Sammamish Balanced Land Use and Mobility Analysis

Draft Environmental Impact Statement | Volume I
August 2021

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City of Sammamish Washington

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August 26, 2021

Subject: Sammamish Balanced Land Use and Mobility Analysis Draft Environmental Impact Statement

Dear Reader:

The City of Sammamish has issued the attached Draft Environmental Impact Statement (Draft EIS) addressing the Sammamish Balanced Land Use and Mobility Analysis (BLUMA). The proposal consists of amendments to the Sammamish Comprehensive Plan and Sammamish Municipal Code (SMC) necessary to amend and implement the City's transportation level of service (LOS) standards and concurrency management program.

Alternatives addressed in the Draft EIS include **Alternative 1 No Action**—continuation of transportation LOS standards and concurrency program requirements currently in effect—and **three action alternatives**, which include adoption and implementation of updated LOS standards, concurrency program requirements, and potential Comprehensive Plan and/or development code amendments, depending on the selected alternative. **Action Alternatives 2, 3, and 4** all assume the same LOS standards based on intersections, key roadway corridors and segments, along with transportation improvements to meet LOS standards. In addition, **Alternative 3** includes land use measures to reduce overall travel demand and an assumed 15% reduction in peak hour trips as a result of changes to work patterns following the pandemic. **Alternative 4** includes all the features of Alternatives 2 and 3, plus transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints. The proposal would apply to all areas within the City of Sammamish city limits.

For each alternative, the potential environmental impacts and mitigation measures are identified for the following topics: Earth, Water Resources, Plants and Animals, Land Use, Housing, Plans and Policies, Transportation, and Utilities (Broadband).

Key issues and options include the following:

- Before the City are a range of approaches to setting a Transportation LOS and Concurrency method. Each alternative requires consideration and approval of Comprehensive Plan and SMC changes to implement the selected approach.
- All alternatives address the City's growth target to 2035 and address identified intersection deficiencies. Some alternatives also address segment and corridor deficiencies and create a more continuous multimodal system. Before the City are choices regarding the comprehensiveness of the LOS and Concurrency approaches that guide transportation system improvements that support the City's future land use. The adoption of the alternative policy would lead to Comprehensive Plan and code amendments that would mean some projects included in the Capital Facility Plan by 2035 as well as beyond.

- The alternatives offer a mix of intersection, segment, and land use/traffic demand management investments. The level of investment in infrastructure can also be lessened where greater work from home occurs, and where a small increase in the mix of housing types is provided.

The Draft EIS is posted and can be downloaded from the City of Sammamish's website at https://connect.sammamish.us/eis/widgets/37530/documents.

The City of Sammamish is requesting comments from citizens, agencies, tribes, and all interested parties on the Draft EIS from August 26, 2021 to September 27, 2021. Comments are due by **5:00 PM, September 27, 2021**. Electronic submittal of comments is preferred and can be accomplished by using this link: https://form.jotform.com/212297394282159 or by emailing eis@sammamish.us.

All written comments should be directed to:

City of Sammamish
ATTN: BLUMA EIS TEAM
801 228th Ave SE
Sammamish, WA 98075
eis@sammamish.us

Please include in the subject line "Sammamish Balanced Land Use and Mobility Analysis Draft EIS Comments."

Should you have questions you may direct your email to Doug McIntyre, Transportation Planner and Lindsey Ozbolt, Long-Range Planning Project Manager, at eis@sammamish.us.

Thank you for your interest in planning for the future of Sammamish.

Sincerely,

David Pyle 08/26/2021

David Pyle, Director
City of Sammamish Department of Community Development
SEPA Responsible Official

Fact Sheet

Project Title

Sammamish Balanced Land Use and Mobility Analysis

Proposed Action and Alternatives

The proposal consists of amendments to the Sammamish Comprehensive Plan and Sammamish Municipal Code necessary to amend and implement the City's transportation level of service (LOS) standards and concurrency management program. Amendments may include:

- **Comprehensive Plan**: Amendments to the Transportation and Capital Facilities Elements, Volume I for transportation LOS standards. Amendments to Transportation and Capital Facilities Elements, Volume II, to update discussion of LOS standards and concurrency, the 6-Year Transportation Improvement Program (TIP), the traffic forecasting model, recommended long-term transportation project list, and financing information. Consistency amendments to other elements may also be required.
- **Sammamish Municipal Code (SMC)**: Potential changes to the SMC could include but are not limited to: SMC Titles 14A, 20, 21A, and 21B to update definitions, address internal consistency, and implement the amended transportation LOS standards in the concurrency management program, depending on the selected alternative.

Alternatives to be addressed in the EIS include **Alternative 1 No Action**—continuation of transportation LOS standards and concurrency program requirements currently in effect—and **three action alternatives**, which include adoption and implementation of updated LOS standards, concurrency program requirements, and potential Comprehensive Plan and/or development code amendments, depending on the selected alternative. **Action Alternatives 2, 3, and 4** all assume the same LOS standards based on intersections, key roadway corridors and segments, along with transportation improvements to meet LOS standards. In addition, **Alternative 3** includes land use measures to reduce overall travel demand and an assumed 15% reduction in peak hour trips as a result of changes to work patterns following the pandemic. **Alternative 4** includes all the features of alternatives 2 and 3, plus transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints. The proposal would apply to all areas within the City of Sammamish city limits.

Proponent and Lead Agency

City of Sammamish

Location

Current incorporated City of Sammamish boundaries

Tentative Date of Implementation

Winter/Spring 2022

SEPA Responsible Official

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Contact Persons

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Required Approvals

City of Sammamish City Council

Principal EIS Authors and Contributors

Under the direction of the City of Sammamish, the consultant team prepared the EIS as follows:

- BERK Consulting: prime consultant, alternatives, land use, plans and policies
- HWA Geo: earth
- The Watershed Company: surface water, fish habitat
- Transportation Solutions, Inc.: transportation

Draft EIS Date of Issuance

August 26, 2021

Draft EIS Comment Period

The City of Sammamish is requesting comments from citizens, agencies, tribes, and all interested parties on the Draft EIS from August 26, 2021 to September 27, 2021. Comments are due by **5:00 PM, September 27, 2021**.

All written comments should be directed to:

City of Sammamish ATTN: BLUMA EIS TEAM
801 228th Ave SE
Sammamish, WA 98075
eis@sammamish.us

Submittal of comments by email is preferred. Please include in the subject line "Sammamish Balanced Land Use and Mobility Analysis Draft EIS Comments."

Prior Environmental Review

June 13, 2018 Environmental Checklist and June 19, 2018 SEPA DNS for a non-project proposal for amendments to the Comprehensive Plan and SMC related to the City's transportation concurrency and level of service regulations. Comprehensive Plan amendments were to the glossary and Transportation Element. SMC amendments included SMC Titles 14, 14A, 21A, 21B and 27A related to the City Council's emergency action regarding the City's transportation concurrency and level of service (LOS) policies.

September 13, 2018 SEPA Threshold Determination and Environmental Checklist Addendum for changes to the June 13, 2018 Checklist and DNS.

July 7, 2020 Environmental Checklist and SEPA Determination of Significance (DS)/Scoping Notice for the Transportation Concurrency Level of Service Standards Update.

February 22, 2021 Optional Informational Notice of additional alternatives being considered in the EIS.

Location of Background Data

You may review the City of Sammamish's website for more information at connect.sammamish.us. If you desire clarification or have questions, please see Contact Information above.

Purchase/Availability of Draft EIS

The Draft EIS is posted and can be downloaded from the City of Sammamish's website at connect.sammamish.us. A hard copy is available at cost for printing and mailing (see Contact Persons to arrange).

Distribution List

Federal and Tribal Agencies

Muckleshoot Indian Tribe
Puyallup Tribe of Indians
Snoqualmie Tribe
US Army Corps of Engineers (Regulatory Branch)

State and Regional Agencies

Puget Sound Clean Air Agency
Puget Sound Regional Council
Washington State Department of Commerce
Washington State Department of Ecology
Washington State Department of Fish and Wildlife
Washington State Department of Fish and Wildlife – Puget Sound Habitat Program
Washington State Department of Natural Resources
Washington State Department of Transportation
Washington State Office of the Attorney General

Adjacent Jurisdictions

City of Issaquah
City of Redmond
King County DDES
King County Department of Permitting and Environmental Review
King County Department of Natural Resources and Parks
King County Department of Local Services
King County Metro Transit

Services and Utilities

Comcast
Eastside Fire and Rescue
Lumen
NE Sammamish Water and Sewer District
Puget Sound Energy
Sammamish Plateau Water and Sewer District
Ziply Fiber

Schools

Eastside Catholic School
Issaquah School District
Lake Washington School District
Snoqualmie Valley School District

Community Organizations and Individuals

Friends of Pine Lake
Johns Monroe Mitsunaga Kolouškovᡠ Law
Sammamish Heritage Society
Sammamish Library
Save Lake Sammamish

Notice of Availability posted to Project Website and sent to interested parties.

Media

Seattle Times Notice of Availability

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1 Summary

1.1 Purpose

Consistent with the Washington Growth Management Act (GMA), the City of Sammamish Comprehensive Plan guides decisions on land use, environment, housing, transportation, utilities, parks, and capital facilities. With respect to transportation, the Comprehensive Plan sets standards for roadway operations, identifies how transportation improvements will be funded, and establishes the basis for regulations that implement plan policies, including transportation Level of Service (LOS) standards.

LOS is a concept used by many cities, including Sammamish, to measure the performance of its street system. LOS may be measured in several different ways. One commonly used approach assigns a letter designation for different levels of traffic congestion, with LOS A representing the best operating conditions (least congestion) and LOS F the worst operating conditions (greatest congestion). Another common approach measures the volume of traffic on a roadway as a ratio of the total estimated roadway capacity, resulting in a volume-to-capacity (V/C) ratio. A V/C ratio less than 1.0 indicates that the roadway has available capacity. A V/C ratio greater than 1.0 indicates that volumes exceed the designed capacity. Historically, the City of Sammamish has used both approaches for measuring LOS.

Transportation LOS standards established in the Comprehensive Plan are used to evaluate the transportation impacts of growth and to determine actions needed to ensure continued provision of adequate transportation facilities. As required by the GMA, Sammamish must adopt and enforce ordinances that prohibit development approval if the development causes LOS on local roadways to decline below the standard adopted in the Comprehensive Plan Transportation Element, unless transportation improvement projects or strategies to accommodate the impacts of development are made concurrent with the development. Please see the sidebar for GMA definitions of terms used here.

In May 2019, the City of Sammamish adopted Ordinance 02019-484, establishing amended transportation level of service standards for transportation concurrency. This action was subsequently appealed to the Central Growth Management Hearings Board (GMHB). The GMHB found that the City's action did not comply with state GMA and SEPA requirements and remanded it to the City to bring the action into compliance. In December 2020, the City repealed the amended transportation LOS standards and concurrency requirements (Ordinance O2020-524).

GMA Terms and Definitions

Concurrency ensures that adequate public facilities are available when the impacts of development occur, or within a specific time thereafter. (WAC 365-196-210)

Adequate public facilities are facilities with the capacity to serve development without decreasing levels of service below locally established minimums. (WAC 365-196-210)

Concurrent with development means that improvements or strategies are in place at the time of development or that a financial commitment is in place to complete the improvements or strategies within six years. (WAC 365-196-840)

The proposal being considered in this Draft Environmental Impact Statement (Draft EIS) is an amendment to the Transportation and Capital Facilities elements of the Comprehensive Plan to change transportation level of service standards, supporting policies, and related transportation capital improvement projects. If adopted, the proposed Comprehensive Plan amendment would be implemented through a SMC amendment to the City's concurrency requirements and possibly development standards, depending on the selected alternative. Potential impacts that could result from both the proposed Comprehensive Plan and SMC amendments are evaluated in this EIS.

The Draft EIS is organized as follows:

- Chapter 1 Summary
- Chapter 2 Proposal and Alternatives
- Chapter 3 Environment, Impacts, and Mitigation Measures
- Chapter 4 Acronyms and References
- Chapter 0 Sammamish Balanced Land Use and Mobility Analysis
  - A Public Outreach
  - B Growth Targets
  - C BLUMA Traffic Analysis Report
  - D Sammamish Municipal Code Title 14A

1.2 Study Area

The proposal would apply to all areas within the City of Sammamish city limits. The city is located in east King County, extending east from the eastern shore of Lake Sammamish. Neighboring jurisdictions include the City of Redmond to the north, City of Issaquah to the south, and unincorporated King County to the northeast, east, and southeast, see Exhibit 1-1. The EIS also considers several road segments and one intersection outside the city limits; these roadways provide connections to regional transportation corridors and carry traffic into and out of Sammamish. Specifically, the EIS considers the road segments and intersections on Sahalee Way between the city boundary and Redmond-Fall City Road, as well as the portion of Issaquah-Pine Lake Road between SE 48th Street and SE Issaquah-Fall City Road.

Exhibit 1-1. City of Sammamish Vicinity Map

Source: City of Sammamish, 2020; BERK, 2021.

1.3 Public Comment Opportunities

As part of the environmental review process, the City conducted a public scoping process that extended from July 7 to July 31, 2020. By the close of the scoping period, the City had received a total of 69 comments. All comments were posted to the City's Connect Sammamish website. Comments were also summarized in a final scoping report that identified changes made to the scope of the EIS in response to comments and responded to major topics and themes contained in the comments. See Appendix A for the scoping report. On February 22, 2021, the City posted an optional notice of additional alternatives being considered in the EIS. This informational notice was provided as a courtesy only, no additional comment period was required.

Public comments are invited on this Draft EIS. All public comments received during the Draft EIS comment period will be considered and addressed in the Final EIS. Please see the Fact Sheet at the beginning of this Draft EIS for the public comment period dates.

Public involvement continues to be an important element of the planning process. City staff may make a recommendation for the Comprehensive Plan and SMC amendments considered in this EIS. Upon receipt of a recommendation for Comprehensive Plan and SMC amendments, the Planning Commission will consider the proposal in one or more public meetings and hold a public hearing. Following the public hearing, the Planning Commission will make a recommendation to City Council. The City Council will review the recommendation at a public meeting and hold a public hearing prior to making their decision. Please see the link to the Balanced Land Use and Mobility Analysis (BLUMA) EIS on the Connect Sammamish website for information about future public meetings and hearings.

1.4 Objectives, Proposal, and Alternatives

1.4.1 Objectives

SEPA requires the statement of objectives describing the purpose and need for the proposals. The following objectives apply to the alternatives considered in this EIS:

1. Maintain consistency with all elements of the Sammamish Comprehensive Plan Goals and Policies while continuing to support the Vision.
2. Manage transportation impacts associated with rapid growth, consistent with the Comprehensive Plan.
3. Acknowledge and implement a transportation level of service that represents real world transportation conditions in the City, including its unique challenges, such as limited access to highways, topography, commute patterns, conditions between intersections, and more.
4. Employ land use measures to reduce travel demand and maximize network effectiveness.

1.4.2 Proposal

The proposal consists of related amendments to the Sammamish Comprehensive Plan and SMC necessary to amend and implement the City's transportation level of service standards and concurrency management program. Amendments may include:

- **Comprehensive Plan**: Amendments to the Transportation and Capital Facilities Elements, Volume I for transportation LOS standards. Amendments to Transportation and Capital Facilities Elements, Volume II, to update discussion of LOS standards and concurrency, the 6-Year Transportation Improvement Program (TIP), the traffic forecasting model, recommended long-term transportation project list, and financing information. Consistency amendments to other elements may also be required.
- **Sammamish Municipal Code (SMC)**: Potential changes to code could include but are not limited to: SMC Titles 14A, 20, 21A, and 21B to update definitions, address internal consistency, and implement the amended transportation LOS standards in the concurrency management program, depending on the selected alternative.

1.4.3 Alternatives

Alternatives addressed in this Draft EIS include **Alternative 1 No Action**—continuation of transportation LOS standards and concurrency program requirements currently in effect—and **three action alternatives**, which include adoption and implementation of updated LOS standards, concurrency program requirements, and potential development code amendments, depending on the selected alternative. **Action Alternatives 2, 3, and 4** all assume the same LOS standards based on intersections, key roadway corridors and segments, along with transportation improvements to meet LOS standards. In addition, **Alternative 3** includes land use measures to reduce overall travel demand and an assumed 15% reduction in peak hour trips as a result of changes to work patterns following the pandemic. **Alternative 4** includes all the features of alternatives 2 and 3, plus transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints. See Exhibit 1-2 below for a summary of the alternatives.

Exhibit 1-2. Alternatives Overview

	Alternative	Key Features
1	No Action	Continuation of transportation LOS standards and concurrency program requirements currently in effect
2	Transportation Level of Service (LOS) Standards	Continuation of LOS standards for intersections and new LOS standards for key roadway corridors and segments Improvements to transportation infrastructure to meet new LOS standards.
3	Transportation LOS Standards with transportation-efficient land use measures	Same LOS standards for intersections and key roadway corridors and segments as Alternative 2 with an assumed 15% reduction in peak hour trips Land use measures to reduce overall travel demand Improvements to transportation infrastructure to meet new LOS standards
4	Transportation LOS Standards with transportation-efficient land use measures and holistic transportation capacity improvements	Same LOS standards for intersections and key corridors and roadway segments as Alternative 2 with an assumed 15% reduction in peak hour trips Same land use measures as described in Alternative 3 Transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints Improvements to transportation infrastructure to meet new LOS standards

1.4.3.1 Alternative 1 No Action

Alternative 1 No Action retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. However, Comprehensive Plan amendments would be required to establish consistency with SMC Title 14A. No other changes are required under Alternative 1. Key features of this alternative are described below.

Transportation

LOS Standards

No change is proposed to the existing transportation LOS standards as found in SMC Title 14A Public Facilities, meaning that LOS is only measured during the AM and PM peak hour at designated concurrency intersections. Existing Comprehensive Plan LOS standards are defined as shown in Exhibit 1-3 below.

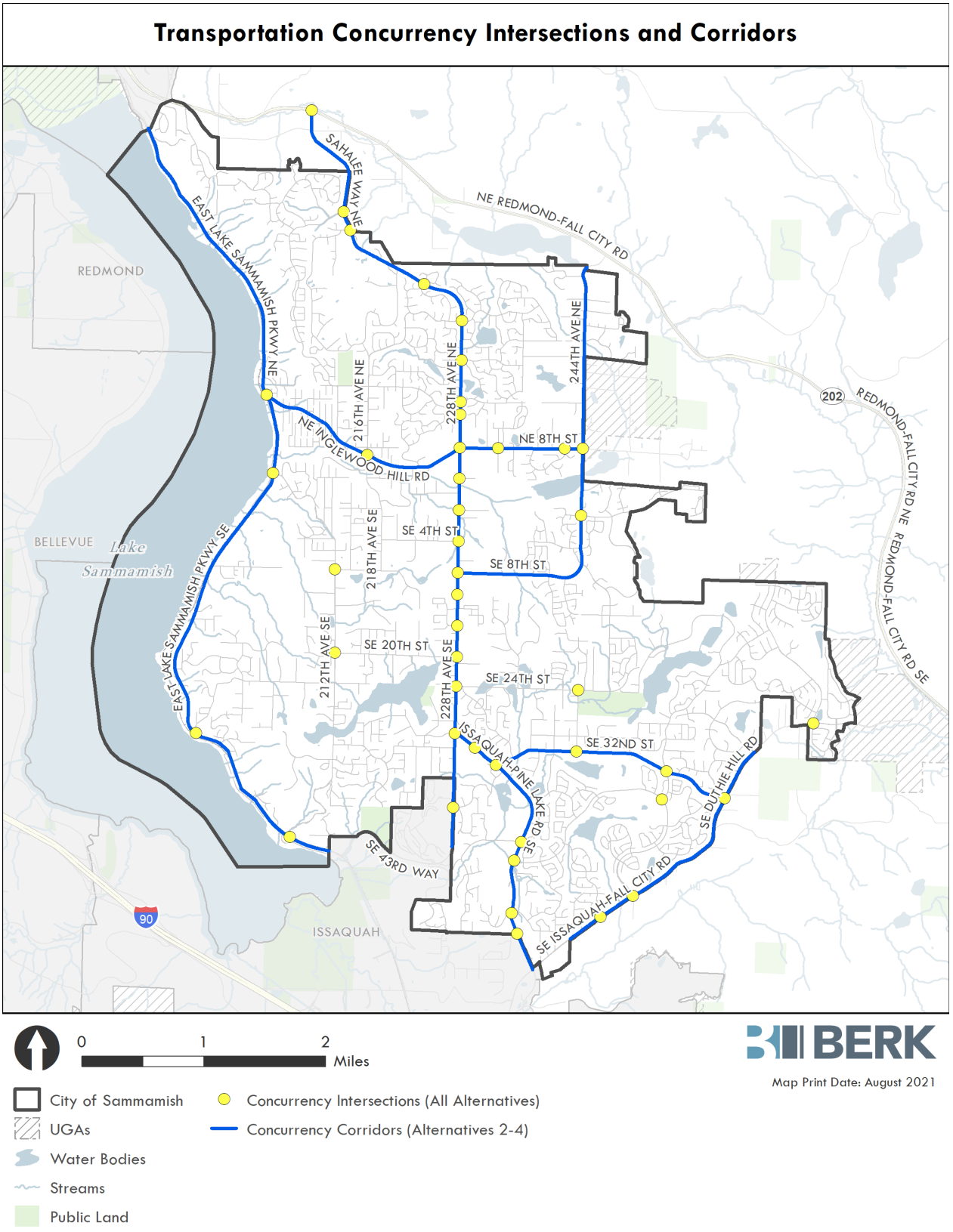
Exhibit 1-3. Intersection Level of Service Standards

Intersection Level of Service Standards	
LOS C	Intersections that include Minor Arterial or Collector Arterial roadways
LOS D	Intersections that include Principal Arterial roadways
LOS E	Intersections that include Principal Arterial roadways where LOS D cannot be met with three approach lanes in any direction.

Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.24.

The City has identified 43 concurrency intersections within the city. See Exhibit 1-4 for a map of these intersections and Exhibit 1-5 for the list of all concurrency intersections.

Exhibit 1-4. Concurrency Intersection and Corridor Map



Source: Draft Sammamish Transportation Master Plan, p, 42. May 2020.

Exhibit 1-5. Concurrency Intersection Descriptions

Node	Intersection	Los Standard[1]	Traffic Control[2]
1	Issaquah-Pine Lake Road and SE 48th Street	D	Signal
2	228th Avenue NE and NE 12th Place	D	Signal
3	Klahanie Drive SE and SE Issaquah-Fall City Road	D	Signal
4	244th Avenue SE and SE 24th Street	C	SSSC
5	SE 32nd Street and 244th Avenue SE	C	SSSC
6	Issaquah-Pine Lake Road and SE 32nd Way	D	RAB
7	228th Avenue SE and SE 40th Street	D	SSSC
8	SE Klahanie Boulevard and 256th Avenue SE	C	AWSC
9	247th Place SE and SE Issaquah-Fall City Road (Pacific Cascade Middle)	D	Signal
10	Sahalee Way NE and NE 36th Street	D	SSSC
11	242nd Avenue NE and NE 8th Street	C	Signal
12	228th Avenue SE and SE 8th Street	D	Signal
13	228th Avenue NE and NE 19th Drive	D	SSSC
14	228th Avenue NE and NE 19th Drive	C	RAB
15	228th Avenue NE and NE Inglewood Hill Road/NE 8th Street	D	Signal
16	228th Avenue NE and NE 4th Street E Signal	E	Signal
17	228th Avenue SE and SE 4th Street	E	Signal
18	212th Avenue SE and SE 8th Street	C	SSSC
19	228th Avenue SE and SE 16th Street	D	Signal
20	East Lake Sammamish Parkway and 212th Way SE	C	Signal
21	East Lake Sammamish Parkway and SE 24th Way	C	SSSC
22	212th Avenue SE and SE 20th Street	C	AWSC
23	East Lake Sammamish Parkway and Louis Thompson Road NE	C	Signal
24	East Lake Sammamish Parkway and Inglewood Hill Road	C	Signal
25	Sahalee Way NE and NE 37th Way	D	Signal
26	NE 8th Street and 244th Avenue NE	C	RAB
27	228th Avenue SE and SE 20th Street	D	Signal
28	228th Avenue SE and SE 24th Street	E	Signal
29	228th Avenue SE and Issaquah-Pine Lake Road	E	Signal
30	Issaquah-Pine Lake Road SE and SE Klahanie Boulevard	D	Signal
31	Duthie Hill Road and Issaquah-Beaver Lake Road	D	Signal
32	256th Avenue SE/E Beaver Lake Drive SE and Issaquah-Beaver Lake Road	C	SSSC
33	228th Avenue NE and NE 14th Street	D	SSSC
34	228th Avenue NE and NE 25th Way	D	Signal
35	Issaquah-Pine Lake Road and SE 42nd Street	D	SSSC

Node	Intersection	Los Standard[1]	Traffic Control[2]
36	Issaquah-Pine Lake Road and 230th Lane SE/231st Lane SE	D	Signal
37	NE 28th Place/223rd Avenue and Sahalee Way NE	D	SSSC
38	Issaquah-Pine Lake Road and SE 47th Way/238th Way SE	D	Signal
39	233rd Avenue NE and NE 8th Street	C	RAB
40	228th Avenue SE and East Main Street	D	Signal
41	244th Avenue NE and East Main Drive	C	RAB
42	Duthie Hill Road and Trossachs Boulevard SE	D	Signal
43	228th Avenue SE and SE 10th Street (Skyline High School)	D	

Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.26
1. LOS standards are based upon the functional classifications of the intersecting roadways. Intersections that include Principal Arterials have a standard of LOS D except where LOS D cannot be met with three approach lanes in any direction. In those cases, LOS E is assigned. Intersections that include Minor Arterials or Collectors have a standard of LOS C.
2. Signal = Signalized, SSSC = Side-Street Stop-Controlled, AWSC = All-Way Stop-Controlled, RAB = Roundabout

Concurrency Management

Consistent with SMC Title 14A Public Facilities, transportation concurrency would continue to be evaluated only on intersection LOS at concurrency designated intersections. To meet concurrency requirements, development proposals would be required to meet intersection LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

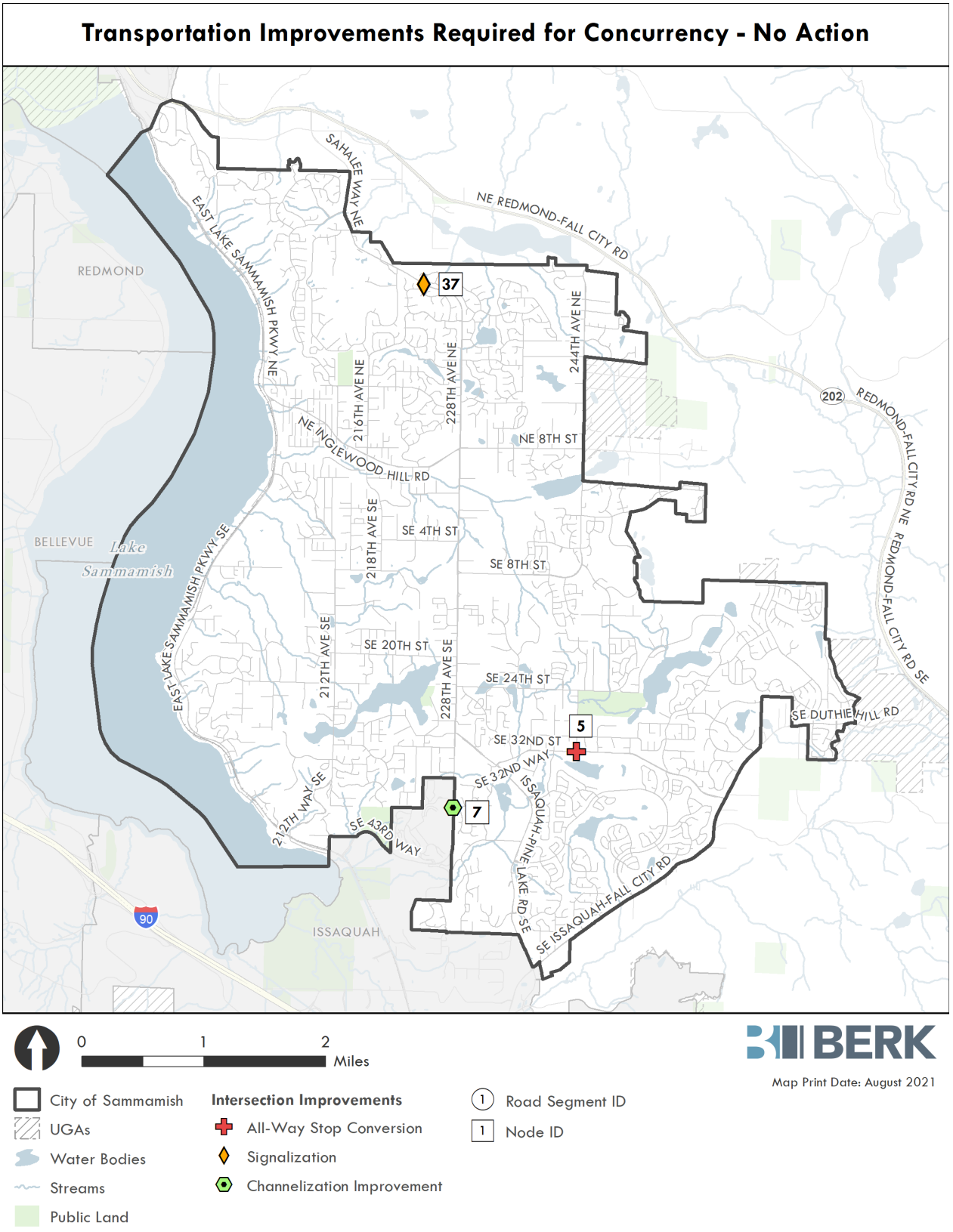
Under Alternative 1, improvements at three intersections are required to maintain intersection LOS standards through 2035. Exhibit 1-6 describes required improvements under Alternative 1 based on transportation modeling analysis and the City's 2016 Public Works Standards; variations from the public works standards are noted if applicable, additional project information is not available. See Exhibit 1-7 for project locations.

Exhibit 1-6. Alternative 1 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Alternative 1 Projects
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS.
Sources: City of Sammamish, 2020; Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 1-7. Alternative 1 Concurrency Intersection Improvement Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Land Use

No changes to land use designations, policies, or regulations are proposed under Alternative 1.

Policy and Regulatory Amendments

Comprehensive Plan

For consistency with the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities, Alternative 1 requires amendments to the Comprehensive Plan. These include but are not limited to:

- Transportation Element Volume I: Policies under Goal T.1 to remove references to LOS standards and concurrency requirements for road segments and corridors. Similar revisions may also occur in the Transportation Element Background Information Volume II.
- Capital Facilities Element Volume I: Policies under Goal CF.2 to remove references to LOS standards and concurrency requirements for road segments.
- Capital Facilities Background Information Volume II: Table CF-6 to ensure that identified transportation capital improvement projects reflect existing LOS standards.
- Other Potential Changes to relevant sections of City plans.

Sammamish Municipal Code

Alternative 1 No Action retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. No amendments are proposed.

1.4.3.2 Alternative 2

Alternative 2 proposes continuation of existing LOS standards for concurrency intersections and new LOS standards for concurrency roadway corridors and segments. Amendments to the Transportation and Capital Facilities elements of the Sammamish Comprehensive Plan would be required to incorporate new LOS standards and implementing projects. SMC Title 14A Public Facilities would also be amended to implement the new LOS standards and concurrency management program. Key features of Alternative 2 are described below.

Transportation

LOS Standards

Alternative 2 continues the LOS standards for concurrency intersections and adopts new LOS standards for identified concurrency corridors and roadway segments, described below. For both the intersections and corridors and segments, LOS would continue to be measured during the AM and PM peak hour. To meet concurrency requirements, LOS standards for intersections, corridors, and segments must be met.

Intersection LOS

Under Alternative 2, intersection LOS standards would be as described under Alternative 1. Implementing intersection improvement projects required under Alternative 2 are listed in Exhibit 1-8, including conceptual project descriptions. See Exhibit 1-14 for the location of Alternative 2 intersection improvements.

Exhibit 1-8. Alternative 2 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Alternative 2 Projects
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 improvements.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
Sources: City of Sammamish, 2020; Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

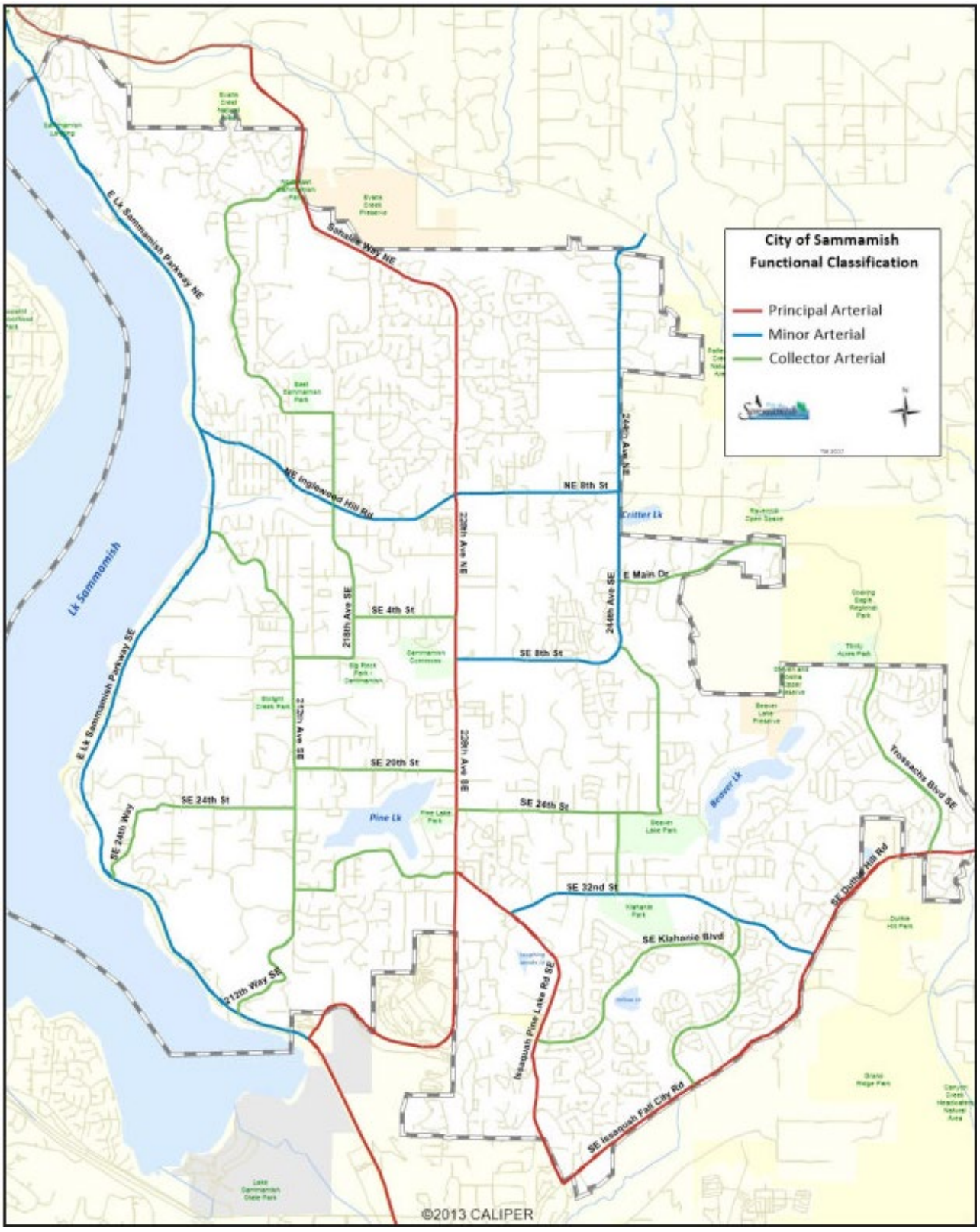
Corridors and Roadway Segments LOS

Alternative 2 establishes new LOS standards for concurrency corridors and roadway segments. The corridors and segments consist of City roadways designated as Principal Arterial and Minor Arterial in the City's functional classification system (Exhibit 1-9). Transportation corridors are comprised of one or more segments, based on transportation character and needs. For example, the Sahalee Way corridor is divided into five distinct segments. Transportation concurrency corridors are listed in Exhibit 1-11, below; see also Exhibit 1-4 for a map of transportation concurrency corridors and Exhibit 1-12 for a map of segments.

The corridor and segment LOS would be measured based on volume to capacity ratios.[1] As shown in Exhibit 1-10, the proposed volume to capacity ratio standard would be less than or equal to 1.1 for corridors and less than or equal to 1.4 for segments.

[1] See Appendix C, for the November 16, 2018 Fehr & Peers memorandum "Measuring Concurrency for Segments and Corridors: HCM 6th Edition, Modified,"

Exhibit 1-9 City Roadway Functional Classifications



Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.11

Exhibit 1-10. Proposed LOS Standards: Concurrency Corridors and Segments

Corridors and Segments	Proposed LOS Standards
Concurrency Corridors	Less than or equal to 1.1 volume to capacity ratio
Concurrency Segments	Less than or equal to 1.4 volume to capacity ratio

Source: City of Sammamish, 2020.

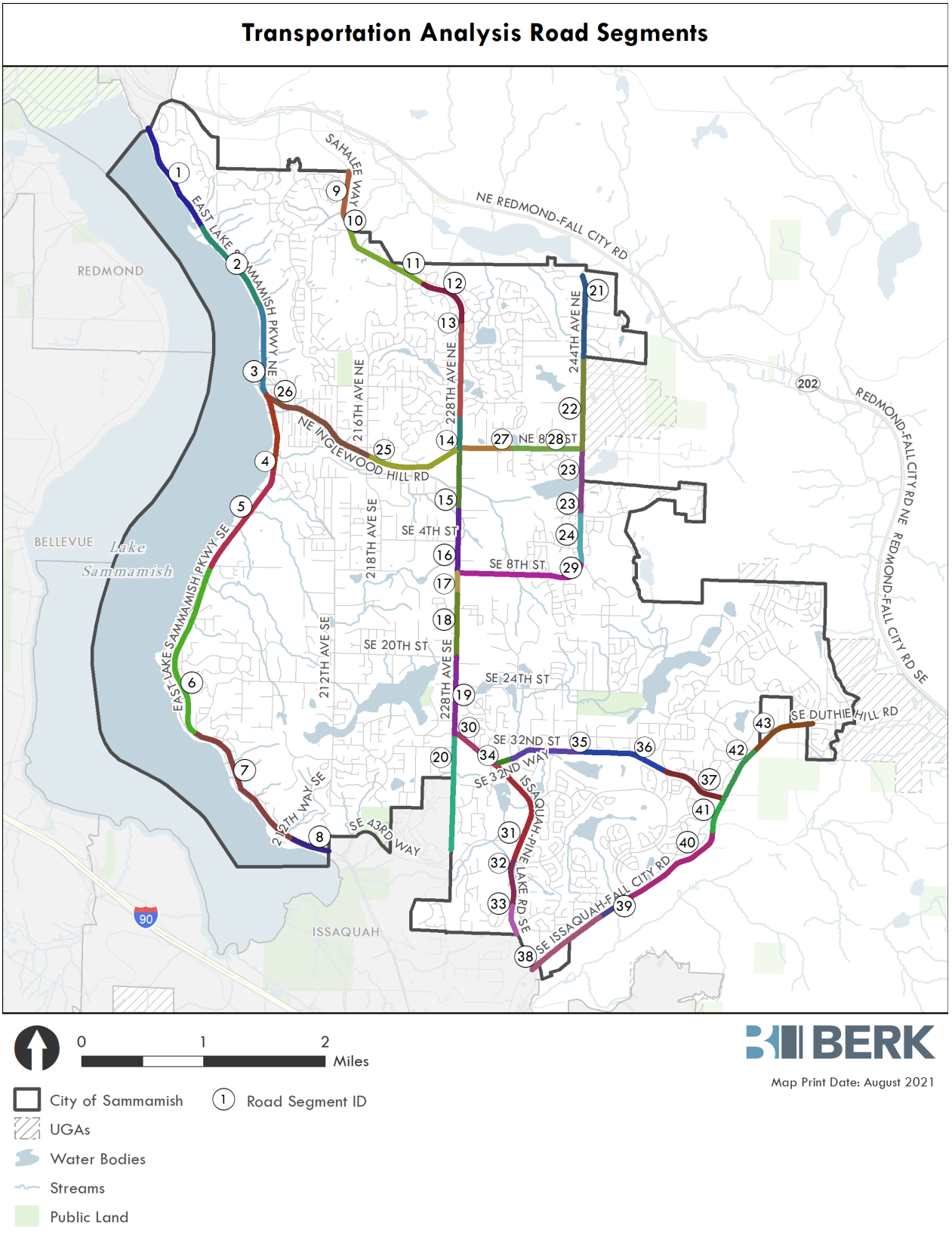
Exhibit 1-11. Transportation Concurrency Corridors

Transportation Corridors	Segments
East Lake Sammamish Parkway North Corridor	1. City limit to 196th Avenue NE 2. 196th Avenue NE to NE 26th Place 3. NE 26th Place to NE Inglewood Hill Road
East Lake Sammamish Parkway Central Corridor	4. NE Inglewood Hill Road to Louis Thompson Road SE 5. Louis Thompson Road SE to SE 8th Street
East Lake Sammamish Parkway South Corridor	7. SE 24th Way to 212th Way SE 8. 205th Avenue SE to city limit
Sahalee Way - 228th Avenue North Corridor	9. City limit to NE 37th Way 10. NE 37th Way to NE 36th Street 11. NE 36th Street to 223rd Avenue NE/NE 28th Place 12. 223rd Avenue NE to NE 25th Way 13. NE 25th Way to NE 12th Place
228th Avenue Central Corridor	14. NE 12th Place to NE 8th Street/Inglewood Hill Road 15. NE 8th Street/Inglewood Hill Road to Main Street 16. Main Street to SE 8th Street 17. SE 8th Street to SE 10th Street 18. SE 10th Street to SE 20th Street
228th Avenue South Corridor	19. SE 20th Street to Issaquah-Pine Lake Road SE 20. Issaquah-Pine Lake Road SE to SE 43rd Street
244th Avenue North Corridor	21. NE 30th Place to NE 20th Street 22. NE 20th Street to NE 8th Street 23. NE 8th Street to E Main Street 24. E Main Street to SE 8th Street
NE Inglewood Hill Road Corridor	25. East Lake Sammamish Parkway to 216th Avenue SE 26. 216th Avenue SE to 228th Avenue SE
NE 8th Street Corridor	27. 228th Avenue NE to 235th Avenue NE 28. 235th Avenue NE to 244th Avenue NE
SE 8th Street Corridor	29. 228th Avenue SE to 244th Avenue SE
Issaquah-Pine Lake Road Corridor	30. 228th Avenue SE to SE 32nd Way 31. SE 32nd Way to SE Klahanie Blvd 32. SE Klahanie Blvd to SE 46th Street 33. SE 46th Street to SE 48th Street

Transportation Corridors	Segments
SE 32nd Way/Street Issaquah Beaver Lake Road Corridor	34. Issaquah-Pine Lake Road to 235th Place SE 35. 235th Place SE to 244th Avenue SE 36. 244th Avenue SE to E Beaver Lake Drive SE 37. E Beaver Lake Drive to SE Duthie Hill Road
Issaquah-Fall City Road Corridor	38. Issaquah-Pine Lake Road to 245th Place SE [confirm] 39. 245th Avenue SE [confirm] to Klahanie Drive SE 40. Klahanie Drive SE to SE Duthie Hill Road 41. SE Issaquah Beaver Lake Road to SE Issaquah-Fall City Road
Duthie Hill Road Corridor	42. SE Issaquah Beaver Lake Road to 266th Avenue SE 43. 266th Avenue SE to SE Trossachs Blvd

Source: City of Sammamish, 2020.

Exhibit 1-12 Transportation Concurrency Segments Map



Source: Transportation Solutions, Inc. 2021.

Concurrency Management

The proposed concurrency management program evaluates concurrency based on the intersection and corridor/segment LOS standards shown in Exhibit 1-3 and Exhibit 1-10 above. To meet concurrency requirements, development proposals would be required to meet both intersection and corridor/segment LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

To maintain Alternative 2 LOS standards through 2035, transportation concurrency projects would be required for the intersections identified in Exhibit 1-8 and to portions or all of five corridors, including East Lake Sammamish Parkway North Corridor, East Lake Sammamish Parkway South Corridor, Sahalee Way-228th Avenue North Corridor, Issaquah-Pine Lake Road Corridor, Issaquah-Fall City Road Corridor, and SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and the City's 2016 Public Works standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.

See Exhibit 1-13 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 2 and Exhibit 1-14 for the project locations.

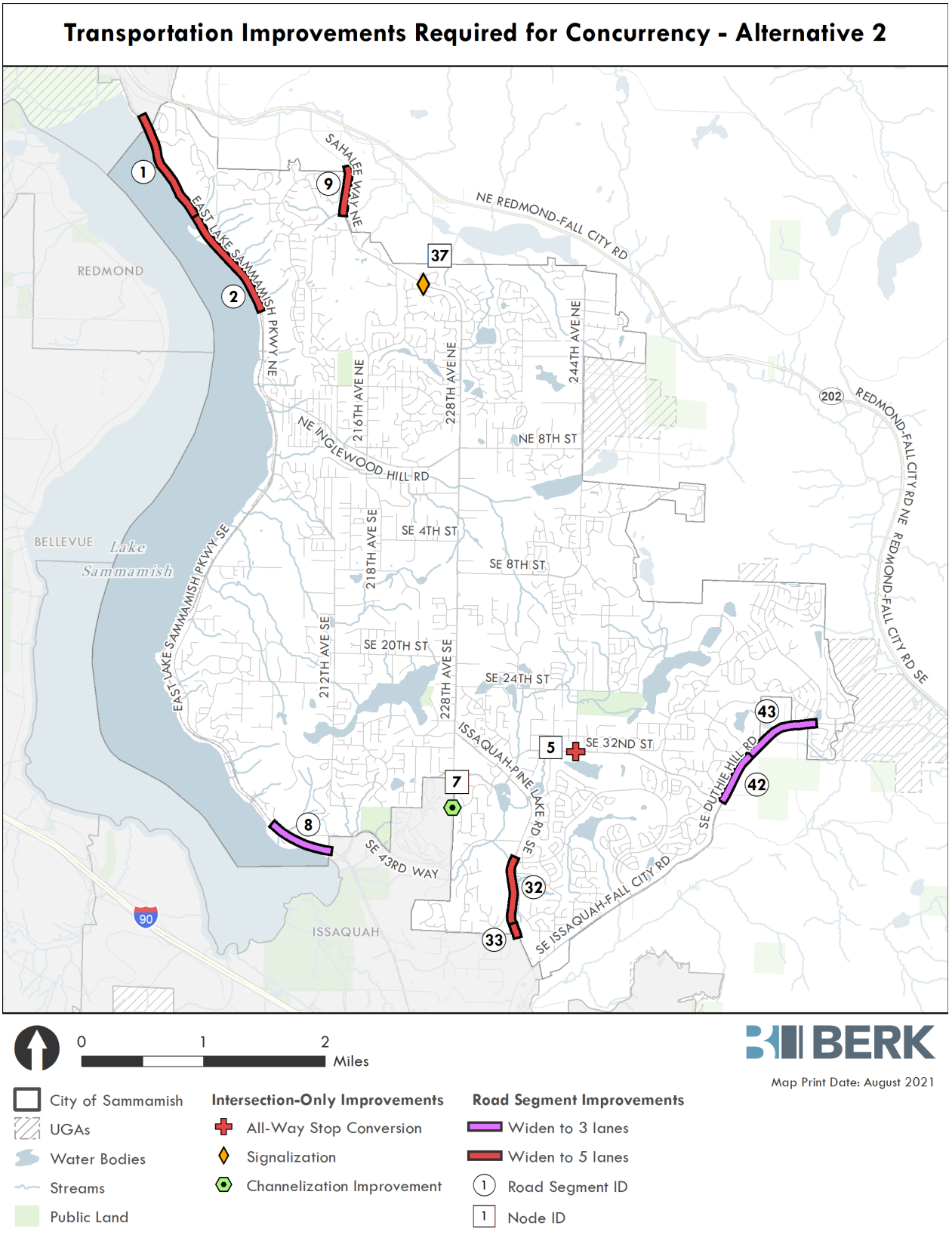
Exhibit 1-13. Alternative 2 Concurrency Corridor Improvement Project Descriptions

Alternative 2	
East Lake Sammamish Parkway North Corridor	
Segment 1 460 Feet North of City Limit to 196th Avenue NE	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 2 196th Avenue NE to NE 26th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
East Lake Sammamish Parkway South Corridor	
Segment 8 205th Avenue SE to City Limit	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Sahalee Way Corridor	
Segment 9 City Limit to NE 37th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway

Alternative 2	
	Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Issaquah-Pine Lake Road Corridor	
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 43 266th Avenue SE to SE Trossachs Boulevard	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 1-14. Alternative 2 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Land Use

No changes to land use designations, policies or regulations are proposed under Alternative 2.

Policy and Regulatory Amendments

Comprehensive Plan Amendments

Alternative 2 Comprehensive Plan amendments include:

- Transportation Element Volume I: Update the description of LOS standards and concurrency management program in Policy T.1.1.
- Transportation Element Background Information Volume II: Update the description of LOS standards and concurrency management program. Baseline data for corridors and segments would be added and transportation improvement projects needed to support the new LOS standards would be identified.
- Capital Facilities Element Volume I: Update the description of LOS standards and concurrency management program in Policy CF2.1
- Capital Facilities Element Background Information Volume: Table CF-6 to reflect new LOS standards.

Sammamish Municipal Code Amendments

Amendments to SMC Title 14A Public Facilities would be required to establish new LOS standards, new concurrency corridors and segments and updated concurrency management program.

1.4.3.3 Alternative 3

Alternative 3 assumes the same LOS standards and concurrency management program as Alternative 2. Alternative 3 also incorporates land use measures intended to reduce travel demand and assumes reduced peak hour travel demand. Key features of Alternative 3 are described below.

Transportation

LOS Standards

The proposed LOS standards for intersections and corridors and roadway segments are the same as for Alternative 2. See Exhibit 1-3, Exhibit 1-10, and the discussion of LOS standards under Alternative 2.

Concurrency Management

The proposed concurrency management program is the same as for Alternative 2. See the discussion of concurrency management under Alternative 2.

Transportation Improvement Projects

To maintain proposed LOS standards through 2035, transportation concurrency projects would be required for the intersections listed in Exhibit 1-15 and to all or portions of three corridors. Under Alternative 3, roadway corridor projects will be required on two segments of the East Lake Sammamish Parkway North Corridor, two segments of the Issaquah-Pine Lake Road Corridor, and one segment of the SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and City's 2016 Public Works standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.

See Exhibit 1-16 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 3 and Exhibit 1-17 for the project locations.

Exhibit 1-15. Alternative 3 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Alternative 3 Projects
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 improvements.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

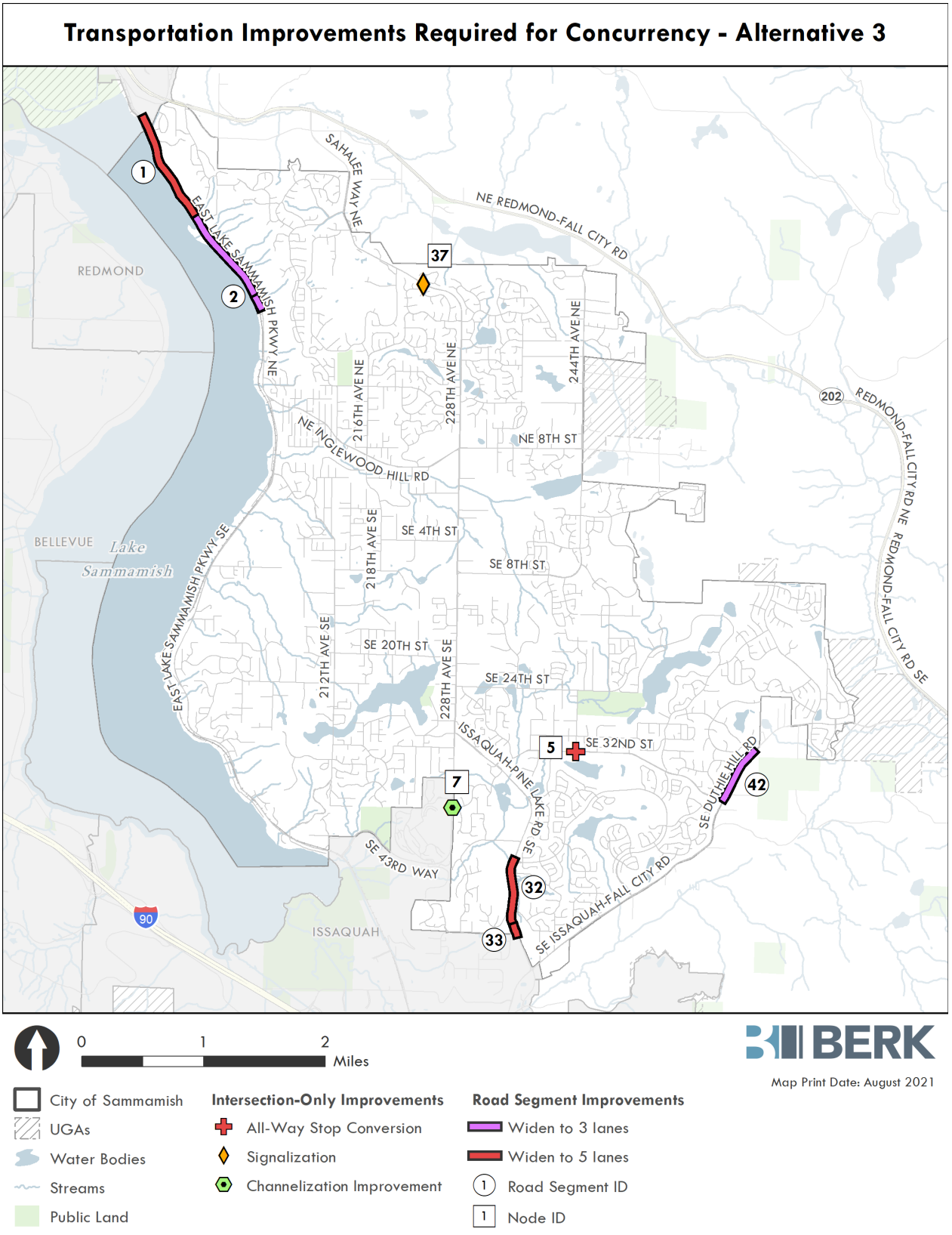
Exhibit 1-16. Alternative 3 Concurrency Corridor Improvement Project Descriptions

Alternative 3 Corridors and Segments	
East Lake Sammamish Parkway North Corridor	
Segment 1 460 Feet North of City Limit to 196th Avenue NE	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 2 196th Avenue NE to NE 26th Place	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk

Alternative 3 Corridors and Segments	
	are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Issaquah-Pine Lake Road Corridor	
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 1-17. Alternative 3 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Travel Demand

Alternative 3 assumes that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish, who have greater options for working remotely.

The COVID-19 pandemic has fundamentally impacted travel behavior for many workers. In Sammamish, a December 2020 open online survey conducted by the City found approximately 44% of respondents reported that they are working from home due to the impacts of COVID-19.[2] Similarly, traffic counts at seven gateway locations of the city conducted in early 2021 found that AM peak hour trips were on average 45% lower and PM peak hour trips 30% lower compared to historic data.

Looking to the future, a Washington State University survey of Pacific Northwest businesses found that some level of working virtually will likely continue for many employees when the pandemic is over. In Washington, over two-thirds (67%) of business leaders report that they plan to continue working virtually when the pandemic is over. More generally, assessments of research firms, management consultants, and other related industries suggest that post-COVID-19 working virtually will continue at least on a part-time or hybrid basis in many industries. Workers in information and technology sectors are often identified as having the highest potential to work from home. Based on 2019 American Community Survey data for Sammamish, the full-time civilian employed population was 23,905 persons. Of this total, an estimated 1,110 worked in finance and insurance, 9,438 in professional, scientific, and technical services; and 247 in management of companies. Collectively these industries total 10,795 employees or approximately 45% of all employees.

Land Use

Alternative 3 assumes that around 10-11% of new units (half of units not otherwise in pipeline) will be comprised of smaller residential units, including small-scale single-family detached dwelling units, townhomes or duplexes. Small-scale single-family detached dwelling units may be defined by a limit on floor area, number of bedrooms or other standards. Duplex and townhouse units are defined in SMC Titles 21A and 21B (see sidebar).

Implementation would occur through amendments to the SMC, including but not limited to: SMC Titles 21A and 21B as appropriate establishing incentives, dimensional standards, design standards, or other applicable amendments. Examples of applicable zoning controls could include maximum building footprint or maximum lot size controls for small-scale single-

Townhouse

A building containing one dwelling unit that occupies space from the ground to the roof and is attached to one or more other townhouse dwellings by common walls (SMC 21A.15.370).

Duplex

A building located on a legal lot, containing two dwelling units designed exclusively for occupancy by two single households living independently of each other (SMC 21B.15.160, Town Center).

[2] Note that this online survey is not statistically significant.

family units. Incentives to promote townhome and duplex development could include flexible minimum lot size or reduced setback requirements to allow a greater number of attached units in a given area.

For the purpose of this analysis, the future residential development projection is based on the City's 2006-2035 growth target, assigned via the King County Countywide Planning process, of 4,849 units less prior growth of 3,963 units permitted through 2019, according to data from the Washington State Office of Financial Management (OFM). This leaves a total of 885 dwelling units remaining under the current target for the planning period 2019 through 2035. As of March 2, 2021, 689 dwelling units were in the pipeline (i.e. in a stage of the permitting process), leaving a projected 196 units through 2035. See the Land Use section of this EIS and Appendix B for a more detailed discussion of growth target assumptions.

Based on Institute of Transportation Engineers (ITE) data, trip generation rates for smaller single-family residential units are expected to result in fewer trips per unit compared to standard single-family residences. Please see Draft EIS Section 3.7 Transportation for additional discussion.

Policy and Regulatory Amendments

Comprehensive Plan Amendments

Comprehensive Plan amendments for Alternative 3 are the same as proposed for Alternative 2. The land use proposal for development of smaller residential units described above is consistent with the Comprehensive Plan land use policy guidance.

Sammamish Municipal Code Amendments

Under Alternative 3, SMC provisions to amend the corridor and segment LOS standard will be as proposed for Alternative 2. In addition, implementation of the land use measures described above may require amendments to the SMC including but not limited to: SMC Title 21A and SMC Title 21Bas appropriate.

1.4.3.4 Alternative 4

Alternative 4 assumes the same LOS standards and concurrency management program as Alternative 2 and the same land use measures and 15% reduction in AM and PM peak hour travel demand as Alternative 3. Alternative 4 also includes a set of transportation capacity improvements intended to improve connectivity and efficiency in the transportation network. Key features of Alternative 4 are described below.

Transportation

As described for Alternative 3, Alternative 4 assumes a 15% reduction in AM and PM peak hour travel demand.

Alternative 4 also includes a set of transportation capacity improvements that consider forecast travel demand, effective connections to the regional transportation network, completion of existing substandard arterials to the City's 2016 Public Works Standards, design accommodations for transit and non-motorized options, and environmental constraints.

Specifically, Alternative 4 focuses on the following objectives:

- Increase the capacity of Principal Arterials by constructing them to current Public Works Standards to direct the highest traffic volumes to the highest classified roadways:
  - Sahalee Way NE
  - 228th Avenue NE and SE
  - Issaquah-Pine Lake Road SE
  - SE Issaquah-Fall City Road (Minor Arterial according to WSDOT/PSRC)
- Remove bottlenecks on Principal Arterials regardless of jurisdiction to ensure system continuity and maximum utilization of increased capacity
  - Sahalee Way NE north of the city limits
  - Issaquah-Pine Lake Road SE south of the city limits
- Control the travel demand on Minor and Collector Arterials with appropriate traffic calming to maintain the local access functions of lower classified roadways.
  - East Lake Sammamish Parkway NE
  - 244th Avenue NE
  - SE 24th Street
  - SE Klahanie Blvd

LOS Standards

The proposed LOS standards for intersections and roadway corridors and segments are the same as for alternatives 2 and 3. See Exhibit 1-3, Exhibit 1-10, and the discussion of LOS standards under Alternative 2.

Concurrency Management

The proposed concurrency management program is the same as for alternatives 2 and 3. See the discussion of concurrency management under Alternative 2.

Transportation Improvement Projects

To maintain proposed LOS standards through 2035, transportation concurrency projects would be required for the intersections identified in Exhibit 1-18 and to five key corridors. Roadway corridor projects would be required on the Sahalee Way Corridor, including a portion of Sahalee Way NE in unincorporated King County adjacent to the city boundary, one segment of the 228th Avenue Central Corridor, one segment of the 228th Avenue South Corridor, the Issaquah-Pine Lake Road Corridor, and the SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and the City's 2016 Public Works standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available. See Exhibit 1-19 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 4 and Exhibit 1-20 for the project locations.

Exhibit 1-18. Alternative 4 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Project
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 and the Issaquah segment adjacent to Segment 33 (SE 48th Street to Issaquah–Fall City Road) improvements. The improvements to IPLR outside the City limits serve to remove the capacity constraint between SE 48th St and Issaquah Fall City Rd to allow the IPL corridor to serve as much traffic as possible, and relieve demand on lower classified roads.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane. Alternative 4 improvements are included as part of Segment 20.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection. Included as part of Segment 31 and Segment 32 improvements.
63*	Sahalee Way and SR 202 intersection	Modify traffic signal. The current intersection's capacity is constrained by the single northbound lane feeding the northbound approach to the traffic signal. Two northbound lanes are necessary to "feed" the double left turn lane and right turn lane. The improvement also adds a second eastbound right turn lane. Included as part of the King County segment adjacent to Segment 9 (SR 202 to north city limit) improvements.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
* Project extends beyond city limits and would require coordination with other jurisdictions.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 1-19. Alternative 4 Concurrency Corridor Improvement Project Descriptions

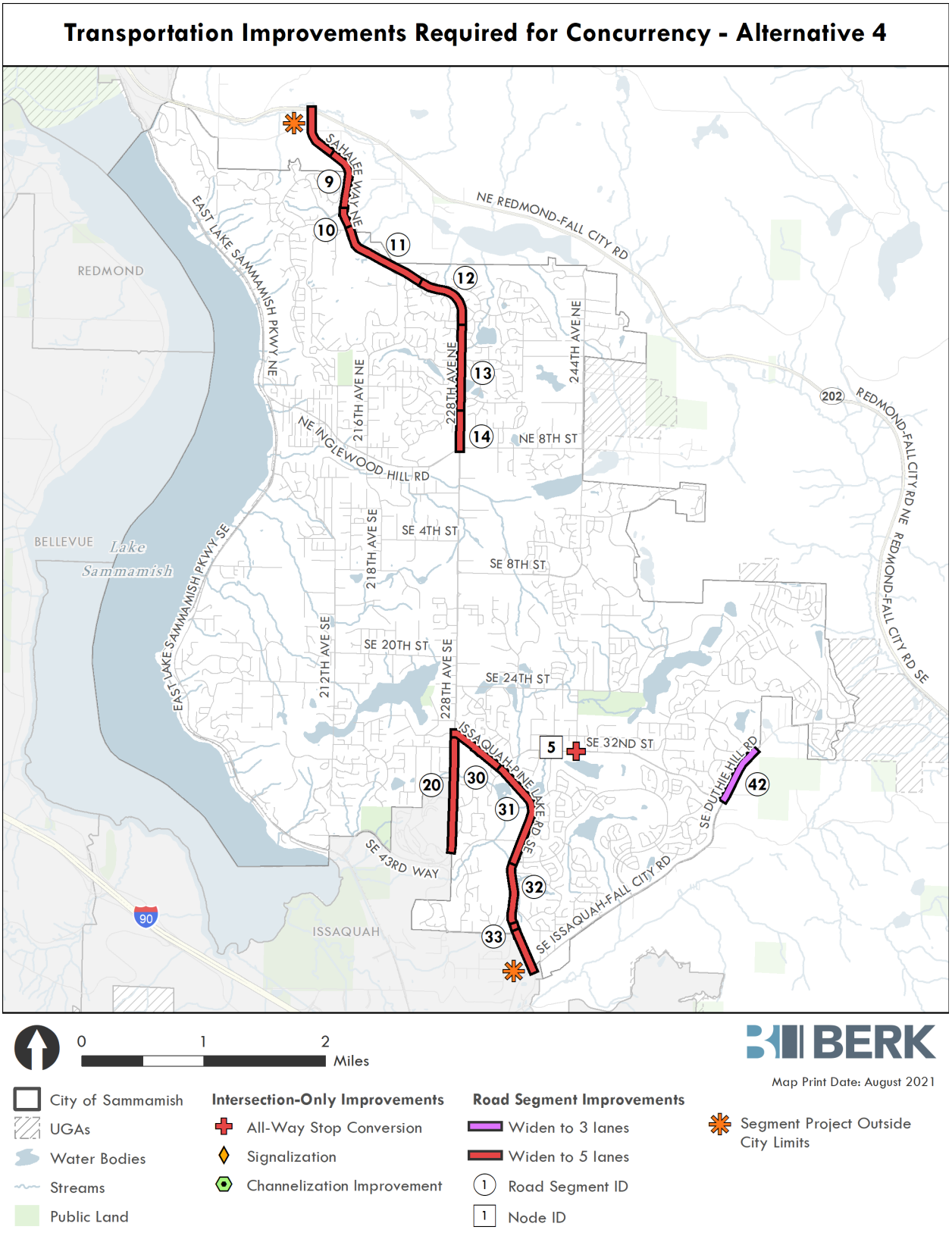
Alternative 4 Corridors and Segments	
Sahalee Way - 228th Avenue North Corridor	
King County Segment adjacent to Segment 9 SR 202 North City Limit	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances. Project improvements extend outside of city limits and will require coordination with other jurisdictions.

Alternative 4 Corridors and Segments	
Segment 9 North City Limit to NE 37th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 10 NE 37th Way to NE 36th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 11 NE 36th Street to 223rd Avenue NE/NE 28th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 12 223rd Avenue NE to NE 25th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 13 NE 25th Way to NE 12th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
228th Avenue Central Corridor	
Segment 14 NE 12th Place to NE 8th Street	Widen the roadway 4 lanes with center turn lane or median consistent with City of Sammamish Principal Arterial Roadway Section FIG01-10. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances resulting in a minimum width of 54 feet from back of walk to back of walk with a 57-foot ROW.
228th Avenue South Corridor	
Segment 20 Issaquah-Pine Lake Road SE to SE 43rd Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Issaquah-Pine Lake Road Corridor	
Segment 30 Pine Lake MS Driveway to SE 32nd Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway

Alternative 4 Corridors and Segments	
	Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 31 SE 32nd Way to SE Klahanie Blvd	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
City of Issaquah Segment, adjacent to Segment 33 SE 48th Street to Issaquah-Fall City Road	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances. Project improvements extend outside of city limits and will require coordination with other jurisdictions.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah-Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 1-20. Alternative 4 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Land Use

Proposed Alternative 4 land use measures are the same as described for Alternative 3.

Policy and Regulatory Amendments

Comprehensive Plan Amendments

Comprehensive Plan amendments proposed under Alternative 4 are the same as Alternative 2.

Sammamish Municipal Code Amendments

Under Alternative 4, SMC provisions to amend the corridor and segment LOS standard are the same as proposed for Alternative 2.

1.4.3.5 Other Alternatives

The assumptions for expected land use patterns, coupled with practical growth targets that are consistent with the last Comprehensive Plan update, produce existing and future trips from the traffic model that are measured against the proposed LOS of V/C Concurrency policies that warrant the list of projects for each alternative. The City will select a Preferred Alternative that is similar to a studied alternative or in the range of the alternatives.

It is possible that future development could vary from the assumptions consistent with City plans, but the LOS and Concurrency policies would guide the City's direction. This EIS presents information on potential improvements on roads where the LOS appears met but is close to the thresholds for the given alternative. Should land use and travel patterns change from those assumed, the improvement ideas could assist the City's implementation of the given alternative LOS and Concurrency approach. This is addressed further in Chapter 3 under mitigation measures for each topic.

1.4.3.6 Alternatives Comparison

Transportation

LOS Standards

Under Alternative 1, no change is proposed to the existing transportation LOS standards as found in SMC Title 14A Public Facilities, meaning that LOS is only measured during the AM and PM peak hour at designated concurrency intersections. The Action Alternatives retain the existing LOS standards for concurrency intersections and adopt new LOS standards for identified concurrency corridors and roadway segments (see Exhibit 1-4 for a map of transportation concurrency corridors). The corridor and segment LOS would be measured based on volume to capacity ratios. As shown in Exhibit 1-10, the proposed volume to capacity ratio standard would be less than or equal to 1.1 for corridors and less than or equal to 1.4 for segments. LOS would continue to be measured during the AM and PM peak hour for both the intersection and corridors and segments.

Concurrency Management

Under Alternative 1, transportation concurrency would continue to be evaluated only on intersection LOS at concurrency designated intersections (consistent with SMC Title 14A Public Facilities). Under the Action Alternatives, the proposed concurrency management program under evaluates concurrency based on the intersection and corridor/segment LOS standards shown in Exhibit 1-3 and Exhibit 1-10. To meet concurrency requirements under all alternatives, development proposals would be required to meet intersection LOS standards for the AM and PM peak hour; under the Action Alternatives, development would also be required to meet corridor/segment LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

Exhibit 1-21 compares the concurrency intersection improvement projects that would be required under each alternative to maintain intersection LOS standards through 2035. The descriptions of required improvements are based on transportation modeling analysis and the City's 2016 Public Works Standards with variances noted for use in this programmatic EIS; specific design or other similar project information is not available.

Exhibit 1-21. Comparison of Concurrency Intersection Improvement Projects, All Alternatives

Node	Intersection	Project	Alt 1	Alt 2	Alt 3	Alt 4
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Alternative 2, 3, and 4 improvements are included as part of Segment 33 and, under Alternative 4, the Issaquah segment adjacent to Segment 33 (SE 48th Street to Issaquah–Fall City Road) improvements. The improvements to Issaquah-Pine Lake Road outside the City limits serve to remove the capacity constraint between SE 48th St and Issaquah Fall City Road to allow the Issaquah-Pine Lake corridor to serve as much traffic as possible, and relieve demand on lower classified roads.		◆	◆	◆
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.	●	●	●	●
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane. Alternative 4 improvements are included as part of Segment 20.	●	●	●	◆
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection. Alternative 4 improvements are included as part of Segment 31 and Segment 32 improvements.	●	●	●	◆
63*	Sahalee Way and SR 202 intersection	Modify traffic signal. The current intersection's capacity is constrained by the single northbound lane feeding the northbound approach to the traffic signal. Two northbound lanes are necessary to "feed" the double left turn lane and right turn lane. The improvement also adds a second eastbound right turn lane. Alternative 4 improvements are included as part of the King County segment adjacent to Segment 9 (SR 202 to north city limit) improvements.				◆

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
● Stand-alone intersection projects
◆ Node improvements included as part of a related corridor segment improvement. See Exhibit 1-12 for a map of segments and Exhibit 1-13, Exhibit 1-16, and Exhibit 1-19.
* Project extends beyond city limits and would require coordination with other jurisdictions.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020, Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 1-22 compares the concurrency corridors and segments that would require improvement projects under the new LOS standards of the Action Alternatives. Alternative 2 would require improvements to five corridors, Alternative 3 would require improvements to three corridors, and Alternative 4 would require improvements to five corridors. Conceptual corridor and segment project descriptions and the project locations are discussed

above under each alternative (see Exhibit 1-13 and Exhibit 1-14 under Alternative 2, Exhibit 1-16 and Exhibit 1-17 under Alternative 3, and Exhibit 1-19 and Exhibit 1-20 under Alternative 4).

Exhibit 1-22. Comparison of Concurrency Corridor Projects, Action Alternatives

Corridors and Segments	Alt 2	Alt 3	Alt 4
East Lake Sammamish Parkway North Corridor			
Segment 1: city limit to 196th Avenue NE	●	●	
Segment 2: 195th Avenue NE to NE 26th Place	●	●	
East Lake Sammamish Parkway South Corridor			
Segment 8: 205th Avenue SE to city limit	●		
Sahalee Way - 228th Avenue North Corridor			
King County Segment, adjacent to Segment 9, city limit to NE 37th Way			●
Segment 9: city limit to NE 37th Way	●		●
Segment 10: NE 37th Way to NE 36th Street			●
Segment 11: NE 36th Street to 223rd Avenue NE/NE 28th Place			●
Segment 12: 223rd Avenue NE to NE 25th Way			●
Segment 13: NE 25th Way to NE 12th Place			●
228th Avenue Central Corridor			
Segment 14: NE 12th Place to NE 8th Street/Inglewood Hill Road			●
228th Avenue South Corridor			
Segment 20: Issaquah-Pine Lake Road to SE 43rd Way			●
Issaquah-Pine Lake Road Corridor			
Segment 30: 228th Avenue SE to SE 32nd Way			●
Segment 31: SE 32nd Way to SE Klahanie Blvd			●
Segment 32: SE Klahanie Boulevard to SE 46th Street	●	●	●
Segment 33: SE 46th Street to SE 48th Street	●	●	●
Issaquah Segment: adjacent to Segment 33, SE 48th Street to Issaquah-Fall City Road			●
Duthie Hill Road Corridor			
Segment 42: Issaquah-Beaver Lake Road to 266th Avenue SE	●	●	●
Segment 43: 266th Avenue SE to SE Trossachs Boulevard	●		

● Improvement project is required.
Sources: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Travel Demand

Alternative 3 assumes that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish, who have greater options for working remotely. The other alternatives do not assume and reductions in travel demand because of sustained changes to work from home habits.

Land Use

No changes to land use designations, policies, or regulations are proposed under Alternative 1 or Alternative 2. Alternative 3 and Alternative 4 assume that around 10-11% of new units (half of units not otherwise in the pipeline) will be comprised of smaller residential units, including small-scale single-family detached dwelling units, townhomes, or duplexes. Small-scale single-family detached dwelling units may be defined by a limit on floor area, number of bedrooms or other standards. Duplex and townhouse units are defined in SMC Titles 21A and 21B.

Policy and Regulatory Amendments

All alternatives would require amendments to the Comprehensive Plan and SMC. Comprehensive Plan amendments include but are not limited to:

- Amendments to the Transportation and Capital Facilities Elements, Volume I for transportation LOS standards.
- Amendments to Transportation and Capital Facilities Elements, Volume II, to update discussion of LOS standards and concurrency, the 6-Year Transportation Improvement Program (TIP), the traffic forecasting model, recommended long-term transportation project list, and financing information.
- Consistency amendments to other elements may also be required.

Potential changes to the SMC could include (but are not limited to) SMC Titles 14A, 20, 21A, and 21B to update definitions, address internal consistency, and implement the amended transportation LOS standards in the concurrency management program, depending on the selected alternative.

1.5 Key Issues and Options

The key issues facing decision makers are summarized below.

- Before the City are a range of approaches to setting a Transportation LOS and Concurrency method. Each alternative requires consideration and approval of Comprehensive Plan and SMC changes to implement the selected approach.
- All alternatives address the City's growth target to 2035 and address identified intersection deficiencies. Some alternatives also address segment and corridor deficiencies and create a more continuous multimodal system. Before the City are choices regarding the comprehensiveness of the LOS and Concurrency approaches that guide transportation system improvements that support the City's future land use. The adoption of the alternative policy would lead to Comprehensive Plan and code amendments that would mean some projects included in the Capital Facility Plan by 2035 as well as beyond.
- The alternatives offer a mix of intersection, segment, and land use/traffic demand management investments. The level of investment in infrastructure[3] can also be lessened where greater work from home occurs, and where a small increase in the mix of housing types is provided.

[3] SEPA does not require cost estimates or funding information (WAC 197-11-448 and 450). Separate from the EIS the City may consider that information, such as part of Comprehensive Plan amendments.

1.6 Summary of Impacts and Mitigation Measures

1.6.1 Earth

1.6.1.1 How did we analyze Earth?

The Earth section considers the effects of the proposed BLUMA EIS Action Alternatives and their impact on and impact by the regional geology, as well as local conditions along each corridor and intersection. Geologically hazardous areas (e.g., landslide hazards, erosion hazards, seismic hazards) are addressed as well as general topography, geology, soils, and sediments potentially affected by the alternatives.

Information presented about the geology, geologic hazards, topography, and soils for the project areas was collected from existing maps and technical reports published by the U.S. Geological Survey (USGS), Washington State Department of Natural Resources (DNR), the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS), and the City of Sammamish. Geotechnical data reports, memos, and maps derived from previous subsurface investigations on-site were reviewed for site-specific information. Site reconnaissance was conducted on the full length of each corridor and at all intersections to identify potential hazards not included in the published sources.

Thresholds of significance utilized in this impact analysis include:

- Inconsistency with current local, state, or federal regulations and policies.
- Increased risk of geologic hazards that reach a magnitude that is qualitatively considered to be more than moderate.

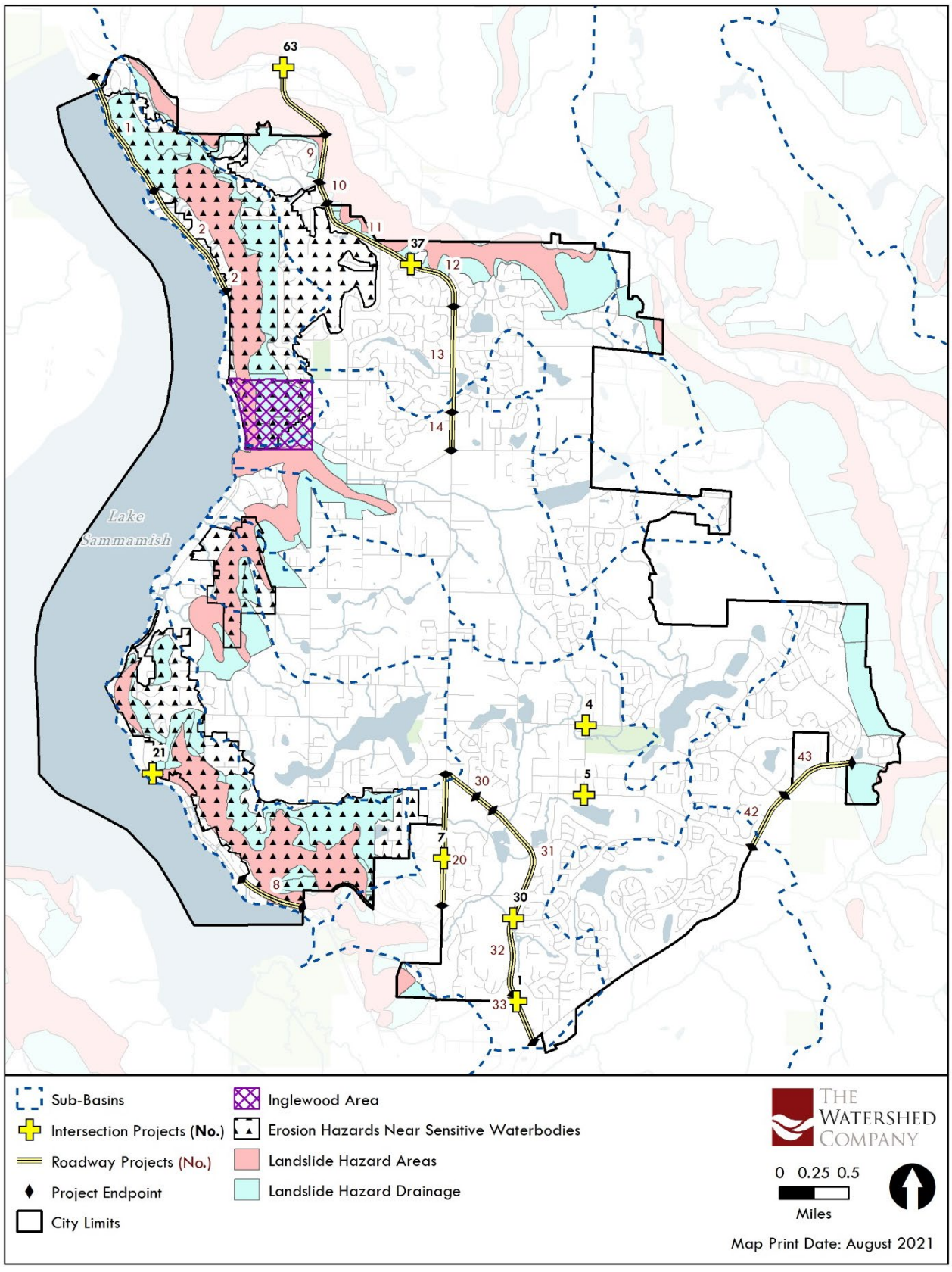
1.6.1.2 What impacts did we identify?

The most significant potential geologic risks resulting from implementation of the proposed transportation projects include erosion due to ditch and culvert maintenance; erosion introducing sediment into drainages, lakes, and wetlands; and steepening of adjacent slopes due to road-widening, resulting in a decreased factor of safety and greater potential for failure on slopes. The erosion impacts and the steepened slope impacts are common to all alternatives.

1.6.1.3 What is different between the alternatives?

Alternatives propose LOS/concurrency programs that result in different improvements that may be proposed in areas with geologic hazards. See Exhibit 1-23.

Exhibit 1-23. Mapped Geologically Hazardous Areas in the City of Sammamish



Source: The Watershed Company, 2021.

Landslides/Steep Slopes

Alternative 1: Due to minimal increase in developed areas and anticipated avoidance of high-risk areas in the improvements associated with this alternative, construction of this alternative would not increase the risk of landslide hazards.

Alternative 2: There is potential for future landslides on the existing steep slope west of the intersection at East Lake Sammamish Parkway SE and SE 24th Way, on the steep slopes to the east and west of a majority of East Lake Sammamish Parkway (segments 1, 2, and 8), and Sahalee Way NE (Segment 9), and at discrete locations on SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than a moderate level.

Alternative 3: There is potential for future landslides on the existing steep slopes to the east and west of East Lake Sammamish Parkway (segments 1 and 2) and at discrete locations on SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than a moderate level.

Alternative 4: There is potential for future landslides on the existing steep slopes adjacent to Sahalee Way NE (Segments 9 and 11) and at discrete locations on 228th Avenue NE (segments 13 and 14), 228th Avenue SE (Segment 20), and SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than a moderate level.

Erosion

Alternative 1: Regarding erosion, due to minimal increase in developed areas near the intersections and anticipated avoidance of high-risk areas in the proposed transportation projects, this alternative would not increase the risk of erosion hazards to more than a moderate level.

Alternative 2: The existing cut slopes along the East Lake Sammamish Parkway and Sahalee Way NE corridors are all mapped as geologic erosion hazards due to their steepness, proximity to critical drainage areas, or surface soil type. Most of the cut slopes along East Lake Sammamish Parkway and Sahalee Way NE corridors exhibit some degree of soil creep into adjacent ditches, indicating soil erosion is currently ongoing. There is a marsh to the east of the Issaquah-Pine Lake Road SE corridor (segments 32 and 33) that would need to be considered for erosion runoff. Proposed construction under this alternative would not increase the risk of erosion hazards to more than a moderate level.

Alternative 3: The existing cut slopes along East Lake Sammamish Parkway (segments 1 and 2) and Issaquah-Pine Lake Road SE (segments 32 and 33), are moderately to more than moderately prone to erosion. Most of the cut slopes exhibit some degree of soil creep toward adjacent ditches, indicating soil erosion is currently ongoing. There is a marsh to the east of the Issaquah-Pine Lake SE corridor (segments 32 and 33) that will need to be considered for erosion runoff. The proposed construction under this alternative could increase the erosion hazards, but not more than a moderate level.

Alternative 4: The existing cut slopes along Sahalee Way NE (segments 9 and 11) and Issaquah-Pine Lake Road SE (segments 32 and 33) are moderately to more than moderately prone to erosion, due to their steepness, proximity to critical drainage areas, or surface soil type. Most of the cut slopes exhibit some degree of soil creep into adjacent ditches, indicating soil erosion is currently ongoing. There are wetlands to

the east of the Issaquah-Pine Lake Road SE corridor (segments 32 and 33), adjacent to Sahalee Way NE (Segment 9+), and the intersection at Sahalee Way NE and State Route 202 that will need to be considered for erosion runoff. Proposed construction under this alternative would not increase the risk of erosion hazards to more than a moderate level.

Near Fault Ground Rupture

Alternative 1: Construction of proposed intersection improvements in this alternative would not increase the risk of seismic hazards.

Alternative 2: Proposed construction under this alternative would not increase the risk of seismic hazards.

Alternative 3: Proposed construction under this alternative would not increase the risk of seismic hazards.

Alternative 4: Proposed construction under this alternative would not increase the risk of seismic hazards.

Liquefaction

Alternative 1: Due to minimal increase in developed areas near the intersections and anticipated avoidance of high-risk areas in the proposed transportation projects, this alternative would not increase the risk of liquefaction hazards to more than a moderate level.

Alternative 2: Proposed construction under this alternative would not increase the risk of liquefaction hazards to more than a moderate level.

Alternative 3: Proposed construction under this alternative would not increase the risk of liquefaction hazards to more than a moderate level.

Alternative 4: There are no segments or intersections in this alternative mapped in areas of moderate to more than a moderate liquefaction potential. Proposed construction under this alternative would not increase the risk of liquefaction hazard.

Construction-related Impacts

Alternative 1: There is a steep uphill slope to the west at 228th Avenue SE and SE 40th Street that could potentially be affected by construction of the channelization improvements. Erosion impacts associated with clearing vegetation and excavation during construction could result at all intersections. Soils disturbed during construction at the west of the intersection of East Lake Sammamish Parkway SE and SE 24th Way could be transported down the steep slope into Lake Sammamish by ravel, precipitation, or storm runoff. Other construction-related impacts associated with corridors are not anticipated due to no corridor construction projects under this alternative.

Alternative 2: This alternative involves widening more segments located on or adjacent to steep slopes than Alternative 3, but fewer than Alternative 4, and in some segments, widening the corridor to a lesser degree to accommodate fewer planned traffic lanes. This reduction of encroachment could reduce, but would not eliminate, the number of slopes negatively affected. This alternative could have a moderate effect on steep slopes along corridors during construction. Permanent engineered mitigation may be required.

While the amount of construction disturbance associated with right-of-way widening would be reduced by the selected transportation projects under this alternative, it maximizes the amount of corridor segments located adjacent to surface water. Therefore, the negative construction impacts associated with this alternative are considered to be more than those anticipated under alternatives 3 and 4. In particular, East Lake Sammamish Parkway (segments 1 and 8) are located within City of Sammamish No-Disturbance areas, as defined by SMC 21A.50.225. Utility corridor construction is exempt from this code, but extra care should be practiced in these areas to minimize impact to adjacent sensitive water bodies. While the lateral extent of potential environmental impacts to surface waters would be maximized by the selection of this alternative, the localized affects are expected to be minor to moderate.

Alternative 3: Areas of most concern are East Lake Sammamish Parkway (segments 1 and 2), discrete locations on SE Duthie Hill Road (Segment 42), and at 228th Avenue SE and SE 40th Street. Alternative 3 includes fewer corridor segment projects located on or adjacent to existing steep slopes than alternatives 2 and 4. The reduced number of corridor segments in this alternative could likely result in less widespread negative construction effects than either alternatives 2 or 4, and could have a moderate effect on steep slopes along corridors during construction. Permanent engineered mitigation may be required.

Alternative 4: Due to the increase in affected segments, it is likely that the number of slopes negatively affected by construction of transportation projects under this alternative would also increase, but the negative effects related to the degree of road widening would not be greater than that of the other alternatives. Permanent engineered mitigation may be required.

Long-term Impacts

Alternative 1: Due to minimal increase in developed areas as proposed by this alternative, long-term impacts from road use are anticipated to be negligible.

Alternative 2: Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

Alternative 3: Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

Alternative 4: Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

1.6.1.4 What are some solutions or mitigation for impacts?

In addition to City of Sammamish code and regulations addressing erosion control and critical areas regulations, other potential mitigation measures include the following summarized from Section 3.1 Earth:

- **Mitigation for Near Surface Ground Rupture:** Given the extent of the Seattle fault zone through the Sammamish Plateau, avoidance of near surface fault ruptures is difficult to accomplish while developing in this area. However, mitigation of the effects that near surface ground ruptures can have on proposed

improvements can be implemented. New subsurface utilities may be designed with sufficient flexibility to anticipate potential fault rupture, however utilities should be designed in accordance with standard practice for the local conditions and with consideration of relative risks vs. costs. Additionally, maintenance of pavement sections and structures may be required following a design earthquake event,[4] likely consisting of cleanup and repair.

- **Mitigation for Landslides/Steep Slopes:** Implementation of improvements associated with the proposed alternatives will likely require roadway widening with impacts that can be mitigated. If roadway widening can be accomplished without additional cutbacks into existing slopes, additional mitigation measures are not necessary. Additionally, priority can be placed on areas outside of the proximity of a steep slope designation, reducing the requirement for implementation of steep slope mitigation measures. If avoidance of these impacts cannot be accommodated, it is expected that the implementation of retaining walls at various locations along the proposed improvement corridors, particularly those near steep slopes, can be utilized to mitigate risk. Retaining walls should mitigate landslide hazards to negligible to minor impacts along the corridor sections where they are constructed. If pre-emptive mitigation is not employed, an alternative mitigation methodology may be employed involving the removal of slide debris and slope stabilization as necessary when slides occur. Maintaining culverts at stream crossings may help avoid debris flow damage to down-gradient properties. Mitigation of debris flow damage would consist of cleanup and repair following an event.
- **Mitigation for Liquefaction:** Prior to implementation of proposed improvements associated with each alternative, subsurface investigations can be completed to determine the extent of liquefiable-susceptible areas within the project site. This information can be used to identify the areas of greatest risk and can be utilized in design to avoid or mitigate potential liquefaction hazards. This may require flexible utilities and utility connections, special wall considerations, incorporation of geotextile reinforcement material, or special foundations for proposed structures. The appropriate level of mitigation may also include acceptance of potential liquefaction-induced settlement with the expectation that the proposed improvements may need to be repaired and regraded as necessary following a seismic event.
- **Mitigation for Erosion:** Priority can be placed on minimizing the removal of existing vegetation and conducting excavations into hill slopes in order to reduce the occurrence of erosion hazards. If these hazards cannot be avoided, Best Management Practices (BMP) should be employed during construction to ensure that erosion does not introduce sediment into drainages, wetlands, waterways, or Lake Sammamish. Project corridors of concern include, but are not limited to, East Lake Sammamish Parkway NE, East Lake Sammamish Parkway SE, Sahalee Way NE, and Issaquah-Pine Lake Road. BMPs, such as covering exposed soil and slopes with plastic sheeting, and using straw wattles, silt fences, and/or silt socks, should be used to prevent sediment transport down slope or into active fluvial drainage flows.
- **Construction-related Mitigation:** A Construction Erosion and Sediment Control Plan should be established which identifies BMPs to prevent or minimize construction-induced transport of potential sediments into surface water during construction activities.
    - Impacts from removing existing sediment from ditches and culverts can best be mitigated by scheduling these activities for the most appropriate times of year, e.g., periods of low rainfall and

[4]A theoretical earthquake magnitude that is used to determine the maximum expected seismic force that must be resisted by new design. This design event is dependent on the governing design for the type of improvements proposed (e.g., 100-year earthquake event; 1,000-year earthquake event; and/or 2,475-year earthquake event).

times when aquatic habitats are least impacted by siltation and sedimentation. Ditches and slopes, where accumulated slough is removed to reduce ditch infilling, should be mulched with straw or matting to reduce short-term erosion. These areas should also be reseeded or planted with vegetation to reduce long-term erosion and sloughing, thus reducing the future frequency of ditch and culvert cleaning.

- Erosion control BMPs near surface drainages, wetlands, lakes, and storm drains should include such measures as straw wattles, silt socks, silt fences, and covering exposed soil and slopes with jute and plastic sheeting to prevent sediment transport into sensitive water bodies and riparian zones. Additionally, diversion trenches can be employed to route surface water through temporary channels around and away from exposed soils.
- Siltation associated with placement and grading of crushed rock may be mitigated by skillful earthwork to reduce the amount of material spilled into ditches. Silt-laden soils excavated during signpost and bollard installation could be removed from the site or spread on fill slopes and covered with mulch. Erosion that may occur from the removal of vegetation and hazard trees can be mitigated by the placement of straw mulch as needed.
- In general, the glacially consolidated native soils expected to be present near the proposed improvement locations are not anticipated to be affected by the proposed alternatives from near surface landslides. However, consideration should be made during construction to minimize the exposure of these near surface soils to prevent the development of landslide or steep slope impacts during construction.

- **Mitigation of Long-Term Impacts:** The most appreciable long-term impact is continued erosion of soils exposed during construction. Such soils can collect downslope as colluvium, and/or transport into drainages, wetlands and lakes. Measures to prevent soil exposure to rainfall, wind, and other methods of transport (such as using erosion control fabric and replanting with appropriate non-invasive plant species) should be taken after construction to minimize these potential impacts. Proper use of BMPs should maintain erosion impacts below significant threshold levels.
- **Mitigation of Other Potential Transportation Improvements:** Additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road (Segment 40) and Duthie Hill Road (Segment 41 in addition to segments 42 and 43) may be required depending upon actual development patterns in the future for alternatives 2, 3, or 4. Segment 40 is not identified near potential geologic hazards; however, the potential for construction impacts and associated need for mitigation measures would apply. Along Segment 41, there are potential steep slope, landslide, and erosion hazards. Thus, the potential impacts and mitigation measures for those hazard areas, as well as construction impacts, would apply.

1.6.1.5 With mitigation, what is the ultimate outcome?

Unavoidable adverse impacts are those effects of the proposed project that would significantly affect either natural or built systems and cannot be mitigated to a less-than-significant level as identified in the previous sections. The proposed mitigation measures should minimize, but may not eliminate, significant unavoidable adverse impacts.

Greater levels of development may lead to the development of significant unavoidable adverse impacts. In areas where glacially consolidated soils occur near surface, the potential for larger deep-seated slope failures to occur are minimal. However, in areas where extensive fill or colluvial material is encountered (e.g., near East Lake Sammamish Parkway [segments 1, 2, and 8] and Sahalee Way NE [segments 9 and 11]) mitigation of deeper-seated slope failures may prove to be cost prohibitive. Without geotechnical subsurface investigations and global slope stability analyses prior to development, determining the likelihood of global slope stability failure is difficult. However, the impact that deep-seated slope failure may have on the proposed improvement projects should be considered within the vicinity of the steep slopes within the region.

While shallow surficial failures may be manageable, deeper seated slope failures through the glacially consolidated soils may occur, resulting in adverse impacts that may prove to be cost prohibitive to mitigate. If significant roadway widening is anticipated, placement of fill at the top of slopes may lead to the increase in driving forces. Removal of material at the base of a cut slope may reduce the resisting forces. In these conditions, the proposed improvements may exceed the global stability of the existing steep slope and require the proposed engineered retaining structures to maintain post-construction stability.

1.6.2 Water Resources

1.6.2.1 How did we analyze Water Resources?

The Water Resources section addresses potential indirect effects from the proposed transportation LOS and concurrency management standards update to surface and ground water systems. These systems include streams, wetlands, and aquifers. See the example stream in Exhibit 1-24. Stormwater considerations including potential changes in water quantity and quality are also included in this section.

Exhibit 1-24. Ebright Creek

Source: City of Sammamish 2021.

Publicly available information, GIS data, GIS analysis, and familiarity with water resources in the city and greater region were the basis of the water resources assessment. A two dimensional intersect analysis in GIS, using city critical area boundaries, estimated critical area buffers and polygons representing corridor improvement projects to quantify approximate areas of wetland, wetland buffer, and stream buffer impacts.

The thresholds of significance utilized in this impact analysis include:

- Inconsistency with current regulations, guidance documents and/or best available science.
- Impact to the functions and values of water resources that reach a magnitude that is qualitatively considered to be more than moderate.

1.6.2.2 What impacts did we identify?

Transportation projects that follow indirectly from the proposed LOS and Concurrency approaches with each alternative considered under the alternatives have the potential to impact water resources through filling, grading, and excavation in critical areas; changes in runoff, inflow and outflow, recharge, and water quality in critical areas and affected flow tributary to critical areas and contributing to trends like water quality and quantity changes due to past, present, and future actions.

1.6.2.3 What is different between the alternatives?

Wetlands: The proposal is for a programmatic action that would not result in direct impacts to the environment. However, adoption of new LOS transportation standards and concurrency requirements could result in indirect impacts associated with construction and expansion of corridors and intersections.

The potential for fill or grading impacts to wetlands resulting from the transportation projects are not anticipated under the studied programmatic alternatives and their associated potential improvements. Wetland buffer impacts are anticipated as a result of the transportation projects under alternatives 2, 3, and 4, with the greatest buffer impact generated by the projects under Alternative 4. No direct alterations to sphagnum bog wetlands or associated buffers are anticipated under any alternative. However, changes to stormwater runoff have the potential to indirectly effect sensitive sphagnum bog wetland systems. See Exhibit 1-25.

Streams: Alternatives 2, 3, and 4 all have impacts to stream buffers, with the greatest area of buffer impact anticipated for Alternative 2.

Alternative 2 projects impact the greatest number of stream crossings and area of stream buffer; Alternative 2 was assigned a relative impact of high. Alternative 3 projects would impact a greater number of stream crossings but fewer acres of stream buffer than Alternative 4, thus both alternatives were assigned medium impact in comparison to the other two alternatives. If the transportation improvement projects under the adopted alternative are implemented, regulations are likely to require that these crossings are improved or replaced and brought up to current design standards for fish passage and habitat in conjunction with transportation improvement projects. Any fish passage barriers associated with existing crossings will be eliminated. Changes to stream crossings may result in longer crossing structures (typically box culverts) where road widening will occur, however this can be avoided or minimized by incorporating engineered vertical or steep slopes at each end. Small increases in stream buffer impact may occur. See Exhibit 1-25.

Stormwater: The transportation improvement projects would have potential stormwater impacts due to increased runoff from impervious surfaces, conveyance of stormwater discharge, changes in groundwater recharge, and potential water quality degradation in receiving waters. Water quality may be impaired by suspended sediment, total dissolved solids, heavy metals (particularly zinc and copper), and hydrocarbons from oil, grease, and fuels. Erosion and sediment impacts may occur from open-channel conveyance of stormwater downstream to an outfall or point of discharge. Alternative 4 would have the greatest increase in impervious surfaces followed by Alternative 2. See Exhibit 1-25.

Exhibit 1-25. Comparison of Transportation Improvements and Relative Impacts to Water Resources

Alternative	Impervious Surface Increase (acres)	Linear Feet of Walls	Relative Impact and Acres of Wetland Impact (approx.)	Relative Impact and Acres of Wetland Buffer Impact (approx.)	Number of Proposed Stream Crossings	Relative Impact and Acres of Stream Buffer Impact (approx.)1
Alternative 1	1.6	600	Low: 0	Low: 0	0	Low: 0
Alternative 2	14.6	23,700	Low: 0	Medium: 0.7	19	High: 9.9
Alternative 3	9.4	14,400	Low: 0	Low: 0	15	Medium: 6.9
Alternative 4	27.8	60,035	Low: 0	High: 3.3	6	Medium: 8.2

[1]Approximate area (acres) of buffer impact estimated in GIS using a presumed stream buffer width of 150 feet.
Source: The Watershed Company, 2021.

1.6.2.4 What are some solutions or mitigation for impacts?

Specific measures to mitigate impacts to water resources from transportation improvement projects are included in the following regulations:

- Surface Water Runoff Regulations. Chapter 13.20 SMC establishes requirements for drainage plans, critical drainage areas and construction timing.
- Water Quality Regulations: Chapter 13.30 SMC prohibits the discharge of contaminants into surface water, stormwater and groundwater and outlines preventive measures to restrict contaminants from entering such waters.
- Surface Water Design Standards: The City has adopted the 2016 King County Surface Water Design Manual (KCSWDM) and Sammamish Addendum to the 2016 KCSWDM, which establishes requirements and provides technical guidance for design of hydrologic systems, conveyance, flow control, and water quality.
    - Stormwater management for transportation redevelopment projects includes mitigation of potential impacts by flow control to address increased runoff (peak flows, volumes, and durations) from impervious surfaces, erosion control for conveyance of the discharge, and water quality treatment to reduce impacts in receiving waters.
    - The City of Sammamish Storm and Surface Water Management Comprehensive Plan includes additional stormwater management options for reducing impacts from road redevelopment projects.
- Public Works Standards: Chapter 14A.01 SMC adopts the City of Sammamish 2016 Public Works Standards which addresses permitting and engineering requirements for rights-of-way and surface water management.
- Critical Areas Regulations: Chapter 21A.50 SMC establishes development standards for critical areas, including erosion hazard areas, frequently flooded areas, landslide hazard areas, critical aquifer recharge areas, wetlands, fish and wildlife habitat conservation areas and corridors, and streams.
- City of Sammamish Shoreline Master Program.
- Low Impact Development Standards. Chapter 21A.85 SMC establishes low impact development standards intended to mimic pre-development processes and allow the natural movement of water through a site.
- Surface Water Management Program: The City's Storm and Surface Water Management Program addresses storm and surface water quality and quantity in the city. The Program reviews proposed development and monitors construction, monitors water quality, implements stormwater control projects, and conducts a variety of stormwater related programs and plans. The Program is developed in accordance with the National Pollutant Discharge Elimination System (NPDES) Phase II Western Washington Municipal Stormwater Permit (Phase II permit) and is a requirement of the federal Clean Water Act (City of Sammamish, 2020).
- Stormwater CIP: The City's stormwater capital improvement program (CIP) lists capital projects to address stormwater issues throughout Sammamish. The list is contained in the Capital Facilities Element of the City's Comprehensive Plan (City of Sammamish, 2016).
- Integrated Construction Practices: Where possible, City practice is to integrate stormwater improvements with roadway construction. This would be considered in the development or expansion of individual roadway projects.

- Project-level SEPA Review: Chapter 20.15 SMC establishes the process for project-level environmental review, including required compliance with applicable mitigating measures to address identified impacts. Authority for project-level mitigation is provided by, among others, the City's Shoreline Management Master Plan, Public Works Standards, Development Code and Noise Ordinance.
- US Fish and Wildlife Service and/or the National Marine Fisheries Service, for federally permitted actions that could affect endangered species (i.e., salmon or bull trout).
- USEPA, Clean Water Act.

The following mitigation measures would further reduce impacts from those described but are not necessary to prevent significant adverse impacts:

- Retrofits: Transportation improvement projects can enhance downstream water quality by incidental flow control and water quality treatment of stormwater from older road sections currently untreated or lacking basic treatment designs. Although they may be somewhat difficult to achieve given steep slopes and erosion hazards on some road segments along ELSP, some retrofits could still improve existing erosion, groundwater seepage, nuisance flooding, and water quality problems (City of Sammamish (basin plans) 2010; 2011).
- Watershed-Based Storage Alternatives: Transportation improvement projects requiring flow control are an opportunity to consider watershed-based storage alternatives outside of the right-of-way. Wetland restoration and regional storage facilities can provide downstream flow attenuation and water quality benefits at a comparatively reduced cost.
- Low Impact Development: Use of Low Impact Development (LID) techniques such as permeable surfaces and other on-site infiltration methods can improve on-site storage capabilities, reduce impact from increased high flows, and provide water quality benefits.
- CARAs: On-site infiltration of stormwater in Critical Aquifer Recharge Areas on the Sammamish Plateau may be constrained by low permeability, consolidated glacial till and groundwater seepage problems downgradient. Plans for infiltration of runoff require hydrogeologic assessment of aquifer characteristics and local groundwater conditions.
- Species of Special Concern: Streams tributary to Lake Sammamish, perennial or intermittent, provide important fish habitat functions besides spawning. These streams provide juvenile refugia, macroinvertebrate food resources, nutrient export, and other functions important to kokanee and other species of concern. Mitigation measures include Conservation Flow Control and enhanced water quality treatment to protect the streams from stormwater impacts.
- Long-Term Impacts: Mitigation of long-term stormwater impacts includes inspection and maintenance of stormwater flow control and water quality facilities as well as conveyance systems. Some types of stormwater facilities such as stormwater ponds and grassed waterways require regular inspection and maintenance of vegetation, removal of debris, and cleaning sediment to maintain soil infiltration rates. Inspection and maintenance requirements for different types of stormwater facilities are specified in the King County Surface Water Design Manual (KCSWDM; 2016) and City of Sammamish Surface Water Design Manual Addendum (SWDMA; 2016).

1.6.2.5 With mitigation, what is the ultimate outcome?

No significant unavoidable adverse impacts are anticipated to water resources under any of the alternatives with application of the mitigation measures included in existing regulations and commitments.

Stormwater mitigation measures that increase storage and enhance water quality treatment may reduce downstream erosion, nuisance flooding, and water quality degradation from existing conditions. Stream conditions may also be improved with upgrades to stream crossings under alternatives 2, 3, and 4.

1.6.3 Plants and Animals

1.6.3.1 How did we analyze Plants and Animals?

Transportation projects, including intersection and corridor/segment improvements, are an indirect effect of maintaining or updating LOS and concurrency management standards. Transportation improvement projects anticipated under the proposed alternatives were evaluated with respect to potential impacts on plants and animals including trees, rare plants, sensitive habitats, animals and fish.

Publicly available information, review of GIS data and GIS analyses, and familiarity with natural resources in the city and greater region, were the basis of the plants and animals assessment. EIS authors conducted a GIS-based analysis to compare the relative impact of the alternatives on tree canopy in the city. The two-dimensional intersect analysis utilized land cover data provided by Davey Resource Group (2018) and polygons representing corridor improvement projects to quantify approximate areas of tree canopy loss. Corridor improvement project polygons assumed a standard road width of 70 feet for a three-lane minor arterial, and 94 feet for a five-lane principal arterial, in accordance with the City's 2016 Public Works Standards.

The thresholds of significance utilized in this impact analysis include:

- Inconsistency with current local, state, or federal regulations and policies.
- Likelihood of impacting a plant or animal population that is not currently vulnerable in Sammamish and is a Priority Habitat or Species.
- Impact to wildlife and/or habitat functions and values that reach a magnitude that is qualitatively considered to be more than moderate.

1.6.3.2 What impacts did we identify?

Transportation projects are a result of the proposed policies of each alternative and could result in impacts indirectly. Transportation projects considered under the alternatives have the potential to impact plants and animals through removing plants and replacing with impervious surface, increasing barriers to animal movement, and contributing to trends like species population declines resulting from past, present, and future actions.

Terrestrial animals and amphibians may experience short- and long-term impacts from all the alternatives. Short-term disturbance could occur during construction of road and intersection projects. Construction activities increase noise and activity levels in a project area and are disruptive to nearby wildlife. While most

construction impacts are expected to be temporary, affected species may be displaced or experience mortality associated with vegetation removal. Incidental loss of wildlife during construction is more likely to impact species that are less mobile or breeding.

Short-term impacts to fish may occur through in-water work associated with construction at stream crossings. However, the effects of all the alternatives on fish are likely to be positive overall, with redevelopment projects likely to improve fish habitat due to the removal of fish passage barriers and improvements to stormwater over the long-term.

Impacts to forested wildlife habitat would occur with tree removal. Existing road infrastructure affects habitat connectivity and animal movement patterns currently. Potential improvements to road corridors and intersections considered under the alternatives would not increase habitat fragmentation, although total habitat area would be reduced by removing vegetation along patch edges and increasing edge effects throughout existing patches. Removal of forest canopy will reduce structure and habitat for wildlife, although road corridors are already disturbed and forested areas directly adjacent to existing roads have reduced habitat function. In general, urbanization is linked to habitat loss, which is contributing to a decline in bird populations across North America. Roadway widening and new retaining walls would increase travel barriers to amphibian, reptile, and some mammal species. Wider road segments may also increase the potential for vehicle collisions with crossing large mammals. Along riparian corridors, movement of wildlife is likely to improve with stream crossing upgrades.

1.6.3.3 What is different between the alternatives?

Types of potential impacts to plants and animals are relatively consistent across alternatives. The magnitude of the effect differs in relation to number of corridor/segment projects, increase in impervious surfaces, and linear feet of walls as noted in Exhibit 1-25 on page 45. The resulting potential alteration of tree canopy is identified in Exhibit 1-26.

Exhibit 1-26. Relative Impacts to Tree Canopy by Comparing Action Alternatives

	Relative Impact and Approximate Area of Tree Canopy Loss[1] (acres)
Alternative 2	**Medium**: 15.0
Alternative 3	**Medium**: 9.3
Alternative 4	**High**: 30.9

[1] Approximate area of tree canopy loss calculated in GIS. Tree canopy impacts are where corridor improvement projects intersect with tree canopy areas, as mapped by the land cover data provided by Davey Resource Group (2018).

Tree canopy loss under Alternative 1 would be minor and readily mitigated based on the relatively small number of trees likely to be affected at intersection projects.

Tree canopy loss under Alternative 2 is half of what is proposed in Alternative 4 (but still greater than Alternative 3). The segments in Alternative 2 that generate the greatest loss in tree canopy are along East

Lake Sammamish Parkway NE Corridor (segments 1 and 2) and Duthie Hill Road Corridor (Segment 43). The Sahalee Way - 228th Avenue North Corridor (Segment 9) in Alternative 2 also has the potential to impact terrestrial habitat associated with the Priority Habitat and Species (PHS) mapped Biodiversity Area and Corridor next to Sahalee Way and Evans Creek Preserve.

Alternative 3 generates the least amount of tree canopy loss of the Action Alternatives, at approximately one-third of what is anticipated under Alternative 4. The East Lake Sammamish Parkway NE Corridor (segments 1and 2) and the Duthie Hill Road Corridor (Segment 42) generate the greatest tree canopy impact in Alternative 3.

Alternative 4 generates the greatest tree canopy removal impact of the alternatives. The Issaquah-Pine Lake Road Corridor (Segment 31), 228th Avenue South Corridor (Segment 20), and Sahalee Way - 228th Avenue North Corridor (Segment 11) contribute the most to this impact in Alternative 4. The Sahalee Way - 228th Avenue North Corridor (segments 9 and 10) in Alternative 4 also has the potential to impact terrestrial habitat associated with the PHS mapped Biodiversity Area and Corridor next to Sahalee Way and Evans Creek Preserve.

1.6.3.4 What are some solutions or mitigation for impacts?

The following existing regulations limit impacts to plants and animals:

- Endangered Species Act: Regulates and protects species listed at the state or federal level.
- Migratory Bird Treaty Act: Prohibits the take of protected migratory bird species without prior authorization by the U.S. Fish and Wildlife Service.
- Bald and Golden Eagle Protection Act: Prohibits the take of any bald eagle or golden eagle without prior authorization by the U.S. Fish and Wildlife Service.
- Fish and Wildlife Habitat Development Standards: SMC 21A.50.325 and .327 identify development standards for development in fish and wildlife habitat conservation areas and corridors, and buffers.
- Development Standards for Wetlands: Chapter 21A.50 SMC identifies development standards for development in wetland and their associated buffers.
- Development Standards for Trees: Chapters 21A.37 and 21A.50 SMC identify development standards for development near significant trees. An exemption to these standards likely applies for removal of significant trees in public easements and public rights-of-way.
- Urban Forest Management Plan (UFMP; 2019), City of Sammamish: The purpose of the UFMP is to provide policy guidance for managing, enhancing, and growing trees in the City of Sammamish over the next 20 years. The UFMP promotes resilience, species diversity and sustainable canopy cover.
- Public Works Standards: The City of Sammamish 2016 Public Works Standards addresses permitting and engineering requirements for work in the City's right-of-way. Topics include submittals of geotechnical reports, cut and fill slopes, landscaping, tree planting and removal, roadway surface treatment, and construction standards. These standards include tree protection and tree installation standards, but do not require tree replacement for removals.
- The State requires an HPA for construction or other work activities in or near state waters that will impact the natural flow or bed of waters of the state. HPAs are intended to ensure that construction is done in a manner that protects fish and their aquatic habitats.

- Project-level SEPA Review: Chapter 20.15 SMC establishes the process for project-level environmental review, including required compliance with applicable mitigating measures to address identified impacts. Authority for project-level mitigation is provided by, among others, the City's Shoreline Management Master Plan, Public Works Standards, Development Code and Noise Ordinance.

Other potential mitigation measures include:

- To continue to promote the goals established in the City's Urban Forest Management Plan, the City could develop mitigation measures for tree canopy impacts that are geared towards one or more of the following:
  - Goal UA#1 – Maintain city-wide canopy cover.
  - Goal UA#2 – Increase and promote resilience in the urban forest resource
  - Goal UA#3 – Update design, construction and development standards that apply to trees and planting sites
  - Goal UA#4 – Establish tree bank (fund)
  - Goal UA#5 – Assess the ecosystem services provided by public trees and natural areas
  - Goal UA#6 – Collect and maintain a complete inventory database of the community tree resource
  - Goal UA#7 – Care for the community urban forest using the best available science
- Consider measures to reduce impacts to animal movement, such as mapping and maintaining wildlife corridors.

1.6.3.5 With mitigation, what is the ultimate outcome?

No significant unavoidable adverse impacts are expected from the alternatives to animals (including fish) with application of the relevant requirements listed under regulations and commitments.

Many relatively large native trees are likely to be removed under the Action Alternatives based upon general proximity of roadway projects to tree stems/driplines. Trees are regulated by the City, but tree removal in public easements and public rights-of-way are exempt from the development standards that would otherwise require some form of replacement or mitigation. Similarly, the 2016 Public Works Standards do not specify standards with respect to mitigation for removed trees. Without mitigation to replace removed trees, alternatives 2, 3, and 4 would result in changes that directly conflict with Goals #1 and #2 of the UFMP. This is considered a potentially significant impact to the urban canopy and the associated functions that trees provide. Alternative 4 presents the greatest impact to the City's urban forest resource, of the Action Alternatives considered. Alternatives 2 and 3, while still potentially significant, would impact half as much tree canopy or less. Cumulatively, impacts to habitat associated with urban canopy loss from the alternatives may contribute to the reported large-scale trend of declining bird populations in North America (Rosenberg, K.V. et al. 2019).

1.6.4 Land Use

1.6.4.1 How did we analyze Land Use?

The land use evaluation reviews the distribution of existing land uses and zoning and historic development activity and trends across the City. The impact analysis compares the alternatives on the basis of their potential effects on future development activity, including changes to transportation patterns and neighborhood character that may disincentivize development in specific areas. See for example Exhibit 1-27.

Impacts for each topic area are considered significant under the following conditions:

- Comprehensive Plan Growth Targets: The alternative would create conditions that act as a barrier to the City achieving their adopted Comprehensive Plan growth targets, as described in Section 1.4.3 above and in Appendix B.
- Town Center Development: The alternative would create conditions that substantially disincentivize development in the Town Center or act as a barrier to the Town Center achieving its planned share of adopted Comprehensive Plan growth targets.
- Land Use Patterns and Character: The alternative would result in a significant change to existing land use patterns or the character of existing neighborhoods.

Exhibit 1-27. Example Homes, Streets, and Tree Canopy

Source: City of Sammamish, 2021.

1.6.4.2 What impacts did we identify?

General Land Use Impacts: The alternatives would not directly affect land use patterns or the ability of the City to meet its growth targets (both citywide and in the Town Center). However, indirect and temporary impacts related to development feasibility, property acquisition, and changes to neighborhood character could occur.

Construction: Implementation of the proposed LOS standards under the Action Alternatives would require the construction of associated transportation improvement projects, as described in Chapter 2. Construction activities associated with these projects may result in indirect and temporary impacts to individual properties in the vicinity of the affected roads and intersections, as well as to development conditions citywide. In addition, while this EIS assumes that all necessary transportation improvements for a given alternative would be constructed consistent with concurrency requirements, such improvements take time to construct, and funding for all necessary projects may not be immediately available. If the necessary transportation improvements are delayed due to lack of funding, this would result in concurrency failure(s), which would cause a corresponding reduction in development activity, depending upon an application's location in the city, until the necessary improvements were completed.

Town Center Impacts: The City's 2015 Comprehensive Plan plans for development of 2,000 units of residential housing in Town Center. Implementation of the Action Alternatives would result in improvements to 228th Avenue NE and Sahalee Way NE, which provide direct access to Town Center and other mixed-use centers. Improved transportation access to these centers could potentially make them more desirable from a development standpoint, leading to future growth in residential and mixed-use development, which would further diversify the local housing stock.

This long-term benefit would be balanced against short-term costs of potential additional development costs and disruption as transportation improvements are constructed, as described above. How the development market would balance these costs and benefits is not known at this time. However, ongoing monitoring can allow the City to anticipate potential impacts and act accordingly.

1.6.4.3 What is different between the alternatives?

Comprehensive Plan Growth Targets: No changes to Comprehensive Plan land use designations or zoning would be enacted under the Action Alternatives, but Alternative 3 and Alternative 4 include revisions to development regulations to promote smaller-scale single-family residences (both attached and detached) and more affordable multi-family and senior housing units. By incentivizing smaller, denser housing types, Alternative 3 and Alternative 4 could potentially increase housing capacity in Sammamish. As such, the incentives proposed for Alternative 3 and Alternative 4 would not negatively affect the ability of the City to achieve adopted Comprehensive Plan growth targets.

Compared to Alternative 1, the addition of LOS standards and concurrency requirements for corridors and corridor segments adds new permit review requirements and may result in additional development costs. Construction of concurrency transportation improvement projects to implement the new standards may cause short-term disruption in localized areas. Collectively these potential impacts could slow future residential development in Sammamish. A drop-off in the rate of development to less than one third of 2010–2019 levels would be needed to impact the City's ability to achieve its 2035 growth target. Based on the city's

track record of development activity, this level of impact appears unlikely. However, given the uncertainty of future economic conditions, it may be prudent to monitor trends so that adjustments can be made as needed.

Land Use Patterns and Character: While none of the alternatives would implement changes to Comprehensive Plan land use designations or zoning districts, the required transportation projects could indirectly affect the land use patterns and character of the areas where they are located. Road widenings would require the acquisition of private property for new right-of-way, obstruction or alteration of property access, and potential changes to traffic patterns on connecting streets due to street and intersection reconfigurations. In addition, increasing roadway capacity may attract additional vehicle traffic, altering the character of affected properties and neighborhoods.

- **Under Alternative 1**, no new roadway segment improvements would be required, and intersection improvements would primarily consist of changes to traffic control (signalization, 4-way stop conversion, installation of a roundabout). No significant impacts to land use patterns or character are anticipated under Alternative 1.
- The most extensive transportation improvements under **Alternative 2** would occur along the northern portion of the East Lake Sammamish Parkway NE corridor (segments 1 and 2); improvements here would require widening up to 5 lanes and full or partial acquisition for most or all of the properties along the east side of this corridor. Expansion of the roadway to 5 lanes would alter the character of existing development along this lakefront route. The increase in the size of the roadway and the additional traffic likely to travel through the corridor in response to increased capacity could potentially reduce the desirability of development in this area. Though smaller in scale than the widenings in Segments 1 and 2, other potential transportation improvements projects along the southern end of East Lake Sammamish Parkway (Segment 8), the northern end of Sahalee Way NE (Segment 9), and the southern end of Issaquah-Pine Lake Road SE (segments 32 and 33) also have the potential to obstruct or reconfigure adjacent property access and require the acquisition of private land for additional right-of-way.
- While **Alternative 3** would adopt the same LOS standards as Alternative 2, the EIS assumes lower overall traffic volumes than Alternative 2, based on the proposed changes to the land use code to promote smaller single-family homes and more affordable multi-family and senior housing, as well as ongoing work-from-home behavior by residents. Consequently, Alternative 3 would require less extensive transportation improvements to meet concurrency requirements along East Sammamish Parkway and Sahalee Way NE; improvements along SE Issaquah-Fall City Road and the southern end of Issaquah-Pine Lake Road SE would be similar to Alternative 2. Similar to Alternative 2, Alternative 3 would occur in areas currently characterized by single-family residential development, and the potential impacts to property access and increased vehicular traffic could adversely affect the desirability of future development in these locations.
- **Alternative 4** assumes the same LOS standards and development regulation changes as Alternative 3. However, road widenings would be more extensive under Alternative 4 (over 7.0 miles) than under Alternative 2 (over 4.25 miles) or Alternative 3 (over 3.5 miles) and would be concentrated in major arterial corridors, specifically routes that serve as external connections and provide access to the Town Center. Concentrating road widenings along these corridors would shift the potential land use impacts associated with construction away from lower-density residential neighborhoods along East Lake Sammamish Parkway toward properties located on major transportation corridors and near the Town Center. Because much of the land along these corridors is also single-family residential in nature,

construction-related impacts to neighborhood character would not be entirely avoided. The additional improvements would increase the capacity of the transportation network which could reduce overall congestion and reduce traffic-related impacts to the character of low-density neighborhoods.

1.6.4.4 What are some solutions or mitigation for impacts?

Indirect and temporary impacts related to development feasibility, property acquisition, and changes to neighborhood character could be addressed through the following mitigation measures:

- **Land Use Patterns and Development Feasibility**
  - Monitor development activity and evaluate policies, regulations, fees, and development standards; if determined to create a barrier to development, adjust to ensure such requirements do not limit the City's ability to meet growth targets or fulfill comprehensive plan and subarea plan goals.
  - As part of future Comprehensive Plan updates, evaluate overall land use patterns in the City, specifically the balance of residential and employment-generating uses. Providing greater levels of employment within Sammamish could reduce commute-related vehicle trips in the concurrency corridors and relieve demand on the transportation network as a whole. As of 2018, the jobs-to-housing ratio in Sammamish was approximately 0.34.[5]
- **Property Acquisition**
  - Design and engineer transportation improvement projects to minimize the need for property acquisition. Where private property must be acquired to accomplish the necessary improvement, the City shall follow all applicable State and Federal requirements. Properties would be purchased for fair market value, and relocation assistance would be provided to displaced residents as necessary.
- **Traffic Patterns**
  - Periodically monitor traffic counts on local streets connecting to major arterials to identify locations where cut-through traffic occurs and implement traffic-calming measures to alleviate effects on adjacent neighborhoods.

1.6.4.5 With mitigation, what is the ultimate outcome?

With implementation of the specific mitigation measures, no significant unavoidable adverse impacts to land use are anticipated.

1.6.5 Housing

1.6.5.1 How did we analyze Housing?

The impact analysis compares the alternatives on the basis of their potential effects on the quantity, cost, and location of future development activity, including changes to transportation patterns and neighborhood character that may disincentivize development in specific areas.

[5] Based on a 2018 PSRC Covered Employment estimate of 7,161 and 2014-2018 ACS 5-Year estimated occupied housing unit count of 21,218.

Impacts for each topic area are considered significant under the following conditions:

- Housing Supply: The alternative creates conditions that act as a significant deterrent to overall housing production in the city, impairing the ability to achieve adopted Comprehensive Plan growth targets.
- Housing Diversity: The alternative creates conditions that substantially disincentivize development in areas zoned for mixed-use, multi-family, or single-family development (such as the Town Center) or otherwise act as a barrier to production of housing types needed by smaller households or special needs populations.
- Housing Affordability: The alternative creates conditions that directly increase the cost of housing production in Sammamish or act as a barrier to the production of more affordable housing types, such as multi-family housing or accessory dwellings.
- Neighborhood Character: The alternative results in a significant change to the character of existing neighborhoods that disincentivizes residential development in these areas.

1.6.5.2 What impacts did we identify?

Implementation of the proposed LOS standards may result in indirect and temporary impacts to individual properties in the vicinity of the affected roads and intersections, as well as to development conditions citywide.

This EIS assumes that all necessary transportation improvements for a given alternative would be constructed consistent with concurrency requirements, but such improvements take time to construct, and funding for all necessary projects may not be immediately available. Therefore, traffic conditions may temporarily affect housing development trends until the necessary improvements are completed.

1.6.5.3 What is different between the alternatives?

Alternative 1 No Action retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. Use of current LOS standards and concurrency requirements would not pose any new impacts to housing supply or housing diversity.

Action Alternatives 2, 3, and 4 – Acquisition: If, as a result of the concurrency and LOS measures of each action alternative, transportation improvements are required as conceptualized in this EIS, there could be widening projects that could result in property acquisitions. Acquisition could be for a portion of the property, which would allow the existing residence to remain, or for the full property, which would result in demolition of the existing structure. The largest impact would likely be experienced under Alternative 4, which has the greatest amount of roadway widening, and smallest impact under Alternative 3, which as the least amount of road widening. Alternative 2 and Alternative 3 would result in a significant level of property acquisition and possible loss of housing along the East Lake Sammamish Parkway North Corridor (Inglewood Road NE to the north City boundary). Alternative 4 would result in a significant level of property acquisition and possible loss of housing along Sahalee Way NE (NE Redmond-Fall City Road to NE 8th Street).

Action Alternatives 2, 3, and 4 – Added Costs: For all the Action Alternatives, the addition of LOS standards and concurrency requirements for corridors and corridor segments adds new permit review requirements and may result in additional development costs. Construction of concurrency transportation improvement projects to

implement the new standards may cause short-term disruption in localized areas. Collectively these potential impacts could slow future residential development in Sammamish.

Action Alternatives 2, 3, and 4 – Housing Types: Adoption of the transportation LOS standards under any of the alternatives would not directly affect the mix of housing types allowed in Sammamish. alternatives 3 and 4 would implement land use measures to incentivize smaller-scale single-family residences and more multi-family affordable housing and senior housing. Because these measures are incentive-based, not required, they are consistent with Policy H.2.8. If the proposed incentives have the desired effect, development under alternatives 3 and 4 would increase the diversity of the city's housing stock, providing a greater range of options for residents.

Action Alternatives 2, 3, and 4 – Housing Target: An additional 885 residential units are currently unbuilt under the City's 2035 housing target; see Appendix B for information about development in the pipeline and development remaining. Given the annual rate of residential development experienced in the past decade, the City will have the capacity to meet King County's Growth Target assigned to Sammamish. A drop-off in the rate of development to less than a third of 2010–2019 levels would have to occur to impact the City's ability to meet its obligations under the adopted King County 2035 Growth Target. Based on the City's track record of development activity, this level of impact appears unlikely. However, given the uncertainty of future economic conditions, it may be prudent to monitor trends so that adjustments in the City's policies and codes can be made as needed.

Action Alternatives 2, 3, and 4 – Housing Affordability: Implementation of updated transportation LOS standards under any of the alternatives would not directly affect the affordability of housing in Sammamish. Improved transportation access to mixed-use centers, including the Town Center, could accelerate development in these areas, promoting the development of more affordable housing types. While implementation of the proposed LOS standards would not directly affect housing affordability, the incentive programs proposed under Alternative 3 and Alternative 4 to promote smaller-scale single-family housing, affordable multi-family units, and senior housing could positively affect housing affordability in Sammamish. Ongoing monitoring would allow the City to gauge the effectiveness of these land use measures.

1.6.5.4 What are some solutions or mitigation for impacts?

The alternatives would not directly affect the housing types allowed or quantity of housing constructed in Sammamish, and the associated transportation improvement projects would not create long-term barriers to development of affordable or diverse housing types. To ensure that funding of such transportation improvement projects does not become a deterrent to development, the City should monitor impact fee collection to identify any negative effects on development trends and adjust fees as needed. No additional mitigation measures are required.

1.6.5.5 With mitigation, what is the ultimate outcome?

With implementation of the specific mitigation measures, no significant unavoidable adverse impacts to housing are anticipated.

1.6.6 Plans and Policies

1.6.6.1 How did we analyze Plans and Policies?

The Plans and Policies sections reviews the alternatives for consistency with the state, regional, and local plans and policies including GMA, PSRC VISION 2050, King County Countywide Planning Policies, and the Sammamish Comprehensive Plan. Consistency means that the alternative can occur and be implemented together with the selected goal or policy without contradiction. A finding of significant adverse impact is based on inconsistency or contradiction with plans and policies.

1.6.6.2 What impacts did we identify?

In general, the alternatives do not differ in potential impacts and none of the alternatives are expected to result in significant adverse impacts with respect to plans and policies. No significant inconsistencies with adopted or updated policies are anticipated.

1.6.6.3 What is different between the alternatives?

Acquisition: For those residential neighborhoods located along principal, minor, and / or collector arterials, corridor roadway widening that may be required under the Action Alternatives may require partial and full property acquisition that would significantly impact the character and function of these neighborhoods. Among the Action Alternatives, Alternative 4 would likely have the most significant level of roadway widening and property acquisition impacts, particularly on the Sahalee Way–228th Avenue North Corridor and the Issaquah-Pine Lake Road Corridor. Alternative 1 No Action would not require any property acquisitions along roadway corridors and segments. Please see discussion in this EIS Sections 3.4 Land Use and 3.5 Housing.

Housing: All alternatives fulfil state, regional, and local housing goals. Traffic modeling for all alternatives assumes the City's adopted King County 2035 Growth Targets, including housing. The Comprehensive Plan provides policy guidance for housing to meet the needs of all economic and demographic groups in the city. The alternatives are consistent with these policies and with planned residential growth. Compared to alternatives 1 and 2, alternatives 3 and 4 would promote an increase in diverse housing types, including small single-family, townhouse and duplexes, and affordable and senior citizen multi-family development.

1.6.6.4 What are some solutions or mitigation for impacts?

Design and engineering of roadway corridor improvements should seek to minimize residential property acquisition under any of the Action Alternatives so as to minimize impacts on individual property owners. Transportation improvement projects that may result under any of the alternatives are unlikely to impact the physical character of most residential neighborhoods, and any improvements would be consistent with the City's 2016 Public Works Standards which establish standards for landscape and non-motorized improvements, lighting design, traffic calming, and amenities (such as benches and other hardscape improvements) to minimize potential indirect impacts on community character. See Sections 1.6.4 and 3.4.3 Land Use for additional recommended mitigation measures.

1.6.6.5 With mitigation, what is the ultimate outcome?

No significant unavoidable adverse impacts are anticipated under any of the alternatives with respect to plans and policy consistency.

1.6.7 Transportation

1.6.7.1 How did we analyze Transportation?

Existing traffic conditions were assessed based on 2016 conditions as part of the 2018 Comprehensive Plan amendments to the Transportation Element and Transportation Element Background Chapter. The evaluation of alternatives relies on the *Sammamish 2035 Travel Demand Model and Intersection Level of Service Model Update*. The comparison of alternatives covers a broad range of transportation-related impacts related to adopted plan consistency, neighboring jurisdictions, performance measures, other transportation modes, safety/emergency responsiveness, and concurrency.

1.6.7.2 What impacts did we identify?

The assumptions for expected land use patterns, coupled with practical growth targets that are consistent with the 2015 Comprehensive Plan update, produce existing and future trips from the traffic model that are measured against the proposed LOS of V/C Concurrency policies that warrant the list of projects for each alternative. Under all alternatives, the City will need to establish a policy to address desired LOS and concurrency procedures and the improvements that will be needed.

1.6.7.3 What is different between the alternatives?

All alternatives are meant to address the City's anticipated trips resulting from land use and housing assumptions as measured against a new LOS V/C standard; however, the means by which the alternatives would address the City's complete multimodal network differ. See Exhibit 1-28. Alternative 4 has the greatest amount of improvements and results in more non-motorized connections, improved freight mobility, and transit, as well as emergency access. Alternative 2 has the second most improvements to these modes.

Exhibit 1-28. Miles of Multimodal Road Improvements by Alternative

Improvement Type	Alt 1	Alt 2	Alt 3	Alt 4
Intersection/Node Improvements	Yes	Yes	Yes	Yes
Segment /Road Improvements	No	Yes	Yes	Yes
Sidewalks Added (Miles)	0*	5.09	3.54	11.67
Bike Lanes Added (Miles)	0*	5.09	3.54	11.67
Lane Miles Improved (Miles)	0*	5.72	3.6	13.26
Total Roadway Improvement (Miles)	0*	4.26	3.01	7.08

*While segment and non-motorized improvements would not be associated with concurrency projects in Alternative 1, the City's Transportation Improvement Program could include such projects implemented without concurrency.
Source: Transportation Solutions Inc., 2021.

Intersection LOS: All 43 identified intersections meet City LOS standards under each alternative.

Segment LOS: Corridor LOS is not applied under Alternative 1 so no corridor or segment V/C data is provided. The improvements included in alternatives 2, 3, and 4 result in all corridors and segments meeting allowable V/C ratio of 1.1 for corridors and 1.4 for segments. Some segments and corridors approach these thresholds. Corridors with forecast V/C in these ranges should be considered carefully as changes between assumed forecast growth and actual future growth could result in V/C changes that require additional or reduced improvements. This applies particularly to the Issaquah-Fall City Road and Duthie Hill corridor.

Consistency with Functional Classifications: Alternative 1 would retain the adopted functional class system but not improve road segments. The roadway improvements developed for Alternative 4 would improve the City's principal arterials to meet the City's adopted Public Works Standards to meet the travel demand created by growth and to determine if that strategy would reduce the need for required improvements on lower classified arterials. The roadway improvements necessary to meet the V/C standards in alternatives 2 and 3 were developed based strictly on modeled deficiencies and did not consider the particular roadway's functional classification.

Continuity with Adjacent Jurisdictions/Facilities: Alternatives 1, 2, and 3 assume no transportation improvements beyond Sammamish city limits. Alternative 4 assumes improvements to Sahalee Way, 228th Avenue, and Issaquah-Pine Lake Road are extended to logical connections to facilities in other jurisdictions.

Measures of Effectiveness: Each alternative's improvements will result in changes to travel patterns and travel time, which would alter VMT, fuel consumption, and GHG emissions:

- Alternative 1 requires only intersection improvements with no roadway widening but results in the highest VMT, fuel consumption, and GHG emissions of the alternatives.
- Alternative 2 requires 4.26 miles of roadway improvements requiring the most roadway widening adjacent to Lake Sammamish of all alternatives. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline and alternatives 3 and 4.
- Alternative 3 requires 3.01 miles of roadway improvements requiring less roadway widening adjacent to Lake Sammamish than Alternative 2. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline but lower than alternatives 1 and 2.
- Alternative 4 requires 7.08 miles of roadway improvements but no roadway widening adjacent to Lake Sammamish. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline but lower than alternatives 1, 2, and 3.

Exhibit 1-29 below summarizes the impacts to systemwide measures of effectiveness under each alternative. Additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road and Duthie Hill Road may be required depending upon actual development patterns in the future for either alternatives 2, 3, or 4.

Exhibit 1-29. Summary of Measures of Effectiveness by Alternative

Systemwide Measures of Effectiveness	Baseline 2016	Alt 1	Alt 2	Alt 3	Alt 4
Total Trips (PM)	38,985	46,847	46,847	44,088	44,088
Vehicle Miles Travelled (PM)	80,181	97,963	97,458	89,951	89,199
Fuel Consumption (Gallons, PM)	3,596	4,393	4,370	4,034	4,000
Greenhouse Gas Emissions (Metric Tons, PM)	36.4	44.4	44.2	40.8	40.5
Average Speed (miles per hour, PM)	31.8	30.0	30.7	31.6	32.4
Total Delay (Hours, PM)	472	862	724	513	416

Source: Transportation Solutions Inc., 2021.

Concurrency Implications: Improvements identified under alternatives 1, 2, and 3 represent the minimum improvements required to meet the identified LOS V/C Standards of each alternative for the 2035 land use forecast. These improvements may be necessary before 2035 based on the actual rate of growth in the City of Sammamish. Alternative 4 provides improvements beyond those necessary to meet the identified LOS V/C Standards and all these improvements may not be necessary to support the 2035 land use forecast. However, the improvements also provide for multi-modal continuity along principal arterials connecting the city to the region.

1.6.7.4 What are some solutions or mitigation for impacts?

The physical improvements identified in each alternative are based on 2016 City of Sammamish Public Works Standards. These standards include features that may not be necessary in all or in parts of the city. Additional flexibility in the standards could reduce the footprint of the required roadway improvements.

The corridor and segment V/C standards are based on an urban network. Modifications to the capacity calculation to address the semi-rural conditions in some areas of the city could reduce the need for some roadway improvements. The capacity calculation in Appendix C could be modified to recognize access management and/or the lack of left-turn demand to reduce the scope of some of the required improvements.

The improvements in the City's Capital Facilities Plan will include LOS/Concurrency Program projects that add capacity to roads. Other projects may be constructed for other purposes, e.g. safety.

Exhibit 1-30 provides an example of a roadway project that widened Issaquah-Fall City Road to four lanes, between 242nd Ave SE and Klahanie Dr SE.

Exhibit 1-30. Issaquah Fall City Road Phase 1 Construction

Source: City of Sammamish 2021.

1.6.7.5 With mitigation, what is the ultimate outcome?

All alternatives support 2035 land use forecasts that would generate trips on the system above the 2016 baseline. Under all Action Alternatives, the City would need to establish a policy to address desired LOS and concurrency procedures and improvements to different degrees would be needed. Improvements would result in changes to travel patterns and travel time, which would alter vehicle miles traveled (VMT), fuel consumption, and GHG emissions.

1.6.8 Utilities

1.6.8.1 How did we analyze Utilities?

This section considers broadband internet access to households in the City of Sammamish. A major source of information for this section is the Broadband Access Study conducted by King County and issued in February

2020. This includes the 2020 information on underserved areas, and survey information. In Sammamish, this included 193 respondents collected from zip codes 98074, 98075, and 98029, that encompass the incorporated city boundaries.

In this section, a finding of significant impact is based on a likelihood that internet access or speed for end users would be reduced as a result of implementation of the proposal or alternatives.

1.6.8.2 What impacts did we identify?

Under all alternatives the City's public rights-of-way would remain available for installation of telecommunication facilities.

The availability of adequate internet access may influence the likelihood that workers will choose to participate in full- or part-time work from home.

The recent adoption of the Public Broadband Act by the State of Washington provides unrestricted authority for public entities to provide telecommunication services to end users. As authorized by this legislation, the City could determine that direct municipal provision of telecommunication services would allow for an increased ability to achieve desired coverage and service levels

1.6.8.3 What is different between the alternatives?

No significant adverse impacts to broadband internet service are anticipated from implementation of any of the alternatives. However, alternatives 3 and 4 assume that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish. The availability of adequate internet access may influence the likelihood that workers will choose to participate in full- or part-time work from home.

1.6.8.4 What are some solutions or mitigation for impacts?

The Sammamish Comprehensive Plan includes several policies that address internet services, including coordination with utility providers to ensure competitive, high-quality telecommunication services that support current users and the proposed land use plan.

Per state law, cities have authority to provide fiber optic and broadband services within their boundaries (ESHB 1336, 2021).

1.6.8.5 With mitigation, what is the ultimate outcome?

Since no impacts have been identified, no mitigation is necessary. The alternatives allow for the installation of broadband in rights of way. No significant unavoidable adverse impacts to broadband internet services are anticipated under any of the alternatives.

2 Proposal and Alternatives

2.1 Introduction

Consistent with the GMA, the City of Sammamish Comprehensive Plan guides decisions on land use, environment, housing, transportation, utilities, parks, and capital facilities. With respect to transportation, the Comprehensive Plan sets standards for roadway operations, identifies how transportation improvements will be funded, and establishes the basis for regulations that implement plan policies, including transportation LOS standards.

LOS is a concept used by many cities, including Sammamish, to measure the performance of its street system. LOS may be measured in several different ways. One commonly used approach assigns a letter designation for different levels of traffic congestion, with LOS A representing the best operating conditions (least congestion) and LOS F the worst operating conditions (greatest congestion). Another common approach measures the volume of traffic on a roadway as a ratio of the total estimated roadway capacity, resulting in a volume-to-capacity (V/C) ratio. A V/C ratio less than 1.0 indicates that the roadway has available capacity. A V/C ratio greater than 1.0 indicates that volumes exceed the designed capacity. Historically, the City of Sammamish has used both approaches for measuring LOS.

Transportation LOS standards established in the Comprehensive Plan are used to evaluate the transportation impacts of growth and to determine actions needed to ensure continued provision of adequate transportation facilities. As required by the GMA, Sammamish must adopt and enforce ordinances that prohibit development approval if the development causes LOS on local roadways to decline below the standard adopted in the Comprehensive Plan Transportation Element, unless transportation improvement projects or strategies to accommodate the impacts of development are made concurrent with the development. Please see the sidebar for GMA definitions of terms used here.

In May 2019, the City of Sammamish adopted Ordinance 02019-484, establishing amended transportation level of service standards for transportation concurrency. This action

GMA Terms and Definitions

Concurrency ensures that adequate public facilities are available when the impacts of development occur, or within a specific time thereafter. (WAC 365-196-210)

Adequate public facilities are facilities with the capacity to serve development without decreasing levels of service below locally established minimums. (WAC 365-196-210)

Concurrent with development means that improvements or strategies are in place at the time of development or that a financial commitment is in place to complete the improvements or strategies within six years. (WAC 365-196-840)

was subsequently appealed to the Central Growth Management Hearings Board (GMHB). The GMHB found that the City's action did not comply with state GMA and SEPA requirements and remanded it to the City to bring the action into compliance. In December 2020, the City repealed the amended transportation LOS standards and concurrency requirements (Ordinance O2020-524).

The proposal being considered in this Draft Environmental Impact Statement (Draft EIS) is an amendment to the Transportation and Capital Facilities elements of the Comprehensive Plan to change transportation level of service standards, supporting policies, and related transportation capital improvement projects. If adopted, the proposed Comprehensive Plan amendment would be implemented through a SMC amendment to the City's concurrency requirements and possibly development standards, depending on the selected alternative. Potential impacts that could result from both the proposed Comprehensive Plan and SMC amendments are evaluated in this EIS.

2.1.1 Overview of the Proposal

The proposal consists of related amendments to the Sammamish Comprehensive Plan and SMC necessary to amend and implement the City's transportation level of service standards and concurrency management program. Amendments may include:

- **Comprehensive Plan**: Amendments to the Transportation and Capital Facilities Elements, Volume 1 for transportation LOS standards. Amendments to Transportation and Capital Facilities Elements, Volume II, to update discussion of LOS standards and concurrency, the 6-Year Transportation Improvement Program (TIP), the traffic forecasting model, recommended long-term transportation project list, and financing information. Consistency amendments to other elements may also be proposed.
- **Sammamish Municipal Code**: Potential changes to code could include but are not limited to: SMC Titles 14A, 20, 21A, and 21B to update definitions, address internal consistency, and implement the amended transportation LOS standards in the concurrency management program, depending on the selected alternative.

Alternatives addressed in this Draft EIS include **Alternative 1 No Action**—continuation of transportation LOS standards and concurrency program requirements currently in effect—and **three action alternatives**, which include adoption and implementation of updated LOS standards, concurrency program requirements, and potential development code amendments, depending on the selected alternative. **Action Alternatives 2, 3, and 4** all assume the same LOS standards based on intersections, key roadway corridors and segments, along with transportation improvements to meet LOS standards. In addition, **Alternative 3** includes land use measures to reduce overall travel demand and an assumed 15% reduction in peak hour trips as a result of changes to work patterns following the pandemic. **Alternative 4** includes all the features of alternatives 2 and 3, plus transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints. See Exhibit 2-1 below for a high-level description of the alternatives.

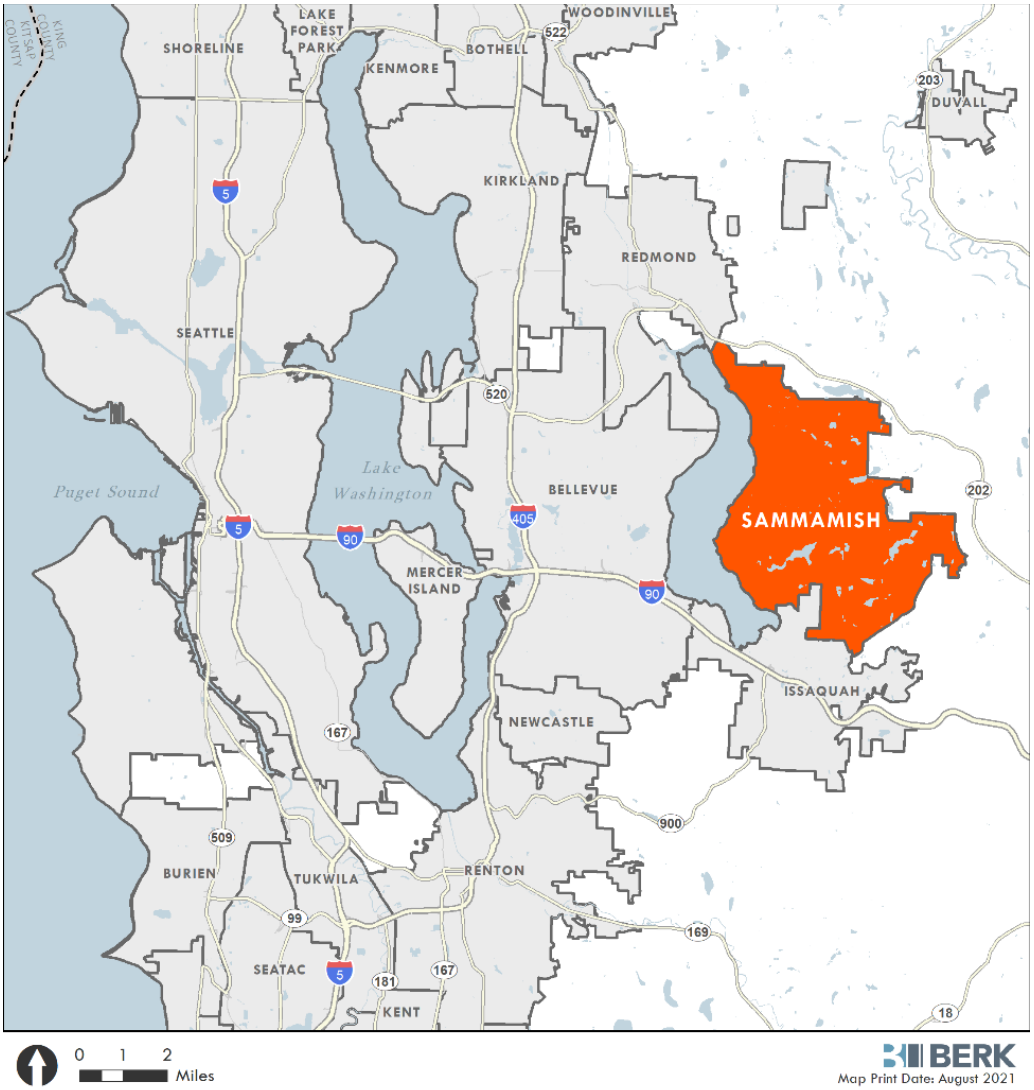
Exhibit 2-1. Alternatives Overview

	Alternative	Key Features
1	No Action	Continuation of transportation LOS standards and concurrency program requirements currently in effect
2	Transportation Level of Service (LOS) Standards	Continuation of LOS standards for intersections and new LOS standards for key roadway corridors and segments Improvements to transportation infrastructure to meet new LOS standards.
3	Transportation LOS Standards with transportation-efficient land use measures	Same LOS standards for intersections and key roadway corridors and segments as Alternative 2 with an assumed 15% reduction in peak hour trips Land use measures to reduce overall travel demand Improvements to transportation infrastructure to meet new LOS standards
4	Transportation LOS Standards with transportation-efficient land use measures and holistic transportation capacity improvements	Same LOS standards for intersections and key corridors and roadway segments as Alternative 2 with an assumed 15% reduction in peak hour trips Same land use measures as described in Alternative 3 Transportation capacity improvements intended to address transportation needs holistically, considering local and regional connectivity, improvements to substandard streets, transit and non-motorized needs, and environmental constraints Improvements to transportation infrastructure to meet new LOS standards

2.1.2 Study Area

The proposal would apply to all area within the City of Sammamish city limits. The city is located in east King County, extending east from the eastern shore of Lake Sammamish. Neighboring jurisdictions include the City of Redmond to the north, City of Issaquah to the south, and unincorporated King County to the northeast, east and southeast, see Exhibit 2-2. The EIS also considers several road segments and one intersection outside the city limits; these roadways provide connections to regional transportation corridors and carry traffic into and out of Sammamish. Specifically, the EIS considers the road segments and intersections on Sahalee Way between the city boundary and Redmond-Fall City Road, as well as the portion of Issaquah-Pine Lake Road between SE 48th Street and SE Issaquah-Fall City Road.

Exhibit 2-2. City of Sammamish Vicinity Map



Source: City of Sammamish, 2020; BERK, 2021.

2.1.3 Objectives of the Proposal

The following objectives apply to the alternatives considered in this EIS:

1. Maintain consistency with all elements of the Sammamish Comprehensive Plan Goals and Policies while continuing to support the Vision.
2. Manage transportation impacts associated with rapid growth, consistent with the Comprehensive Plan.
3. Acknowledge and implement a transportation level of service that represents real world transportation conditions in the city, including its unique challenges, such as limited access to highways, topography, commute patterns, conditions between intersections, and more.
4. Employ land use measures to reduce travel demand and maximize network effectiveness.

2.2 Planning Context

2.2.1 Sammamish Comprehensive Plan

The Sammamish Comprehensive Plan is a 20-year plan that provides policy guidance for how Sammamish will accommodate growth in a way that is consistent with the vision of the citizens of the city. As a policy document, the Plan lays out general guidance for future City actions. In many cases, general guidance in the Plan is more specifically addressed in functional plans that focus on a particular aspect of City services, such as parks, transportation, or drainage. The City implements the Comprehensive Plan through regulations, such as the City of Sammamish zoning map and development code, capital investments, focused initiatives, and other activities.

Consistent with the GMA, the City adopted its first Comprehensive Plan in 2003 and conducted a major update in 2015. The Plan has been updated on an annual basis since 2015 and the next major update is scheduled for 2024, with a planning horizon that extends to 2044. This update will incorporate revised estimates of employment and population growth and other changes since the last major plan update. The current Comprehensive Plan provides policy guidance through 2035 and is the basis for the BLUMA EIS.

The Sammamish Comprehensive Plan consists of eight major elements: Land Use, Environment and Conservation, Housing, Transportation, Utilities, Parks, Capital Facilities, and Shoreline. As described in Section 2.4, amendments are proposed to the Transportation and Capital Facilities elements. These elements are briefly described here and discussed further in the Plans and Policies section of this EIS.

2.2.2 Transportation Element

The Transportation Element is organized into two sections; Volume I contains transportation goals and policies and Volume II contains supporting analysis and background information. Each is described below.

The goals and supporting polices in Volume I address the following topics:

- **Supporting growth**: Support the City's and region's growth strategy by focusing on moving people and goods within the City and beyond with a highly efficient multimodal transportation network. Related policies address concurrency, LOS standards, regional coordination, and freight movement.

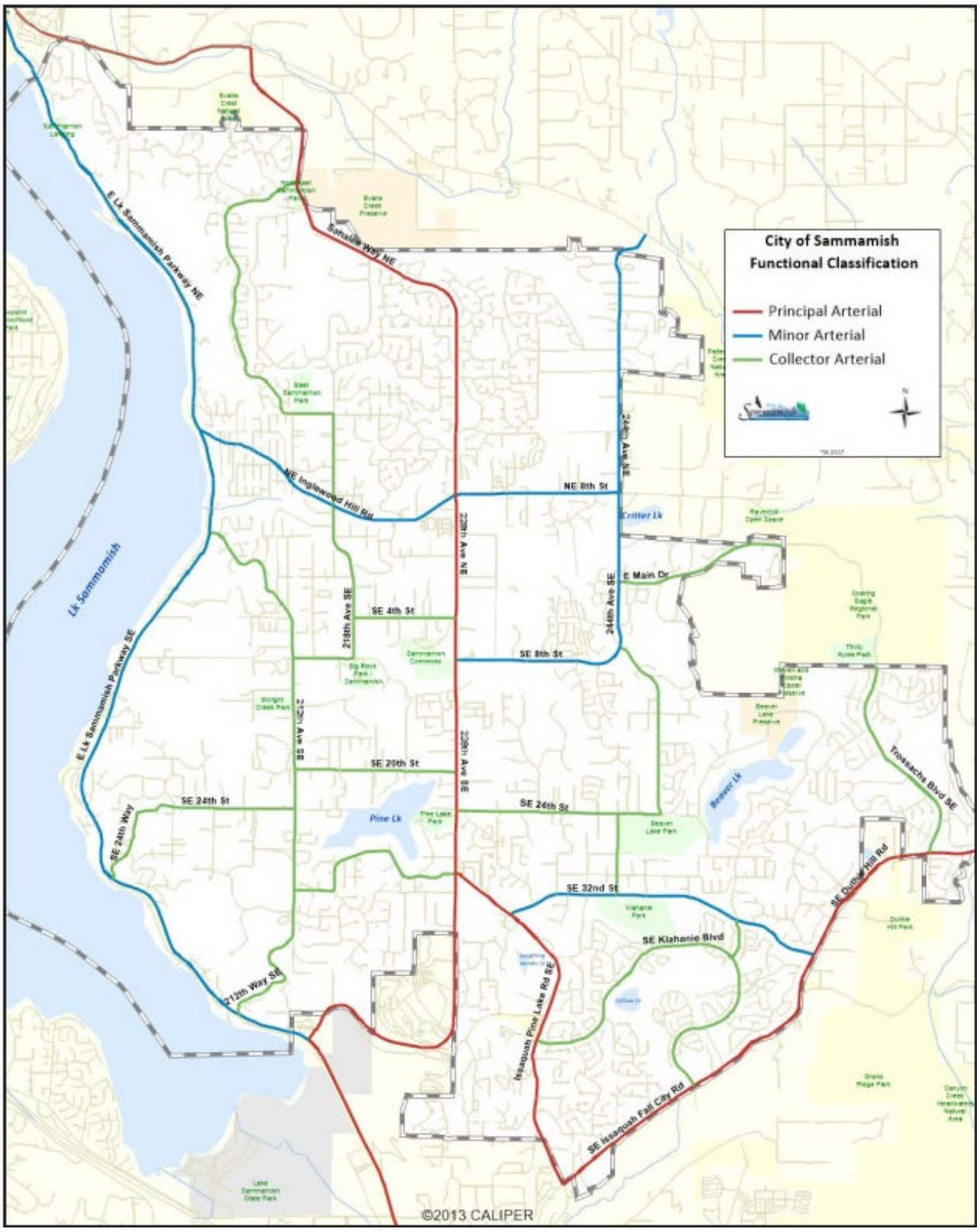
- **Greater options and mobility**: Invest in transportation systems that offer greater options, mobility and access in support of the City's growth strategy. Policies address multimodal transportation options, transportation demand management strategies, and roadway design to improve mobility.
- **Operations, maintenance, management, and safety**: As a high priority, maintain, preserve, and operate the City's transportation system in a safe and functional state. Policies address maintenance and preservation, transportation systems management, safety, and financial management.
- **Sustainability**: Design and manage the City's transportation system to minimize the negative impacts of transportation on the natural environment, to promote public health and safety, and to achieve optimum efficiency. Policies address sustainability and the natural environment, human health and safety, and balancing the costs and human impacts of transportation.

Functional Classification

Functional classification is a system for categorizing roadways based on the function they are intended to provide. The classifications are used to determine planned traffic volumes, roadway design, and standards. As shown in Exhibit 2-3, Sammamish designations include principal arterials, minor arterials, and collector arterials. All other roadways are assumed to be local access streets. Please see EIS Section 3.7 Transportation for additional discussion of the functional classification system.

The Transportation Element Background Information Volume II addresses roadway classifications, levels of service, transit and non-motorized modes, future travel forecasts, transportation system improvements, financing strategies, and concurrency management. It establishes the technical basis for transportation system development, and for existing and future improvement of transportation programs and facilities guided by Comprehensive Plan transportation goals and policies. This section includes an inventory of existing conditions containing the City's existing roadway inventory and functional classifications map, shown in the sidebar and Exhibit 2-3.

Exhibit 2-3 City Roadway Functional Classifications



Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.11

2.2.3 Capital Facilities Element

The Capital Facilities Element Volume I contains five major goals and supporting policies. Goals and policies address public facilities needed for public services that will support planned population and employment, including the transportation system, parks and recreation, schools, libraries, stormwater, water and sanitary sewer systems, public safety, and governmental services. Goals and policies guide the City to have facilities that adequately support new development, address any past deficiencies, and maintain their stated LOS, including transportation LOS. Financial feasibility is also addressed, with policy direction to provide adequate funding to serve projected growth at adopted levels of service and steps to address a funding shortfall. Goals and policies also support environmental sustainability in the design and operation of capital facilities.

The Capital Facilities Element Background Information Volume II provides the foundational data and analysis for the Capital Facilities Element Volume I goals and policies. This includes an inventory of all public facilities, a forecast of future needs, planned capital projects and potential funding strategies.

2.3 Public Outreach

As part of the environmental review process, the City conducted a public scoping process that extended from July 7 to July 31, 2020. By the close of the scoping period, the City had received a total of 69 comments. All comments were posted to the City's Connect Sammamish website. Comments were also summarized in a final scoping report that identified changes made to the scope of the EIS in response to comments and responded to major topics and themes contained in the comments. See Appendix A for the scoping report. On February 22, 2021, the City posted an optional notice of additional alternatives being considered in the EIS. This informational notice was provided as a courtesy only, no additional comment period was required.

Public comments are invited on this Draft EIS. All public comments received during the Draft EIS comment period will be considered and addressed in the Final EIS. Please see the Fact Sheet at the beginning of this Draft EIS for the public comment period dates.

Public involvement continues to be an important element of the planning process. City staff may make a recommendation for the Comprehensive Plan and SMC amendments considered in this EIS. Upon receipt of a recommendation for Comprehensive Plan and SMC amendments, the Planning Commission will consider the proposal in one or more public meetings and hold a public hearing. Following the public hearing, the Planning Commission will make a recommendation to City Council. The City Council will review the recommendation at a public meeting and hold a public hearing prior to making their decision. Please see the link to the Balanced Land Use and Mobility Analysis (BLUMA) EIS on the Connect Sammamish website for information about future public meetings and hearings.

2.4 Proposed Action and Alternatives

This section describes proposed transportation level of service, concurrency management, Comprehensive Plan amendments, SMC amendments, land use measures such as incentives for some housing types or encouraging work from home, and transportation improvement projects for each of the four alternatives considered in this EIS.

2.4.1 Alternative 1 No Action

Alternative 1 No Action retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. However, Comprehensive Plan amendments would be required to establish consistency with SMC Title 14A. No other changes are required under Alternative 1. Key features of this alternative are described below.

2.4.1.1 Transportation

LOS Standards

No change is proposed to the existing transportation LOS standards as found in SMC Title 14A Public Facilities, meaning that LOS is only measured during the AM and PM peak hour at designated concurrency intersections. Existing Comprehensive Plan LOS standards are defined as shown in Exhibit 2-4 below.

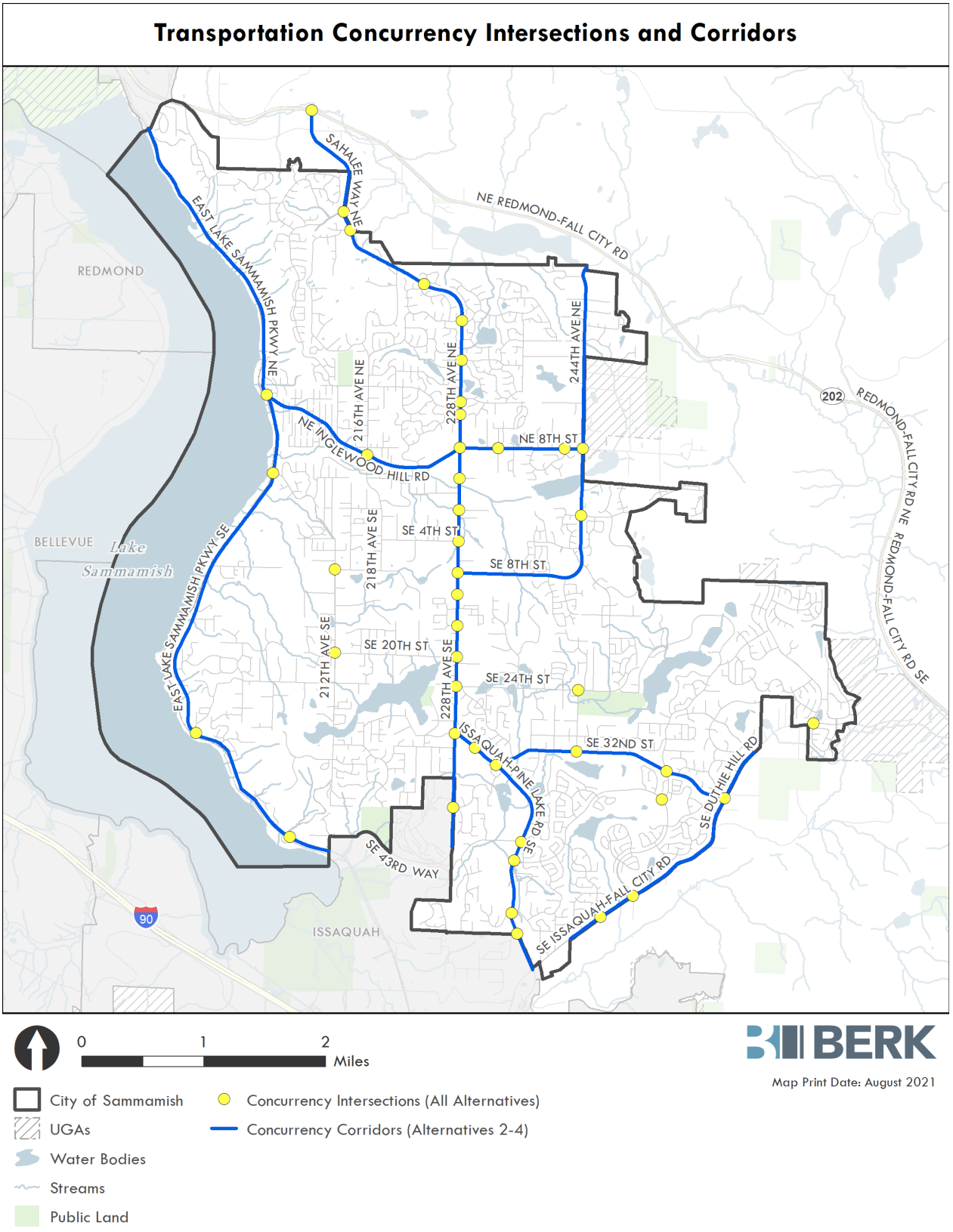
Exhibit 2-4. Intersection Level of Service Standards

Intersection Level of Service Standards	
LOS C	Intersections that include Minor Arterial or Collector Arterial roadways
LOS D	Intersections that include Principal Arterial roadways
LOS E	Intersections that include Principal Arterial roadways where LOS D cannot be met with three approach lanes in any direction.

Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.24.

The City has identified 43 concurrency intersections within the city. See Exhibit 2-5 for a map of these intersections and Exhibit 2-6 for the list of all concurrency intersections.

Exhibit 2-5. Concurrency Intersection and Corridor Map



Source: Draft Sammamish Transportation Master Plan, p, 42. May 2020.

Exhibit 2-6. Concurrency Intersection Descriptions

Node	Intersection	Los Standard[1]	Traffic Control[2]
1	Issaquah-Pine Lake Road and SE 48th Street	D	Signal
2	228th Avenue NE and NE 12th Place	D	Signal
3	Klahanie Drive SE and SE Issaquah-Fall City Road	D	Signal
4	244th Avenue SE and SE 24th Street	C	SSSC
5	SE 32nd Street and 244th Avenue SE	C	SSSC
6	Issaquah-Pine Lake Road and SE 32nd Way	D	RAB
7	228th Avenue SE and SE 40th Street	D	SSSC
8	SE Klahanie Boulevard and 256th Avenue SE	C	AWSC
9	247th Place SE and SE Issaquah-Fall City Road (Pacific Cascade Middle)	D	Signal
10	Sahalee Way NE and NE 36th Street	D	SSSC
11	242nd Avenue NE and NE 8th Street	C	Signal
12	228th Avenue SE and SE 8th Street	D	Signal
13	228th Avenue NE and NE 19th Drive	D	SSSC
14	228th Avenue NE and NE 19th Drive	C	RAB
15	228th Avenue NE and NE Inglewood Hill Road/NE 8th Street	D	Signal
16	228th Avenue NE and NE 4th Street E Signal	E	Signal
17	228th Avenue SE and SE 4th Street	E	Signal
18	212th Avenue SE and SE 8th Street	C	SSSC
19	228th Avenue SE and SE 16th Street	D	Signal
20	East Lake Sammamish Parkway and 212th Way SE	C	Signal
21	East Lake Sammamish Parkway and SE 24th Way	C	SSSC
22	212th Avenue SE and SE 20th Street	C	AWSC
23	East Lake Sammamish Parkway and Louis Thompson Road NE	C	Signal
24	East Lake Sammamish Parkway and Inglewood Hill Road	C	Signal
25	Sahalee Way NE and NE 37th Way	D	Signal
26	NE 8th Street and 244th Avenue NE	C	RAB
27	228th Avenue SE and SE 20th Street	D	Signal
28	228th Avenue SE and SE 24th Street	E	Signal
29	228th Avenue SE and Issaquah-Pine Lake Road	E	Signal
30	Issaquah-Pine Lake Road SE and SE Klahanie Boulevard	D	Signal
31	Duthie Hill Road and Issaquah-Beaver Lake Road	D	Signal
32	256th Avenue SE/E Beaver Lake Drive SE and Issaquah-Beaver Lake Road	C	SSSC
33	228th Avenue NE and NE 14th Street	D	SSSC
34	228th Avenue NE and NE 25th Way	D	Signal
35	Issaquah-Pine Lake Road and SE 42nd Street	D	SSSC

Node	Intersection	Los Standard[1]	Traffic Control[2]
36	Issaquah-Pine Lake Road and 230th Lane SE/231st Lane SE	D	Signal
37	NE 28th Place/223rd Avenue and Sahalee Way NE	D	SSSC
38	Issaquah-Pine Lake Road and SE 47th Way/238th Way SE	D	Signal
39	233rd Avenue NE and NE 8th Street	C	RAB
40	228th Avenue SE and East Main Street	D	Signal
41	244th Avenue NE and East Main Drive	C	RAB
42	Duthie Hill Road and Trossachs Boulevard SE	D	Signal
43	228th Avenue SE and SE 10th Street (Skyline High School)	D	

Source: Sammamish Comprehensive Plan, Transportation Element Volume II, p. T.26
1. LOS standards are based upon the functional classifications of the intersecting roadways. Intersections that include Principal Arterials have a standard of LOS D except where LOS D cannot be met with three approach lanes in any direction. In those cases, LOS E is assigned. Intersections that include Minor Arterials or Collectors have a standard of LOS C.
2. Signal = Signalized, SSSC = Side-Street Stop-Controlled, AWSC = All-Way Stop-Controlled, RAB = Roundabout

Concurrency Management

Consistent with SMC Title 14A Public Facilities, transportation concurrency would continue to be evaluated only on intersection LOS at concurrency designated intersections. To meet concurrency requirements, development proposals would be required to meet intersection LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

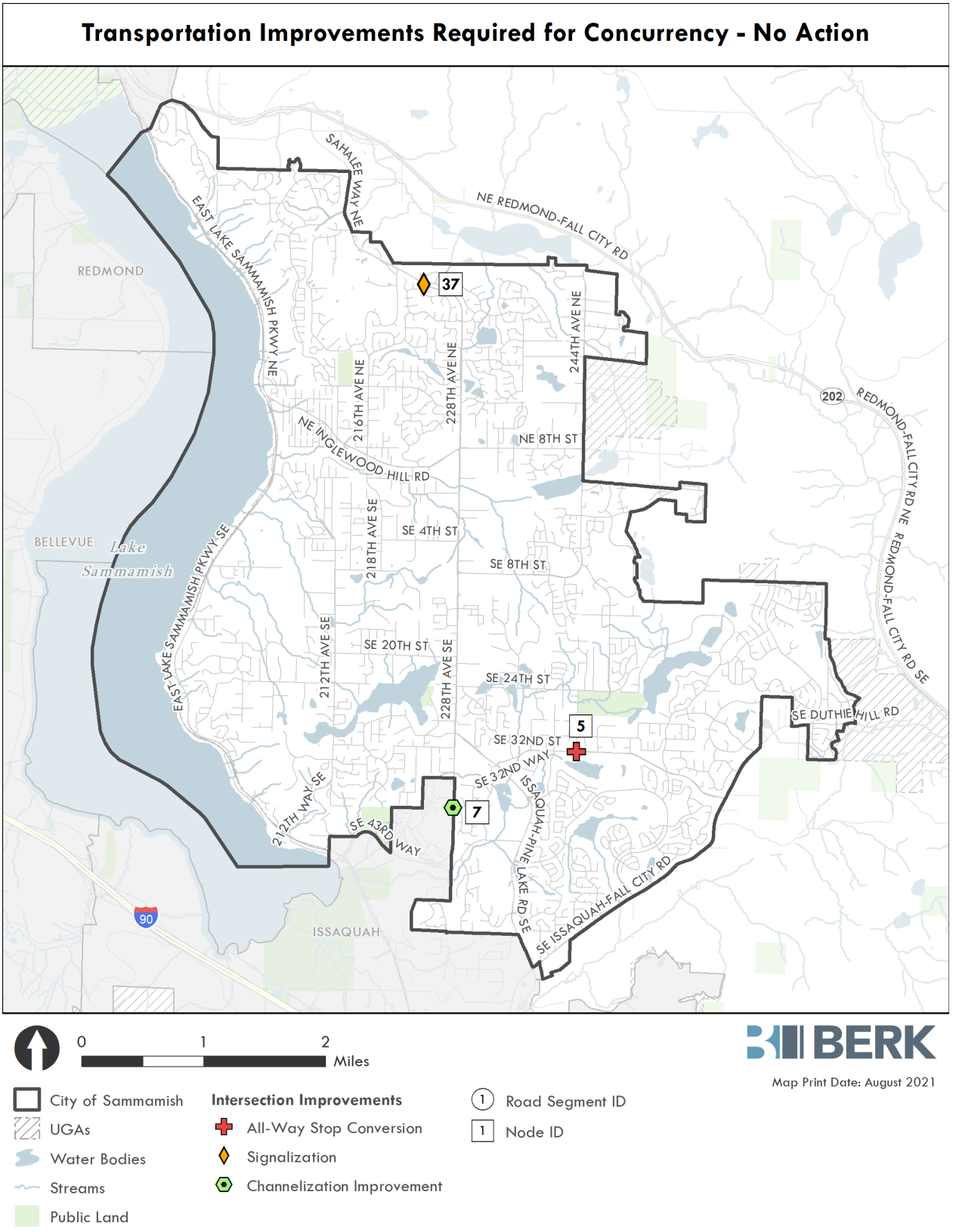
Under Alternative 1, improvements at three intersections are required to maintain intersection LOS standards through 2035. Exhibit 2-7 describes required improvements under Alternative 1 based on transportation modeling analysis and the City's 2016 Public Works Standards; variations from the public works standards are noted if applicable, additional project information is not available. See Exhibit 2-8 for project locations.

Exhibit 2-7. Alternative 1 Concurrency Intersection Improvement Projects Description

Node	Intersection	Alternative 1 Projects
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
Sources: City of Sammamish, 2020; Perteet Engineering, DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 2-8. Alternative 1 Concurrency Intersection Improvement Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

2.4.1.2 Land Use

No changes to land use designations, policies, or regulations are proposed under Alternative 1.

2.4.1.3 Policy and Regulatory Amendments

Comprehensive Plan

For consistency with the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities, Alternative 1 requires amendments to the Comprehensive Plan. These include but are not limited to:

- Transportation Element Volume I: Policies under Goal T.1 to remove references to LOS standards and concurrency requirements for road segments and corridors. Similar revisions may also occur in the Transportation Element Background Information Volume II.
- Capital Facilities Element Volume I: Policies under Goal CF.2 to remove references to LOS standards and concurrency requirements for road segments.
- Capital Facilities Background Information Volume II: Table CF-6 to ensure that identified transportation capital improvement projects reflect existing LOS standards.
- Other Potential Changes to relevant sections of City plans

Sammamish Municipal Code

Alternative 1 No Action retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. No amendments are proposed.

2.4.2 Alternative 2

Alternative 2 proposes continuation of existing LOS standards for concurrency intersections and new LOS standards for concurrency roadway corridors and segments. Amendments to the Transportation and Capital Facilities Elements of the Sammamish Comprehensive Plan would l be required to incorporate new LOS standards and implementing projects. SMC Title 14A Public Facilities would also be amended to implement the new LOS standards and concurrency management program. Key features of Alternative 2 are described below.

2.4.2.1 Transportation

LOS Standards

Alternative 2 continues the LOS standards for concurrency intersections and adopts new LOS standards for identified concurrency corridors and roadway segments, described below. For both the intersections and corridors and segments, LOS would continue to be measured during the AM and PM peak hour. To meet concurrency requirements, LOS standards for intersections, corridors, and segments must be met.

Intersection LOS

Under Alternative 2, intersection LOS standards would be as described under Alternative 1. Implementing intersection improvement projects required under Alternative 2 are shown in Exhibit 2-9, including conceptual project descriptions. See Exhibit 2-9 for the location of Alternative 2 intersection improvements.

Exhibit 2-9. Alternative 2 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Alternative 2 Projects
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 improvements.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
Sources: City of Sammamish, 2020; Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Corridors and Roadway Segments LOS

Alternative 2 establishes new LOS standards for concurrency corridors and roadway segments. The corridors and segments consist of City roadways designated as Principal Arterial and Minor Arterial in the City's functional classification system (Exhibit 2-3). Transportation corridors are comprised of one or more segments, based on transportation character and needs. For example, the Sahalee Way corridor is divided into five distinct segments. Transportation concurrency corridors are listed in Exhibit 2-11, below; see also Exhibit 2-5 for a map of transportation concurrency corridors and Exhibit 2-12 for a map of segments.

The corridor and segment LOS would be measured based on volume to capacity ratios.[6] As shown in Exhibit 2-10, the proposed volume to capacity ratio standard would be less than or equal to 1.1 for corridors and less than or equal to 1.4 for segments.

Exhibit 2-10. Proposed LOS Standards: Concurrency Corridors and Segments

Corridors and Segments	Proposed LOS Standards
Concurrency Corridors	Less than or equal to 1.1 volume to capacity ratio
Concurrency Segments	Less than or equal to 1.4 volume to capacity ratio

Source: City of Sammamish, 2020.

[6] See Appendix C, for the November 16, 2018 Fehr & Peers memorandum "Measuring Concurrency for Segments and Corridors: HCM 6th Edition, Modified,"

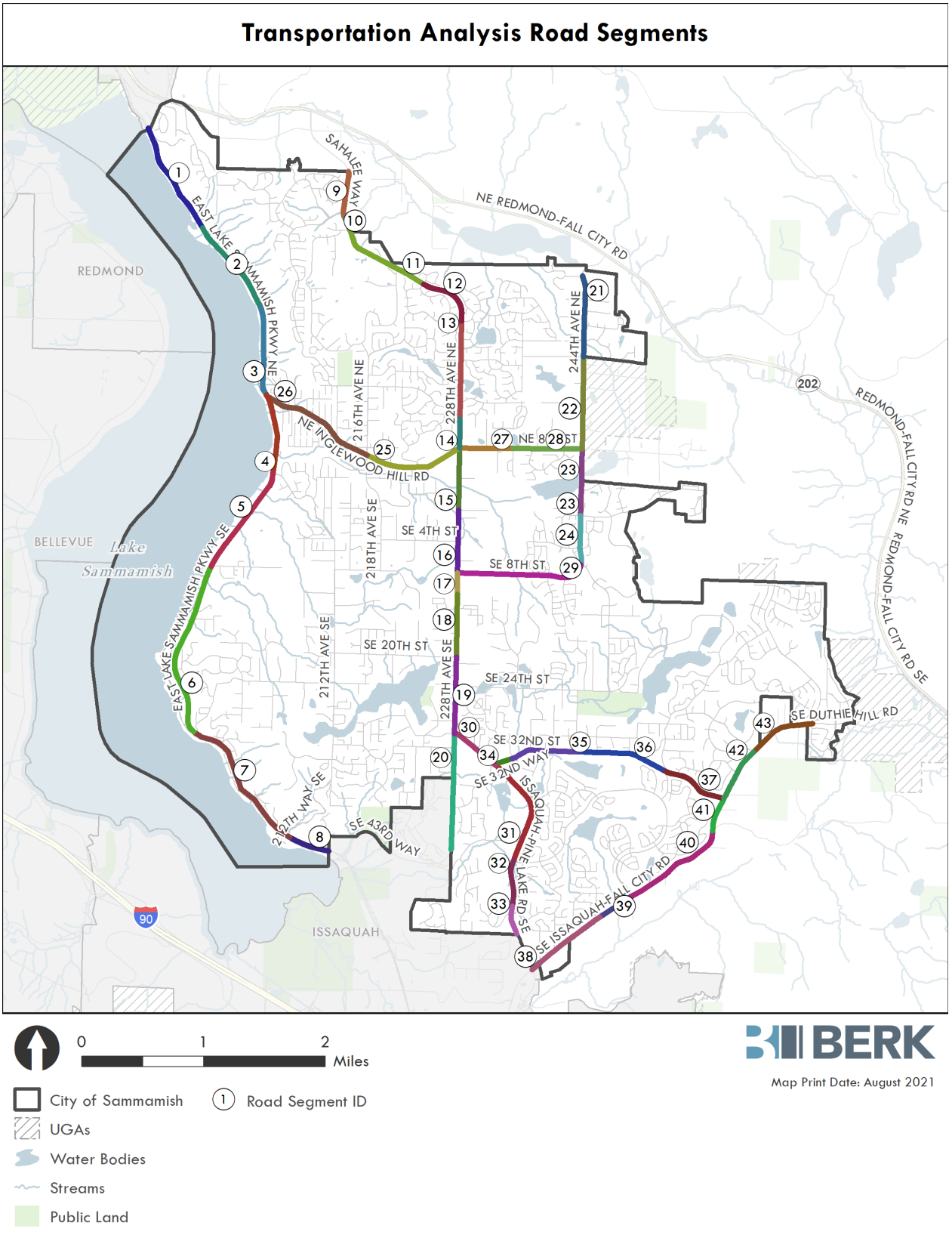
Exhibit 2-11. Transportation Concurrency Corridors

Transportation Corridors	Segments
East Lake Sammamish Parkway North Corridor	1. City limit to 196th Avenue NE 2. 196th Avenue NE to NE 26th Place 3. NE 26th Place to NE Inglewood Hill Road
East Lake Sammamish Parkway Central Corridor	4. NE Inglewood Hill Road to Louis Thompson Road SE 5. Louis Thompson Road SE to SE 8th Street
East Lake Sammamish Parkway South Corridor	7. SE 24th Way to 212th Way SE 8. 205th Avenue SE to city limit
Sahalee Way - 228th Avenue North Corridor	9. City limit to NE 37th Way 10. NE 37th Way to NE 36th Street 11. NE 36th Street to 223rd Avenue NE/NE 28th Place 12. 223rd Avenue NE to NE 25th Way 13. NE 25th Way to NE 12th Place
228th Avenue Central Corridor	14. NE 12th Place to NE 8th Street/Inglewood Hill Road 15. NE 8th Street/Inglewood Hill Road to Main Street 16. Main Street to SE 8th Street 17. SE 8th Street to SE 10th Street 18. SE 10th Street to SE 20th Street
228th Avenue South Corridor	19. SE 20th Street to Issaquah-Pine Lake Road SE 20. Issaquah-Pine Lake Road SE to SE 43rd Street
244th Avenue North Corridor	21. NE 30th Place to NE 20th Street 22. NE 20th Street to NE 8th Street 23. NE 8th Street to E Main Street 24. E Main Street to SE 8th Street
NE Inglewood Hill Road Corridor	25. East Lake Sammamish Parkway to 216th Avenue SE 26. 216th Avenue SE to 228th Avenue SE
NE 8th Street Corridor	27. 228th Avenue NE to 235th Avenue NE 28. 235th Avenue NE to 244th Avenue NE
SE 8th Street Corridor	29. 228th Avenue SE to 244th Avenue SE
Issaquah-Pine Lake Road Corridor	30. 228th Avenue SE to SE 32nd Way 31. SE 32nd Way to SE Klahanie Blvd 32. SE Klahanie Blvd to SE 46th Street 33. SE 46th Street to SE 48th Street
SE 32nd Way/Street Issaquah Beaver Lake Road Corridor	34. Issaquah-Pine Lake Road to 235th Place SE 35. 235th Place SE to 244th Avenue SE 36. 244th Avenue SE to E Beaver Lake Drive SE 37. E Beaver Lake Drive to SE Duthie Hill Road

Transportation Corridors	Segments
Issaquah-Fall City Road Corridor	38. Issaquah-Pine Lake Road to 245th Place SE [confirm] 39. 245th Avenue SE [confirm] to Klahanie Drive SE 40. Klahanie Drive SE to SE Duthie Hill Road 41. SE Issaquah Beaver Lake Road to SE Issaquah-Fall City Road
Duthie Hill Road Corridor	42. SE Issaquah Beaver Lake Road to 266th Avenue SE 43. 266th Avenue SE to SE Trossachs Blvd

Source: City of Sammamish, 2020.

Exhibit 2-12 Transportation Concurrency Segments Map



Source: Transportation Solutions, Inc. 2021.

Concurrency Management

The proposed concurrency management program evaluates concurrency based on the intersection and corridor/segment LOS standards shown in Exhibit 2-4 and Exhibit 2-10 above. To meet concurrency requirements, development proposals would be required to meet both intersection and corridor/segment LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

To maintain Alternative 2 LOS standards through 2035, transportation concurrency projects would be required for the intersections identified in Exhibit 2-9 and to portions or all of five corridors, including East Lake Sammamish Parkway North Corridor, East Lake Sammamish Parkway South Corridor, Sahalee Way-228th Avenue North Corridor, Issaquah-Pine Lake Road Corridor, Issaquah-Fall City Road Corridor, and SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and the City's 2016 Public Works Standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.

See Exhibit 2-13 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 2 and Exhibit 2-14 for the project locations.

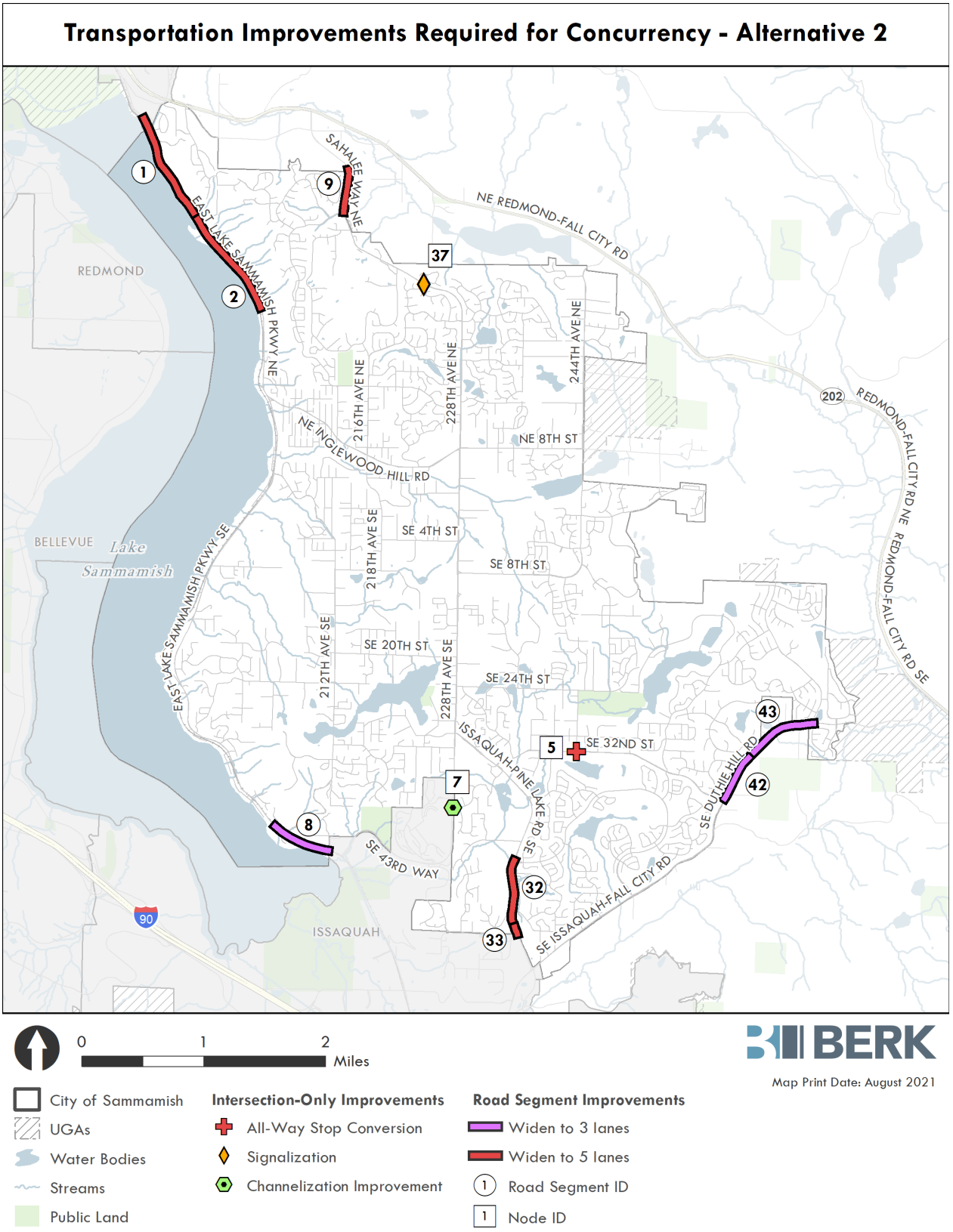
Exhibit 2-13. Alternative 2 Concurrency Corridor Improvement Project Descriptions

Alternative 2	
East Lake Sammamish Parkway North Corridor	
Segment 1 460 Feet North of City Limit to 196th Avenue NE	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 2 196th Avenue NE to NE 26th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
East Lake Sammamish Parkway South Corridor	
Segment 8 205th Avenue SE to City Limit	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Sahalee Way Corridor	
Segment 9 City Limit to NE 37th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91

Alternative 2	
	feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Issaquah-Pine Lake Road Corridor	
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 43 266th Avenue SE to SE Trossachs Boulevard	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 2-14. Alternative 2 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

2.4.2.2 Land Use

No changes to land use designations, policies or regulations are proposed under Alternative 2.

2.4.2.3 Policy and Regulatory Amendments

Comprehensive Plan Amendments

Alternative 2 Comprehensive Plan amendments include:

- Transportation Element Volume I: Update the description of LOS standards and concurrency management program in Policy T.1.1.
- Transportation Element Background Information Volume II: Update the description of LOS standards and concurrency management program. Baseline data for corridors and segments would be added and transportation improvement projects needed to support the new LOS standards would be identified.
- Capital Facilities Element Volume I: Update the description of LOS standards and concurrency management program in Policy CF2.1
- Capital Facilities Element Background Information Volume: Table CF-6 to reflect new LOS standards.

Sammamish Municipal Code Amendments

Amendments to SMC Title 14A Public Facilities would be required to establish new LOS standards, new concurrency corridors and segments and updated concurrency management program.

2.4.3 Alternative 3

Alternative 3 assumes the same LOS standards and concurrency management program as Alternative 2. Alternative 3 also incorporates land use measures intended to reduce travel demand and assumes reduced peak hour travel demand. Key features of Alternative 3 are described below.

2.4.3.1 Transportation

LOS Standards

The proposed LOS standards for intersections and corridors and roadway segments are the same as for Alternative 2. See Exhibit 2-4, Exhibit 2-10, and the discussion of LOS standards under Alternative 2.

Concurrency Management

The proposed concurrency management program is the same as for Alternative 2. See the discussion of concurrency management under Alternative 2.

Transportation Improvement Projects

To maintain proposed LOS standards through 2035, transportation concurrency projects would be required for the intersections listed in Exhibit 2-15 and to all or portions of three corridors. Under Alternative 3, roadway corridor projects will be required on two segments of the East Lake Sammamish Parkway North Corridor, two segments of the Issaquah-Pine Lake Road Corridor, and one segment of the SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and the City's 2016 Public Works Standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.

See Exhibit 2-16 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 3 and Exhibit 2-17 for the project locations.

Exhibit 2-15. Alternative 3 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Alternative 3 Projects
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 improvements.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

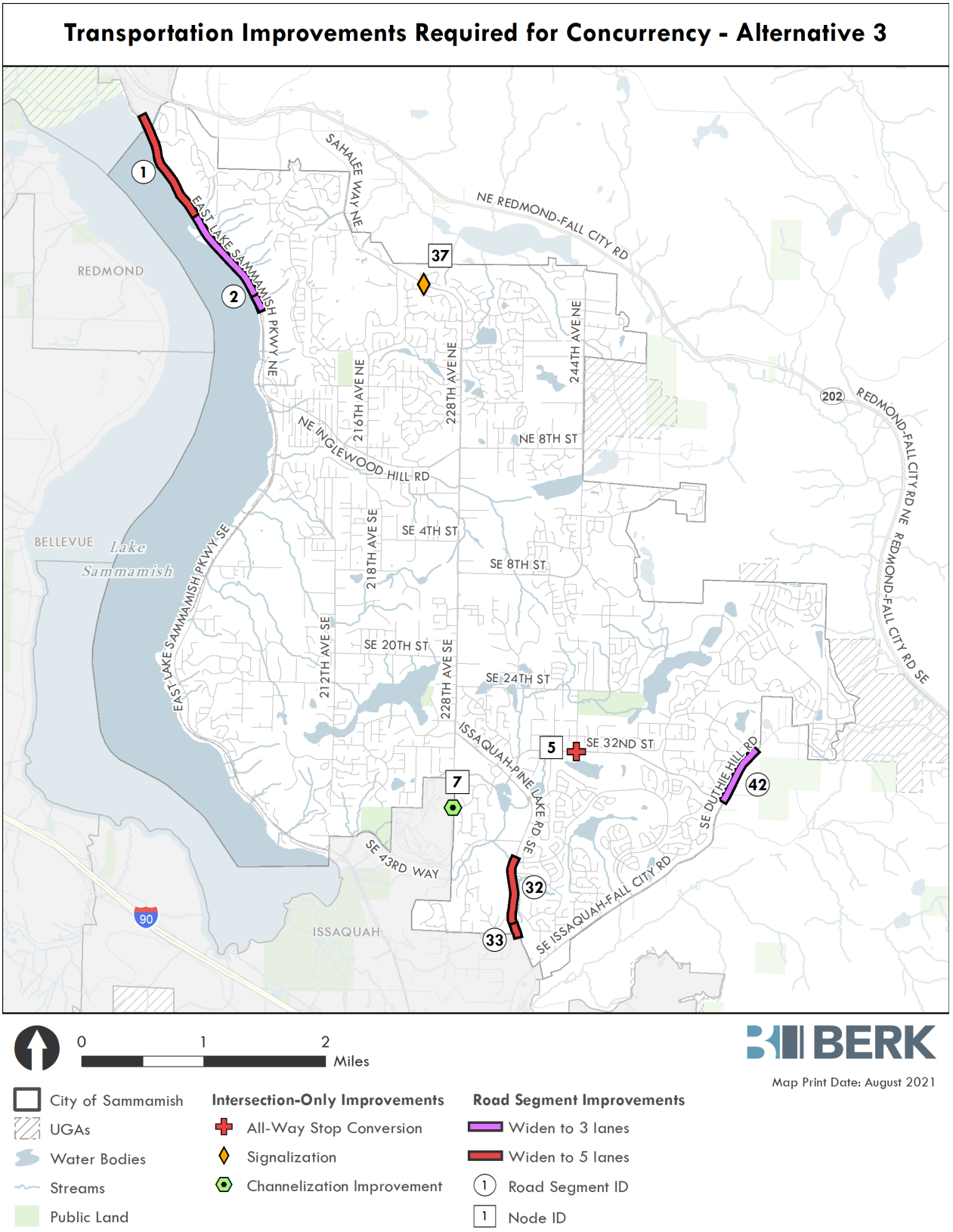
Exhibit 2-16. Alternative 3 Concurrency Corridor Improvement Project Descriptions

Alternative 3 Corridors and Segments	
East Lake Sammamish Parkway North Corridor	
Segment 1 460 Feet North of City Limit to 196th Avenue NE	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 2 196th Avenue NE to NE 26th Place	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk

Alternative 3 Corridors and Segments	
	are replaced with an 8-foot shoulder on the west side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Issaquah-Pine Lake Road Corridor	
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 2-17. Alternative 3 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Travel Demand

Alternative 3 assumes that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish, who have greater options for working remotely.

The COVID-19 pandemic has fundamentally impacted travel behavior for many workers. In Sammamish, a December 2020 open online survey conducted by the City found approximately 44% of respondents reported that they are working from home due to the impacts of COVID-19.[7] Similarly, traffic counts at seven gateway locations of the city conducted in early 2021 found that AM peak hour trips were on average 45% lower and PM peak hour trips 30% lower compared to historic data.

Looking to the future, a Washington State University survey of Pacific Northwest businesses found that some level of working virtually will likely continue for many employees when the pandemic is over. In Washington, over two-thirds (67%) of business leaders report that they plan to continue working virtually when the pandemic is over. More generally, assessments of research firms, management consultants, and other related industries suggest that post-COVID-19 working virtually will continue at least on a part-time or hybrid basis in many industries. Workers in information and technology sectors are often identified as having the highest potential to work from home. Based on 2019 American Community Survey data for Sammamish, the full-time civilian employed population was 23,905 persons. Of this total, an estimated 1,110 worked in finance and insurance, 9,438 in professional, scientific, and technical services; and 247 in management of companies. Collectively these industries total 10,795 employees or approximately 45% of all employees.

2.4.3.2 Land Use

Alternative 3 assumes that around 10-11% of new units (half of units not otherwise in pipeline) will be comprised of smaller residential units, including small-scale single-family detached dwelling units, townhomes or duplexes. Small-scale single-family detached dwelling units may be defined by a limit on floor area, number of bedrooms or other standards. Duplex and townhouse units are defined in SMC Titles 21A and 21B (see sidebar).

Implementation would occur through amendments to the SMC including but not limited to: SMC Titles 21A and 21B as appropriate establishing incentives, dimensional standards, design standards, or other applicable amendments. Examples of applicable zoning controls could include maximum building footprint or maximum lot size controls for small-scale single-family units. Incentives to promote townhome and duplex development

Townhouse

A building containing one dwelling unit that occupies space from the ground to the roof and is attached to one or more other townhouse dwellings by common walls (SMC 21A.15.370).

Duplex

A building located on a legal lot, containing two dwelling units designed exclusively for occupancy by two single households living independently of each other (SMC 21B.15.160, Town Center).

[7] Note that this online survey is not statistically significant.

could include flexible minimum lot size or reduced setback requirements to allow a greater number of attached units in a given area.

For the purpose of this analysis, the future residential development projection is based on the City's 2006-2035 growth target, assigned via the King County Countywide Planning process, of 4,849 units less prior growth of 3,963 units permitted through 2019, according to data from the Washington State Office of Financial Management (OFM). This leaves a total of 885 dwelling units remaining unbuilt under the current target for the planning period 2019 through 2035. As of March 2, 2021, 689 dwelling units were in the pipeline (i.e. in a stage of the permitting process), leaving a projected 196 units through 2035. See the Land Use section of this EIS and Appendix B for a more detailed discussion of growth target assumptions.

Based on Institute of Transportation Engineers (ITE) data, trip generation rates for smaller single-family residential units are expected to result in fewer trips per unit compared to standard single-family residences. Please see Draft EIS Section 3.7 Transportation for additional discussion.

2.4.3.3 Policy and Regulatory Amendments

Comprehensive Plan Amendments

Comprehensive Plan amendments for Alternative 3 are the same as proposed for Alternative 2. The land use proposal for development of smaller residential units described above is consistent with the Comprehensive Plan land use policy guidance.

Sammamish Municipal Code Amendments

Under Alternative 3, SMC provisions to amend the corridor and segment LOS standard would be as proposed for Alternative 2. In addition, implementation of the land use measures described above may require amendments to the SMC including but not limited to: SMC Title 21A and Title 21B as appropriate.

2.4.4 Alternative 4

Alternative 4 assumes the same LOS standards and concurrency management program as Alternative 2 and the same land use measures and 15% reduction in AM and PM peak hour travel demand as Alternative 3. Alternative 4 also includes a set of transportation capacity improvements intended to improve connectivity and efficiency in the transportation network. Key features of Alternative 4 are described below.

2.4.4.1 Transportation

As described for Alternative 3, Alternative 4 assumes a 15% reduction in AM and PM peak hour travel demand.

Alternative 4 also includes a set of transportation capacity improvements that consider forecast travel demand, effective connections to the regional transportation network, completion of existing substandard arterials to current the City's 2016 Public Works Standards, design accommodations for transit and non-motorized options, and environmental constraints.

Specifically, Alternative 4 focuses on the following objectives:

- Increase the capacity of Principal Arterials by constructing them to current Public Works Standards to direct the highest traffic volumes to the highest classified roadways
  - Sahalee Way NE
  - 228th Avenue NE and SE
  - Issaquah-Pine Lake Road SE
  - SE Issaquah-Fall City Road (Minor Arterial according to WSDOT/PSRC)
- Remove bottlenecks on Principal Arterials regardless of jurisdiction to ensure system continuity and maximum utilization of increased capacity
  - Sahalee Way NE north of the city limits
  - Issaquah-Pine Lake Road SE south of the city limits
- Control the travel demand on Minor and Collector Arterials with appropriate traffic calming to maintain the local access functions of lower classified roadways.
  - East Lake Sammamish Parkway NE
  - 244th Avenue NE
  - SE 24th Street
  - SE Klahanie Blvd

LOS Standards

The proposed LOS standards for intersections and roadway corridors and segments are the same as for alternatives 2 and 3. See Exhibit 2-4, Exhibit 2-10, and the discussion of LOS standards under Alternative 2.

Concurrency Management

The proposed concurrency management program is the same as for alternatives 2 and 3. See the discussion of concurrency management under Alternative 2.

Transportation Improvement Projects

To maintain proposed LOS standards through 2035, transportation concurrency projects would be required for the intersections identified in Exhibit 2-18 and to five key corridors. Roadway corridor projects would be required on the Sahalee Way Corridor, including a portion of Sahalee Way NE in unincorporated King County adjacent to the city boundary, one segment of the 228th Avenue Central Corridor, one segment of the 228th Avenue South Corridor, the Issaquah-Pine Lake Road Corridor, and the SE Duthie Hill Road Corridor. These improvement projects are described conceptually based on transportation modeling analysis and the City's 2016 Public Works Standards. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.

See Exhibit 2-19 for conceptual project descriptions of the corridors and segments that would require improvement projects under Alternative 4 and Exhibit 2-20 for the project locations.

Exhibit 2-18. Alternative 4 Concurrency Intersection Improvement Project Descriptions

Node	Intersection	Project
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Included as part of Segment 33 and the Issaquah segment adjacent to Segment 33 (SE 48th Street to Issaquah–Fall City Road) improvements. The improvements to IPLR outside the City limits serve to remove the capacity constraint between SE 48th St and Issaquah Fall City Rd to allow the IPL corridor to serve as much traffic as possible, and relieve demand on lower classified roads.
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane. Alternative 4 improvements are included as part of Segment 20.
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection. Included as part of Segment 31 and Segment 32 improvements.
63*	Sahalee Way and SR 202 intersection	Modify traffic signal. The current intersection's capacity is constrained by the single northbound lane feeding the northbound approach to the traffic signal. Two northbound lanes are necessary to "feed" the double left turn lane and right turn lane. The improvement also adds a second eastbound right turn lane. Included as part of the King County segment adjacent to Segment 9 (SR 202 to north city limit) improvements.

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
* Project extends beyond city limits and would require coordination with other jurisdictions.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020; Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 2-19. Alternative 4 Concurrency Corridor Improvement Project Descriptions

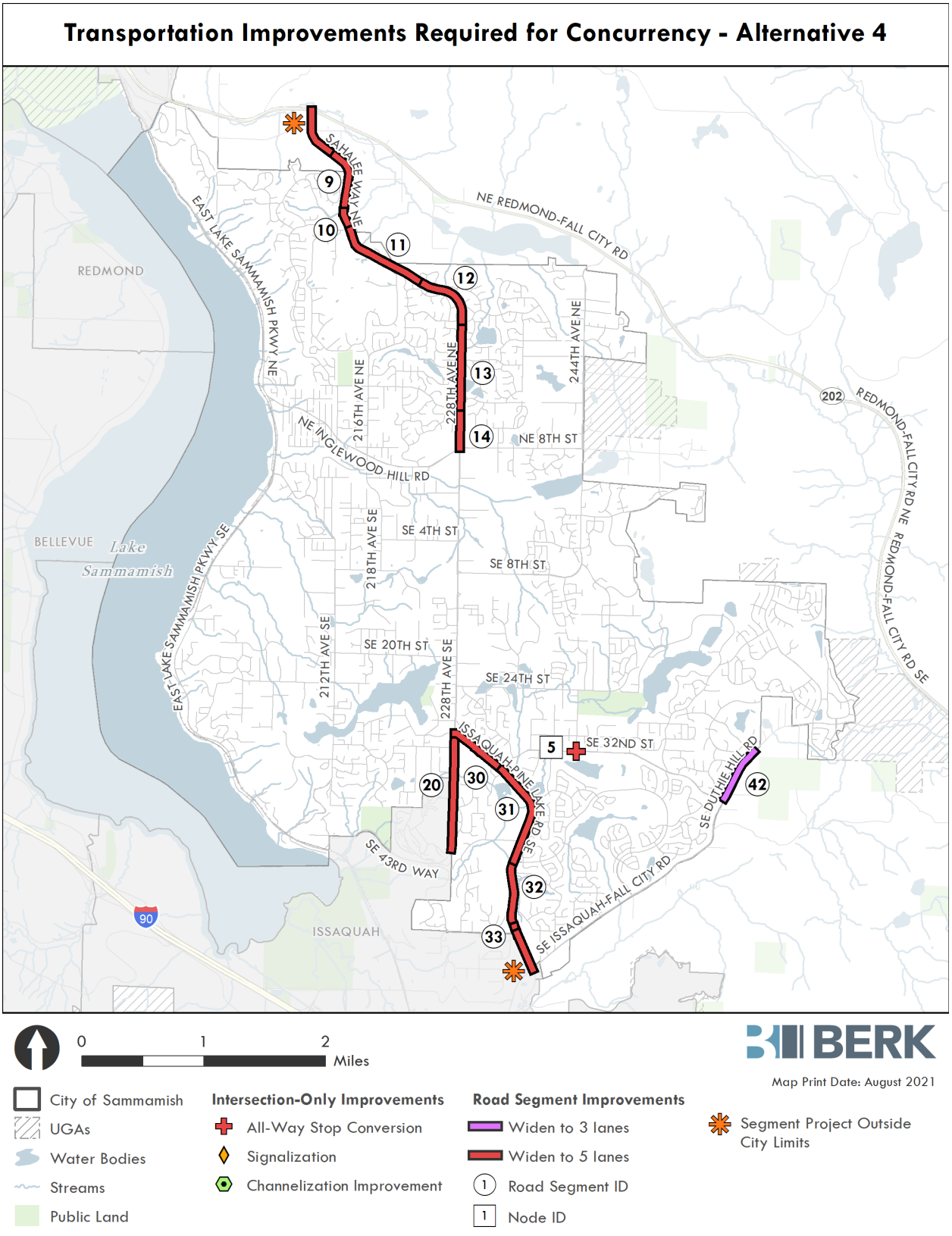
Alternative 4 Corridors and Segments	
Sahalee Way - 228th Avenue North Corridor	
King County Segment adjacent to Segment 9 SR 202 North City Limit	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances. Project improvements extend outside of city limits and will require coordination with other jurisdictions.

Alternative 4 Corridors and Segments	
Segment 9 North City Limit to NE 37th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 10 NE 37th Way to NE 36th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 11 NE 36th Street to 223rd Avenue NE/NE 28th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 12 223rd Avenue NE to NE 25th Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 13 NE 25th Way to NE 12th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
228th Avenue Central Corridor	
Segment 14 NE 12th Place to NE 8th Street	Widen the roadway 4 lanes with center turn lane or median consistent with City of Sammamish Principal Arterial Roadway Section FIG01-10. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances resulting in a minimum width of 54 feet from back of walk to back of walk with a 57-foot ROW.
228th Avenue South Corridor	
Segment 20 Issaquah-Pine Lake Road SE to SE 43rd Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Issaquah-Pine Lake Road Corridor	
Segment 30 Pine Lake MS Driveway to SE 32nd Way	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway

Alternative 4 Corridors and Segments	
	Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 31 SE 32nd Way to SE Klahanie Blvd	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
Segment 32 SE Klahanie Blvd to SE 46th Place	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances
Segment 33 SE 46th Street to SE 48th Street	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.
City of Issaquah Segment, adjacent to Segment 33 SE 48th Street to Issaquah-Fall City Road	Widen the roadway to include two 11-foot lanes in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 6.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Principal Arterial Roadway Section FIG01-01. Section is 66 feet wide from Face of curb to face of curb and 91 feet wide from back of walk to back of walk with a 94-foot ROW. Medians and amenity zones can be reduced in width or eliminated under certain circumstances. Project improvements extend outside of city limits and will require coordination with other jurisdictions.
SE Duthie Hill Road Corridor	
Segment 42 Issaquah-Beaver Lake Road to 266th Avenue SE	Widen the roadway to include one 11-foot lane in each direction and a 12-foot center turn lane or landscaped median, 5-foot bike lanes, 5.5-foot amenity zones, and six-foot sidewalks consistent with City of Sammamish Minor Arterial Roadway Section FIG01-02. For this section assume the bike lane, amenity zone, and sidewalk are replaced with an 8-foot shoulder on the south side of the segment. Medians and amenity zones can be reduced in width or eliminated under certain circumstances.

Source: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.
Note: Conceptual project descriptions are based on transportation modeling analysis and City's 2016 Public Works Standards with variances noted for use in this programmatic EIS.

Exhibit 2-20. Alternative 4 Concurrency Projects Map



Source: City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

2.4.4.2 Land Use

Proposed Alternative 4 land use measures are the same as described for Alternative 3.

2.4.4.3 Policy and Regulatory Amendments

Comprehensive Plan Amendments

Comprehensive Plan amendments proposed under Alternative 4 will be the same as Alternative 2.

Sammamish Municipal Code Amendments

Under Alternative 4, SMC provisions to amend the corridor and segment LOS standard are the same as proposed for Alternative 2.

2.4.5 Other Alternatives

The assumptions for expected land use patterns, coupled with practical growth targets that are consistent with the last Comprehensive Plan update, produce existing and future trips from the traffic model that are measured against the proposed LOS of V/C Concurrency policies that warrant the list of projects for each alternative. The City will select a Preferred Alternative that is similar to a studied alternative or in the range of the alternatives. For example, the City could select Alternative 1 and then, via SEPA review, require certain segment improvements in alternatives 2, 3, or 4 as mitigation. The other tools that the City uses to accomplish improvements include frontage improvement requirements and street standards, the 20-year project list in the Comprehensive Plan, and the 6-year Transportation Improvement Program.

It is possible that future development could vary from the assumptions consistent with City plans, but the LOS and Concurrency policies would guide the City's direction. This EIS presents information on potential improvements on roads where the LOS appears met but is close to the thresholds for the given alternative. Should land use and travel patterns change from those assumed the improvement ideas could assist the City's implementation of the given alternative LOS and Concurrency approach. This is addressed further in Chapter 3 under mitigation measures for each topic.

2.4.6 Alternatives Comparison

2.4.6.1 Transportation

LOS Standards

Under Alternative 1, no change is proposed to the existing transportation LOS standards as found in SMC Title 14A Public Facilities, meaning that LOS is only measured during the AM and PM peak hour at designated concurrency intersections. The Action Alternatives retain the existing LOS standards for concurrency intersections and adopt new LOS standards for identified concurrency corridors and roadway segments (see Exhibit 2-5 for a map of transportation concurrency corridors). The corridor and segment LOS would be measured based on volume to capacity ratios. As shown in Exhibit 2-10., the proposed volume to capacity ratio standard would be less than or equal to 1.1 for corridors and less than or equal to 1.4 for segments. LOS would continue to be measured during the AM and PM peak hour for both the intersection and corridors and segments.

Concurrency Management

Under Alternative 1, transportation concurrency would continue to be evaluated only on intersection LOS at concurrency designated intersections (consistent with SMC Title 14A Public Facilities). Under the Action Alternatives, the proposed concurrency management program under evaluates concurrency based on the intersection and corridor/segment LOS standards shown in Exhibit 2-4 and Exhibit 2-10. To meet concurrency requirements under all alternatives, development proposals would be required to meet intersection LOS standards for the AM and PM peak hour; under the Action Alternatives, development would also be required to meet corridor/segment LOS standards for the AM and PM peak hour.

Transportation Improvement Projects

Exhibit 2-21 compares the concurrency intersection improvement projects that would be required under each alternative to maintain intersection LOS standards through 2035. The descriptions of required improvements are based on transportation modeling analysis and the City's 2016 Public Works Standards with variances noted for use in this programmatic EIS; specific design or other similar project information is not available.

Exhibit 2-21. Comparison of Concurrency Intersection Improvement Projects, All Alternatives

Node	Intersection	Project	Alt 1	Alt 2	Alt 3	Alt 4
1	Issaquah-Pine Lake Road and SE 48th Street	Widen south leg to five lanes to match width of Issaquah-Pine Lake Road north of the intersection. Alternative 2, 3, and 4 improvements are included as part of Segment 33 and, under Alternative 4, the Issaquah segment adjacent to Segment 33 (SE 48th Street to Issaquah–Fall City Road) improvements. The improvements to IPLR outside the City limits serve to remove the capacity constraint between SE 48th St and Issaquah Fall City Rd to allow the IPL corridor to serve as much traffic as possible, and relieve demand on lower classified roads.		◆	◆	◆

Node	Intersection	Project	Alt 1	Alt 2	Alt 3	Alt 4
5	244th Avenue SE and SE 32nd Street Intersection	Convert the existing side-street stop-controlled intersection into an all-way stop control.	●	●	●	●
7	228th Avenue SE and SE 40th Street Intersection (channelization improvement)	Construct new two-stage left turn lane. Alternative 4 improvements are included as part of Segment 20.	●	●	●	◆
37	Sahalee Way NE and NE 28th Way/223rd Avenue NE	Replace existing side-street stop-control with a traffic signal. Control left-turn lanes on Sahalee Way NE with flashing yellow arrows. Retain existing lane configuration at intersection. Rebuild sidewalks and curb ramps at all four corners of intersection. Alternative 4 improvements are included as part of Segment 31 and Segment 32 improvements.	●	●	●	◆
63*	Sahalee Way and SR 202 intersection	Modify traffic signal. The current intersection's capacity is constrained by the single northbound lane feeding the northbound approach to the traffic signal. Two northbound lanes are necessary to "feed" the double left turn lane and right turn lane. The improvement also adds a second eastbound right turn lane. Alternative 4 improvements are included as part of the King County segment adjacent to Segment 9 (SR 202 to north city limit) improvements.				◆

Note: Conceptual project descriptions are based on transportation modeling analysis and the City's 2016 Public Works Standards for use in the BLUMA EIS. Variations from the public works standards are noted if applicable. Specific design or other similar project information is not available.
● Stand-alone intersection projects
◆ Node improvements included as part of a related corridor segment improvement. See Exhibit 2-12 for a map of segments and Exhibit 2-13 (Alternative 2), Exhibit 2-16 (Alternative 3), and Exhibit 2-19 (Alternative 4).
* Project extends beyond city limits and would require coordination with other jurisdictions.
Sources: Perteet Engineering, 2020; DEA, Inc., 2020, Transportation Solutions, Inc., 2021; City of Sammamish, June 2021.

Exhibit 2-22 compares the concurrency corridors and segments that would require improvement projects under the new LOS standards of the Action Alternatives. Alternative 2 would require improvements to five corridors, Alternative 3 would require improvements to three corridors, and Alternative 4 would require improvements to five corridors. Conceptual corridor and segment project descriptions and the project locations are discussed above under each alternative (see Exhibit 2-13 and Exhibit 2-14 under Alternative 2, Exhibit 2-16 and Exhibit 2-17 under Alternative 3, and Exhibit 2-19 and Exhibit 2-20 under Alternative 4).

Exhibit 2-22. Comparison of Concurrency Corridor Projects, Action Alternatives

Corridors and Segments	Alt 2	Alt 3	Alt 4
East Lake Sammamish Parkway North Corridor			
Segment 1: city limit to 196th Avenue NE	●	●	
Segment 2: 195th Avenue NE to NE 26th Place	●	●	
East Lake Sammamish Parkway South Corridor			

Corridors and Segments	Alt 2	Alt 3	Alt 4
Segment 8: 205th Avenue SE to city limit	●		
Sahalee Way - 228th Avenue North Corridor			
King County Segment, adjacent to Segment 9, city limit to NE 37th Way			●
Segment 9: city limit to NE 37th Way	●		●
Segment 10: NE 37th Way to NE 36th Street			●
Segment 11: NE 36th Street to 223rd Avenue NE/NE 28th Place			●
Segment 12: 223rd Avenue NE to NE 25th Way			●
Segment 13: NE 25th Way to NE 12th Place			●
228th Avenue Central Corridor			
Segment 14: NE 12th Place to NE 8th Street/Inglewood Hill Road			●
228th Avenue South Corridor			
Segment 20: Issaquah-Pine Lake Road to SE 43rd Way			●
Issaquah-Pine Lake Road Corridor			
Segment 30: 228th Avenue SE to SE 32nd Way			●
Segment 31: SE 32nd Way to SE Klahanie Blvd			●
Segment 32: SE Klahanie Boulevard to SE 46th Street	●	●	●
Segment 33: SE 46th Street to SE 48th Street	●	●	●
Issaquah Segment: adjacent to Segment 33, SE 48th Street to Issaquah-Fall City Road			●
Duthie Hill Road Corridor			
Segment 42: Issaquah-Beaver Lake Road to 266th Avenue SE	●	●	●
Segment 43: 266th Avenue SE to SE Trossachs Boulevard	●		

● Improvement project is required.
Sources: Perteet, 2020; City of Sammamish, 2021; Transportation Solutions, Inc., 2021.

Travel Demand

Alternative 3 assumes that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish, who have greater options for working remotely. The other alternatives do not assume and reductions in travel demand because of sustained changes to work from home habits.

2.4.6.2 Land Use

No changes to land use designations, policies, or regulations are proposed under Alternative 1 or Alternative 2. Alternative 3 and Alternative 4 assume that around 10-11% of new units (half of units not otherwise in the pipeline) will be comprised of smaller residential units, including small-scale single-family detached dwelling

units, townhomes, or duplexes. Small-scale single-family detached dwelling units may be defined by a limit on floor area, number of bedrooms or other standards. Duplex and townhouse units are defined in SMC Titles 21A and 21B

2.4.6.3 Policy and Regulatory Amendments

All alternatives would require amendments to the Comprehensive Plan and SMC. Comprehensive Plan amendments include but are not limited to:

- Amendments to the Transportation and Capital Facilities Elements, Volume I for transportation LOS standards.
- Amendments to Transportation and Capital Facilities Elements, Volume II, to update discussion of LOS standards and concurrency, the 6-Year Transportation Improvement Program (TIP), the traffic forecasting model, recommended long-term transportation project list, and financing information.
- Consistency amendments to other elements may also be required.

Potential changes to the SMC could include (but are not limited to) SMC Titles 14A, 20, 21A, and 21B to update definitions, address internal consistency, and implement the amended transportation LOS standards in the concurrency management program, depending on the selected alternative.

2.5 SEPA Process

2.5.1.1 Scoping

Scoping. Scoping is a process intended to identify the range of issues to be considered and evaluated of every EIS on the probable significant adverse impacts and reasonable alternatives, including mitigation measures. The City issued a Scoping Notice on July 7, 2020 with a 24-day public comment period that ran through July 31, 2020. On February 22, 2021 the City issued an optional Informational Notice of additional alternatives being considered in the EIS. See Appendix A for the scoping report and information notice.

Draft EIS. Public and agency comments are invited on this Draft EIS. Following issuance of the Draft EIS, comments are invited during the 30-day public comment period. During the public comment period, written and verbal comments are invited. Public comments will be considered and addressed in the Final EIS. Please see the Fact Sheet at the beginning on this Draft EIS for the dates of the public comment period and public meeting.

2.5.1.2 Level of Analysis

SEPA requires government officials to consider the environmental consequences of actions they are about to take and to consider better or less damaging ways to accomplish those proposed actions. They must consider whether the proposed action will have a probable significant adverse environmental impact on elements of the natural and built environment.

This EIS provides a programmatic analysis of the proposed amendments to the transportation concurrency level of service standards. The adoption of comprehensive plans, development regulations, or other long-range planning activities is classified by SEPA as a non-project action (i.e., actions that are different or

broader than a single site-specific project, such as plans, policies, and programs (WAC 197-11-774)). An EIS for a non-project proposal does not require site-specific analyses; instead, the EIS discusses impacts and alternatives appropriate to the scope of the non-project proposal and to the level of planning for the proposal (WAC 197-11-442).

2.6 Benefits and Disadvantages of Delaying the Proposed Action

SEPA requires a discussion of the benefits and disadvantages of reserving for some future time the implementation of a proposal as compared with possible approval at this time. The benefit of adopting the proposed LOS standards would be to allow the City to plan for and implement transportation facilities that reflect distinctive conditions that impact transportation in the city, including recent rapid growth, limited access to highways, topographic and natural environment constraints, and unique commute patterns. In general, updated standards would provide a more tailored approach for meeting the City's vision for transportation.

Delaying the implementation of the proposal and continuing with the pre-existing LOS standards and concurrency management system may reduce the City's capacity to manage transportation impacts associated with rapid growth and to benefit from tailored standards that reflect the City's unique characteristics and challenges.

Regardless of whether the proposal is delayed or implemented at this time, the City will continue to maintain consistency with all Elements of the Comprehensive Plan.

3 Environment, Impacts, and Mitigation Measures

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

- Section 3.1 Earth
- Section 3.2 Water Resources
- Section 3.3 Plants and Animals
- Section 3.4 Land Use
- Section 3.5 Housing
- Section 3.6 Plans and Policies
- Section 3.7 Transportation
- Section 3.8 Utilities: Broadband

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

3.1 Earth

The Earth section considers geologic conditions along affected corridors and intersections and the impact of the roadway improvements proposed in Action Alternatives on and by the regional geology. Geologically hazardous areas (e.g., those identified as subject to landslides, significant erosion, earthquakes) are addressed as well as general topography, geology, soils, and sediments potentially affected by the alternatives. Information about the geology, geologic hazards, topography, and soils for the project areas was collected from existing maps and technical reports published by the U.S. Geological Survey (USGS), Washington State Department of Natural Resources (DNR), the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS), and the City of Sammamish. Geotechnical data reports, memos, and maps derived from previous subsurface investigations were reviewed for site-specific information. Reconnaissance was conducted on the full length of each corridor and at all intersections to identify potential hazards not included in the published sources.

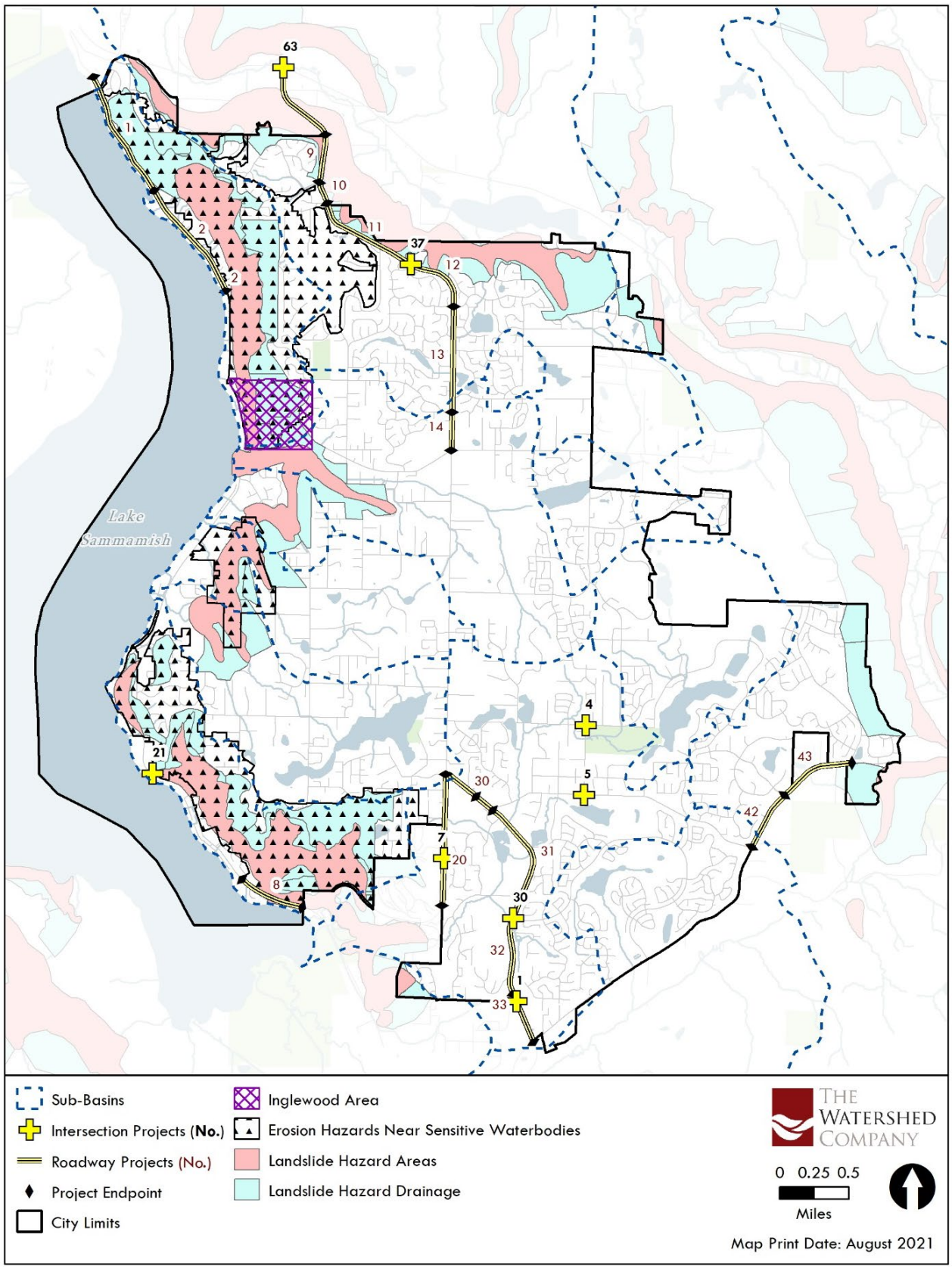
Thresholds of significance utilized in this impact analysis include:

- Inconsistency with current local, state, or federal regulations and policies.
- Increased risk of geologic hazards that reach a magnitude qualitatively considered to be more than moderate.

3.1.1 Affected Environment

This section describes the existing geologic conditions (topography, soils, surface water, and associated hazards) that may affect or be affected by the proposed transportation improvement projects. Groundwater and hydrology are addressed in their corresponding section, Section 3.2 Water Resources. Exhibit 3-1 depicts mapped geologically hazardous areas in the City of Sammamish.

Exhibit 3-1. Mapped Geologically Hazardous Areas in the City of Sammamish



Source: The Watershed Company, 2021.

3.1.1.1 Topography and Geology

The proposed project corridors and intersections are located in the central portion of the Puget Sound Basin, an elongated, north-south trending depression situated between the Olympic Mountains and the Cascade Range in Western Washington. The existing topography and surficial geology in the project area are heavily influenced by past glacial activity. The topography is dominated by a series of north-south trending ridges and large troughs formed by glacial activity. The major troughs are now occupied by Puget Sound, Lake Washington, Lake Sammamish, and other large water bodies. Geology in the region includes a thick sequence of overconsolidated glacial and unconsolidated non-glacial soils overlying bedrock.

The study area corridors and intersections are located on the Sammamish Plateau. The Sammamish Plateau is a topographic high, with a relief of approximately 400 feet above Lake Sammamish, located at the base of the plateau to the west. The topography on the plateau undulates, varying by approximately plus or minus 100 feet. The proposed East Lake Sammamish Parkway corridor improvements are on segments that run roughly parallel to the Lake Sammamish shoreline across the slope of the plateau. One intersection, at East Lake Sammamish Parkway SE and SE 24th Way, is situated near the base of the slope. The Sahalee Way NE corridor initiates at the base of the plateau to the north and terminates on the top of the plateau. The intersection at Sahalee Way NE and State Route 202 is located to the north, and at the base, of the plateau. All other corridors and intersections are located on the top of the plateau.

Landslide potential along the study area corridors and intersections varies with surficial geology, soil type, topography, occurrence of groundwater seepage, surface runoff, and the built environment. Steep slopes with inclines greater than 45° and greater than 10 feet in height were observed along East Lake Sammamish Parkway (segments 1, 2, and 8), Sahalee Way NE (segments 9 and 11), and the intersection of East Lake Sammamish Parkway SE and SE 24th Way. Discrete, unmapped areas of landslide potential were observed on 228th Avenue NE (segments 13 and 14), 228th Avenue SE (Segment 20), and SE Duthie Hill Road (Segment 42).

3.1.1.2 Soils and Sediments

Surface and subsurface soils along all studied corridors and intersections typically consist of overconsolidated or normally consolidated glacial deposits, overlain by variable thicknesses of colluvium (landslide deposits) and locally by alluvium (water-derived deposits). The segments along 228th Avenue SE (Segment 20) and Issaquah-Pine Lake Road SE (Segment 32) contain localized outcrops of sedimentary bedrock. Based on Washington State Department of Natural Resources mapping, alluvial deposits classified as moderately to highly liquefiable are located to the west of, and locally underlying, all East Lake Sammamish Parkway corridor segments. The native soils were modified by cut and fill earthwork for construction of the main roadway, adjoining streets, and residential developments.

Additionally, based on a reconnaissance of the corridors and intersections in the study area, it is reasonable to expect that the majority of the existing slope soils consist of very loose to loose or soft colluvium near the surface, underlain by dense to very dense glacially consolidated soils. The loose colluvium likely developed as a result of mechanical weathering, gradual slope creep over time, and past slope failures. Subsurface investigations were not completed as part of the reconnaissance and subsurface conditions may vary appreciably from those described herein.

3.1.1.3 Seismic

The Puget Sound is a seismically active region. Earthquakes in Western Washington occur in three distinct settings: shallow, crustal earthquakes that occur in the North American plate; deep, Wadati-Benioff zone earthquakes within the subducted oceanic crust (Juan de Fuca plate); and offshore, subduction zone earthquakes. Since the 1850's, over 25 earthquakes of Magnitude 5.0 or greater have occurred in the Puget Sound region. Historical earthquake damage in the Puget Sound region has resulted only from Wadati-Benioff zone earthquakes, with the 1949, 1965, and 2001 events creating the most damage. The February 28, 2001 Nisqually earthquake resulted in lateral spreading of the railbed shoulder in one location and of East Lake Sammamish Parkway in two locations. Liquefaction during that earthquake resulted in sand blows near the mouth of Issaquah Creek in Lake Sammamish State Park.

In addition to the recorded earthquakes, evidence suggests that a major earthquake occurred about 1,100 years ago on the Seattle Fault. The geologic record indicates at least five or six subduction zone earthquakes (Magnitude 8 to 9) have occurred over the last 3,500 years; the most recent about 300 years ago.

The study area is located within the Seattle Fault Zone and there is some evidence that inferred fault traces may intersect the project corridors and intersections. Mapped traces of the Seattle Fault Zone intersect 228th Avenue SE (Segment 20), Issaquah-Pine Lake Road SE (Segment 30), SE Duthie Hill Road (Segment 42), and the intersection of 228th Avenue SE and SE 40th Street. An unidentified inferred fault trace intersects Issaquah-Pine Lake Road SE (Segment 31). All corridors and intersections are located within an approximately 5-mile radius of the Seattle fault Zone.

3.1.1.4 Surface Water

In addition to Lake Sammamish to the west, multiple lakes and wetlands are located on or within the vicinity of the Sammamish Plateau. Multiple fluvial drainages flow from the Sammamish Plateau to Lake Sammamish and other surface waters (see Section 3.2 Water Resources for more information on surface water).

3.1.2 Impacts

3.1.2.1 Impacts Common to All Alternatives

The impacts evaluated include known geologic hazards and those associated with construction, operation, and maintenance of the transportation improvements on affected corridors and intersections under each alternative. Each of these impacts can be divided into slope stability, seismic, or erosion hazards. The most significant potential geologic risks resulting from implementation of the proposed transportation projects include erosion due to ditch and culvert maintenance; erosion introducing sediment into drainages, lakes, and wetlands; and steepening of adjacent slopes due to road-widening, resulting in a decreased factor of safety and greater potential for failure on slopes. The erosion impacts and the steepened slope impacts are common to all alternatives. A description of each of these impacts is provided below. Exhibit 3-2 and Exhibit 3-3 identify all mapped and field-identified geological hazards for each corridor and intersection affected by potential improvement alternatives. Also identified are mapped historic and prehistoric landslides and Seattle Fault Zone intersects for each corridor.

This assessment is based on right-of-way (ROW) project descriptions for each of the alternatives. As noted in the project descriptions, median and amenity zones can be reduced in width or eliminated under certain unspecified conditions. Any reduction of the ROW width would reduce these potential impacts.

Exhibit 3-2. Summary of Potential Earth Impacts Per Road Project by Segment

Corridor Segment	Alt 1	Alt 2	Alt 3	Alt 4	Near-fault Ground Rupture[1]	Steep Slope or Landslide[2]	Liquefaction (moderate to high)[3]	Erosion[4]	Previously Mapped Landslides[5]	Fault Zone Intersects[6]
East Lake Sammamish Parkway NE										
1			X		X	X	X	X		
2		X	X		X	X	X	X	X	
East lake Sammamish Parkway SE										
8		X			X	X	X	X		
Sahalee Way NE/228th Avenue NE										
9+ (King County Segment, city limit to SR 202)				X						
9		X		X		X		X	X	
10				X				X		
11				X		X		X	X	
12				X						
13				X						
228th Avenue NE Central										
14				X				X		
228th Avenue SE South										
20				X	X	X		X		X
Issaquah-Pine Lake Road SE										
30				X	X					X
31				X	X					X
32		X	X	X				X		
33		X	X	X				X		
33+ (SE 48th Street to Issaquah-Fall Road)				X						
SE Duthie Hill Road										
42		X	X	X	X	X		X		X
43		X	X					X		

1. Areas in mapped moderate to high liquefaction hazard zones or intersected by mapped fault strands.
2. Observed areas having both greater than 40 degrees slope and 10 feet of height, and/or areas in mapped landslide hazard zones.
3. Areas mapped as having a moderate to high liquefaction hazard during an earthquake event.
4. Areas in mapped erosion hazard zones, or areas observed near surface water that could be negatively affected by erosion.
5. Areas identified in the Washington State Department of Natural Resources Landslide Inventory Database as previous landslides.
6. Areas intersected by mapped Seattle Fault Zone fault traces.

Source: The Watershed Company, 2021.

Exhibit 3-3. Summary of Potential Earth Impacts Per Intersection Project by Segment

Intersection Segment	Alt 1	Alt 2	Alt 3	Alt 4	Near-fault Ground Rupture[1]	Steep Slope or Landslide[2]	Liquefaction (moderate to high)[3]	Erosion[4]	Previously Mapped Landslides[5]	Fault Zone Intersects[6]
Intersections										
Issaquah Pine Lake Road/SE 48th St		X	X	X				X		
244th Avenue SE & SE 32nd Street	X	X	X	X						
228th Avenue SE & SE 40th Street	X	X	X	X	X	X				X
East Lake Sammamish Parkway SE & SE 24th Way	X	X			X	X	X	X		
Sahalee Way NE & NE 28th Way/233rd Avenue NE	X	X	X	X						
Sahalee Way & SR 202 Intersection				X				X		

1. Areas in mapped moderate to high liquefaction hazard zones or intersected by mapped fault strands.
2. Observed areas having both greater than 40 degrees slope and 10 feet of height, and/or areas in mapped landslide hazard zones.
3. Areas mapped as having a moderate to high liquefaction hazard during an earthquake event.
4. Areas in mapped erosion hazard zones, or areas observed near surface water that could be negatively affected by erosion.
5. Areas identified in the Washington State Department of Natural Resources Landslide Inventory Database as previous landslides.
6. Areas intersected by mapped Seattle Fault Zone fault traces.
Source: The Watershed Company, 2021.

This assessment is based on right-of-way (ROW) project descriptions for each of the alternatives. As noted in the project descriptions, median and amenity zones can be reduced in width or eliminated under certain unspecified conditions. Any reduction of the ROW width would reduce these potential impacts.

Landslides/Steep Slopes

Landslides can be triggered by 1) a seismic event, 2) by the natural stabilization process whereby a steep slope evolves to a flatter profile, 3) by an increase in pore-water pressure due to excessive rainfall that could destabilize the slope, or 4) by construction activities which traverse or cut into steep slopes or otherwise change local drainage patterns that impact pore-water pressures. Trees, utility poles, and guard rails out of vertical alignment were observed at some locations, indicating movement has previously occurred along these slopes.

Generally, once the near surface colluvium on steep slopes reaches thicknesses greater than approximately 3 feet, the slopes are prone to sliding during periods of heavy rainfall or unusually wet weather. These failures generally consist of the loosened, near surface colluvium sliding or flowing down the slope and exposing the underlying dense glacial soils.

Erosion

Erosion impacts are associated with slope steepness, proximity to critical drainage areas, and surface soil type. Erosion potential along the project corridors and intersections varies with surficial geology and soil type; topography; occurrence of groundwater seepage and surface runoff; and the level and type of development. Erosion potential can increase as a result of precipitation, increasing slope steepness, or removal of vegetation. Most of the cut slopes on the project corridors exhibit some degree of soil creep into adjacent ditches.

Near-Fault Ground Rupture

Improvements constructed within the Seattle fault zone have the potential to experience displacements associated with fault rupture. Such displacements could include, but are not limited to, vertical and lateral offsets ranging from inches to feet in scale.

Liquefaction

Liquefaction of adjacent and underlying alluvial soils could result in a loss of strength, settlement, and lateral displacement of soils supporting the proposed roadway improvements.

Liquefaction is a temporary loss of soil shear strength due to earthquake shaking. Loose, saturated cohesionless soils are the most susceptible to earthquake-induced liquefaction, as are certain silts and low-plasticity clays. Primary factors controlling the development of liquefaction include the intensity and duration of strong ground motions, the characteristics of subsurface soils, in-situ stress conditions and the depth to ground water. Liquefaction-induced damage can manifest as settlement and slope failures.

A strong-motion earthquake could cause liquefaction-induced slope failures along steep slopes on the western extent of Sammamish Plateau that could impact roadways and intersection in this area. Liquefaction-induced slope failures can either occur as a lateral spreading or as a flow failure. Liquefaction-induced lateral spreading occurs as the shear strength of liquefiable soils decrease during seismic shaking but do not decrease to the point that a complete flow failure would occur. Lateral spreading occurs cyclically when the horizontal ground accelerations combine with gravity to create driving forces which temporarily exceed the available strength of the soil mass. This is a type of failure known as cyclic mobility. The result of a lateral spreading failure is horizontal movement of the liquefied soils and any overlying crust of non-liquefied soils. Displacements associated with lateral spreading are generally quantifiable and on the order of a few meters. In contrast, liquefaction-induced flow failures result when the residual strength of the liquefied mass is not sufficient to withstand the static stresses that existed before the earthquake. Upon initiation of liquefaction-induced flow failure, the liquefied soil behaves like a debris flow, characterized by very large displacements. Flow failures involve horizontal and vertical movements of the liquefied soils and any overlying crust of non-liquefied soils. The chaotic nature of flow failures is such that estimation of the magnitude of displacement is not possible.

Construction-related Impacts

Construction to widen road corridors with steep slopes would involve cutting into positive-gradient (uphill) steep slopes. Cutting of positive slopes could result in loss of toe slope resistance to the upper slope, and an

increase in slope gradient. A gradient increase would reduce the factor of safety for the slope. Widening towards negative-gradient (downhill) slopes would reduce the width of buffer zones, increasing the risk of damage due to a landslide event. Portions of the negative slope may require backfilling to bring the area up to grade with the road construction. This backfill could increase the overburden on the steep slope below, potentially reducing slope stability.

Removal of pre-existing engineered retaining structures may be required to accommodate proposed widening of ROWs in some of the transportation projects under the revised alternatives. Pre-existing retaining structures observed along project segments included small-scale rockery retaining walls and large-scale engineered concrete structures. One of the more significant structures observed included a concrete retaining wall with a maximum height of approximately 12 feet adjacent to a mapped erosion hazard zone on the west side of 228th Avenue NE (Segment 14). Removal of such structures could result in a temporary increase in construction-related impacts at these locations; construction plans should include preemptive mitigation measures to minimize this impact.

Erosion and sedimentation impacts could occur due to cleaning ditches of slough and sediment accumulation. Removal of trees and groundcover could expose soil, increasing potential for erosion and sedimentation impacts. Such impacts would be greatest at locations with steep slope or ditches.

Long-term Impacts

Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters.

3.1.2.2 Alternative 1 No Action

Landslides/Steep Slopes

There is potential for future landslides on the existing steep slope west of the intersection at East Lake Sammamish Parkway SE and SE 24th Way, on the steep slopes to the east and west of a majority of the East Lake Sammamish Parkway corridors, on the Sahalee Way NE corridor (segments 9 and 11), and at discrete locations on 228th Avenue NE (Segment 13), 228th Avenue SE (Segment 20), and SE Duthie Hill Road (Segment 42). Due to minimal increase in developed areas and anticipated avoidance of high-risk areas in the improvements associated with this alternative, construction of this alternative would not increase the risk of landslide hazards.

Erosion

Due to minimal increase in developed areas near the intersections and anticipated avoidance of high-risk areas in the proposed transportation projects, this alternative would not increase the risk of erosion hazards to more than moderate.

Near Fault Ground Rupture

The intersection at East Lake Sammamish Parkway SE and SE 24th Way and the roadways along East Lake Sammamish Parkway (segments 1, 2, and 8) are considered to have a moderate to more than a moderate

seismic risk. Seismic risk is considered to be very low to moderate at all other project corridors and intersections, however, the intersection of 228th Avenue SE and SE 40th Street is intersected by a mapped fault trace which may impact the proposed improvements. Additionally, during a seismic event, any intersections or segments found within the Seattle Fault Zone have an elevated susceptibility to near-fault rupture. Construction of proposed intersection improvements in this alternative would not increase the risk of seismic hazards.

Liquefaction

Due to minimal increase in developed areas near the intersections and anticipated avoidance of high-risk areas in the proposed transportation projects, this alternative would not increase the risk of liquefaction hazards to more than moderate.

Construction-related Impacts

Proposed construction for most intersections included in Alternative 1 will not cut into any steep slopes, and therefore will not reduce the stability of existing slopes. There is a steep uphill slope to the west at 228th Avenue SE and SE 40th Street that could potentially be affected by construction of the channelization improvements. Erosion impacts associated with clearing vegetation and excavation during construction could result at all intersections. Soils disturbed during construction at the west of the intersection of East Lake Sammamish Parkway SE and SE 24th Way could be transported down the steep slope into Lake Sammamish by ravel, precipitation, or storm runoff.

Long-term Impacts

Due to minimal increase in developed areas as proposed by this alternative, long-term impacts from road use are anticipated to be negligible.

3.1.2.3 Alternative 2

Landslides/Steep Slopes

There is potential for future landslides on the existing steep slope west of the intersection at East Lake Sammamish Parkway SE and SE 24th Way, on the steep slopes to the east and west of a majority of East Lake Sammamish Parkway (segments 1, 2, and 8), and Sahalee Way NE (Segment 9), and at discrete locations on SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than moderate.

Erosion

The existing cut slopes along the East Lake Sammamish Parkway and Sahalee Way NE corridors are all mapped as geologic erosion hazards due to their steepness, proximity to critical drainage areas, or surface soil type. Most of the cut slopes along East Lake Sammamish Parkway and Sahalee Way NE corridors exhibit some degree of soil creep into adjacent ditches, indicating soil erosion is currently ongoing. The marsh to the east of the Issaquah-Pine Lake Road SE corridor (segments 32 and 33) could be subject to erosion runoff.

Proposed construction under this alternative would not increase the risk of erosion hazards to more than moderate.

Near Fault Ground Rupture

The intersection at East Lake Sammamish Parkway SE and SE 24th Way and the roadways along East Lake Sammamish Parkway (segments 1, 2, and 8) are considered to have a moderate to more than a moderate seismic risk. Seismic risk is considered to be very low to moderate at all other project corridors and intersections; however, SE Duthie Hill Road (Segment 42) and the intersection of 228th Avenue SE and SE 40th Street are intersected by mapped fault traces, which could be affected during a seismic event. Additionally, during a seismic event, any intersections or segments found within the Seattle Fault Zone have an elevated susceptibility to near-fault rupture. Proposed construction under this alternative would not increase the risk of seismic hazards.

Liquefaction

A strong-motion earthquake could cause lateral spreading along steep slopes to the west of East Lake Sammamish Parkway (segments 1, 2, and 8) and to the east of Sahalee Way NE (Segment 9). The potential impact could be increased by adding overburden to these slopes or by reducing the buffer zone between the corridors and slopes. The proposed construction under this alternative would not increase the risk of liquefaction hazards to more than moderate.

Construction-related Impacts

Areas of most concern are East Lake Sammamish Parkway (segments 1, 2, and 8), Sahalee Way NE (Segment 9), discrete locations on SE Duthie Hill Road (Segment 42), and at 228th Avenue SE and SE 40th Street. This alternative involves widening more segments located on or adjacent to steep slopes than Alternative 3, but fewer than Alternative 4, and in some segments, widening the corridor to a lesser degree to accommodate fewer planned traffic lanes. This reduction of encroachment could reduce, but would not eliminate, the number of slopes negatively affected. This alternative could have a moderate effect on steep slopes along corridors during construction. Permanent engineered mitigation may be required.

Construction-induced erosion and sedimentation impacts would be greatest on East Lake Sammamish Parkway (segments 1, 2, and 8), Sahalee Way NE (Segment 9), Issaquah-Pine Lake Road SE (segments 32 and 33), and at the intersection of East Lake Sammamish Parkway SE and SE 24th Way, but could affect all segments and intersections included in this alternative if not properly mitigated.

Soils disturbed during construction at East Lake Sammamish Parkway SE and SE 24th Way, East Lake Sammamish Parkway (segments 1, 2, and 8), Sahalee Way NE (Segment 9), and Issaquah-Pine Lake Road SE (segments 32 and 33) could be transported laterally and/or down-slope into surface water by raveling, precipitation, and storm runoff. While the amount of construction disturbance associated with right-of-way widening would be less than Alternative 3 and Alternative 4, this alternative proposed construction on the largest amount of corridor segments located adjacent to surface water. Therefore, the negative construction impacts associated with this alternative are considered to be more than those anticipated under Alternative 3 and Alternative 4. In particular, East Lake Sammamish Parkway (segments 1 and 8) are located within City of Sammamish No-Disturbance areas, as defined by) 21A.50.225 SMC. Utility corridor construction is exempt

from this code, but extra care should be practiced in these areas to minimize impact to adjacent sensitive water bodies. While the lateral extent of potential environmental impacts to surface waters would be greatest for this alternative, the localized affects could be minor to moderate.

Long-term Impacts

Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

3.1.2.4 Alternative 3

Landslides/Steep Slopes

There is potential for future landslides on the existing steep slopes to the east and west of East Lake Sammamish Parkway (segments 1 and 2) and at discrete locations on SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than moderate.

Erosion

The existing cut slopes along East Lake Sammamish Parkway (segments 1 and 2) and Issaquah-Pine Lake Road SE (segments 32 and 33), are moderately to more than moderately prone to erosion. Most of the cut slopes exhibit some degree of soil creep toward adjacent ditches, indicating soil erosion is currently ongoing. The marsh to the east of the Issaquah-Pine Lake SE corridor (segments 32 and 33) could be subject to erosion runoff. The proposed construction under this alternative could increase the erosion hazards, but not more than a moderate level.

Near Fault Ground Rupture

The intersection at East Lake Sammamish Parkway SE and SE 24th Way and the roadways along East Lake Sammamish Parkway (segments 1 and 2) are considered to have a moderate to more than moderate seismic risk. Seismic risk is considered to be very low to moderate at all other project corridors and intersections, however, SE Duthie Hill Road (Segment 42), and the intersection of 228th Avenue SE and SE 40th Street are intersected by fault traces and could be affected during a seismic event. Additionally, during a seismic event, any intersections or segments found within the Seattle Fault Zone have an elevated susceptibility to near-fault rupture. Proposed construction under this alternative would not increase the risk of seismic hazards.

Liquefaction

A strong-motion earthquake could cause lateral spreading along steep slopes to the west of East Lake Sammamish Parkway (segments 1 and 2). The potential impact could be increased by adding overburden to these slopes, or by reducing the buffer zone between the corridors and slopes. The proposed construction under this alternative would not increase the risk of liquefaction hazards to more than moderate.

Construction-related Impacts

Areas of most concern are East Lake Sammamish Parkway (segments 1 and 2), discrete locations on SE Duthie Hill Road (Segment 42), and at 228th Avenue SE and SE 40th Street. Alternative 3 includes fewer corridor segment projects located on or adjacent to existing steep slopes than Alternative 2 and Alternative 4. The reduced number of corridor segments in this alternative would likely result in less negative construction effects than either Alternative 2 or Alternative 4, and could have a moderate effect on steep slopes along corridors during construction. Permanent engineered mitigation may be required.

Construction-induced erosion and sedimentation impacts would likely be greatest on East Lake Sammamish Parkway (segments 1 and 2) but could affect all segments and intersection projects included under this alternative if not properly mitigated. In particular, East Lake Sammamish Parkway (Segment 1) is located within a City of Sammamish No-Disturbance area, as defined by SMC 21A.50.225. Utility corridor construction is exempt from this code but extra care should be practiced in these areas to minimize impact to adjacent sensitive water bodies.

Soils disturbed during construction at East Lake Sammamish Parkway (segments 1 and 2), and Issaquah-Pine Lake Road SE (segments 32 and 33) could be transported laterally and/or down-slope into surface water by raveling, precipitation, and storm runoff. This alternative includes the fewest corridor segment and intersection projects adjacent to surface water.

Long-term Impacts

Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

3.1.2.5 Alternative 4

Landslides/Steep Slopes

There is potential for future landslides on the existing steep slopes adjacent to Sahalee Way NE (segments 9 and 11) and at discrete locations on 228th Avenue NE (segments 13 and 14), 228th Avenue SE (Segment 20), and SE Duthie Hill Road (Segment 42). Proposed construction under this alternative would not increase the risk of landslide hazards to more than moderate.

Erosion

The existing cut slopes along Sahalee Way NE (segments 9 and 11) and Issaquah-Pine Lake Road SE (segments 32 and 33) are moderately to more than moderately prone to erosion, due to their steepness, proximity to critical drainage areas, or surface soil type. Most of the cut slopes exhibit some degree of soil creep into adjacent ditches, indicating soil erosion is currently ongoing. The wetlands to the east of the Issaquah-Pine Lake Road SE corridor (segments 32 and 33), adjacent to Sahalee Way NE (Segment 9+), and the intersection at Sahalee Way NE and State Route 202 will need to be considered for erosion runoff. Proposed construction under this alternative would not increase the risk of erosion hazards to more than moderate.

Near Fault Ground Rupture

The intersection at East Lake Sammamish Parkway SE and SE 24th Way and the roadways along East Lake Sammamish Parkway (segments 1 and 2) are considered to have a moderate to more than a moderate seismic risk. Seismic risk is considered to be very low to moderate at all other project corridors and intersections, however, 228th Avenue SE (Segment 20), Issaquah-Pine Lake Road SE (segments 30 and 31), SE Duthie Hill Road (Segment 42), and the intersection of 228th Avenue SE and SE 40th Street are crossed by fault traces and could be affected during a seismic event. Additionally, during a seismic event, any intersections or segments found within the Seattle Fault Zone have an elevated susceptibility to near-fault rupture. Proposed construction under this alternative would not increase the risk of seismic hazards.

Liquefaction

A strong-motion earthquake could cause lateral spreading along steep slopes, and potential impact could be increased if overburden was added to these slopes or if the buffer zones between the corridors and slopes were reduced. However, no segments or intersections in this alternative are located in areas of moderate to more than a moderate liquefaction potential. Proposed construction under this alternative would likely not increase the risk of liquefaction hazard.

Construction-related Impacts

Areas of most concern are Sahalee Way NE (segments 9 and 11), discrete locations on 228th Avenue NE (segments 13 and 14), 228th Avenue SE (Segment 20), and SE Duthie Hill Road (Segment 42). Alternative 4 includes the most corridor segments located on or adjacent to existing steep slopes. Therefore, this alternative is expected to have the greatest potential negative effect on steep slopes along corridors during construction. To accommodate the planned traffic lanes this alternative proposes the widening of corridor segments to a similar degree as Alternative 2 and Alternative 3. While the number of slopes negatively affected by construction of transportation projects proposed in this alternative would also increase, the negative effects related to road widening would not be greater than that of the other alternatives. Permanent engineered mitigation may be required.

Construction-induced erosion and sedimentation impacts would likely be greatest on Sahalee Way NE (segments 9 and 11) but could potentially affect all segment and intersection projects included under this alternative.

Soils disturbed during construction at Sahalee Way NE (segments 9 and 9+), Issaquah-Pine Lake Road SE (segments 32 and 33), and the intersection of Sahalee Way NE and State Route 202 could be transported laterally and/or down-slope into surface water by raveling, precipitation, and storm runoff. Construction-related erosion impacts to these corridors and intersections could be minor to moderate. Since this alternative does not propose construction on East Lake Sammamish Parkway SE, no road construction-related surface water impacts would occur on this corridor.

Long-term Impacts

Any soil left exposed to rainfall and surface runoff after initial construction and subsequent maintenance could erode and cause increased siltation and sedimentation of surface waters. Impacts from road use are anticipated to be negligible.

3.1.3 Mitigation Measures

3.1.3.1 Incorporated Plan Features

All alternatives would continue City Comprehensive Plan goals and policies regarding critical areas protection and earth resources. Examples include:

- Goal EC.2 Protect people, property, and the environment in areas of natural hazards.
- Policy EC.2.3 Promote soil stability through retention of existing vegetation and the addition or replacement of plants promoting such.
- Policy EC.2.4 Avoid or minimize impacts from new development to erosion hazard areas, Erosion Hazard Near Sensitive Water Body Overlays (and those areas that drain to them), wetland management areas and landslide hazard areas subject to provisions in the Sammamish development code and its rules and regulations.
- Policy EC.2.6 Avoid potential impacts to life and property by strictly limiting land disturbance and development in landslide hazard, steep slopes, and Erosion Hazard Near Sensitive Water Body Overlays.
- Policy EC.2.7 Support and promote seismic hazard preparedness efforts.

3.1.3.2 Regulations and Commitments

City of Sammamish code and regulations addressing the impacts listed above include the following:

- Erosion Control Regulations: Chapter 16.15 SMC regulates 1) clearing and removal of vegetation, 2) excavation, grading and earthwork (including cuts and fills), and 3) gravel pits and dumping operations in the City. Chapter 21A.50 SMC establishes development standards for grading and filling in landslide, seismic, and erosion hazard areas.
- 2016 Public Works Standards: The City of Sammamish 2016 Public Works Standards addresses permitting and engineering requirements for work in City rights-of-way. Topics include submittals of geotechnical reports, cut and fill slopes, landscaping, tree planting and removal, roadway surface treatment, and construction standards.
- Project-level SEPA Review: Chapter 20.15 SMC establish the process for project-level environmental review, including required compliance with applicable mitigating measures to address identified impacts. Authority for project-level mitigation is provided by, among others, the City's Shoreline Management Master Plan, Public Works Standards, Development Code, and Noise Ordinance.
- Geologically hazardous areas are defined as areas that are susceptible to damage from erosion, landslides, earthquakes, or other geologic events. Washington's Growth Management Act (GMA) (Chapter 36.70A RCW) requires all cities and counties to identify critical areas within their jurisdictions and to formulate development regulations for their protection. The City of Sammamish has developed

Geologically Hazardous Areas Ordinances and produced accompanying maps. In general, these ordinances require that detailed geotechnical studies be prepared to address specific standards relating to site geology and soils, seismic hazards, and facility design.

- Best management practices (BMPs) for sediment and erosion control are established in the City of Sammamish Storm and Surface Water Comprehensive Plan. Topics include BMPs for areas categorized as erosion hazards or erosion hazards near sensitive water bodies, and construction site inspections of BMPs. Such BMPs typically include:
  - Minimize the areas of exposure
  - Retain vegetation where possible
  - Route surface water through temporary drainage channels or piping around and away from exposed soil
  - Intercept and drain water from any surface seeps when they are encountered
  - Use silt fences, silt dikes, check dams, etc. to retain possible eroded material on site
  - Use erosion control matting, mulching, sodding, or plastic covering on exposed soil as needed
  - Conduct construction during the dry summer months
  - Seed or plant appropriate vegetation on exposed areas as soon as work is completed

A Construction Erosion and Sediment Control Plan should be established which identifies BMPs to prevent or minimize construction-induced transport of potential sediments into surface water or ground water during construction activities.

3.1.3.3 Other Potential Mitigation Measures

The additional mitigation measures described below will further avoid and/or reduce potential long-term geologic impacts on and from the proposed project.

Mitigation for Near Surface Ground Rupture

While the potential for fault rupture to occur along the Seattle fault should be considered, it is not possible to know the actual magnitude of differential displacements that may occur. Given the extent of the Seattle fault zone through the Sammamish Plateau, avoidance of near surface fault ruptures is difficult to accomplish while developing in this area.

Potential effects of near surface ground ruptures on proposed improvements can be mitigated. With due consideration of relative risks vs. costs, new subsurface utilities may be designed in accordance with standard practice for the local conditions and with sufficient flexibility to withstand potential fault rupture. Cleanup and repair of pavement sections and structures may be required following a design earthquake event, defined as a theoretical earthquake magnitude that is used to determine the maximum expected seismic force that must be resisted by new design. This design event is dependent on the governing design for the type of improvements proposed (e.g. 100-year earthquake event; 1,000-year earthquake event; and/or 2,475-year earthquake event).

Mitigation for Landslides/Steep Slopes

Implementation of improvements associated with the proposed alternatives will likely require roadway widening with impacts that can be mitigated. If roadway widening can be accomplished without further cutbacks into existing slopes, additional mitigation measures are not necessary. Additionally, priority can be placed on areas outside of the proximity of a steep slope designation, reducing the magnitude of steep slope mitigation required.

If these impacts cannot be avoided, retaining walls constructed near steep slopes along the proposed improvement corridors can mitigate risk.

To accommodate the roadway widening, retaining walls will likely be required at various locations along the proposed improvement corridors, particularly those near steep slopes. These retaining structures may consist of structural earth walls (SEW), soldier pile walls with and without lagging, gravity block walls, or rockeries, where appropriate. An alternative to mitigating steep slopes with retained structures is re-grading the slopes, which may require right-of-way acquisitions. Retaining walls currently proposed in the alternatives should mitigate landslide hazards to negligible to minor impacts along the corridor sections where they are constructed.

Steepening of the existing slopes will likely require a slope protection/stabilization system to reduce the potential for near surface slope failures in the vicinity of the proposed improvements. Many slope stabilization systems are available and have been used successfully on other similar projects. These can vary from simple geosynthetic mats that are draped over the slope surface to more complicated systems that are anchored to the slope. If pre-emptive mitigation is not employed, an alternative mitigation methodology could be the removing of slide debris and slope stabilization as necessary. Maintaining culverts at stream crossings may help avoid debris flow damage to down-gradient properties. Mitigation of debris flow damage would consist of cleanup and repair following an event.

Mitigation for Liquefaction

Prior to implementation of proposed improvements, subsurface investigations can be completed to determine the extent of liquefiable-susceptible areas within each proposed project site. This information can be used to identify the areas of greatest risk and to design so as to avoid or mitigate potential liquefaction hazards.

Without performing a subsurface investigation, the extent and presence of liquefiable material and associated anticipated settlements are difficult to determine. Liquefiable material may be present at various locations within the proposed improvement segments; therefore, project designers should strive to reduce or mitigate the effects of liquefaction on the roadway, structures, retaining walls, utilities, and other improvements.

Damage due to soil liquefaction can be reduced or eliminated by a number of methods. Mitigation of the onset of liquefaction generally requires removal of the liquefiable soils or ground improvement. For long corridor projects, either of these options are typically cost prohibitive and too disruptive to merit considering.

As a result, liquefaction mitigation typically consists of designing proposed improvements to accommodate the anticipated liquefaction-induced settlement to the maximum extent possible. This may require flexible utilities and utility connections, special wall considerations, incorporation of geotextile reinforcement material, or

special foundations for proposed structures. The appropriate level of mitigation may also include acceptance of potential liquefaction-induced settlement with the expectation that the proposed improvements may need to be repaired and regraded as necessary following a seismic event.

Liquefaction-induced instability of the subsurface soils may lead to liquefaction-induced slope failures. Flow sliding would likely occur in close proximity to the shoreline and lateral spreading to extend further way from the shoreline. While anticipated displacements along the proposed roadway alignments cannot accurately be determined, the level of displacement could be on the order of several feet and would likely damage any proposed improvements. Implementing mitigation measures associated with liquefaction-induced instability along the entire roadway alignment would likely be cost prohibitive. Therefore, mitigation measures would likely be limited to those recommended to address liquefaction-induced settlement and repair on a site-specific basis.

Mitigation for Erosion

Priority can be placed on minimizing the removal of existing vegetation and conducting excavations into hill slopes in order to reduce the occurrence of erosion hazards. If these hazards cannot be avoided, BMPs should be employed during construction to ensure that erosion does not introduce sediment into drainages, wetlands, waterways, or Lake Sammamish. Project corridors of concern include, but are not limited to, East Lake Sammamish Parkway NE, East Lake Sammamish Parkway SE, Sahalee Way NE, and Issaquah-Pine Lake Road. BMPs, such as covering exposed soil and slopes with plastic sheeting, and using straw wattles, silt fences, and/or silt socks, should be used to prevent sediment transport down slope or into active fluvial drainage flows.

Construction-related Mitigation

A Construction Erosion and Sediment Control Plan should be established which identifies BMPs to prevent or minimize construction-induced transport of potential sediments into surface water during construction activities.

Impacts from removing existing sediment from ditches and culverts can best be mitigated by scheduling these activities for the most appropriate times of year, e.g., periods of low rainfall and times when aquatic habitats are least impacted by siltation and sedimentation. Ditches and slopes, where accumulated slough is removed to reduce ditch infilling, should be mulched with straw or matting to reduce short-term erosion. These areas should also be reseeded or planted with vegetation to reduce long-term erosion and sloughing, thus reducing the future frequency of ditch and culvert cleaning.

Erosion control BMPs near surface drainages, wetlands, lakes, and storm drains should include such measures as straw wattles, silt socks, silt fences, and covering exposed soil and slopes with jute and plastic sheeting to prevent sediment transport into sensitive water bodies and riparian zones. Additionally, diversion trenches can be employed to route surface water through temporary channels around and away from exposed soils.

Siltation associated with placement and grading of crushed rock may be mitigated by skillful earthwork to reduce the amount of material spilled into ditches. Silt-laden soils excavated during signpost and bollard installation could be removed from the site or spread on fill slopes and covered with mulch. Erosion that may occur from the removal of vegetation and hazard trees can be mitigated by the placement of straw mulch as needed.

In general, the glacially consolidated native soils expected to be present near the proposed improvement locations are not anticipated to be affected by the proposed alternatives from near surface landslides. However, these soils are considered to be highly variable in composition and moisture sensitive. As a result, exposure of these soils to moisture through removal of surface vegetation and tree cover can lead to significant slope raveling. Consideration should be made during construction to minimize the exposure of these near surface soils to prevent the development of landslide or steep slope impacts during construction.

Mitigation of Long-Term Impacts

The most appreciable long-term impact is continued erosion of soils exposed during construction. Such soils can collect downslope as colluvium, and/or transport into drainages, wetlands and lakes. Measures to prevent soil exposure to rainfall, wind, and other methods of transport (such as using erosion control fabric and replanting with appropriate non-invasive plant species) should be taken after construction to minimize these potential impacts. Proper use of BMPs should maintain erosion impacts below significant threshold levels.

Mitigation of Other Potential Transportation Improvements

Additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road (Segment 40) and Duthie Hill Road (Segment 41 in addition to segments 42 and 43) may be required depending upon actual development patterns in the future for alternatives 2, 3, or 4.

Klahanie Drive SE to SE Duthie Hill Road on Issaquah-Fall City Road (Segment 40) is not identified near potential geologic hazards; however, the potential for construction impacts and associated need for mitigation measures would apply. Along Issaquah-Fall City Road, there are potential steep slope, landslide, and erosion hazards from SE Issaquah Beaver Lake Road to SE Issaquah-Fall City Road (Segment 41). Thus, the potential impacts and mitigation measures for those hazard areas, as well as construction impacts, would apply.

3.1.4 Significant Unavoidable Adverse Impacts

Unavoidable adverse impacts are those effects of the proposed project that would significantly affect either natural or built systems and cannot be mitigated to a less-than-significant level as identified in the previous sections. The proposed mitigation measures should minimize, but may not eliminate, significant unavoidable adverse impacts.

Greater levels of development may lead to the development of significant unavoidable adverse impacts. In areas where glacially consolidated soils occur near surface, the potential for larger deep-seated slope failures to occur are minimal. However, in areas where extensive fill or colluvial material is encountered (e.g., near East Lake Sammamish Parkway (segments 1, 2, and 8) and Sahalee Way NE (segments 9 and 11)) mitigation of deeper-seated slope failures may prove to be cost prohibitive. Without geotechnical subsurface investigations and global slope stability analyses prior to development, determining the likelihood of global slope stability failure is difficult. However, the impact that deep seated slope failure may have on the proposed improvement projects should be considered.

While shallow surficial failures may be manageable, deeper seated slope failures through the glacially consolidated soils may occur, resulting in adverse impacts that may prove to be cost prohibitive to mitigate. If

significant roadway widening is anticipated, placement of fill at the top of slopes may lead to the increase in driving forces. Removal of material at the base of a cut slope may reduce the resisting forces. In these conditions, the proposed improvements may exceed the global stability of the existing steep slope and require engineered retaining structures to maintain post-construction stability.

3.2 Water Resources

The Water Resources section addresses potential indirect effects from the proposed transportation LOS and concurrency management standards update to surface and ground water systems. These systems include streams, wetlands, and aquifers. Stormwater considerations including potential changes in water quantity and quality are also included in this section. Future transportation projects, including intersection and corridor/segment improvements, are an indirect effect of maintaining or updating the LOS and concurrency management standards. The transportation projects anticipated under the proposed Action Alternatives (see Chapter 2) were evaluated for the potential direct, indirect, and/or cumulative impacts on water resources. The standards update alone, without the subsequent transportation project implementation, does not result in direct impacts to the environment.

Publicly available information, GIS data, GIS analysis, and familiarity with water resources in the city and greater region were the basis of the water resources assessment. Approximate areas of wetland, wetland buffer, and stream buffer impacts were quantified using a GIS-based, two-dimensional, intersect analysis of city critical area buffer boundaries and polygons representing corridor improvement projects. The intent of this analysis is to provide a consistent framework to compare the relative impacts of the transportation projects on water resources between the proposed Action Alternatives. Corridor improvement project polygons assumed a standard road width of 70 feet for a three-lane minor arterial, and 94 feet for a five-lane principal arterial in accordance with the City's 2016 Public Works Standards. The project polygons do not include additional area for water quality detention facilities that may be required to implement the transportation projects. Wetland buffer widths were assumed to be 215 feet for sphagnum bogs and 150 feet for all other wetlands. All stream buffer widths were assumed to be 150 feet. Additional analyses include quantifying the number of stream crossings, area of new impervious surface, number of walls, and linear feet of new walls either created or impacted by the anticipated transportation projects under each alternative.

The type, magnitude, and likelihood of impacts occurring as a result of the transportation projects anticipated under each alternative were evaluated for potential effects on water resources. Specific functions and values considered with respect to water resources are water quality, hydrologic (i.e., water flow and quantity), and habitat.

The thresholds of significance used in this impact analysis include:

- Inconsistency with current regulations, guidance documents and/or best available science.
- Impact to the functions and values of water resources that reach a magnitude that is qualitatively considered to be more than moderate.

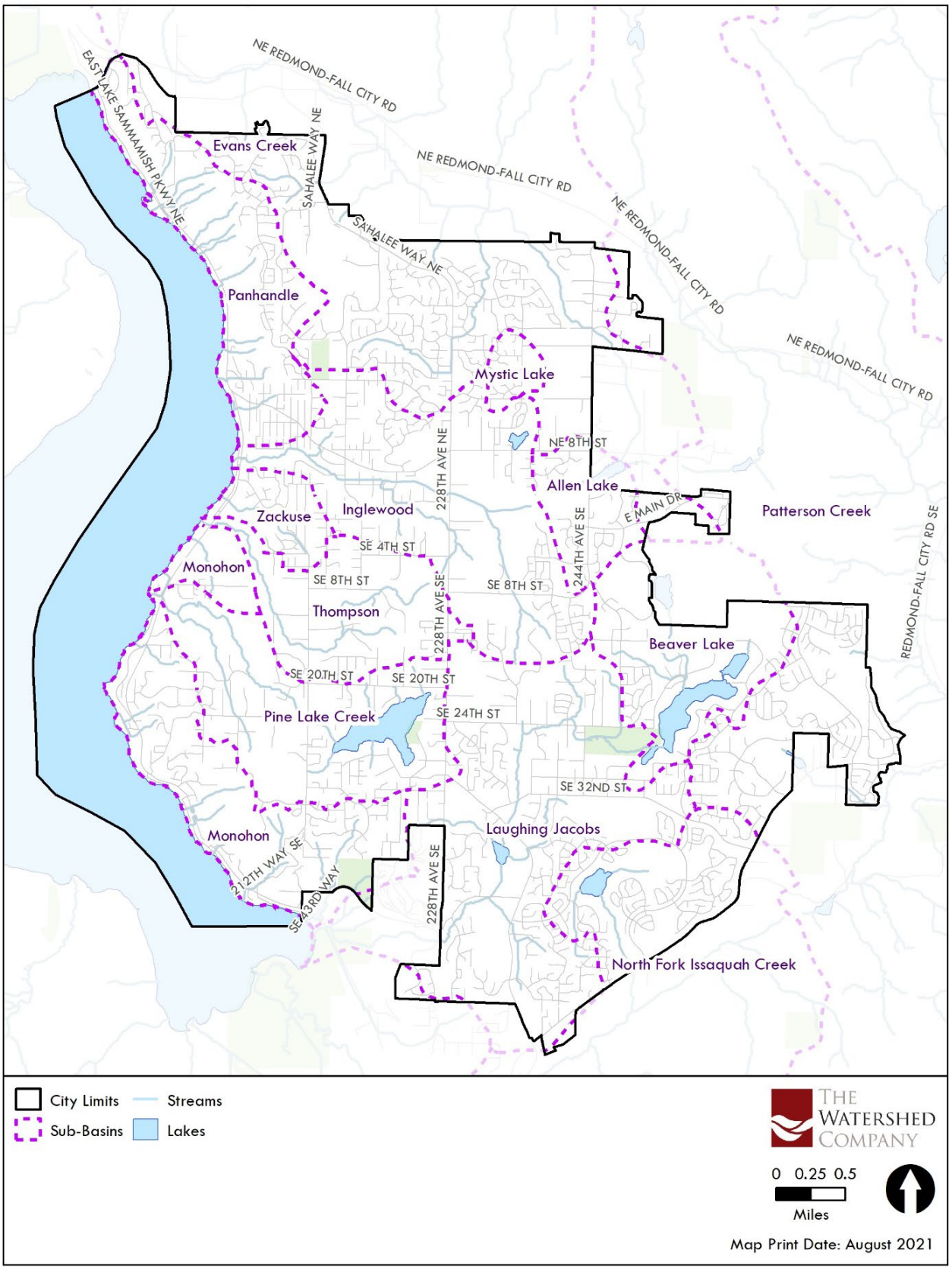
3.2.1 Affected Environment

3.2.1.1 Surface Water

The majority of the city is located within the Sammamish Watershed, part of the greater Lake Washington/Cedar River/Sammamish drainage known as Water Resources Inventory Area (WRIA) 8. The city includes portions of three subbasins with this watershed. Much of the city lies within the East Lake Sammamish

subbasin and drains to Lake Sammamish. The northeastern portion of the City lies within the Evans Creek subbasin and the very southern portion lies within the Issaquah Creek subbasin. The city's urban growth area also includes the North Fork Issaquah Creek and Lower Issaquah Creek subbasins, also within the Cedar River Basin. The far eastern edge of the city is within the Patterson Creek subbasin of WRIA 7, the Snoqualmie/Skykomish Watershed. The following map shows the 14 subbasins used for planning and analysis of project impacts (Exhibit 3-4).

Exhibit 3-4. Subbasins in the City of Sammamish



Source: The Watershed Company, 2021.

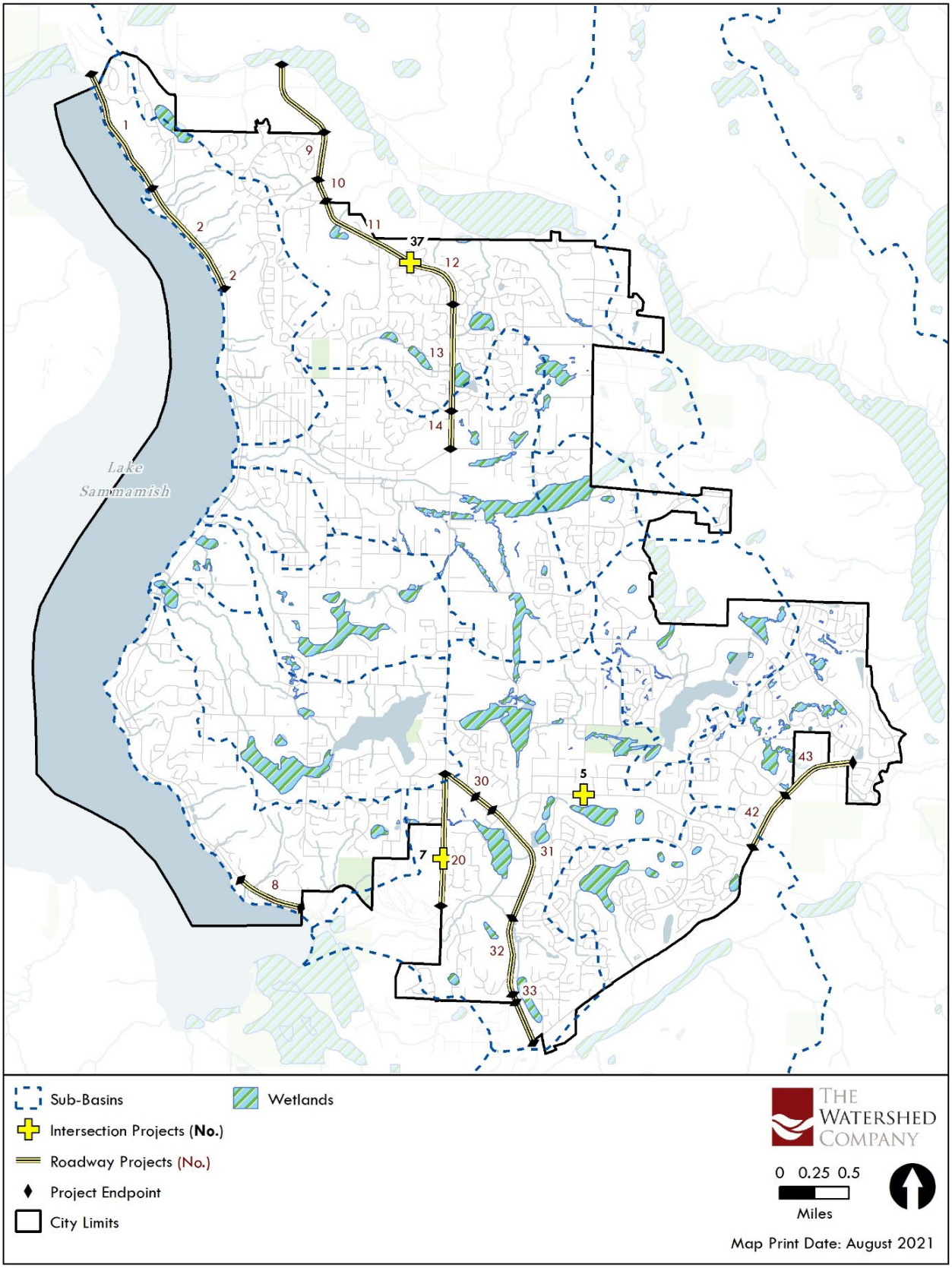
3.2.1.2 Wetlands

Over 100 wetlands have been identified within the City, as documented by the City's Environmentally Sensitive Areas Surface Waters and Wetlands map (COS 2003). The largest wetland systems remaining in the City tend to be associated with Laughing Jacobs Creek, North Fork Issaquah Creek, Ebright Creek, George Davis Creek and Beaver and Pine Lakes (Exhibit 3-5). While mapped wetland areas likely capture most of the large wetland areas remaining in the city, wetland boundaries and conditions often change over time and site-specific studies are necessary to determine the presence or absence of wetland conditions within an individual project area.

Wetland functions are influenced by physical, chemical, and biological processes that occur within a wetland unit and in the surrounding landscape. Wetlands in Washington State are rated based on water quality, hydrologic, and habitat functions for classifying into one of four categories of wetland, I-IV, Category I being the highest quality (functioning) wetland and Category IV the lowest (Hruby, 2014). Wetlands perform water quality and hydrologic functions through several processes including water filtration, shoreline stabilization, and floodwater detention.

Exhibit 3-5 identifies the location of wetlands in relation to the segments and intersections/nodes that could be improved under one or more alternatives.

Exhibit 3-5. Mapped Wetlands in the City of Sammamish



Source: The Watershed Company, 2021.

Wetland processes that alleviate flooding, improve stormwater control, provide erosion protection, and improve water quality are particularly valuable to protect infrastructure and limit the effects of development on the city's natural resources. Vegetated upland buffer areas adjacent to wetlands protect wetland functions from the effects of surrounding land uses. The factors that influence the performance of a buffer include vegetative structure, percent slope, soils, and buffer width and length. Wetland buffers in urban settings commonly include invasive species such as Himalayan blackberry and infrastructure intrusions. Degraded buffer areas provide an opportunity to improve wetland conditions within the city through restoration or enhancement. Wetland buffer widths required by the City are provided in Exhibit 3-6 below and are based on wetland category as determined by the *Washington State Wetland Rating System for Western Washington* [revised], Department of Ecology Publication No. 04-06-025), and associated habitat score.

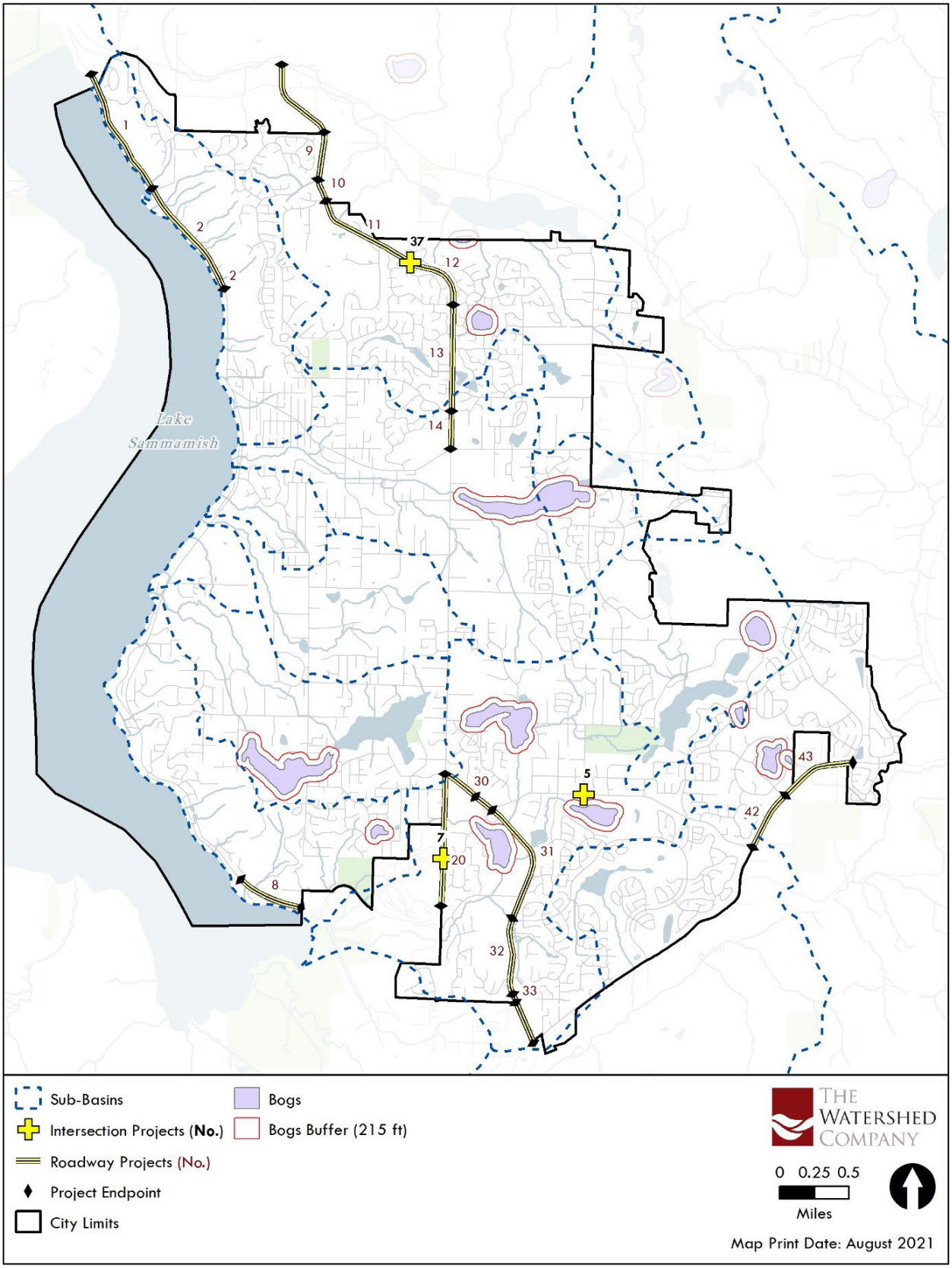
Exhibit 3-6. Standard Wetland Buffer Widths in Sammamish (SMC 21A.50.290)

Wetland Category	Habitat Score	Standard Buffer Width (ft)
Category I	Natural heritage of bog wetlands	215
	8-9	200
	5-7	150
	Not meeting above criteria	125
Category II	8-9	150
	5-7	100
	Not meeting above criteria	75
Category III	8-9	75
	Not meeting above criteria	50
Category IV	All	50

Source: SMC 21A.50.290

As noted by the wetland buffer standards, Sammamish is known to contain several sphagnum bogs. Bogs are high-quality unique wetlands classified as Category I based in part because they are sensitive to disturbance and have not been successfully re-created through mitigation efforts. Bogs, as defined by the rating system, include true bogs with peat soils that receive most of their water from rainfall, as well as acidic peat wetlands that get some of their water from the surrounding landscape and are often called "acidic fens". Bog wetlands have peat soils and low pH and are very sensitive to disturbance. They provide habitat to unique plants and animals specially adapted to such conditions. Sphagnum bogs perform water hydrology and filtration functions at a very high level. They act as carbon and nutrient sinks, performing valuable functions related to climate change and protecting downstream resources from excess nutrients (King County 2001b). One local study (completed in 1981) documented how peat decomposition in a sphagnum bog contributed substantial nutrients to Pine Lake (King County 2001a). Sammamish contains 12 known sphagnum bog ecosystems as shown in Exhibit 3-7.

Exhibit 3-7. Mapped Sphagnum-dominated Peatlands in the City of Sammamish



Source: The Watershed Company, 2021.

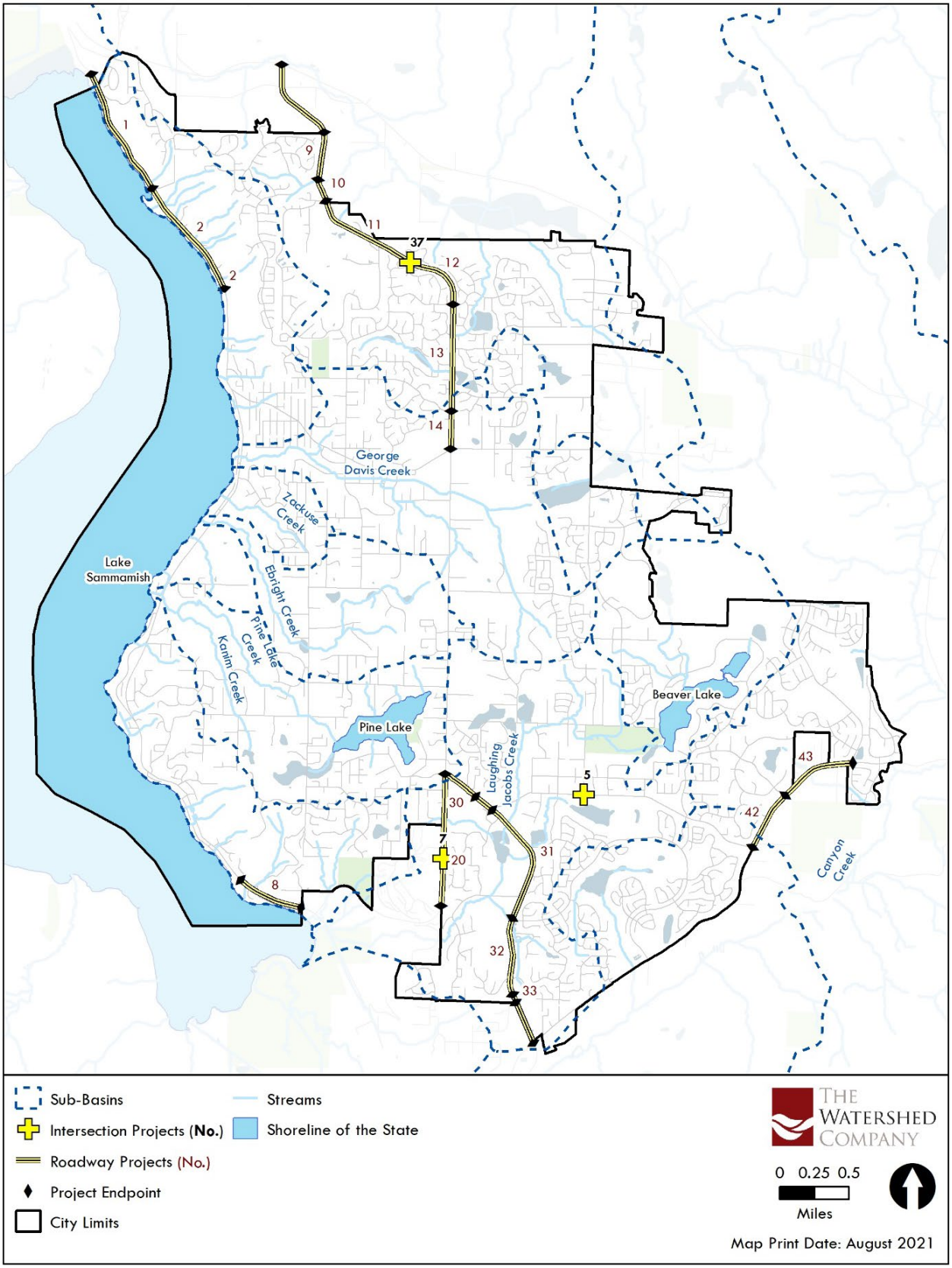
3.2.1.3 Streams and Lakes

Lake Sammamish, a central feature of the Sammamish Watershed, is regulated by the City's Shoreline Master Program (SMP). It is also a Shoreline of the State and a Shoreline of Statewide Significance as defined under the Shoreline Management Act (RCW 90.58) that has additional shoreline management restrictions. The main tributaries to Lake Sammamish, Issaquah Creek and Tibbetts Creek, lie outside of the city limits. Pine Lake Creek, the third major tributary, is located within the city. Surface water discharges from Lake Sammamish through the Sammamish River at the north end of the lake.

Other Shorelines of the State within the city limits include Pine Lake and Beaver Lake. Wetlands associated with and within 200 feet of a Shoreline of the State are also managed under the City's SMP.

While no streams in the city qualify as Shorelines of the State, due to minimum flow requirements, there are numerous smaller mapped streams throughout the city, as shown in Exhibit 3-8.

Exhibit 3-8. Shorelines of the State and Mapped Streams in Sammamish



Source: The Watershed Company, 2021.

There are 19 mapped streams that drain from the Sammamish Plateau into Lake Sammamish. King County's iMap shows 28 streams crossing East Lake Sammamish Parkway, some of which may be seasonal or intermittent. Notably, kokanee salmon are known to be present in Lake Sammamish and several tributary streams (see Section 3.3 Plants and Animals for details). The following streams are located within the East Lake Sammamish subbasin in the city:

- Ebright Creek (WRIA 0149) (salmon bearing)
- Pine Lake Creek (WRIA 0152) (salmon bearing)
- Laughing Jacobs Creek (salmon bearing)
- Laughing Jacobs Lake (WRIA 0166) (salmon bearing)
- George Davis Creek (WRIA 0144) (salmon bearing)
- Zackuse Creek (WRIA 0145) (salmon bearing)
- Kanim Creek (WRIA 0153) (salmon bearing)
- Many Springs Creek (WRIA 0164) (salmon bearing)
- Numerous (20 to 30) unnamed streams flowing into Lake Sammamish (some support limited salmonid use)
- Several (5 to 10) unnamed streams flowing into Pine Lake or Beaver Lake, and eventually to Lake Sammamish (some support limited salmonid use)

In addition, several (5 to 10) unnamed streams are present in Sammamish that flow to Evans Creek in the Evans Creek subbasin, and 2 to 5 streams are located in the North Fork Issaquah Creek subbasin within the city's urban growth boundaries. Salmonid use of several of these streams is either documented or assumed.

Like wetlands, streams are also protected by vegetated upland buffer areas. In urbanized areas many buffers are degraded and have vegetation cover limited to ornamental landscapes, lawns and shrubby/grass areas with scattered trees. Intact native vegetation is present in patches throughout the city, including intermittently along Lake Sammamish.

Required stream buffer widths listed in Exhibit 3-9 are based on stream type (stream types are defined by SMC 21A.15.1240).

Exhibit 3-9. Standard Stream Buffer Widths in Sammamish (SMC 21A.50.330)

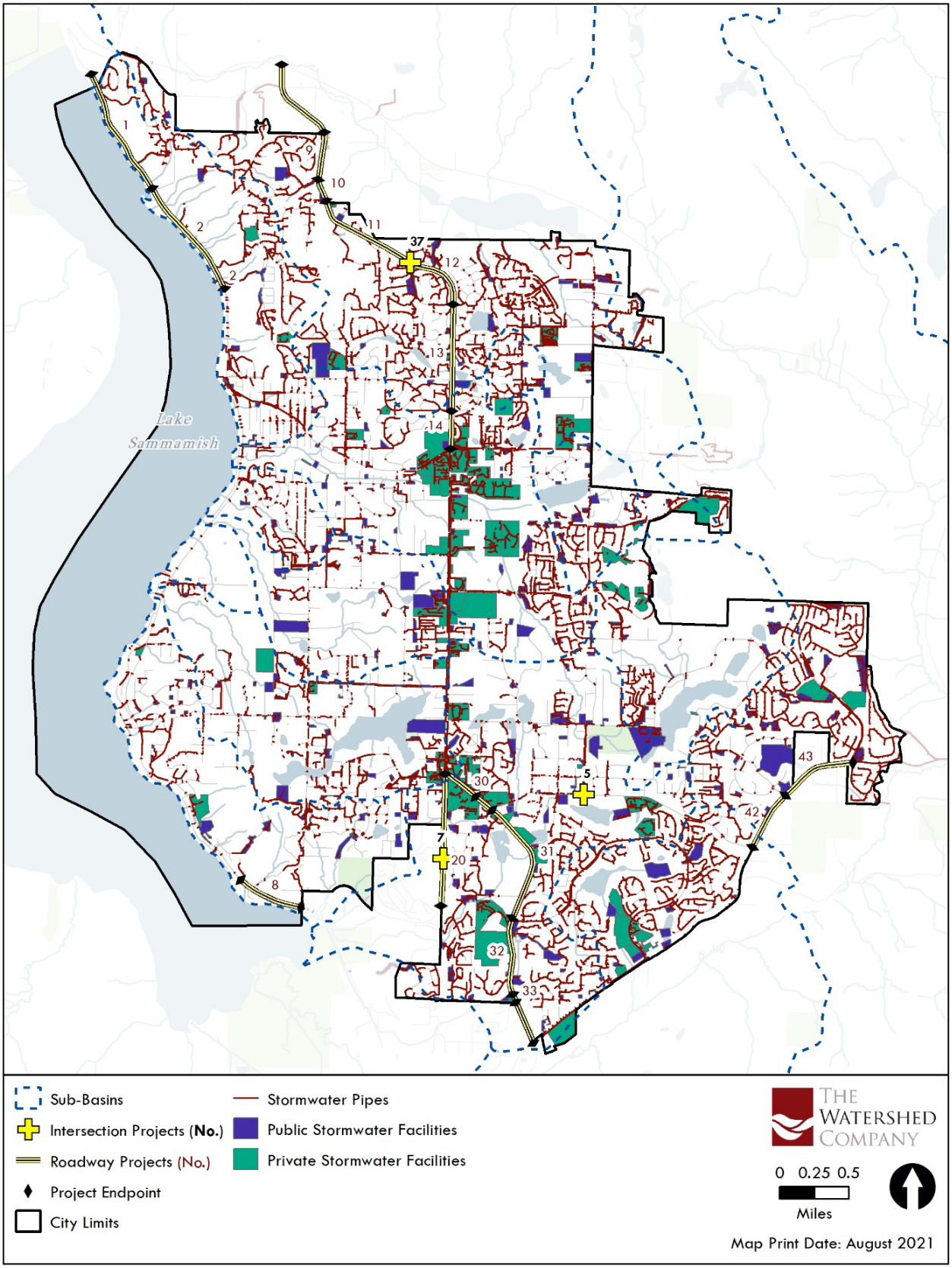
Stream Type	Standard Buffer Width (feet)
Type S	150
Type F	150
Type Np	75
Type Ns	50

Source: SMC 21A.50.330, 2021.

3.2.1.4 Stormwater Infrastructure

The city has 185 miles of stormwater pipes, more than 400 publicly-owned stormwater facilities, and more than 100 privately-owned stormwater facilities (Exhibit 3-10). The City has 167 miles of paved roadway and more than 30 miles of streams that are or could be impacted by stormwater discharge from impervious surfaces.

Exhibit 3-10. Mapped Stormwater Infrastructure in Sammamish



Source: The Watershed Company, 2021.

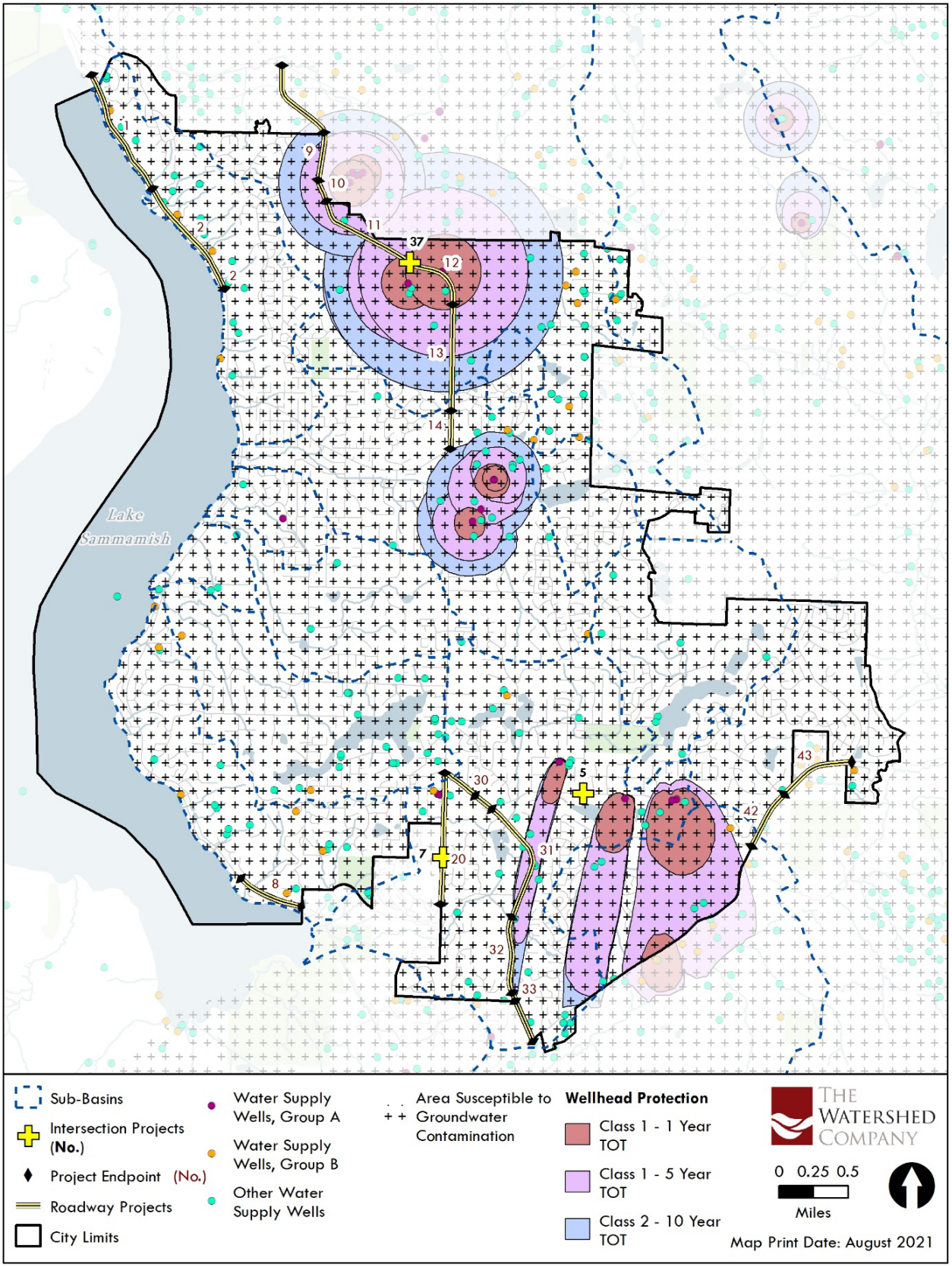
3.2.1.5 Ground Water

The geology of East Lake Sammamish and the Sammamish Plateau is characterized by undifferentiated glacial and glaciofluvial deposits of Pleistocene age. Glacial deposits include outwash gravels of highly permeable, loose sedimentary rock with interbeds of either sand and gravel or consolidated, fine-grained tills with low permeability and variable silt and silty clay composition. Perched shallow aquifers occur near the surface and recharged by precipitation and seepage from surface water bodies. Local soils over till subsoils frequently exhibit mottling (iron staining) associated with seasonal high water levels. Much of the shallow groundwater on the Sammamish Plateau discharges to Lake Sammamish through groundwater seepage in tributary streams or subsurface upwelling in the lake basin. The deeper regional aquifer underlying Lake Sammamish and the Sammamish Plateau is recharged by regional flow paths from upgradient sources in the Cascade foothills. The regional aquifer is semi-confined to confined by overlying formations with geostatic pressures and an increasing (vertical) hydraulic gradient with depth.

3.2.1.6 Critical Aquifer Recharge Areas (Wellhead Protection Zones)

Critical Aquifer Recharge Areas (CARAs) in the City are mapped as Wellhead Protection Zones based on Time of Travel (TOT) calculations (Exhibit 3-11). Areas with surficial geology mapped as advance outwash in Class 3 CARAs require infiltration of 75% of the stormwater unless it can be shown that groundwater quality will be diminished, or it will add to downgradient seepage problems. Deep injection is not allowed in Class 1 and 2 CARAs but may be allowed in Class 3 CARAs when water quality BMPs are in place. Many of the project segments in the transportation redevelopment proposals are in Class 3 CARAs, particularly those on East Lake Sammamish Parkway.

Exhibit 3-11. Mapped Wellhead Protection Areas in Sammamish



Source: The Watershed Company, 2021.

3.2.2 Impacts

Transportation projects that follow indirectly from the proposed LOS and Concurrency approaches with each alternative considered under the alternatives have the potential to impact water resources through filling, grading, and excavation in critical areas; changes in runoff, inflow and outflow, recharge, and water quality in critical areas and affected flow tributary to critical areas and contributing to trends like water quality and quantity changes due to past, present, and future actions. This section addresses potential impacts to water resources from the transportation improvement project alternatives in the City's BLUMA EIS. The Alternatives include corridor/segment improvements, intersections, and associated construction. Detailed descriptions of each alternative, including locations and construction elements, is included in Chapter 2 of this document. A summary of new impervious surface area by alternative is provided below (Exhibit 3-12).

Exhibit 3-12. Comparison of Impervious Surface and Retaining Wall Impacts, All Alternatives

	Impervious Surface Increase (square feet)	Impervious Surface Increase (acres)	Number of Walls	Linear Feet of Walls[1]
Alternative 1	71,000	1.6	1	600
Alternative 2	636,720	14.6	52	23,700
Alternative 3	411,360	9.4	41	14,400
Alternative 4	1,211,059	27.8	112	60,035

[1] The quantities in this exhibit are the sum of values for impervious surface increase, number of walls, and linear feet of walls by segment from an Excel spreadsheet table provided by the City's traffic consultant, Transportation Solutions, Inc., dated June 27, 2021, with updates through July 16, 2021. Amenity zones were not considered impervious surfaces and are not included in the areas given above.

3.2.2.1 Impacts Common to All Alternatives

Wetlands

The proposal is for a programmatic action that would not result in direct impacts to the environment. However, adoption of new LOS transportation standards and concurrency requirements could result in indirect impacts associated with construction and expansion of corridors and intersections.

Approximate areas of wetlands and wetland buffer impacts were quantified using a GIS-based, two-dimensional, intersect analysis of City-mapped wetlands (with an assumed buffer of 215 feet for sphagnum bogs and 150 feet for all others) and polygons representing corridor improvement projects. Corridor improvement project polygons assumed a standard road width of 70 feet for a three-lane minor arterial, and 94 feet for a five-lane principal arterial, in accordance with the City's 2016 Public Works Standards. The project polygons do not include additional area for water quality detention facilities that may be required to implement the transportation projects.

The potential for fill or grading impacts to wetlands resulting from the transportation projects are not anticipated under the studied programmatic alternatives and their associated potential improvements (Exhibit 3-13). Transportation projects proposed in the Action Alternatives would likely impact wetland buffers, with the greatest buffer impact generated by the projects under Alternative 4.

Exhibit 3-13 summarizes the relative impacts on wetlands and wetland buffers from the proposed transportation projects in each alternative. None of the proposed alternatives include transportation projects that would impact wetlands directly. Alternatives with no impacts to wetlands were assigned low impact. High impact was assigned if the projects could potentially result in filling or grading within mapped wetlands. For comparison purposes, those with impacts of less than 0.25 acres were assigned low impact; those impacting 0.26 – 2 acres were assigned medium impact; and those impacting more than 2 acres were assigned high impact.

No direct alterations to sphagnum bog wetlands or associated buffers are anticipated from potential roadway construction under any alternative. However, changes to stormwater runoff have the potential to affect these sensitive wetland systems.

Exhibit 3-13. Comparison of Relative Impacts to Wetlands and Wetland Buffers by Action Alternative

	Relative Impact and Acres of Wetland Impact (approx.)	Relative Impact and Acres of Buffer Impact (approx.)
Alternative 1	**Low**: 0	**Low**: 0
Alternative 2	**Low**: 0	**Medium**: 0.7
Alternative 3	**Low**: 0	**Low**: 0
Alternative 4	**Low**: 0	**High**: 3.3

Approximate range (acres) of buffer impact estimated in GIS. For wetland buffer impacts the following buffer widths were presumed: 215 feet for mapped sphagnum bogs and 150 feet for all other wetlands.
Source: The Watershed Company, 2021.

Streams and Lakes

The Action Alternatives result in potential transportation projects with numerous stream crossings and road work in stream buffers in four subbasins. The following table summarizes the number of stream crossings in each subbasin and the approximate area of roadways in stream buffers that would be affected by the projects under each alternative (Exhibit 3-14). None of the anticipated projects appear to be near enough to lakes to generate potential impacts to the lakes or their buffers (50 feet). However, the proposed projects may indirectly impact Lake Sammamish through stormwater discharges and infiltration. Lake Sammamish is classified as a Major Receiving Water for direct discharge (KCSWDM, 2016) and the City has classified the subbasins on the lake as Sensitive Lake Areas.

Exhibit 3-14. Summary of Number of Stream Crossings and Stream Buffer Impact per Alternative

	Subbasins and Number of Proposed Stream Crossings										
	Evans Creek	Inglewood Creek	Laughing Jacobs Creek	Monohon	Panhandle	Patterson	Pine Lake	Thompson	Zackuse	Total	Relative Impact and Acres of Buffer Impact (approx.)[1]
Alternative 1	-	-	-	-	-	-	-	-	-	0	**Low:** 0
Alternative 2	1	-	1	3	13	1	-	-	-	19	**High:** 9.9
Alternative 3	-	-	1	-	13	1	-	-	-	15	**Medium:** 6.9
Alternative 4	2	-	4	-	-	-	-	-	-	6	**Medium:** 8.2

[1]Approximate area (acres) of buffer impact estimated in GIS using a presumed stream buffer width of 150 feet.
Source: The Watershed Company, 2021.

All stream crossings potentially affected by the proposed transportation projects presently exist within the current road alignments. Alternatives 2, 3, and 4 all have impacts to stream buffer, with the greatest area of buffer impact anticipated under Alternative 2. Alternative 2 projects impact the greatest number of stream crossings and area of stream buffer and was assigned a relative impact of high. Alternative 3 projects would impact a greater number of stream crossings but fewer acres of stream buffer than Alternative 4, thus both alternatives were assigned a relative impact of medium.

If the transportation improvement projects under the adopted alternative are implemented, regulations would likely require these crossings be improved or replaced to current roadway design standards for fish passage and habitat in conjunction with transportation improvement projects. Most notably, stream channels at improved crossings would likely be wider and include a gravel bottom. Any fish passage barriers associated with existing crossings would be eliminated. Where roads are widened, longer stream crossing structures (typically box culverts) would likely be constructed with vertical or steep slopes at both ends to facilitate fish passage. Small increases in stream buffer impact may occur. The relative magnitude of potential stream buffer impacts and indirect effects from changes to stormwater discharges and infiltration is discussed below.

Stormwater

The proposed roadway projects would have potential stormwater impacts due to increased runoff from impervious surfaces, conveyance of stormwater discharge, changes in groundwater recharge, and likely water quality degradation in receiving waters. Water quality may be impaired by suspended sediment, total dissolved solids, heavy metals (particularly zinc and copper), and hydrocarbons from oil, grease, and fuels. Erosion and sediment impacts may occur from open-channel conveyance of stormwater downstream to an outfall or point of discharge. While some argue that transportation projects may convey but do not actually create pollution, uncontrolled stormwater discharge may increase peak flows and cause downstream erosion, flooding, and water quality problems. See Exhibit 3-15.

Construction-related stormwater impacts are addressed in Section 3.1 Earth of this document.

Exhibit 3-15. Summary of Stormwater Management Criteria by Roadway Segment and Action Alternative

Corridor Segment	Improvement Alternatives			Flow Control	Water Quality	Sphagnum Bog	CARA
	2	3	4				
ELSP (NE)							
1	X	X		CF	SL	X[1]	
2	X			CF	SL		
ELSP (SE)							
8	X			CF	SL		
Sahalee Way NE							
KC adjacent to 9			X	CF	B		X
9	X		X	CF	B		X
10			X	CF	B		X
11			X	CF	B		X
12			X	CF	B		X
13			X	CF	SL	X	X
228th Avenue NE							
14			X	FP	SL		
228th Avenue SE							
20[2]	X	X	X	FP	CD	X	X
Issaquah-Pine Lake Road							
30			X	CF	SL		
31			X	CF	SL	X	X
32	X	X	X	CF	SL	X	X
33	X	X	X	CF	SL		X
KC adjacent to 33			X	CF	SL		
SE Duthie Hill Road							
42	X	X	X	CF	SL		
43	X			CF	B	X	

Key: CF – Conservation Flow Control (Level 2); FP – Flood Problem Control (Level 3); SL – Sensitive Lakes Area; B – Basic Water Quality Treatment Area; CD – Critical Drainage Area; CARA – Critical Aquifer Recharge Area / Wellhead Protection Zones; KC – King County

[1] Sphagnum bog noted here is outside city limits.
[2] Related to Intersection 7 and channelization/widening.
Source: The Watershed Company, 2021.

3.2.2.2 Alternative 1 No Action

Alternative 1 includes three intersection improvement projects. The projects would generate 1.6 acres of new impervious surface area. Alternative 1 projects generate the fewest impacts to water resources compared to the Action Alternatives.

The road improvement projects under Alternative 1 are unlikely to result in impacts to mapped wetlands, streams, lakes, and their associated buffer areas. This assessment is based upon condition of existing intersections and surrounding land use, topography, and mapped critical areas. The increase in impervious surface coverage does have the potential to result in changes to stormwater, which could cause indirect impacts to downstream wetland and stream critical areas.

One intersection (224th Ave SE/SE 32nd St) included for improvements in alternatives 1, 2, and 4 may drain towards the sphagnum-dominated peatland known locally as Queen's Bog. This proposed project would not increase the amount of impervious surface from existing conditions; it would convert the existing two-way stop control into an all-way stop control. While the intersection appears to be greater than 215 feet from the wetland edge (outside of the regulated wetland buffer), western Washington peatlands are known to be sensitive to changes in hydrology, water chemistry, and biotic factors (King County 2001).

3.2.2.3 Alternative 2

In addition to the three intersection projects evaluated under Alternative 1, Alternative 2 includes improvements to eight road segments associated with five corridor project areas (Exhibit 2-13 and Exhibit 2-14). Impacts of Alternative 2 include the impacts described previously in Alternative 1 and those described below. Alternative 2 generates approximately 14.6 acres of new impervious surfaces.

Wetlands

A potential impact to wetlands from transportation projects included in the Action Alternatives would be the degradation of sphagnum bogs due to changes in hydrology and water chemistry from road corridor projects. None of the transportation projects under any of the alternatives would result in direct impacts to mapped wetlands. Other impacts to wetlands (that are presumably less sensitive and rare than the bogs) or wetland buffers would likely be adequately protected and mitigated by applicable regulations.

Three road segment projects and one intersection project, with a combined impervious surface increase of over five acres, may drain to sphagnum bogs and could impact hydrology and water quality in those unique wetlands (Exhibit 3-7). This assessment is based on map data and generalized topography. Western Washington peatlands are known to be sensitive to changes in hydrology, water chemistry, and biotic factors (King County 2001).

Streams and Lakes

Alternative 2 includes 19 stream crossings and approximately 9.9 acres of potential stream buffer impacts (Exhibit 3-14). As previously stated, all stream crossings affected by projects under the alternatives currently exist. Regulations would likely require these crossings be improved or replaced to current roadway design standards for fish passage and habitat. Most notably, stream channels at improved crossings would likely be

wider and include a gravel bottom. Any fish passage barriers associated with existing crossings would be eliminated. Where roads are widened, longer stream crossing structures (typically box culverts) would likely be constructed with vertical or steep slopes at both ends to facilitate fish passage. Small increases in stream buffer impact may occur; these can be readily and fully mitigated.

Streams and lakes may also be affected by changes in stormwater as discussed below.

Critical Aquifer Recharge Areas (Wellhead Protection Zones)

All potential road segment projects included under this alternative are located in a Wellhead Protection Zone, Class 3 CARA and could impact groundwater recharge and water quality in some public water supply wells. Three road segments are in Wellhead Protection Zone Class 1 or Class 2 CARA and could impact groundwater recharge and water quality in Group A or Group B public water supply wells.

Potential stormwater impacts to CARAs include reduced groundwater recharge, decreased water quality in shallow aquifers used for water supply wells, and over saturation of soil in some areas due to flow control measures that increase infiltration rates and induce groundwater seepage downslope.

Stormwater

Indirect effects of stormwater discharge on wetlands, streams, lakes, and CARAs may include increased erosion and flooding in riparian buffers at stream crossings, excess groundwater seepage downgradient due to infiltration of runoff, and reduced off-site water quality prior to attenuation of stormwater constituents in receiving waters.

Current regulations for stormwater control are likely to be more stringent (i.e., more protective of natural systems) than when existing road and intersection projects were originally constructed. The proposed projects would be designed to current standards and could improve stormwater conditions with respect to natural systems like wetlands, streams, lakes, and CARAs.

As depicted in Exhibit 3-15, several stormwater flow control and water quality mechanisms currently in place limit the potential for significant adverse environmental impacts from stormwater, including the following which would apply to projects proposed under Alternative 2:

- Flow Control (Conservation Flow Control, Flood Problem Flow Control): All road segments are in a Flow Control Application Area. The additional impervious surface proposed for eight segments in Conservation Flow Control, Level 2 areas could increase peak flows (discharge, volumes, and durations).
- Water Quality (Sensitive Lake Treatment Areas, Critical Drainage Areas): All road segments are in a Water Quality Treatment area. Six road segments in Sensitive Lake Treatment areas could impact water quality in tributary streams and Lake Sammamish. Two segments in Basic Water Quality Treatment areas pose fewer potential impacts to receiving waters.

These mechanisms frequently combine infiltration and stormwater detention for flow control with alternatives for water quality treatment depending on local soil conditions (particularly depth, permeability, and organic matter content) and topography (particularly slope).

3.2.2.4 Alternative 3

Alternative 3 projects include improvements to four road segments associated with three corridor project areas considered in this document, in addition to three intersection projects, which have been previously evaluated under Alternative 1 (Exhibit 2-16 and Exhibit 2-17).

Wetlands

Alternative 3 includes the impacts to wetland buffers included in Alternative 2 Exhibit 3-13).

Potential impacts to known sphagnum bogs have previously been discussed under Alternative 2.

Streams and Lakes

Alternative 3 includes 15 stream crossings and approximately 6.9 acres of potential stream buffer impacts (Exhibit 3-14). As previously stated, all stream crossings affected by projects under the alternatives currently exist. Regulations would likely require these crossings be improved or replaced to current roadway design standards for fish passage and habitat. Most notably, stream channels at improved crossings would likely be wider and include a gravel bottom. Any fish passage barriers associated with existing crossings would be eliminated. Where roads are widened, longer stream crossing structures (typically box culverts) would likely be constructed with vertical or steep slopes at both ends to facilitate fish passage. Small increases in stream buffer impact may occur; these can be readily and fully mitigated.

Streams and lakes may also be affected by changes in stormwater as discussed below.

Critical Aquifer Recharge Areas (Wellhead Protection Zones)

All potential road segment projects included under this alternative are located in a Wellhead Protection Zone, Class 3 CARA and could impact groundwater recharge and water quality in some public water supply wells. Two road segments are in Wellhead Protection Zone Class 1 or Class 2 CARA and could impact groundwater recharge and water quality in Group A or Group B public water supply wells.

Similar to Alternative 2, potential stormwater impacts to CARAs include reduced groundwater recharge, decreased water quality in shallow aquifers used for water supply wells, and over saturation of soil in some areas due to flow control measures that increase infiltration rates and induce groundwater seepage downslope.

Stormwater

Potential stormwater impacts resulting from road improvement projects are similar to those described under Alternative 2. As depicted in Exhibit 3-15, several stormwater flow control and water quality mechanisms currently in place limit the potential for significant adverse environmental impacts from stormwater, including the following which would apply to projects proposed under Alternative 3:

- Flow Control (Conservation Flow Control, Flood Problem Flow Control): All road segments are in a Flow Control Application Area. All segments lie within Conservation Flow Control, Level 2 areas; the additional impervious surface proposed could increase peak flows (discharge, volumes, and durations).

- Water Quality (Sensitive Lake Treatment Areas, Critical Drainage Areas): All road segments are in a Water Quality Treatment area. Four road segments in Sensitive Lake Treatment areas could impact water quality in tributary streams and Lake Sammamish.

These mechanisms frequently combine infiltration and stormwater detention for flow control with alternatives water quality treatment depending on local soil conditions (particularly depth, permeability, and organic matter content) and topography (particularly slope).

3.2.2.5 Alternative 4

Alternative 4 includes road improvements to 14 road segments and five corridors in addition to one intersection project, which has already been evaluated under Alternative 1 (Exhibit 2-19 and Exhibit 2-20). Alternative 4 includes the most roadway improvement projects of any alternative and generates the greatest potential to impact water resources. Alternative 4 results in an estimated 27.8 acres of new impervious surfaces.

Wetland

Potential impacts to wetlands from transportation projects under this alternative do not include fill or grading impacts within wetlands but do include an estimated 3.3 acres of wetland buffer impact, the highest estimated wetland buffer impact of any alternative. Alternative 4 includes potential stormwater impacts to four known sphagnum bogs.

SE 32nd Way to SE 46th Street (segments 31 and 32) on Issaquah-Pine Lake Road may drain towards the sphagnum bog labeled ELS39. The road-widening project for Issaquah-Pine Lake Road would increase the amount of impervious surface by approximately 199,000 square feet.

NE 25th Way to NE 12th Place (Segment 13) on the Sahalee Way - 228th Avenue North Corridor may drain towards the sphagnum bog labeled EC27. The road-widening project for Sahalee Way would increase the amount of impervious surface by approximately 113,000 square feet.

Changes to stormwater may require mitigation to prevent associated impacts to sphagnum bogs as discussed in Mitigation Measures below.

Streams and Lakes

The transportation projects under Alternative 4 include six stream crossings and approximately 8.2 acres of potential stream buffer impact (Exhibit 3-14). Alternative 4 projects impact fewer stream crossings than Alternative 2 and Alternative 3. Potential impacts to streams and lakes and associated buffer areas under this alternative are similar to those described in Alternative 2.

Critical Aquifer Recharge Areas (Wellhead Protection Zones)

All road segment improvements under this alternative are in a Wellhead Protection Zone, Class 3 CARA for potential groundwater recharge and groundwater quality impacts to water supply wells. Ten road segments are in Wellhead Protection Zone Class 1 or Class 2 CARA with potential impacts to groundwater recharge and water quality in Group A or Group B public water supply wells.

Potential impacts to CARAs are similar to those described under previous alternatives.

Stormwater

Indirect effects of stormwater discharge on natural systems are comparable to those previously described. Road segments in Alternative 4 are located in the following stormwater management areas:

- Flow Control (Conservation Flow Control, Flood Problem Flow Control): All road segments are in a Flow Control Application Area. The additional impervious surface proposed for twelve segments in Conservation Flow Control, Level 2 areas could increase peak flows (discharge, volumes, and durations). The additional impervious surface proposed for two segments in Flood Problem Flow Control, Level 3 Area could increase peak flow flooding and erosion.
- Water Quality (Sensitive Lake Treatment Areas, Critical Drainage Areas): All road segments are in a Water Quality Treatment area. Eight road segments in Sensitive Lake Treatment areas could impact water quality in tributary streams and Lake Sammamish. Two segments in Basic Water Quality Treatment areas pose fewer potential impacts to receiving waters. Five segments in a Basic Water Quality Treatment Area pose fewer potential impacts to receiving waters. One road segment in a Critical Drainage Area which requires 80% phosphorus removal to prevent potential eutrophication impacts to receiving waters.

These mechanisms frequently combine infiltration and stormwater detention for flow control with alternatives for water quality treatment depending on local soil conditions (particularly depth, permeability, and organic matter content) and topography (particularly slope).

3.2.3 Mitigation Measures

3.2.3.1 Incorporated Plan Features

All alternatives would continue City Comprehensive Plan goals and policies regarding critical areas protection and water resources. Examples include:

- Goal EC.3 Protect wetlands and other water resources from encroachment and degradation and encourage restoration of such resources.
- Goal EC.5 Maintain and protect surface water and groundwater resources that serve the community and enhance the quality of life.

3.2.3.2 Regulations and Commitments

Stormwater Management

Stormwater management for transportation improvement projects includes mitigation of potential impacts by flow control to address increased runoff (peak flows, volumes, and durations) from impervious surfaces, erosion control for conveyance of the discharge, and water quality treatment to prevent impacts in receiving waters.

The City has adopted the 2016 King County Surface Water Design Manual (KCSWDM, 2016) and the Sammamish Addendum (2016) to the KCSWDM for regulation of stormwater discharge from proposed developments to mitigate potential impacts. The City of Sammamish Storm and Surface Water Management Comprehensive Plan includes additional stormwater management options for reducing impacts from road redevelopment projects.

Flow Control (Conservation Flow Control, Flood Problem Flow Control)

Projects with more than 2,000 square feet of new impervious surfaces or in a Critical Drainage Area require either a full drainage review or large project drainage review (KCSWDM, 2016).

Mitigation of conveyance impacts may include grassed waterways, pipes, culverts, or other channel modifications to prevent erosion and flooding between impervious surfaces and points of discharge. Project reviews include 9 core requirements and 5 special requirements for flow control. These require infiltration, short-term detention, or long-term retention of runoff to reduce peak flow rates and high flow durations.

Different streams may have different impact mitigation requirements depending on stream classifications in the City of Sammamish Storm and Surface Water Management Comprehensive Plan.

Water Quality (Sensitive Lake Treatment Areas, Critical Drainage Areas)

Mitigation for water quality impacts include settling and removal of suspended sediments, separation of oil and water by filtration or skimming, and treatment methods to remove dissolved minerals or chemicals in solution. Mitigation in Critical Drainage Areas require 80% phosphorus removal to prevent eutrophication in receiving waters. Water quality treatment methods such as settling basins, stormwater ponds, or bioswales can reduce total suspended solids and may bioaccumulate dissolved constituents to prevent water quality impairment in the receiving waters.

Identified Sphagnum Bogs

Mitigation for impacts to sphagnum bogs include enhanced water quality treatment to prevent changes in pH and suspended solids that may adversely impact unique plant associations in these wetlands. Stormwater discharge to sphagnum bogs greater than 0.25 acres in size require enhanced water quality treatment with specific conditions. Detailed drainage routes would need to be established by hydrogeologic assessment during the permit phase for individual projects. Specific flow paths for stormwater discharge could be altered to prevent discharge to sphagnum bogs and mitigate potential impacts.

CARAs (Wellhead Protection Zones)

Mitigation for impacts to groundwater recharge and groundwater quality in wellhead protection zones designated as CARAs include stormwater infiltration, frequently in an infiltration basin, with enhanced water quality treatment prior to discharge.

Additional Water Resources Regulations

Specific measures to mitigate impacts to water resources from the proposed transportation projects are included in the following regulations:

- Surface Water Runoff Regulations. Chapter 13.20 SMC establishes requirements for drainage plans, critical drainage areas and construction timing.
- Water Quality Regulations: Chapter 13.30 SMC prohibits the discharge of contaminants into surface water, stormwater and groundwater and outlines preventive measures to restrict contaminants from entering such waters.
- Surface Water Design Standards: The City has adopted the 2016 King County Surface Water Design Manual (KCSWDM) and Sammamish Addendum to the 2016 KCSWDM, which establishes requirements and provides technical guidance for design of hydrologic systems, conveyance, flow control, and water quality.
- Public Works Standards: Chapter 14A.01 SMC adopts the City of 2016 Sammamish Public Works Standards which addresses permitting and engineering requirements for rights-of-way and surface water management.
- Critical Areas Regulations: Chapter 21A.50 SMC establishes development standards for critical areas, including erosion hazard areas, frequently flooded areas, landslide hazard areas, critical aquifer recharge areas, wetlands, fish and wildlife habitat conservation areas and corridors, and streams.
- City of Sammamish Shoreline Master Program.
- Low Impact Development Standards. Chapter 21A.85 SMC establishes low impact development standards intended to mimic pre-development processes and allow the natural movement of water through a site.
- Surface Water Management Program: The City's Storm and Surface Water Management Program addresses storm and surface water quality and quantity in the city. The program reviews proposed development and monitors construction and water quality, implements stormwater control projects, and conducts a variety of stormwater related programs and plans. The program is developed in accordance with the National Pollutant Discharge Elimination System (NPDES) Phase II Western Washington Municipal Stormwater Permit (Phase II permit) and is a requirement of the federal Clean Water Act (City of Sammamish, 2020).
- Stormwater CIP: The City's stormwater capital improvement program lists capital projects to address stormwater issues throughout Sammamish. The list is contained in the Capital Facilities Element of the City's Comprehensive Plan (City of Sammamish, 2016).
- Integrated Construction Practices: Where possible, City practice is to integrate stormwater improvements with roadway construction. This would be considered in the development of individual roadway projects.
- Project-level SEPA Review: Chapter 20.15 SMC establishes the process for project-level environmental review, including required compliance with applicable mitigating measures to address identified impacts. Authority for project-level mitigation is provided by, among others, the City's Shoreline Management Master Plan, Public Works Standards, Development Code and Noise Ordinance.
- US Fish and Wildlife Service and/or the National Marine Fisheries Service, for federally permitted actions that could affect endangered species (i.e., salmon or bull trout).
- USEPA, Clean Water Act.

3.2.3.3 Other Potential Mitigation Measures

Additional Water Resources Mitigation Measures

The following mitigation measures would further reduce impacts from those described but are not necessary to prevent significant adverse impacts:

- Retrofits: Transportation improvement projects can enhance downstream water quality by incidental flow control and water quality treatment of stormwater from older road sections currently untreated or lacking basic treatment designs. Although they may be somewhat difficult to achieve given steep slopes and erosion hazards on some road segments along East Lake Sammamish Parkway, some retrofits could still improve existing erosion, groundwater seepage, nuisance flooding, and water quality problems (City of Sammamish [basin plans] 2010; 2011).
- Watershed-Based Storage Alternatives: Transportation improvement projects requiring flow control are an opportunity to consider watershed-based storage alternatives outside of the right-of-way. Wetland restoration and regional storage facilities can provide downstream flow attenuation and water quality benefits at a comparatively reduced cost.
- Low Impact Development: Use of Low Impact Development (LID) techniques such as permeable surfaces and other on-site infiltration methods can improve on-site storage capabilities, reduce impact from increased high flows, and provide water quality benefits.
- CARAs: On-site infiltration of stormwater in Critical Aquifer Recharge Areas on the Sammamish Plateau may be constrained by low permeability, consolidated glacial till and groundwater seepage problems downgradient. Plans for infiltration of runoff require hydrogeologic assessment of aquifer characteristics and local groundwater conditions.
- Species of Special Concern: Streams tributary to Lake Sammamish, perennial or intermittent, provide important fish habitat functions besides spawning. These streams provide juvenile refugia, macroinvertebrate food resources, nutrient export, and other functions important to kokanee and other species of concern. Mitigation measures include Conservation Flow Control and enhanced water quality treatment to protect the streams from stormwater impacts.
- Long-Term Impacts: Mitigation of long-term stormwater impacts includes inspection and maintenance of stormwater facilities for flow control, conveyance, and water quality treatment. Stormwater ponds, grassed waterways, and similar facilities require regular inspection and maintenance of vegetation, removal of debris, and cleaning sediment to maintain flow control and water quality as designed. Inspection and maintenance requirements for different types of projects are specified in the 2016 KCSWDM (King County) and SWDMA (City of Sammamish 2016).

Mitigation of Other Potential Transportation Improvements

Additional improvements to other roadway segments maybe required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road (Segment 40) and Duthie Hill Road (Segment 41 in addition to 42 and 43) may be required depending upon actual development patterns in the future for either alternatives 2, 3, or 4.

Adding road improvements along Issaquah-Fall City Road and Duthie Hill Road could add impervious surfaces by 1.4 to 2.4 acres and increase the number of walls (up to 10) and length (approximately 12,400

feet). Adding road improvements to segments 40 and 41 would result in an estimated 0.3 acres of wetlands impacts, and it is possible to increase stream buffer impacts by about a 0.5 acres. Stormwater controls would be required, such as conservation flow control and sensitive lakes area flow control.

Mitigation measures through existing regulations and other potential mitigation measures described above would be applicable to these segments.

3.2.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated to water resources under any of the alternatives with application of the mitigation measures included in existing regulations and commitments.

Stormwater mitigation measures that increase storage and enhance water quality treatment may reduce downstream erosion, nuisance flooding, and water quality degradation from existing conditions. Stream conditions may also be improved with upgrades to stream crossings under alternatives 2, 3, and 4.

3.3 Plants and Animals

The Plants and Animals section addresses potential indirect effects from the proposed transportation LOS and concurrency management standards update to wildlife, including terrestrial and aquatic plants and animals and their associated habitats. Transportation projects, including intersection and corridor/segment improvements, are an indirect effect of maintaining or updating LOS and concurrency management standards. Transportation projects anticipated under the proposed alternatives (see Chapter 2) were evaluated with respect to potential impacts on the plants and animals including trees, rare plants, sensitive habitats, animals and fish. The standards update alone, without the subsequent transportation project implementation, does not result in direct impacts to the environment. The basis of this assessment includes publicly available information, review of GIS data and GIS analyses, and familiarity with natural resources in the city and greater region.

The Watershed Company (Watershed) conducted a GIS-based analysis to compare the relative impact of the alternatives on tree canopy in the city. The two-dimensional intersect analysis utilized land cover data provided by Davey Resource Group (2018) and polygons representing corridor improvement projects to quantify approximate areas of tree canopy loss. Corridor improvement project polygons assumed a standard road width of 70 feet for a three-lane minor arterial, and 94 feet for a five-lane principal arterial in accordance with the City's 2016 Public Works Standards.

The type, magnitude, and likelihood of impacts occurring from the transportation projects under the alternatives were evaluated in relation to plants and animals. Listed fish species and their associated habitats were strongly considered in this assessment.

The thresholds of significance used in this impact analysis include:

- Inconsistency with current local, state, or federal regulations and policies.
- Likelihood of impacting a plant or animal population that is not currently vulnerable in Sammamish and is a Priority Habitat or Species.
- Impact to wildlife and/or habitat functions and values that reach a magnitude that is qualitatively considered to be more than moderate.

3.3.1 Affected Environment

3.3.1.1 Plants

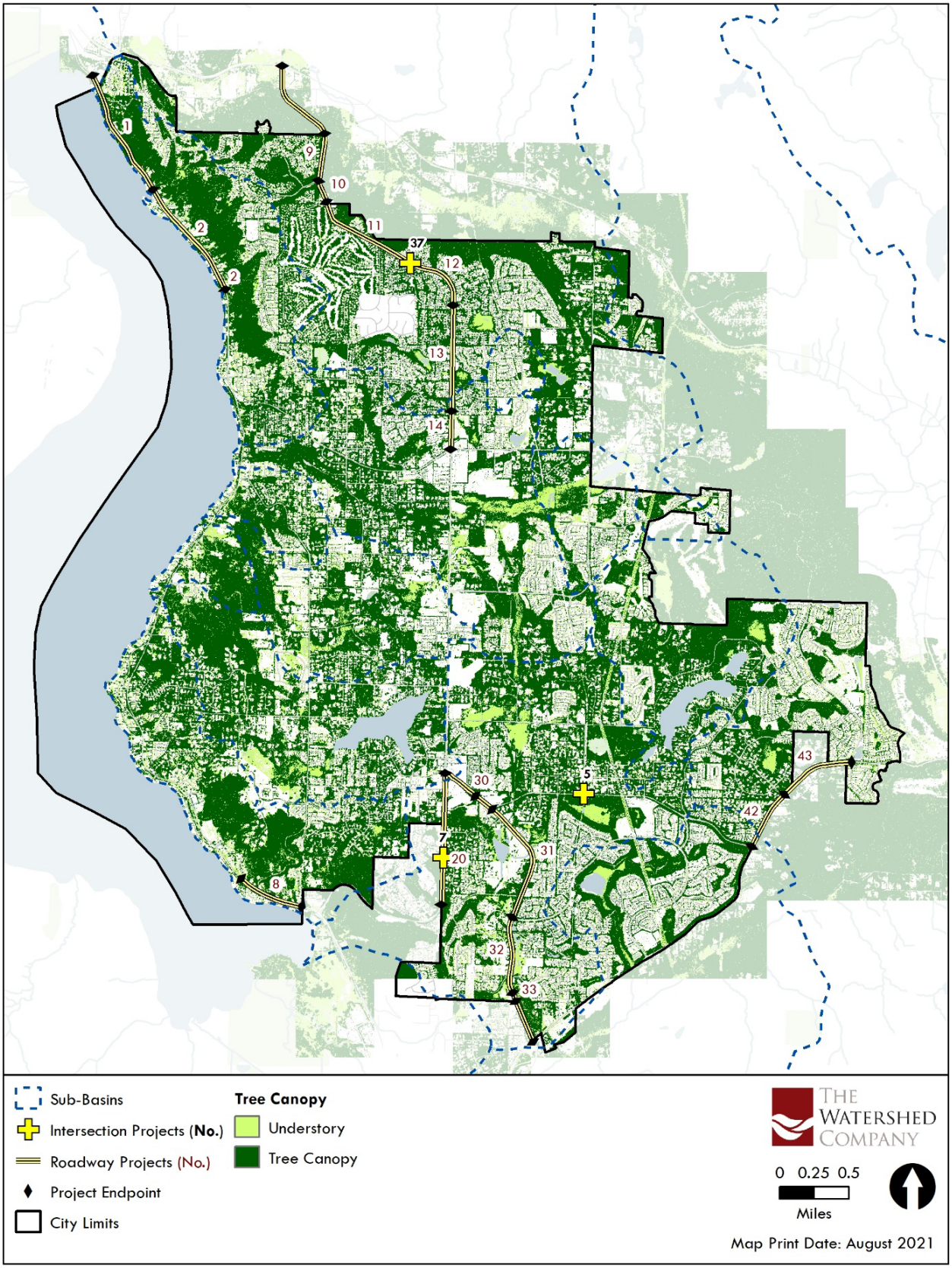
Trees

The city is in the Puget Trough ecoregion, historically dominated by coniferous forests. Beginning in the late 1800's through about 1940, loggers extensively harvested primarily Douglas-fir and western red cedar trees in the Sammamish area (The Sammamish Heritage Society n.d).

Like many eastside communities, the city has experienced rapid growth in recent decades resulting in the removal and fragmentation of natural habitat area and the trees and other plants they comprise. Today, retained forested areas in Sammamish commonly include mature Douglas-fir, western red cedar and bigleaf maple, and are characterized as second-growth forest stands (Davey Resource Group 2019). In areas that have been more recently developed, the plant palette typically includes younger and more diverse urban (non-native) tree species (2019).

According to the Urban Forest Management Plan (UFMP) (2019), tree canopy covers 48% of the City of Sammamish (Exhibit 3-16). Furthermore, as described in the UFMP and evidenced in the City's Comprehensive Plan, Sammamish residents place great value in the preservation of its urban forest which strongly contribute to the city's character and appeal. Trees provide valuable functions; the five primary benefits that trees relate to water quality, carbon sequestration, energy savings, air quality and socioeconomic indicators (2019).

Exhibit 3-16. Mapped Tree Canopy in Sammamish



Source: 2018 tree canopy and understory land cover data obtained from Davey Resource Group in March 2021.

Rare Plants

The Washington Natural Heritage Program (WNHP) maintains a database on rare and imperiled species and plant communities for Washington State, which is updated periodically. Current WNHP maps do not map any features within the boundaries of Sammamish (WNHP n.d.).

Sensitive Habitats & Ecosystems

Groups of plants combined with various physical, biotic and abiotic factors form ecosystems or habitat areas that vary in their sensitivity to disturbance and provide important ecological functions. Some sensitive habitats, like wetlands and streams/riparian areas, are discussed in Section 3.2 Water Resources. As described there, Sammamish is known to contain sphagnum bogs, or peatlands, a distinct type of wetland that contains unique and sensitive plant communities.

The Washington Department of Fish and Wildlife (WDFW) maintains a list and database of the State's Priority Habitats and Species (PHS). Nearly all the habitat features mapped by PHS in Sammamish are wetland polygons or streams with fish presence and/or fish migration routes. However, two terrestrial habitat polygons are also depicted. These features–one on the north side of Sahalee Way NE and one just south of the city limits near Lake Sammamish State Park–are characterized as Biodiversity Areas and Corridors. They appear to be part of the same sub-dataset and are described as "Steep and forested areas in the Bear, Evans Creek area; east of Lake Sammamish and west of Snoqualmie River. South to I-90" (WDFW n.d.). Biodiversity Areas and Corridors are areas of habitat that have been identified as important to native fish and wildlife. They are often biologically diverse and composed of mostly native vegetation. In urban areas, habitat functions may be limited, and the available habitat may be surrounded by development (WDFW 2008).

Large patches of relatively intact forested habitat on slopes east of Lake Sammamish may provide similar habitat functions as the Biodiversity Areas and Corridor units but have not been formally designated and mapped by WDFW. These remaining patches of natural habitat are expected to provide nesting, resting, and foraging habitat and serve as movement corridors for local wildlife.

Sammamish does not contain designated critical habitat for threatened and endangered fish and wildlife species as mapped by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

3.3.1.2 Animals

Terrestrial Animals and Amphibians

A variety of native animals occupy habitat available within the City of Sammamish for some portion of their life history. The following general list of animals known or expected to be present in Sammamish has been compiled using publicly available data generated by citizen scientists through the eBird and iNaturalist apps, City staff observations (AMEC n.d.), and personal knowledge:

- Mammals – Townsends chipmunk, Douglas's squirrel, beaver, river otter, long-tailed weasel, Columbian black-tailed deer, black bear, bobcat, cougar, coyote, mice, moles, and voles
- Birds – a wide range of resident and migrant birds likely utilize habitat in Sammamish at some point in their life history. Number of bird species may approach 100 or more ranging from a variety of waterfowl in lakes to many types of songbirds in forested habitats to eagles, osprey, and herons along shorelines.
- Reptiles and amphibians – chorus frog, western red-backed salamander, rough-skinned newt, northwestern salamander, long-toed salamander, ensatina, northern alligator lizard, and common garter snake

Several non-native animals are also common within the city including bullfrog, eastern gray squirrel, and cottontail rabbit, among others.

Below is a summary of sensitive wildlife species or vulnerable animal groups documented in or near Sammamish based upon PHS data (WDFW n.d.) in combination with eBird and iNaturalist observations:

- Waterfowl Concentrations: PHS maps a portion of Lake Sammamish as important habitat for waterfowl.
- Great Blue Heron Colonies: Great Blue Herons have been known to nest in Marymoor Park, located eastward of the northern end of Sammamish city limits. Other sensitive bird species are expected to also utilize the habitat a Marymoor Park.
- Pileated Woodpecker: expected in remnant patches of mature forest in Sammamish.
- Band-tailed Pigeon: individuals observed and documented by citizen scientist(s).
- Vaux's Swift: individuals observed and documented by citizen scientist(s).
- Purple Martin: breeding area documented by WDFW in boxes on remnant pilings at the north end of Lake Sammamish in 2003.
- Western Toad: individuals observed and documented by citizen scientist(s).
- Priority Bats: WDFW displays township-level (masked) data that indicates the potential for the following bat species in the southern portion of Sammamish: big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and yuma myotis (*Myotis yumanensis*).

Fish

Sammamish's water resources support populations of listed fish species. Exhibit 3-17 identifies the priority fish species occurring in the City's water bodies as reported for WRIA 8 by King County DNR (January 2010)[8]

[8] https://www.govlink.org/watersheds/8/reports/fish-maps/default.aspx.

and in WDFW PHS and SalmonScape data (WDFW n.d.), and King County DNR's "Lake Sammamish kokanee" map (King County DNR, May 2014; see Exhibit 3-18 below).[9]

Exhibit 3-17. Priority Fish Species Occurrence in or Near the City of Sammamish

Common Name (*Scientific Name*)	Status	Water Bodies with Documented Occurrence in Sammamish
Puget Sound Chinook Salmon (*Oncorhynchus tshawytscha*)	Federal Threatened, State Candidate	Lake Sammamish
Puget Sound Steelhead (O. *mykiss*)	Federal Threatened	Lake Sammamish George Davis Creek[2] Ebright Creek Pine Lake Creek (lower reach) Kanim Creek Unnamed stream
Puget Sound-Strait of Georgia Coho Salmon (O. *kisutch*)	Federal Species of Concern	Lake Sammamish George Davis Creek (rearing[2]) Zackuse Creek (lower reach) Ebright Creek Pine Lake Creek Laughing Jacobs Creek
Sockeye/Kokanee Salmon (O. *nerka*)	—	Lake Sammamish George Davis Creek (near mouth[2]) Ebright Creek Pine Lake Creek (lower reach) Zackuse Creek Laughing Jacobs Creek (lower reach)
Rainbow Trout[1] (O. *mykiss*)	—	Lake Sammamish
Cutthroat Trout (O. *clarkii*)	—	Lake Sammamish George Davis Creek Ebright Creek Pine Lake Creek (lower reach) Laughing Jacobs Creek Unnamed streams

[1] Rainbow trout and steelhead trout are part of the same species and are only distinguishable by behavior. Steelhead trout are anadromous and spend part of their lives in salt water while rainbow trout do not.
[2] Of note, George Davis Creek has complete fish migration barriers near its mouth, but these are in the process of being addressed by the City. Correcting these barriers would open the way for restoring use by coho, steelhead, and kokanee. There is an especially strong interest in restoring kokanee access along the length of the creek, which may presently be used by resident cutthroat and planted juvenile coho.
Source: King County DNR - WRIA 8, n.d.; WDFW, n.d.

[9] https://your.kingcounty.gov/dnrp/library/water-and-land/salmon/kokanee/1405-lake-sammamish-kokanee-map.pdf.

Fish Use of East Lake Sammamish Streams

East Lake Sammamish streams are typically used by kokanee and coho salmon, and steelhead and cutthroat trout.

Lake Sammamish Kokanee: Several streams on the east side of Lake Sammamish have historically supported kokanee spawning (Exhibit 3-18). Kokanee, unlike their larger relative sockeye salmon (both *Oncorhynchus nerka*), spend their entire life cycle in freshwater. They migrate to Lake Sammamish as inch-long fry and spend three to four years there before spawning in the late fall and early winter in their natal streams. In recent decades, their numbers have plummeted, and their distribution has been reduced from a large portion of the Lake Washington watershed to only Lake Sammamish and several of its tributary streams (King County DNR 2014). The life history of kokanee differs from that of cutthroat and coho in that kokanee do not rear as juveniles in streams. Adults arrive in the late fall, November and December, but may need to ripen in deeper pools, preferably with wood for protection, until they are ready to spawn. When the fry hatch and emerge from the gravel in the spring, they head straight for the lake, even possibly on the same night. They do not rear in the creeks and are not present in creeks at any life history stage during the summer.

Coho Salmon: Coho salmon present in the East Lake Sammamish sub-basin begin migrating into fresh water and through Lake Washington in the late summer and early fall to eventually reach Lake Sammamish tributaries. Adult coho spawn in the late fall, primarily during November and December. Juvenile coho emerge in the spring and rear in fresh water for an additional year before migrating to the ocean.

Cutthroat Trout: Of these species, cutthroat trout are the most versatile and so their life history the most variable. They are pervasive in local city streams where access is available and habitat suitable. In addition to migrating to lakes and salt water to rear and grow in size, cutthroat can also exist as non-migratory or resident forms. As such, they can sometimes remain to complete their entire life history upstream of migration barriers, so long as there are some stream sections with perennial flow above such barriers. Unlike kokanee or coho, but similar to steelhead, cutthroat spawn in the late winter or early spring. They can be present in streams at any time of year.

Steelhead: Anadromous steelhead and resident rainbow trout, both *Oncorhynchus mykiss,* may be present in Lake Sammamish and its tributary streams. Adults spawn in the early spring and juveniles generally migrate seaward as smolts in March to early June after two years of stream residence. Since juvenile steelhead typically spend one or more full years rearing in fresh water before migrating to sea, they can be present as rearing juveniles in suitable stream habitat at any time of year. Steelhead populations are very depressed throughout the Lake Washington basin.

Exhibit 3-18. Streams in Sammamish that Support Kokanee Salmon

Lake Sammamish Kokanee Streams and Public Lands

Name Kokanee Stream
Public Land
Other Stream/Lake
King County Regional Trail
Major Road

N
0 1 2 Miles
May 2014

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

File Name: 1405_3086sammKOKANEEmap.ai wgab
Data Sources: KC GIS Data Library, USFWS Fish Files blog

King County
Department of Natural Resources and Parks

Source: King County Department of Natural Resources and Parks.

3.3.2 Impacts

Transportation projects are a result of the proposed policies of each alternative and could result in impacts indirectly. Transportation projects considered under the alternatives have the potential to impact plants and animals through removing plants and replacing with impervious surface, increasing barriers to animal movement, and contributing to trends like species population declines resulting from past, present, and future actions. Types of potential impacts to plants and animals are relatively consistent across alternatives. The magnitude of the effect differs in relation to number of corridor/segment projects, increase in impervious surfaces, and linear feet of walls, summarized in Exhibit 3-19. Alternative 4 generates the greatest increase in impervious surface while Alternative 1 generates the smallest impervious surface increase.

Exhibit 3-19. Comparison of Impervious Surface and Retaining Wall Impacts, All Alternatives

	Impervious Surface Increase (square feet)	Impervious Surface Increase (acres)	Number of Walls	Linear Feet of Walls[1]
Alternative 1	71,000	1.6	1	600
Alternative 2	636,720	14.6	52	23,700
Alternative 3	411,360	9.4	41	14,400
Alternative 4	1,211,059	27.8	112	60,035

[1] The quantities in this exhibit are the sum of values for impervious surface increase, number of walls, and linear feet of walls by segment from an Excel spreadsheet table provided by the City's traffic consultant, Transportation Solutions, Inc., dated June 27, 2021, with updates through July 16, 2021. Amenity zones were not considered impervious surfaces and are not included in the areas given above.

3.3.2.1 Plants

Impacts Common to All Alternatives

Impacts to plants are generally expected to correspond with increased impervious surface amount. Type of vegetation that would be impacted along roadways and intersections ranges from grass and forbs, shrubs, maintained landscape areas, street trees, and/or native deciduous and coniferous trees, with invasive weeds likely prevalent in some areas. No sensitive or rare plant species are known to be present that would be directly impacted by the alternatives. Indirect effects to sensitive habitats (like effects of stormwater changes to sphagnum bogs discussed in the Water Resources section) could be prevented through application of current stormwater standards.

The greatest impact to plants would come from the removal of established native trees along roadway projects. Approximate tree canopy loss was quantified using a two-dimensional GIS analysis to analyze the relative impacts to tree canopy of the Action Alternatives as compared to Alternative 1. Assumed tree canopy loss occurs where improvement project polygons intersect tree canopy area (2018 tree canopy data provided by Davey Resource Group, received March 2021). The analysis does not consider tree stem location or the development status of the land present beneath existing tree canopy. Therefore, the tree canopy loss area presented in Exhibit 3-20 may be an over-estimate. Project polygons are based upon standard road widths of 70 feet for a three-lane minor arterial and 94 feet for a five-lane principal arterial.

Exhibit 3-20. Relative Impacts to Tree Canopy by Comparing Action Alternatives

	Relative Impact and Approximate Area of Tree Canopy Loss[1] (acres)
Alternative 2	**Medium**: 15.0
Alternative 3	**Medium**: 9.3
Alternative 4	**High**: 30.9

[1] Approximate area of tree canopy loss calculated in GIS. Tree canopy impacts are where corridor improvement projects intersect with tree canopy areas, as mapped by the land cover data provided by Davey Resource Group (2018).

Alternative 1

Tree canopy loss under Alternative 1 would be minor and readily mitigated based on the relatively small number of trees likely to be affected at intersection projects.

Alternative 2

Tree canopy loss under Alternative 2 is half of what is proposed in Alternative 4 (but still greater than Alternative 3). The segments in Alternative 2 that generate the greatest loss in tree canopy are along East Lake Sammamish Parkway NE Corridor (segments 1 and2) and Duthie Hill Road Corridor (Segment 43). The Sahalee Way - 228th Avenue North Corridor (Segment 9) in Alternative 2 also has the potential to impact terrestrial habitat associated with the PHS mapped Biodiversity Area and Corridor next to Sahalee Way and Evans Creek Preserve.

Alternative 3

Alternative 3 generates the least amount of tree canopy loss of the Action Alternatives, at approximately one-third of what is anticipated under Alternative 4. The East Lake Sammamish Parkway NE Corridor (segments 1and 2) and the Duthie Hill Road Corridor (Segment 42) generate the greatest tree canopy impact in Alternative 3.

Alternative 4

Alternative 4 generates the greatest tree canopy removal impact of the Action Alternatives. The Issaquah-Pine Lake Road Corridor (Segment 31), 228th Avenue South Corridor (Segment 20), and Sahalee Way - 228th Avenue North Corridor (Segment 11) contribute the most to this impact in Alternative 4. The Sahalee Way - 228th Avenue North Corridor (segments 9 and 10) in Alternative 4 also has the potential to impact terrestrial habitat associated with the PHS mapped Biodiversity Area and Corridor next to Sahalee Way and Evans Creek Preserve.

3.3.2.2 Animals

Terrestrial Animals and Amphibians

Impacts Common to All Alternatives

Terrestrial animals and amphibians may experience short- and long-term impacts from all the alternatives. Short-term disturbance would occur during construction of road and intersection projects. Construction activities increase noise and activity levels in a project area and are disruptive to nearby wildlife. While most construction impacts are expected to be temporary, affected species may be displaced or experience mortality associated with vegetation removal. Incidental loss of wildlife during construction is more likely to impact species that are less mobile or breeding.

Existing road infrastructure currently affects habitat connectivity and animal movement patterns. Potential improvements to road corridors and intersections considered under the alternatives would not increase habitat fragmentation, although total habitat area would be reduced by removing vegetation along patch edges and by increasing edge effects throughout existing patches. Removal of forest canopy will reduce structure and habitat for wildlife, although road corridors are already disturbed and forested areas directly adjacent to existing roads have reduced habitat function. Roadway widening and new retaining walls would increase travel barriers to species like amphibians, reptiles, and some mammals. Wider road segments may also increase the potential for vehicle collisions with crossing large mammals. Along riparian corridors, movement of wildlife is likely to improve with stream crossing upgrades (see discussion below).

In general, urbanization is linked to habitat loss, which is contributing to a decline in bird populations across North America. The bird abundance trajectory is in decline along with a decline in insect abundance linked to agriculture intensification and urbanization. A study analyzing bird diversity and abundance across North America from 1970 to 2018 found a steep decline in bird abundance from all biomes except wetlands. A loss of nearly three billon birds is reported for North America over that 48-year period (Rosenberg, K.V. et al. 2019). This study shows that more efforts are necessary to keep common birds common.

Action Alternatives 2, 3, and 4

Several acres of forested wildlife habitat along existing roadway corridors would be removed in the Action Alternatives, with Alternative 4 potentially impacting around 30 acres. All potential transportation project areas are along existing roadway corridors and experience regular disturbance from vehicular traffic. As a result, wildlife species in the vicinity of these areas are expected to be tolerant of existing urban/suburban disturbance levels reducing the likelihood of impacts to species that are generally less tolerant of human activity.

Fish

Impacts Common to All Alternatives

Since the corridor and intersection projects included under all alternatives are already existing, and were constructed when stormwater regulations were typically much less stringent, proposed projects could improve stormwater characteristics related to water quality and quantity. The proposed projects represent an

opportunity to not only treat additional impervious surfaces according to current, more effective design standards, but also to bring previously developed areas up to those same improved standards as well. Thus, diligent and competent implementation of these projects can result in net improvements to stormwater and downstream fish and wildlife habitat.

Alternative 1

Under Alternative 1, no stream crossing or associated in-water work are involved, and indirect effect on fish are expected to be the same as those described previously (under Impacts Common to All Alternatives).

Action Alternatives 2, 3, and 4

Net improvements to stormwater are expected under alternatives 2, 3, and 4 as well. These alternatives may also have short-term impacts to fish through in-water work associated with construction at stream crossings. However, where existing stream crossings are upgraded, bringing stream crossings up to current design standards with accompanying improvement in fish passage and in-stream habitat will yield a long-term benefit to fish. Where road segments are widened, longer culverts may result; this effect can be minimized with the use of vertical or steep engineered slopes at each culvert end. Any impacts to buffers can be readily mitigated. Net fish passage and other habitat benefits will result from bringing these existing stream crossings up to current design standards.

3.3.3 Mitigation Measures

3.3.3.1 Incorporated Plan Features

The alternatives would retain Comprehensive Plan goals and policies regarding plants and animals, such as:

- Goal EC.4 Protect and promote a diversity of plant, pollinator and animal species habitat in Sammamish.
- Policy EC.1.2 Encourage the retention and connectivity of active and passive open space and areas of natural vegetation to mitigate harmful impacts of development on the City's lakes, streams, wetlands, erosion and other natural hazard areas, fish, wildlife and pollinator habitat to improve the quality of life.
- Policy EC.1.4 Protect, where appropriate, the following special areas: a Natural areas including significant trees…

3.3.3.2 Regulations and Commitments

The following existing regulations limit impacts to plants and animals:

- Endangered Species Act: Regulates and protects species listed at the state or federal level.
- Migratory Bird Treaty Act: Prohibits the take of protected migratory bird species without prior authorization by the U.S. Fish and Wildlife Service.
- Bald and Golden Eagle Protection Act: Prohibits the take of any bald eagle or golden eagle without prior authorization by the U.S. Fish and Wildlife Service.

- Fish and Wildlife Habitat Development Standards: SMC 21A.50.325 and .327 identify development standards for construction in fish and wildlife habitat conservation areas and corridors, and associated buffers.
- Development Standards for Wetlands: Chapter 21A.50 SMC identifies development standards for construction in wetlands and associated buffers.
- Development Standards for Trees: Chapters 21A.37 and 21A.50 SMC identify development standards for construction near significant trees. An exemption to these standards likely applies for removal of significant trees in public easements and public rights-of-way.
- Urban Forest Management Plan (UFMP) (2019), City of Sammamish: The purpose of the UFMP is to provide policy guidance for managing, enhancing, and growing trees in the City of Sammamish over the next 20 years. The UFMP promotes resilience, species diversity and sustainable canopy cover.
- Public Works Standards: The City of Sammamish 2016 Public Works Standards addresses permitting and engineering requirements for work in the City's right-of-way. Topics include submittals of geotechnical reports, cut and fill slopes, landscaping, tree planting and removal, roadway surface treatment, and construction standards. These standards include tree protection and tree installation standards, but do not require tree replacement for removals.
- The State requires an HPA for construction or other work activities in or near state waters that will impact the natural flow or bed of waters of the state. HPAs are intended to ensure that construction is done in a manner that protects fish and their aquatic habitats.
- Project-level SEPA Review: Chapter 20.15 SMC establishes the process for project-level environmental review, including required compliance with applicable mitigating measures to address identified impacts. Authority for project-level mitigation is provided by, among others, the City's Shoreline Management Master Plan, Public Works Standards, Development Code and Noise Ordinance.

3.3.3.3 Other Potential Mitigation Measures

Tree Canopy and Wildlife Corridors

- To continue to promote the goals established in the City's Urban Forest Management Plan, the City could develop mitigation measures for tree canopy impacts that are geared towards one or more of the following:
  - Goal UA#1 – Maintain city-wide canopy cover.
  - Goal UA#2 – Increase and promote resilience in the urban forest resource
  - Goal UA#3 – Update design, construction and development standards that apply to trees and planting sites
  - Goal UA#4 – Establish tree bank (fund)
  - Goal UA#5 – Assess the ecosystem services provided by public trees and natural areas
  - Goal UA#6 – Collect and maintain a complete inventory database of the community tree resource
  - Goal UA#7 – Care for the community urban forest using the best available science
- Consider measures to reduce impacts to animal movement, such as mapping and maintaining wildlife corridors.

Mitigation of Other Potential Transportation Improvements

Alternatives 2, 3, and 4 propose LOS and concurrency programs for segments, and address 2035 growth targets. Growth may occur differently than modeled, and, thus additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road (Segment 40) and Duthie Hill Road (Segment 41 in addition to segments 42 and 43) may be required depending upon actual development patterns in the future for either alternatives 2, 3, or 4.

Adding road improvements along Issaquah-Fall City Road and Duthie Hill Road could add impervious surfaces by 1.4 to 2.4 acres and increase the number of walls (up to 10) and length (approximately 12,400 feet). Adding road improvements to segments 40 and 41 could result in 3.0 to 3.9 more acres of tree canopy loss.

Mitigation measures through existing regulations and other potential mitigation measures described above would be applicable to these segments.

3.3.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are expected from the alternatives to animals (including fish) with application of the relevant requirements listed under regulations and commitments.

Many relatively large native trees are likely to be removed under the Action Alternatives based upon general proximity of roadway projects to tree stems/driplines. Trees are regulated by the City, but tree removal in public easements and public rights-of-way are exempt from the development standards that would otherwise require some form of replacement or mitigation. Similarly, the 2016 Public Works Standards do not specify standards with respect to mitigation for removed trees. Without mitigation to replace removed trees, alternatives 2, 3, and 4 would result in changes that directly conflict with Goals #1 and #2 of the UFMP. This is considered a potentially significant impact to the urban canopy and the associated functions that trees provide. Alternative 4 presents the greatest impact to the city's urban forest resource, of the Action Alternatives considered. Alternatives 2 and 3, while still potentially significant, would impact half as much tree canopy or less. Cumulatively, impacts to habitat associated with urban canopy loss from the alternatives may contribute to the reported large-scale trend of declining bird populations in North America (Rosenberg, K.V. et al. 2019).

3.4 Land Use

This chapter evaluates potential effects of the alternatives on land use mix and patterns, key transportation corridors and community centers, and the ability to meet planning-level growth targets for the Sammamish Town Center and the City as a whole. The chapter also reviews the distribution of existing land uses and zoning and historic development activity and trends across the City. The impact analysis compares the alternatives on the basis of their potential effects on future development activity, including changes to transportation patterns and neighborhood character that may disincentivize development in specific areas.

Impacts for each topic area are considered significant under the following conditions:

- **Comprehensive Plan Growth Targets:** The alternative creates conditions that act as a barrier to the City achieving their adopted Comprehensive Plan growth targets.
- **Town Center Development:** The alternative creates conditions that substantially disincentivize development in the Town Center or act as a barrier to the Town Center achieving its planned share of adopted Comprehensive Plan growth targets.
- **Land Use Patterns and Character:** The alternative results in a significant change to existing land use patterns or the character of existing neighborhoods.

3.4.1 Affected Environment

3.4.1.1 Existing Land Use Patterns

The City of Sammamish encompasses approximately 21.5 square miles, or 13,760 acres (inclusive of land and water area). It is generally characterized as a residential City, with approximately 60% of the geographic area consisting of single-family residences. Commercial and mixed-use areas combined account for roughly 1% of the city's land area. School uses and multi-family residential uses each make up about 3% of the total land area. Approximately 21% of the land area is recreation/open space, and 11% of the land area is considered vacant.

The City has established four commercial/mixed use centers: Inglewood, Pine Lake, Klahanie, and the Town Center. These centers serve as nodes of development within the community, with most of the city's commercial, mixed-use, and multi-family residential development concentrated in these areas. Existing land use and center boundaries are shown in Exhibit 3-21. The following sections describe each of these centers, plus the major transportation corridors that connect them with the rest of the city.

Town Center

The Town Center subarea is generally bounded on the north by E Main Street, on the south by SE 8th Street, on the east by 233rd Avenue SE and on the west by 222nd Avenue SE. The Town Center Plan, adopted in 2008 and last amended in 2020, envisions the Sammamish Town Center as a central hub that integrates

commercial, residential, cultural, and natural land uses in a vibrant, family-friendly gathering space. Implementing zoning for Town Center was adopted in 2010 and 2011. Since that time, development has included approximately 132,000 sf of commercial area and 326 residential units, including 49 affordable units and 13 live/work units. Most of this development has been in a single project, the Village at Sammamish Town Center, located at SE 4th Street/228th Avenue SE. Development in the permit review pipeline could add to the mixed uses consistent with City plans and codes. The Town Center area also includes the 39-acre Sammamish Commons, City Hall, the Sammamish Library, and the Sammamish Community and Aquatic Center. Skyline High School adjoins the southeast boundary of the subarea.

Inglewood Center

Centered on the intersection of NE Inglewood Hill Road/NE 8th Street and 228th Avenue NE, the Inglewood Community Center consists mostly of auto-oriented commercial and moderate-density multi-family residential land uses. The center is anchored by a shopping center that includes a grocery store and an assortment of restaurants and personal services. The Sammamish Boys and Girls Club is located in the northwest quadrant of the center and Eastlake High School adjacent to the southeastern corner of the center.

Pine Lake Center

The smallest of Sammamish's commercial/mixed-use centers, Pine Lake consists of a mix of commercial and multi-family residential development. The center is anchored by a shopping center at the intersection of Issaquah-Pine Lake Road SE and 228th Avenue SE that contains a grocery store and a mix of restaurants and personal service businesses. Pine Lake Middle School and Sunny Hills Elementary School are located south and east of the center along Issaquah-Pine Lake Road SE.

Klahanie

The Klahanie neighborhood was annexed to the City of Sammamish in 2016. While the neighborhood is primarily residential, a small commercial and multi-family residential center is located at the intersection of SE Issaquah-Fall City Rd and Klahanie Dr SE, consisting of a shopping center, apartments, and townhomes.

East Lake Sammamish Parkway Corridor

Spanning north to south on the western side of the city along Lake Sammamish, East Lake Sammamish Parkway is comprised of mostly single-family uses, recreation/open space, vacant land, and some multi-family and commercial development along the southwestern corridor. The corridor is adjacent to the East Lake Sammamish Trail, which runs parallel to the corridor. The corridor runs south through the adjacent City of Issaquah.

Sahalee Way NE/228th Avenue NE Corridor

Sahalee Way NE/228th Avenue NE is a centrally located north-south corridor. Sahalee Way NE is the major entryway into the City from the north where it intersects with SR 202. Sahalee Way rises up from the Sammamish River Valley and connects to 228th Avenue NE near the top of this rise. The corridor runs through the City of Sammamish's commercial and mixed-use centers, including the Town Center, and the designated community centers of Inglewood and Pine Lake. The existing land uses include single-family residential, school and public facility/institutional uses, business/commercial, mixed-use, multi-family, recreation/open space, utility, and vacant land.

NE Inglewood Hill Road/NE 8th Street Corridor

NE Inglewood Hill Road/NE 8th Street is a centrally located east-west corridor that serves the neighborhood of Inglewood on the west. The corridor intersects with the Inglewood Center, discussed above. Other land uses along the corridor include recreation/open space, vacant, and single-family residential.

Issaquah-Pine Lake Road/SE Issaquah-Fall City Road Corridor

The Issaquah-Pine Lake Road/SE Issaquah-Fall City Road corridor is concentrated on the southeastern region of the City of Sammamish and runs adjacent to the Klahanie neighborhood. The corridor intersects with 228th Avenue SE and the south Community Center/Commons commercial area. Land uses along the corridor include school uses, business/commercial concentrated in the commercial area, multi-family, utility, recreation/open space, single-family residential, public facility/institution, and vacant land.

244th Avenue NE Corridor

Located near the northeastern edge of the city, this corridor provides north-south access between SR 202 and SE 8th Street. Land uses along this corridor are primarily single-family residential in character with substantial amounts of recreation and open space, as well as public uses such as schools.

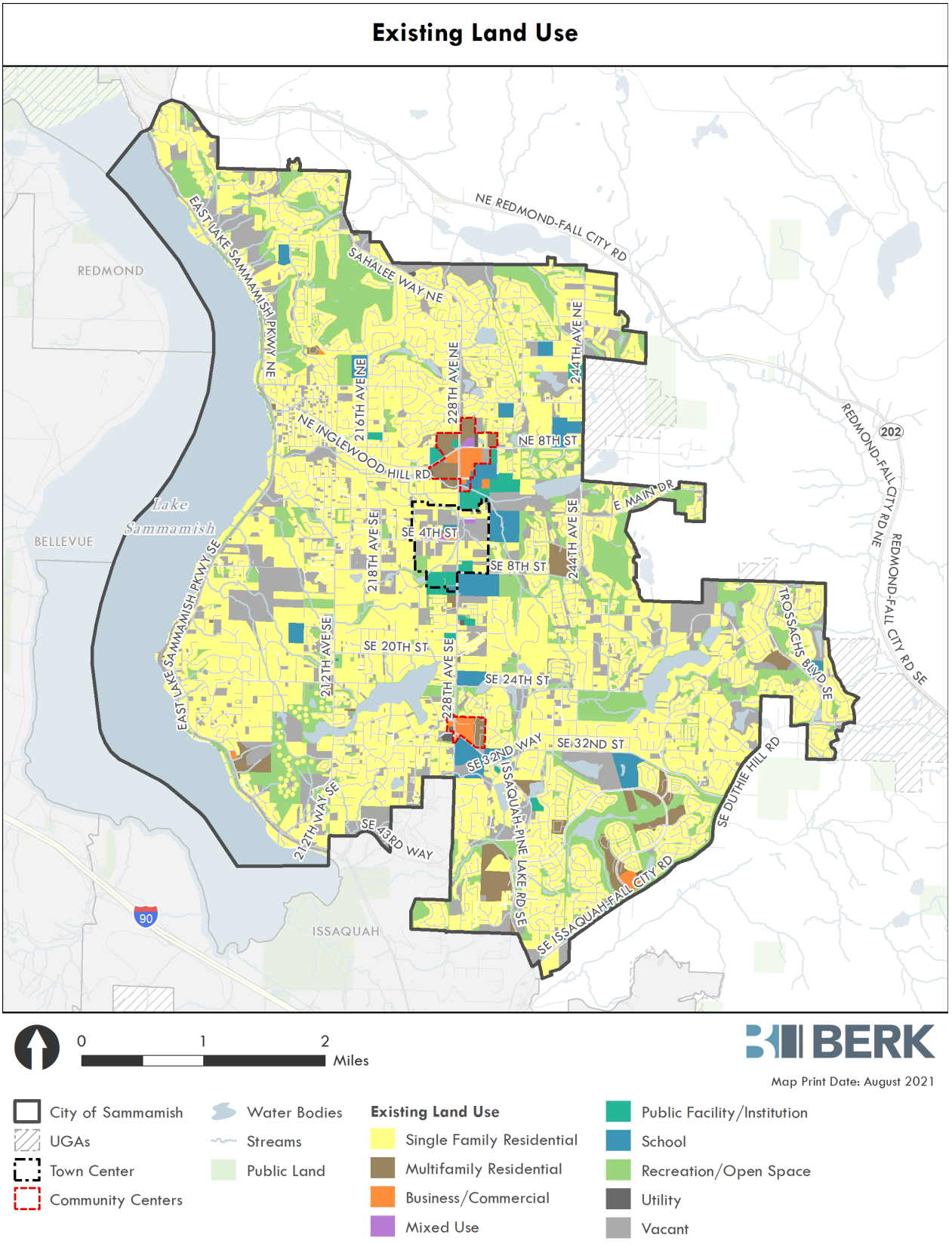
SE 32nd Street Corridor

This corridor travels east-west along the northern edge of the Klahanie neighborhood, connecting the Pine Lake center to the SE Issaquah-Fall City Rd/SE Duthie Hill Rd Corridor that runs along the southeastern edge of the City. Land uses are primarily single-family residential with the exception of Klahanie Park and Beaver Lake Middle School.

SE Issaquah-Fall City Road/SE Duthie Hill Rd Corridor

This corridor runs along the southeastern boundary of the city. Land uses include a mix of single-family residential and open space uses with a concentration of commercial and multi-family uses, as described above for the Klahanie center.

Exhibit 3-21. Existing Land Use Map



Source: City of Sammamish, 2020; King County Assessor, 2020.

3.4.1.2 Future Land Use and Zoning

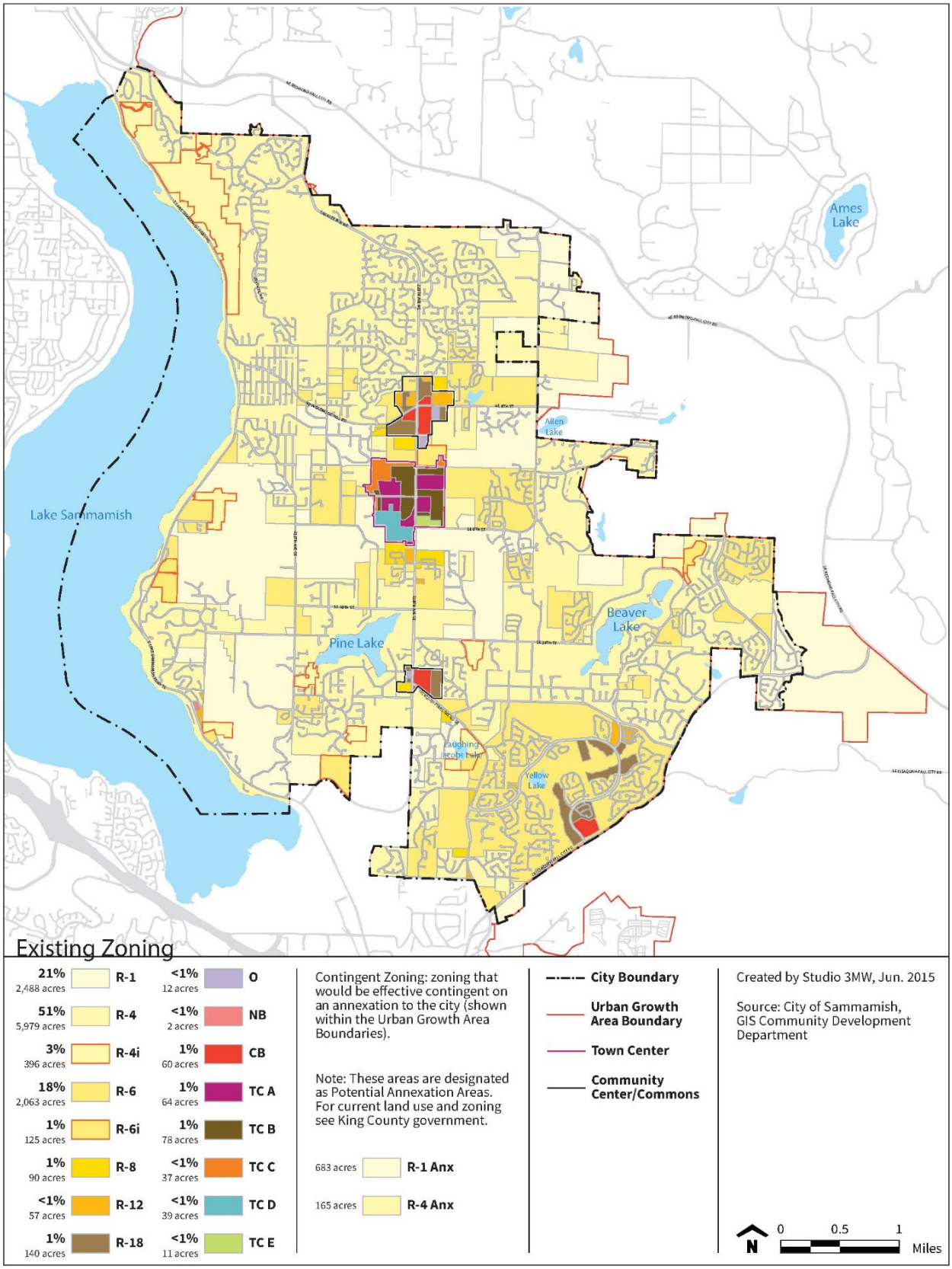
The Sammamish Comprehensive Plan Land Use Element establishes land use designations to achieve the plan's goals and policies; zoning districts mirror the Comprehensive Plan land use designations. Future land use and zoning districts are shown in Exhibit 3-22. Each land use designation and its corresponding zoning district is described below:

- **Residential (R):** Residential districts implement the Comprehensive Plan's housing policies and provide for residential development at a range of densities. The R-1 zone is intended for single-family residences on lots with environmental constraints. The R-4, R-6, and R-8 zones are intended primarily for detached single-family residences, and the R-12 and R-18 zones allow for moderate-density multi-family residential development (up to 12 and 18 units per acre, respectively).
- **Neighborhood Business (NB):** This designation allows for small-scale commercial/retail uses and provides for limited residential development up to the same density as the R-8 zone.
- **Community Business (CB):** Compared to the Neighborhood Business zone, the CB zone permits a wider range of commercial uses, including small-scale office and mixed-use developments.
- **Office (O):** The Office district is focused on employment-generating uses, including pedestrian and transit-oriented offices with potential for commercial/retail uses and urban-density residential development.
- **Town Center (TC):** The Town Center is planned as the primary commercial and mixed-use center in Sammamish, featuring a mix of commercial and residential uses at a range of densities. Zones within this area are broken up into the following:
  - **Town Center A (TC-A):** Commercial focus. The purpose of the TC-A zone is to foster a mix of pedestrian-oriented retail, office, high-density residential, and civic uses.
  - **Town Center B (TC-B):** Residential Focus. The TC-B zone provides for a mix of housing types, including apartments, townhomes, and limited cottages and detached single-family residences.
  - **Town Center C (TC-C):** Lower Intensity Residential. The TC-C zone is designed to buffer lower-density areas on the periphery of the Town Center from higher-intensity commercial and multi-family development in the Town Center core. The zone emphasizes lower-density housing types, such as cottages and detached single-family residences.
  - **Town Center D (TC-D):** Civic Campus. The TC-D zone provides for civic, recreational, and open space uses and generally covers the areas around the Sammamish Commons park and the Sammamish City Hall campus.
  - **Town Center E (TC-E)**: Reserve. This zone allows for preservation of existing uses while not precluding future development.
- **Public Institution (P):** This zone accommodates publicly owned facilities that offer governmental, utility, recreational, educational, and emergency response services to the city.

The City has also identified four Potential Annexation Areas (PAA) in the unincorporated Urban Growth Area, including:

- **Outlook:** This area serves as an outlook and entrance for Evans Creek Preserve, north of the Sahalee Country Club and Golf Course.
- **244th South:** Located east of 244th Avenue NE, this area is comprised of low-density residential development and open space.
- **Soaring Eagle Park:** Located north of SE 9th Way, this area is currently in use as parkland.
- **Aldarra Unplatted:** This area is characterized as open space, consisting of a golf course.

Exhibit 3-22. Future Land Use and Zoning Map



Source: City of Sammamish, 2020.

3.4.1.3 Shoreline Master Program Designations

The Sammamish Shoreline Master Program (SMP) establishes goals, policies, and land use regulations for shoreline areas to conserve and restore sensitive environmental areas, protect water quality, and preserve and enhance public access and public recreation along the shoreline. Shoreline jurisdiction includes areas within 200 feet of the shoreline, plus associated wetlands and floodplains. The SMP establishes two environment designations for shoreline properties:

- **Shoreline Residential (SR):** The shoreline residential environment is intended to accommodate residential development in shoreline areas. It applies to areas with existing or planned residential development and areas platted for residential development.
- **Urban Conservancy (UC):** The urban conservancy environment is intended to protect and restore shoreline areas that are relatively undeveloped or unaltered. Associated regulations maintain open space, floodplains, and habitat, while allowing for compatible uses. Development in the UC environment should be relatively low intensity, as the designation is applied to shorelines that retain important ecological functions.

Most of East Lake Sammamish Parkway is located within shoreline jurisdiction, as are most of the adjacent waterward properties. Development within shoreline jurisdiction on these properties would be subject to review and compliance with the requirements of the City's SMP.

3.4.1.4 Comprehensive Plan Growth Targets

In compliance with the Growth Management Act, the Land Use Element of the Sammamish Comprehensive Plan establishes growth targets for the City over the plan's 20-year planning period. These figures are established through a countywide process that starts with population projection and housing data from the Washington Office of Financial Management (OFM). Through the King County Countywide Planning Policies, all cities in King County are assigned a growth target. The growth target is a baseline of necessary zoned capacity needed to accommodate growth (both housing and jobs) in each jurisdiction; it does not set a cap for development and therefore, development can exceed the growth target in any given planning horizon. With pipeline development the City is nearing its 2035 housing target (see Appendix B).

Due to a variety of factors, including delayed Comprehensive Plan update schedules due to the Great Recession and the annexation of the Klahanie neighborhood, the City's growth targets have undergone a series of revisions since 2006 (Appendix B).

In 2006, the King County Countywide Planning Policies established a 2006–2031 housing growth target for the City of Sammamish of 4,000 new dwelling units. While comprehensive plans typically cover a 20-year planning period, this target encompassed 25 years. King County cities were due to prepare periodic updates to their comprehensive plans in 2011. However, in the aftermath of the Great Recession, the State Legislature allowed these updates to be delayed until 2015. When these 2015 updates were prepared, growth targets were extended to 2035 to coincide with the 20-year horizon of the updated comprehensive plans. The City of Sammamish, consistent with guidance from King County, extended its target of 4,000 new units by applying a straight-line projection from 2031 to 2035, based on the average annual increment of growth established by the previous target.

4,000 ÷ 25 years = 160 units/yr | 160 units/yr x 4 yrs. = 640 units | 4,000 + 640 = 4,640 units

The City's 2015 Comprehensive Plan states the City's 2015–2035 growth target as 4,640 units, which, while correctly calculated, does not provide clear context on the process for setting the targets. Because this is an extension of the original growth targets, it would be clearer to state this as a 2006–2035 target.

The growth targets were adjusted again following the annexation of the Klahanie neighborhood in early 2016. This adjustment used the 2006–2031 target of 4,000 units as a base and added 180 units to reflect the change in the city's boundary. This adjusted target of 4,180 units was then extended to 2035 using the same method employed for the Comprehensive Plan.

4,180 ÷ 25 years = 167 units/yr. | 167 units x 4 yrs. = 669 units | 4,180 + 669 = 4,849 units

The next round of periodic updates for King County cities is due in June 2024. In preparation, King County is in the process of updating its Countywide Planning Policies to incorporate new growth projections and regional planning guidance from PSRC's VISION 2050. These factors, along with recent local development trends, will inform the establishment of new growth targets through 2044 in the City of Sammamish. However, the currently adopted 2006 – 2035 growth target is the basis for the BLUMA EIS.

3.4.2 Impacts

3.4.2.1 City-wide Impacts

As described in Chapter 2, the Action Alternatives (alternatives 2, 3, and 4) would entail the adoption of new transportation LOS standards and concurrency requirements. No changes to Comprehensive Plan land use designations or zoning would be enacted under the Action Alternatives, but Alternative 3 and Alternative 4 would include revisions to development regulations to promote smaller-scale single-family residences (both attached and detached) and more affordable multi-family and senior housing units. Adoption of Alternative 1 or Alternative 2 would not directly change land uses or land use patterns in the city, though Alternative 3 and Alternative 4 would gradually alter the residential use mix as new development occurred under the new incentive regulations. While the additional concurrency review necessary under alternatives 2, 3, and 4 would not preclude or impede development on any specific property, implementation of the proposed LOS standards under the Action Alternatives would require the construction of associated transportation improvement projects, as described in Chapter 2. Construction activities associated with these projects may result in indirect and temporary impacts to individual properties in the vicinity of the affected roads and intersections. In addition, while this EIS assumes that all necessary transportation improvements for a given alternative would be constructed consistent with concurrency requirements, such improvements take time to construct, and funding for all necessary projects may not be immediately available. If the necessary transportation improvements are delayed due to lack of funding, this would result concurrency failure(s), which would cause a corresponding reduction in development activity, depending upon an application's location in the city, until the necessary improvements are completed.

The following sections describe how each of the alternatives would potentially impact land use conditions in Sammamish, specifically with respect to the ability of the City to meet its Comprehensive Plan growth targets; the pace and type of development occurring in the Town Center; and land use patterns and development character throughout the City.

3.4.2.2 Comprehensive Plan Growth Targets

As described above, none of the Action Alternatives propose any changes to future land use or zoning designations, nor do they change any development regulations that would affect the amount of development that could occur in Sammamish or reduce the city's overall development capacity. Roads and intersections performing below LOS standards could potentially create traffic conditions that would make some areas of the City temporarily less desirable for new development due to lack of easy access. However, such traffic conditions would not preclude development on vacant or redevelopable properties, and each alternative assumes that all transportation improvements necessary to meet LOS standards would be completed in a manner consistent with concurrency requirements.

Potential impacts of the various alternatives are discussed below.

Alternative 1 No Action

Under Alternative 1, the LOS standards in effect prior to the adoption of Ordinance 02019-484, which was invalidated by the GMHB, would be restored. Reinstatement of the previous LOS standards and concurrency requirements would not result any new land use impacts compared to existing conditions.

Action Alternatives 2, 3, and 4

Compared to Alternative 1, the addition of LOS standards and concurrency requirements for corridors and corridor segments adds new permit review requirements and may result in additional development costs. Construction of transportation improvement projects to implement the new standards may cause short-term, construction-related disruption in localized areas, and any projects delayed due to lack of funding could create concurrency failures that would slow future residential development in Sammamish.

As noted in Section 3.4.1 Affected Environment, an additional 885 residential units are needed to meet the City's 2035 housing target; most of these units (689) are currently in the development pipeline, leaving 196 units remaining to meet the housing target.; there is also over 400,000 square feet of commercial space anticipated to be constructed by 2035. See Appendix B. Given the annual rate of residential development experienced in the past decade (as described in Chapter 3.5–Housing), this will be easily achieved. A drop-off in the rate of development to less than one third of 2010–2019 levels would need to occur to impact the City's ability to meet its obligations under the 2035 growth target. Based on the City's track record of development activity, this level of impact appears unlikely. However, given the uncertainty of future economic conditions, it may be prudent to monitor trends so that adjustments can be made as needed.

As described in Chapter 2, alternatives 3 and 4 would additionally include amendments to City regulations including but not limited to SMC Title 21A and 21B to implement regulatory incentives designed to promote smaller residential development types, including small-scale detached single-family dwellings (e.g., small-lot or zero lot-line residential, cottages, and cluster development), townhomes, and duplexes. These incentive measures could alter the mix of housing types in Sammamish but would not reduce available land capacity or reduce the overall quantity of housing units produced. By incentivizing smaller, denser housing types, alternatives 3 and 4 could potentially increase housing capacity in Sammamish, with a goal to reduce trip generation in the city. As such, the incentives proposed for alternatives 3 and 4 would not negatively affect the ability of the City to achieve adopted Comprehensive Plan growth targets.

3.4.2.3 Town Center Impacts

The City's 2035 growth target plans for development of 2,000 residential units in Town Center. Implementation of the Action Alternatives would result in improvements to 228th Avenue NE and Sahalee Way NE, which provide direct access to Town Center and other mixed-use centers. Improved transportation access to these centers could potentially make them more desirable from a development standpoint, leading to future growth in multi-family and mixed-use development, which would further diversify the local housing stock.

This long-term benefit would be balanced against short-term costs of potential additional development costs and disruption as transportation improvements are constructed, as described above. How the development market would balance these costs and benefits is not known at this time. However, ongoing monitoring can allow the City to anticipate potential impacts and act accordingly.

3.4.2.4 Land Use Patterns and Character

While none of the alternatives would implement changes to Comprehensive Plan land use designations or zoning districts, the required transportation projects could indirectly affect the land use patterns and character of the areas where they are located. Road widenings would require the acquisition of private property for new right-of-way, obstruction or alteration of property access, and potential changes to traffic patterns on connecting streets due to street and intersection reconfigurations. In addition, increasing roadway capacity may attract additional vehicle traffic, altering the character of affected properties and neighborhoods.

A detailed discussion of likely changes in traffic patterns is presented in Section 3.7 Transportation.

Alternative 1 No Action

Under Alternative 1, no new roadway segment or corridor improvements are required, and intersection improvements would primarily consist of changes to traffic control (signalization, 4-way stop conversion, installation of a roundabout). No significant impacts to land use patterns or character are anticipated under Alternative 1.

Alternative 2

The most extensive transportation improvements under Alternative 2 are along the northern portion of the East Lake Sammamish Parkway NE corridor (segments 1 and 2); improvements here would require widening up to 5 lanes and full or partial acquisition for most or all of the properties along the east side of this corridor. Currently 2 lanes wide, this portion of East Lake Sammamish Parkway is characterized primarily by low-density, single-family residential development, extensive mature vegetation, and sweeping views of Lake Sammamish. Expansion of the roadway to 5 lanes would alter the character of existing development along this lakefront route. The increase in the size of the roadway and the additional traffic likely to travel through the corridor in response to increased capacity could potentially reduce the desirability of development in this area.

As shown in Exhibit 2-14, additional 5-lane road widening projects would be necessary at the northern end of Sahalee Way NE (Segment 9), and the southern end of Issaquah-Pine Lake Road SE (segments 32 and 33).

Widening to 3 lanes would be needed along the eastern portion of SE Issaquah-Fall City Road (segments 42 and 43) and the southern end of East Lake Sammamish Parkway (Segment 8). Though smaller in scale than the widenings in segments 1 and 2, these projects also have the potential to obstruct or reconfigure adjacent property access and require the acquisition of private land for additional right-of-way.

Alternative 3

While Alternative 3 adopts the same LOS standards as Alternative 2, the EIS assumes lower overall traffic volumes than Alternative 2, based on the proposed changes to the land use code to promote smaller single-family homes and more affordable multi-family and senior housing, as well as ongoing work-from-home behavior by residents. Consequently, Alternative 3 would require less extensive transportation improvements to meet concurrency requirements, as illustrated in Exhibit 2-17. Compared to Alternative 2, Alternative 3 would require reduced property acquisition on East Lake Sammamish Parkway; 196th Avenue NE to NE 26th Place (Segment 2) would only require widening to 3 lanes instead of 5, and no widening would be necessary from 205th Avenue SE to the city limit (Segment 8). Widening of Sahalee Way NE (Segment 9) would also not be necessary. Transportation improvements to the eastern portion of SE Issaquah-Fall City Road (Segment 42) and the southern end of Issaquah-Pine Lake Road SE (segments 32 and 33) would be similar to Alternative 2. Also similar to Alternative 2, most of the necessary improvements under Alternative 3 would occur in areas currently characterized by single-family residential development, and the potential impacts to property access and increased vehicular traffic could adversely affect the desirability of future development in these locations.

Alternative 4

Alternative 4 assumes the same LOS standards and development regulation changes as Alternative 3. However, Alternative 4 implements a different set of transportation improvements designed to increase the capacity of Principal Arterial roadways, thereby directing high traffic volumes to the highest-classified roadways. As shown in Exhibit 2-20, transportation improvements would be concentrated along Sahalee Way NE (segments 9, 10, 11, 12, 13, and 14), Issaquah-Pine Lake Road SE (segments 30, 31, 32, and 33), and the southern end of 228th Avenue SE (Segment 20). All affected segments on these roadways would be widened to 5 lanes. Similar to alternatives 2 and 3, a portion of SE Issaquah-Fall City Road (Segment 42) would be widened to 3 lanes.

Road widenings would be more extensive under Alternative 4 (over 7.0 miles) than under Alternative 2 (over 4.25 miles) or Alternative 3 (over 3.5 miles) and would be concentrated in major arterial corridors, specifically routes that serve as external connections and provide access to the Town Center. Concentrating road widenings along these corridors would shift the potential land use impacts associated with construction away from lower-density residential neighborhoods along East Lake Sammamish Parkway toward properties located on major transportation corridors and near the Town Center. Much of the land along these corridors is also single-family residential in nature and so construction-related impacts to neighborhood character would not be entirely avoided. The additional improvements would increase the capacity of the transportation network which could reduce overall congestion and reduce traffic-related impacts to the character of low-density neighborhoods.

3.4.3 Mitigation Measures

3.4.3.1 Incorporated Plan Features

- No alternative would directly affect land use patterns or the ability of the City to meet its growth targets (both citywide and in the Town Center).
- All alternatives maintain the vision, goals, and policies of the Comprehensive Plan.
- Under alternatives 3 and 4, there would be code-based incentives for unit types that fit the overall City Comprehensive Plan policies and zoning districts. This could include regulatory incentives designed to promote smaller residential development types, including small-scale detached single-family dwellings, townhomes, and duplexes.

3.4.3.2 Regulations and Commitments

SMC Title 21A Development Code provides standards for development including setbacks, landscaping, and other requirements that are intended to result in a consistent character of development.

3.4.3.3 Other Potential Mitigation Measures

Indirect and temporary impacts related to development feasibility, property acquisition, and changes to neighborhood character for the studied alternatives could be addressed through the following mitigation measures. These measures could also address potential improvements along Issaquah-Fall City Road (Segment 40) and Duthie Hill Road (Segment 41 in addition to 42 and 43) should those be identified.

Land Use Patterns and Development Feasibility

- Monitor development activity and evaluate policies, regulations, fees, and development standards; if determined to create a barrier to development, adjust to ensure such requirements do not limit the City's ability to meet growth targets or fulfill comprehensive plan and subarea plan goals.
- As part of future Comprehensive Plan updates, evaluate overall land use patterns in the City, specifically the balance of residential and employment-generating uses. Providing greater levels of employment within Sammamish could reduce commute-related vehicle trips in the concurrency corridors and relieve demand on the transportation network as a whole. As of 2018, the jobs-to-housing ratio in Sammamish was approximately 0.34.[10]

Property Acquisition

- Design and engineer transportation improvement projects to minimize the need for property acquisition. Where private property must be acquired to accomplish the necessary improvement, the City shall follow all applicable State and Federal requirements. Properties would be purchased for fair market value, and relocation assistance would be provided to displaced residents as necessary.

[10] Based on a 2018 PSRC Covered Employment estimate of 7,161 and 2014-2018 ACS 5-Year estimated occupied housing unit count of 21,218.

Traffic Patterns

- Periodically monitor traffic counts on local streets connecting to major arterials to identify locations where cut-through traffic occurs and implement traffic-calming measures to alleviate effects on adjacent neighborhoods.

3.4.4 Significant Unavoidable Adverse Impacts

With implementation of the specific mitigation measures, no significant unavoidable adverse impacts to land use are anticipated.

3.5 Housing

This chapter evaluates potential effects of the alternatives on housing conditions in Sammamish. The impact analysis compares the alternatives on the basis of their potential effects on the quantity, cost, and location of future development activity, including changes to transportation patterns and neighborhood character that may disincentivize development in specific areas.

Impacts for each topic area are considered significant under the following conditions:

- **Housing Supply:** The alternative will create conditions that act as a significant deterrent to overall housing production in the city, impairing the ability to achieve adopted Comprehensive Plan growth targets.
- **Housing Diversity:** The alternative will create conditions that substantially disincentivize development in areas zoned for mixed-use or multi-family development (such as the Town Center) or otherwise act as a barrier to production of housing types needed by smaller households or special needs populations.
- **Housing Affordability:** The alternative will create conditions that directly increase the cost of housing production in Sammamish or act as a barrier to the production of more affordable housing types, such as multi-family housing or accessory dwellings.
- **Neighborhood Character:** The alternative will result in a significant change to the character of existing neighborhoods that would disincentivize residential development in these areas.

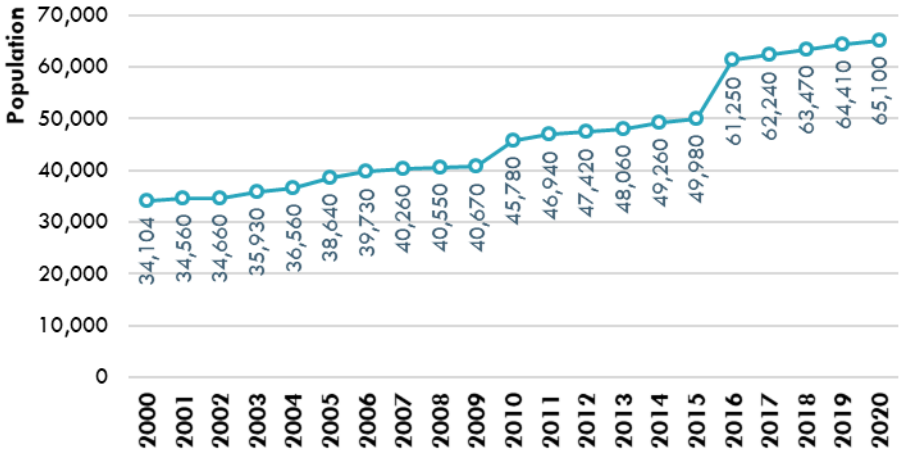
3.5.1 Affected Environment

3.5.1.1 Population

Sammamish is the 9th largest city in King County and makes up about 3% of the countywide population of 2,260,800, as of 2020. According to the Office of Financial Management (OFM), Sammamish's permanent city population was about 61,250 in 2016, growing incrementally to 65,100 in 2020.[11] The city's population has nearly doubled over the last two decades, with a notable jump in 2016 when the Klahanie neighborhood was officially annexed.[12] See Exhibit 3-23.

[11] While the state has estimates of population to 2020, the years 2016 and 2018 are the base years used in this assessment due to the base year used in the City's transportation model (2016) and availability of 2018 American Community Survey (ACS) information.
[12] On April 28, 2015, the residents of Klahanie and several adjacent neighborhoods voted to annex to Sammamish. The annexation became official on Jan. 1, 2016, raising the city's total population by about 11,000 to a little over 61,000.

Exhibit 3-23. Total City Population in the City of Sammamish, 2000-2020

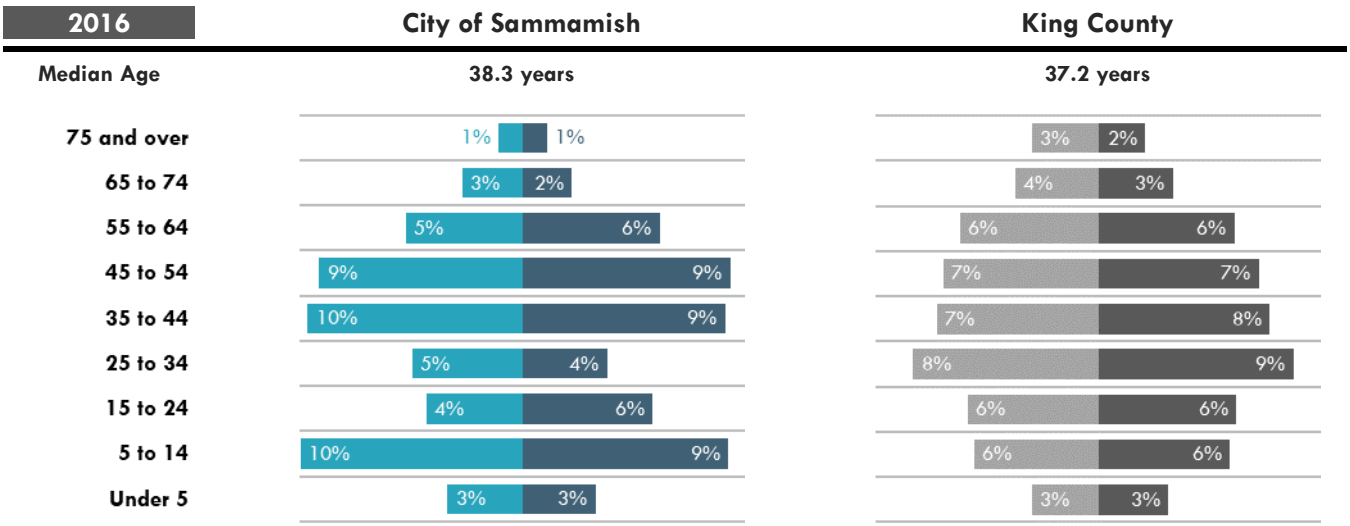


Source: OFM, 2020; BERK, 2020.

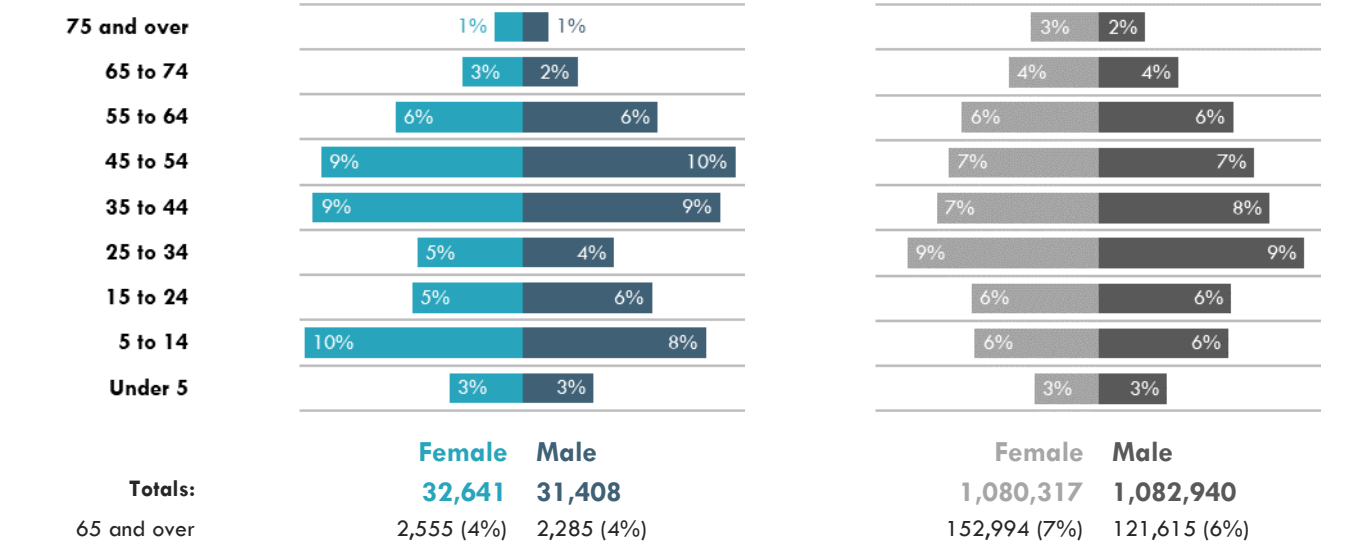
Age

Exhibit 3-24 shows the 2016 and 2018 age distribution for Sammamish residents. The median age in 2016 was 38.3 years, and the gender split was almost 50/50. Compared to the county overall, Sammamish was home to a larger proportion of children and those aged 35 to 54, with a corresponding lack of young adults. About one-third of the city's population was under 18 years of age (31%), with many of those aged 5 to 14 – compared to about one-fifth of the county overall (21%). The population profile of Sammamish in 2018 was nearly identical to 2016.

Exhibit 3-24. Population by Age Range in the City of Sammamish and King County, 2016 and 2018



2016	City of Sammamish		King County	
	Female	Male	Female	Male
Totals:	**31,335**	**30,801**	**1,041,758**	**1,037,792**
65 and over	2,381 (4%)	2,002 (3%)	141,679 (7%)	111,044 (5%)
50-64	5,828 (9%)	6,438 (10%)	202,101 (10%)	199,255 (10%)
18-49	13,349 (21%)	12,997 (21%)	484,417 (23%)	505,405 (24%)
Under 18	9,777 (16%)	9,364 (15%)	212,519 (10%)	222,087 (11%)



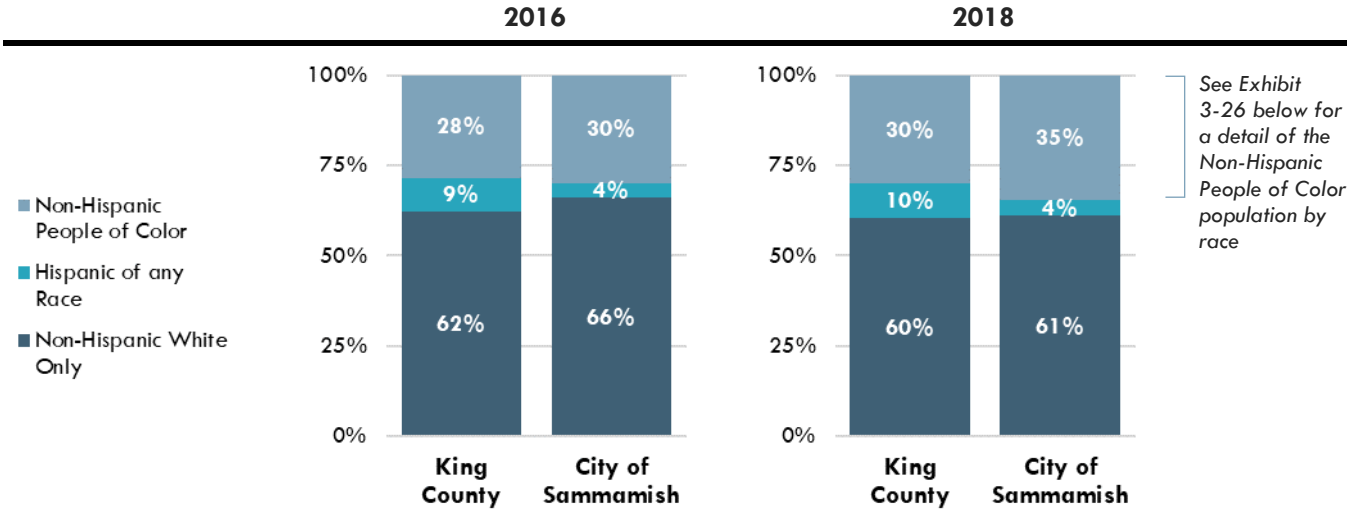
2018	City of Sammamish		King County	
	Female	Male	Female	Male
Totals:	**32,641**	**31,408**	**1,080,317**	**1,082,940**
65 and over	2,555 (4%)	2,285 (4%)	152,994 (7%)	121,615 (6%)
50-64	6,191 (10%)	6,522 (10%)	203,947 (9%)	202,024 (9%)
18-49	13,859 (22%)	13,376 (21%)	505,056 (23%)	532,243 (25%)
Under 18	10,036 (16%)	9,225 (14%)	218,320 (10%)	227,058 (10%)

Note: Estimates were provided for specific age groups as a percent in 2016 and as counts in 2018. Rounding errors in 2016 may result in the sum of summary age groups not matching the totals reported by gender.
Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table S0101); BERK, 2020.

Race and Ethnicity

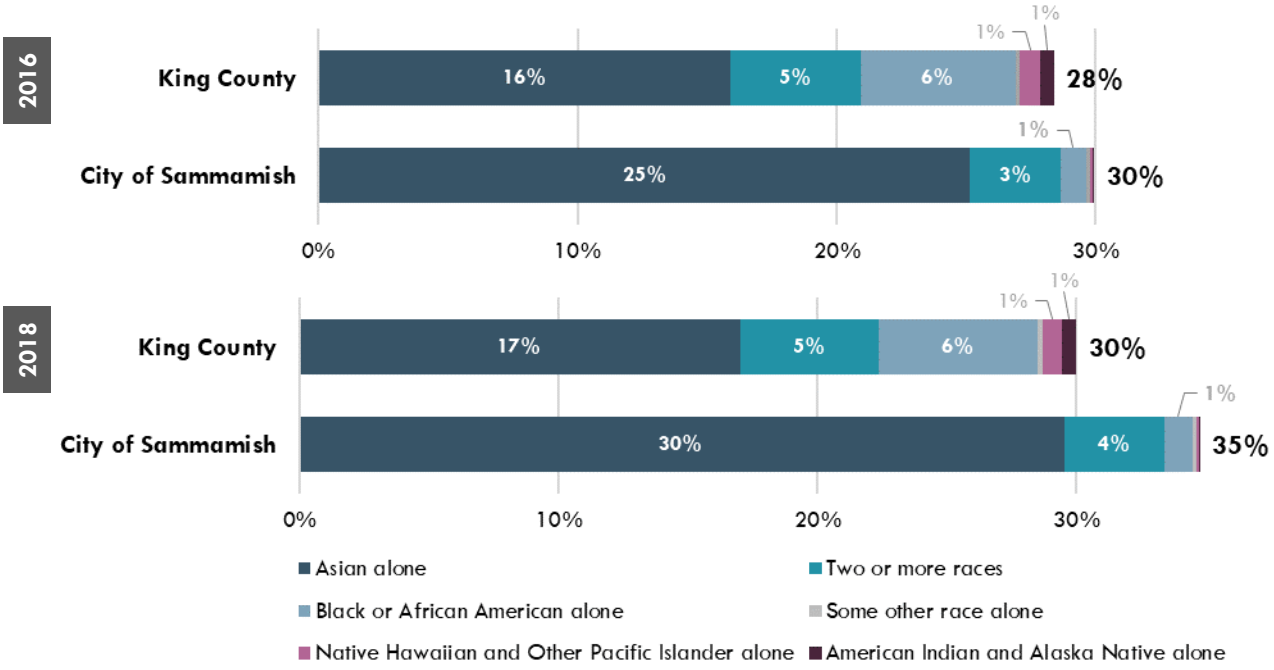
Exhibit 3-25 shows the total population of the City of Sammamish and King County by non-Hispanic people of color, Hispanic persons of any race, and non-Hispanic white identities. In 2016, about two-thirds of Sammamish residents identified as non-Hispanic white, slightly higher than the county overall. This proportion decreased slightly by 2018 to 61%, with those identifying as non-Hispanic people of color increasing from 30% of the city's population in 2016 to 35% in 2018. The largest racial groups represented in the 2016 and 2018 non-Hispanic population in Sammamish are Asian, those with two or more racial identities, and Black or African American (see Exhibit 3-26). People of color who identify as Asian represent a larger portion of Sammamish's total population than in the county overall, while the remaining proportions of people of color are lower than the county overall.

Exhibit 3-25. Population by Race and Ethnicity in the City of Sammamish and King County, 2016 and 2018



Note: Non-Hispanic people of color includes those who identified as "Not Hispanic or Latino" and as "Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, Some other race alone, or Two or more races."
Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table B03002); BERK, 2020.

Exhibit 3-26. Non-Hispanic People of Color Population Detail in the City of Sammamish and King County, 2016 and 2018



Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table B03002); BERK, 2020.

Residents with Special Housing Needs

Within any population there are sub-groups that have additional needs, especially related to housing with appropriate services, affordability, or both. This includes older adults, persons with disabilities, and the homeless. Given the size of these populations, their needs are typically described on a more regional level, but these needs exist to some degree in all communities. Many of the organizations that provide services and housing to those with special needs work throughout East King County.

Older Residents

In 2016, approximately 7% of Sammamish residents were age 65 or older and about 7,000 residents aged 55–64 will become older residents within the next 10 years (see Exhibit 3-24 above).[13] While older residents are diverse and have a range of housing preferences, many need affordable, accessible housing in age-friendly neighborhoods with close links to health services and other supports. While many households with older residents in Sammamish have the financial means to afford appropriate housing and services, others will not.

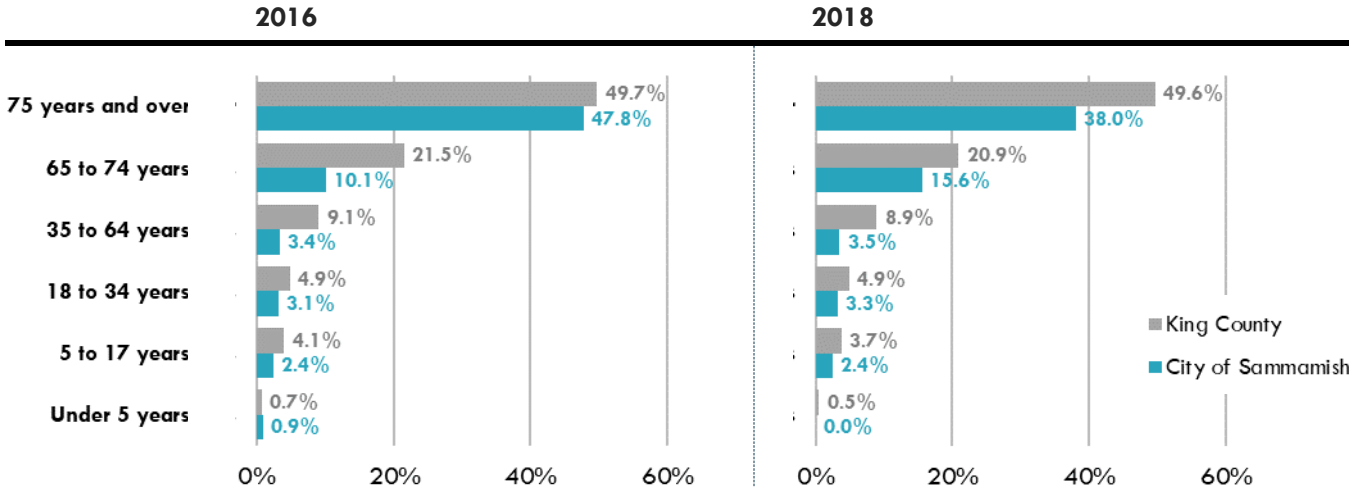
Population with Disabilities

In 2016, there were 2,639 people with a disability in the City of Sammamish (4.2% of the total population), including cognitive, vision, hearing, and mobility impairments (Exhibit 3-27). Nearly half of residents aged 75 or older had one or more of these disabilities in 2016. By 2018, the total number of individuals with a

[13] US Census Bureau, 2012–2016 ACS 5-Year Estimates.

disability increased to 2,846 (4.4% of the population); however, the proportion of residents aged 75 or older with a disability decreased to 38% and the proportion of residents aged 65 to 74 increased from 10% to 16%. In both 2016 and 2018, the proportion of residents with a disability in all age groups was lower in the City of Sammamish than in King County overall.

Exhibit 3-27. Population with Disability by Age in the City of Sammamish and King County, 2016 and 2018



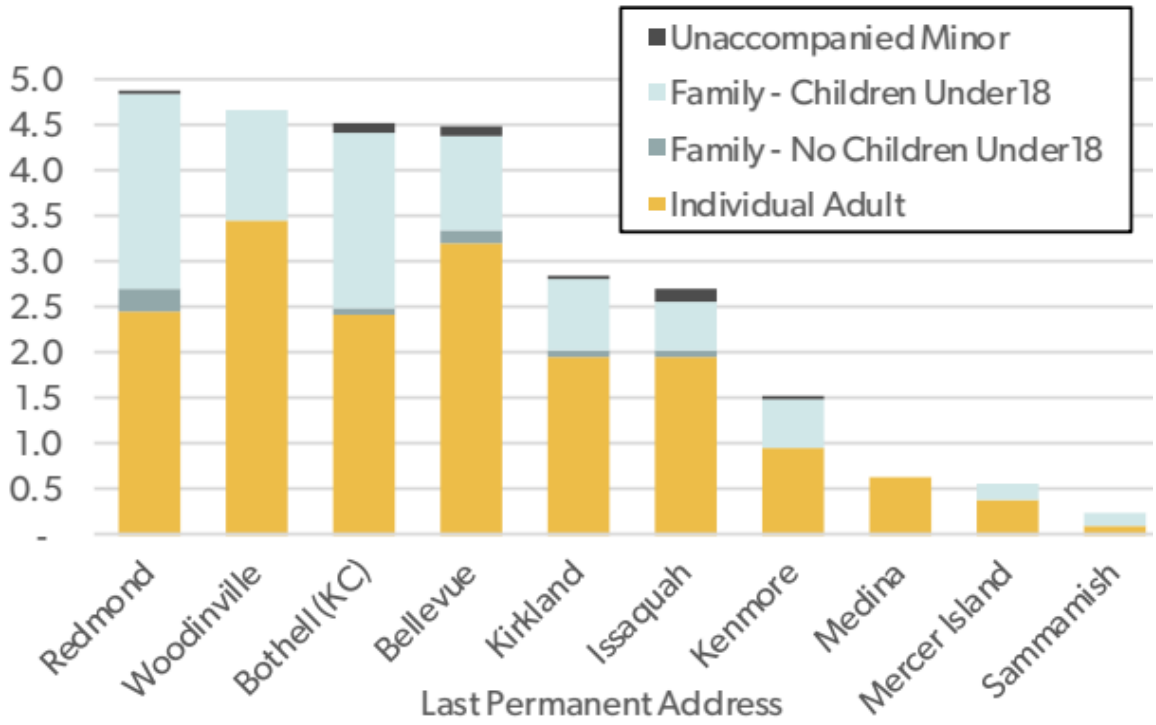
Note: Disabilities include cognitive, vision, hearing, and mobility impairments.
Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table S1810); BERK, 2020.

Homeless Population

In 2016, the rate of people entering the King County homeless system whose last permanent address was in Sammamish was lower than in other eastside communities (Exhibit 3-28). However, according to the housing needs assessment in *Sammamish Home Grown* (2019), those individuals experiencing homelessness in Sammamish currently have very few potential housing options in the city. In addition, several organizations report that there are currently a large number of single parents living in the available affordable housing units in Sammamish, many of whom have fled domestic violence situations. Some young families and young adults living in and around Sammamish struggle with housing instability and homelessness.[14]

[14] Sammamish Home Grown: A Plan for People, Housing, and Community (Appendix D), 2019.

Exhibit 3-28. People Entering the King County Homeless System per 1,000 Residents, 2016

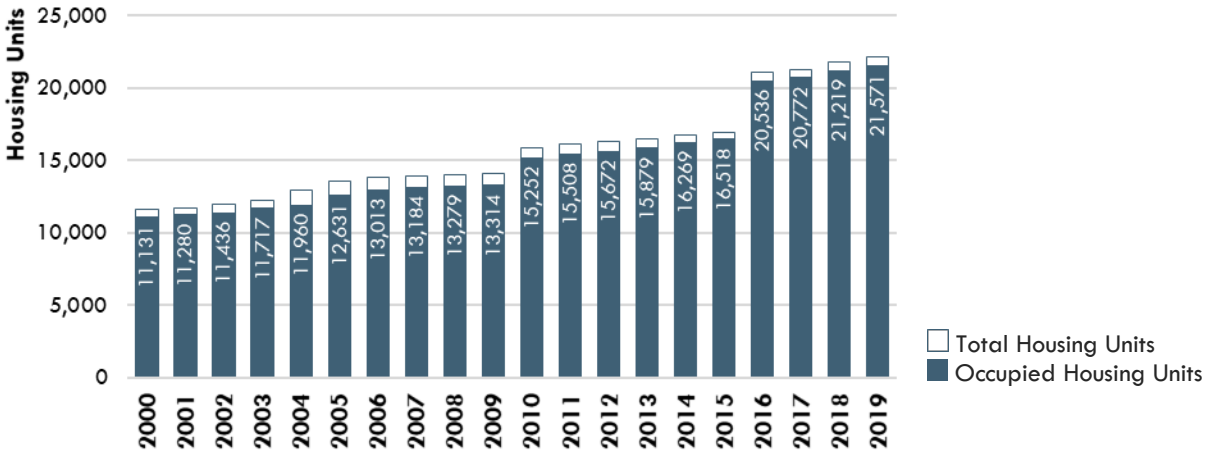


Source: Sammamish Home Grown: A Plan for People, Housing, and Community (Appendix C), 2019; King County Homelessness Information Management System, 2017.

3.5.1.2 Households

A household is a group of people who live in a single dwelling unit, such as a house or apartment. Households can have only one member or many members. They can be families or unrelated people living together. According to OFM, the number of occupied housing units (households) within city limits in 2016 was 20,536, which is an 85% increase from the 11,131 occupied units documented in 2000 (Exhibit 3-29). This increase is due to both annexations and residential development within the city. By 2019, the number of occupied housing units rose slightly to 21,571. The percent of occupied housing units compared to the total number of units available in the city has remained relatively stable since 2000. Occupied housing units accounted for 92–97% of total housing units in the city from 2000 to 2019, reaching a low of 92% in 2004 and maintaining a high of 97% since 2014.

Exhibit 3-29. Occupied Housing Units in the City of Sammamish, 2000-2019



Note: The jump in total number of housing units and occupied housing units in 2016 was related to the annexation of Klahanie. On April 28, 2015, the residents of Klahanie and several adjacent neighborhoods voted to annex to Sammamish. The annexation became official on Jan. 1, 2016.
Source: OFM, 2019; BERK, 2020.

Household Tenure and Size

According to the American Community Survey (ACS), about 86% of occupied-housing units in Sammamish were owner-occupied and 15% were renter-occupied in 2016 (Exhibit 3-30). A larger share of the City's dwellings was owner-occupied compared to the county as a whole (57%) and statewide (62%). Tenure characteristics in 2018 were nearly identical to 2016.

Exhibit 3-30. Households by Housing Tenure, 2016 and 2018

	2016			2018		
	Sammamish	King County	WA State	Sammamish	King County	WA State
Total Occupied Units	**20,401**	**831,995**	**2,696,606**	**21,218**	**865,627**	**2,800,423**
Owner-occupied	85.5%	57.3%	62.4%	85.8%	57.1%	62.7%
Renter-occupied	14.5%	42.7%	37.6%	14.2%	42.9%	37.3%

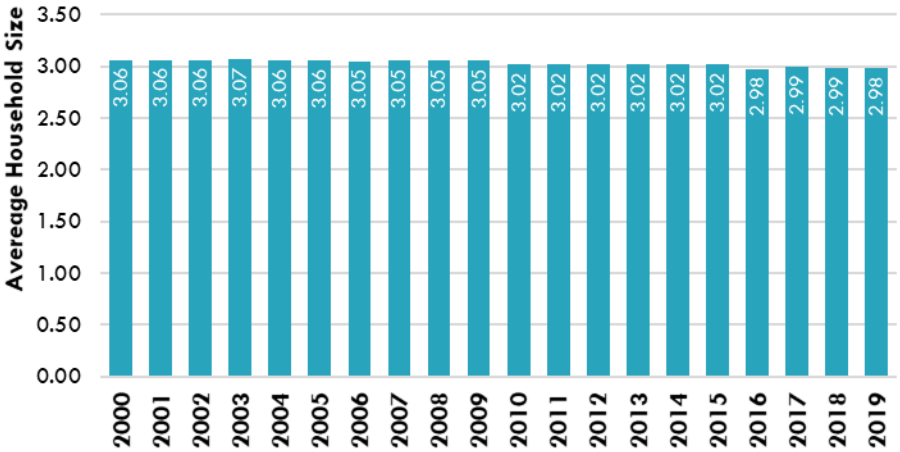
Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table DP04); BERK, 2020.

The city's average household size has remained relatively constant since 2000, decreasing slightly from 3.06 in 2000 to 2.98 in 2018 Exhibit 3-31). According to OFM, the average household size in 2016 and 2018 in Sammamish was 2.98 people per household.[15] This is higher than the 2018 average household size in King County (2.46) and the statewide average of 2.55.[16] In 2016, more than three-quarters of the city's households had between two and four members (Exhibit 3-32), likely due to the share of middle aged adults

[15] The 2012–2016 and 2014–2018 ACS 5-Year Estimates report an average household size of 3.0 for Sammamish in 2016 and 2018, slightly higher than reported by OFM.
[16] US Census Bureau, 2014–2018 ACS 5-Year Estimates, Quick Facts. Available at https://www.census.gov/quickfacts/fact/table/sammamishcitywashington,kingcountywashington,WA/HSD310218.

and school aged children. The distribution of household size and tenure characteristics by household size in 2018 was nearly identical to 2016. Average household size was also unaffected by tenure in 2016 and 2018.[17]

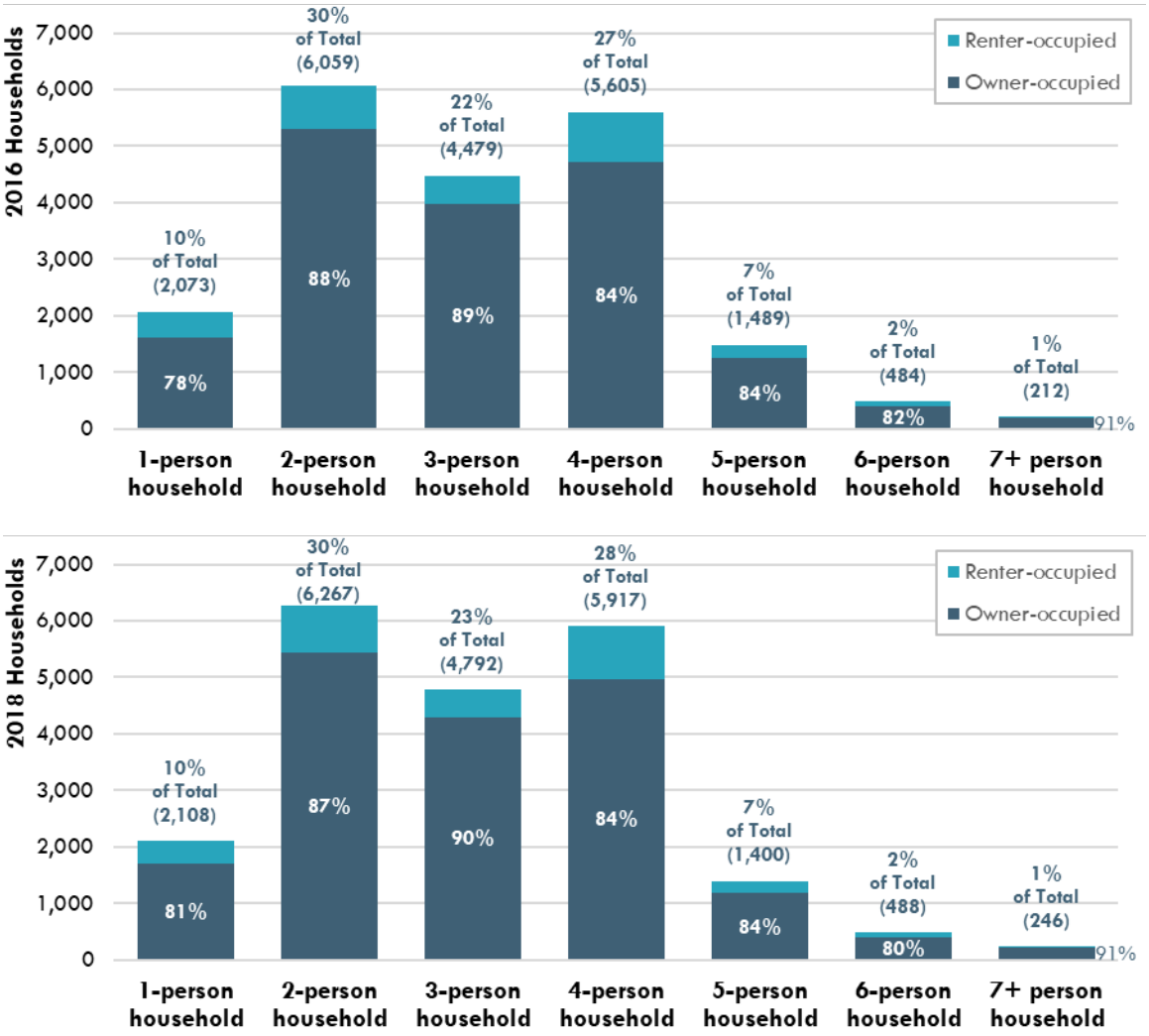
Exhibit 3-31. Average Household Size in the City of Sammamish, 2000-2019



Note: The 2012–2016 and 2014–2018 ACS 5-Year Estimates report an average household size of 3.0 for Sammamish in 2016 and 2018, slightly higher than reported by OFM.
Source: OFM, 2019; BERK, 2020.

[17] US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table DP04).

Exhibit 3-32. Households by Size in the City of Sammamish, 2016 and 2018

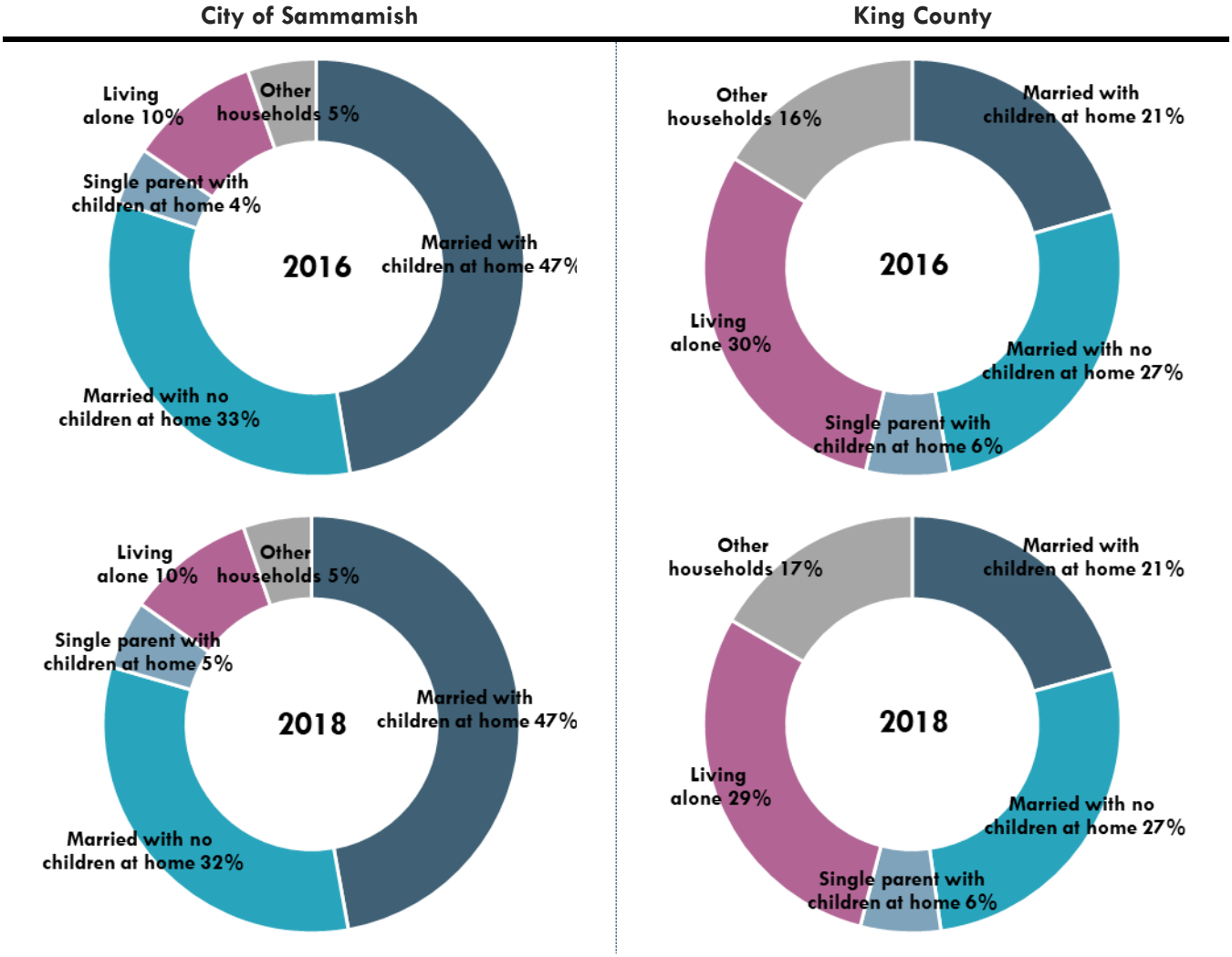


Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table B25009); BERK, 2020.

Household Types

According to the ACS, about 52% of households in Sammamish had children at home, and 80% of households were comprised of a married couple (with or without children) in 2016 (Exhibit 3-33). This is nearly double that of King County overall, where about 27% of households had children at home and 47% were comprised of a married couple. A much larger portion of county residents lived alone (30%) than in Sammamish (10%). Sammamish household types in 2018 were nearly identical to 2016.

Exhibit 3-33. Household Type in the City of Sammamish and King County, 2016 and 2018



Note: Other households includes single parents without children living at home and nonfamily households that do not live alone.
Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table DP02); BERK, 2020.

Household Income

When summarizing housing affordability by income level, households are typically grouped relative to the US Department of Housing and Urban Development (HUD) Area Median Family Income (MFI, also known as "AMI"). Income groups are typically defined as follows:

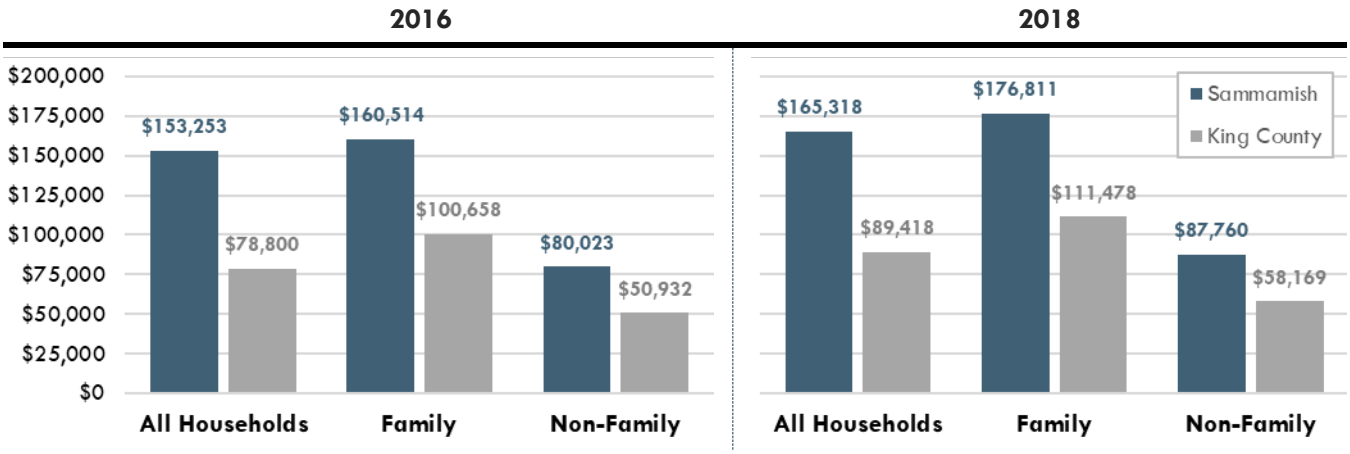
- Extremely Low Income: ≤30% AMI
- Very Low Income: 30–50% AMI
- Low Income: 50–80% AMI
- Moderate Income: 80–100% AMI
- Above Median Income: >100% AMI

HUD AMI for King County was $90,300 in 2016, $103,400 in 2018, and $113,300 in 2020.[18]

[18] HUD Income Limits, 2018 (https://www.huduser.gov/portal/datasets/il.html).

The ACS estimates median income specific to the City of Sammamish and King County and presents household counts by income level, without adjustment for household size. Exhibit 3-34 shows 2016 and 2018 ACS median income in the city and county for families (households with two or more related persons) and non-families.[19] In 2016, the City of Sammamish's AMI was approximately $153,253 for all households, nearly double that of the countywide AMI of $78,800. Family incomes are typically higher than non-family. In both the city and county, non-family households make roughly half that of family households. Incomes overall rose from 2016 to 2018, but the relative patterns are similar to those in 2016.

Exhibit 3-34. Median Household Income by Household Type, 2016 and 2018

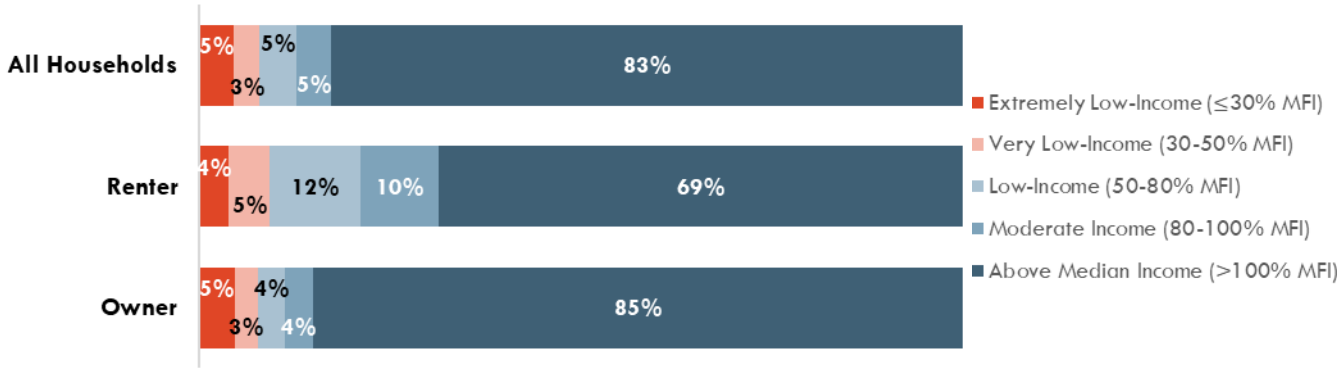


Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table S1901); BERK, 2020.

Exhibit 3-35 breaks down renter- and owner-occupied households in the City of Sammamish by income level relative to HUD AMI. As of 2016, 5% of all households in Sammamish were considered "extremely low income," 3% were considered "very low income," and 5% were considered "low income." While the share of extremely low- and very low-income households is consistent between renter- and owner-occupied households, owner households are much more likely to have incomes above 100% AMI. Only 69% of renter households earn at or above AMI, compared to 85% of owner households.

[19] Family households consist of two or more individuals residing together who are related by birth, marriage, or adoption, and includes any unrelated people (unrelated subfamily members and/or secondary individuals) who may be residing there. Non-family households consist of people who live alone or who share their residence with only unrelated individuals. US Census Bureau, Subject Definitions (https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html#familyhousehold).

Exhibit 3-35. Percentage of Households by Income Level and Tenure in the City of Sammamish, 2016



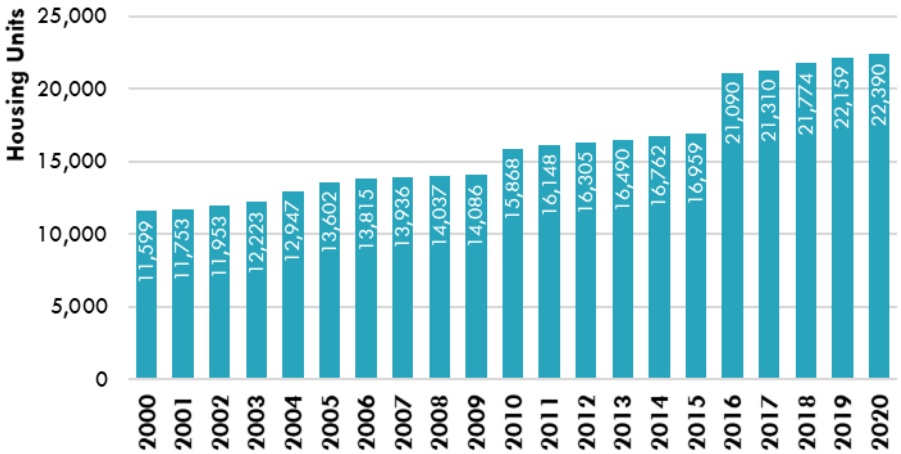
Note: MFI is also used to denote the HUD Area Median Family Income and is the same as AMI in this analysis. Income categories (Extremely Low, Very Low, etc.) are based on 2016 King County HUD AMI of $90,300.
Source: HUD CHAS (based on ACS 2012–2016 5-year estimates); BERK, 2020.

3.5.1.3 Housing Inventory

Housing Units by Type and Size

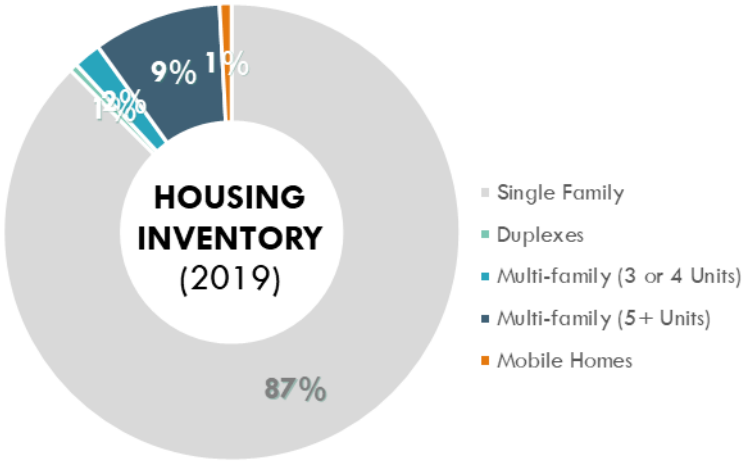
In 2019, there were 22,159 housing units in the City of Sammamish (Exhibit 3-36), increasing slightly to 22,390 in 2020. Most of these units are single-family homes (87%), while a little under 10% are multi-family buildings of 5+ units (Exhibit 3-37).

Exhibit 3-36. Housing Units, 2000-2020



Source: OFM, 2020; BERK, 2020.

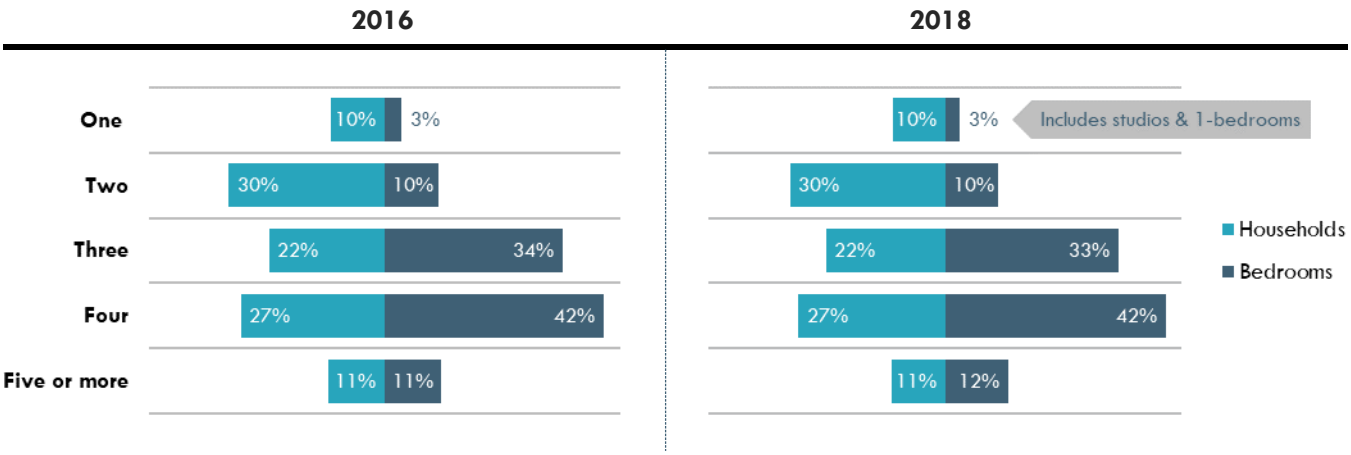
Exhibit 3-37. Housing Inventory by Type, 2019



Source: OFM, 2019; BERK, 2020.

Exhibit 3-38 shows that while 40% of households in 2016 had only one or two members, 13% of the housing units had two or fewer bedrooms. In contrast, 60% of households had three or more members but 87% of housing units had three or more bedrooms. These relationships were nearly identical in 2018. While it is possible that some small households in Sammamish prefer larger homes, it could also be an indicator of an unserved demand for smaller housing types in the city.

Exhibit 3-38. Household Size vs. Number of Bedrooms in the City of Sammamish, 2016 and 2018

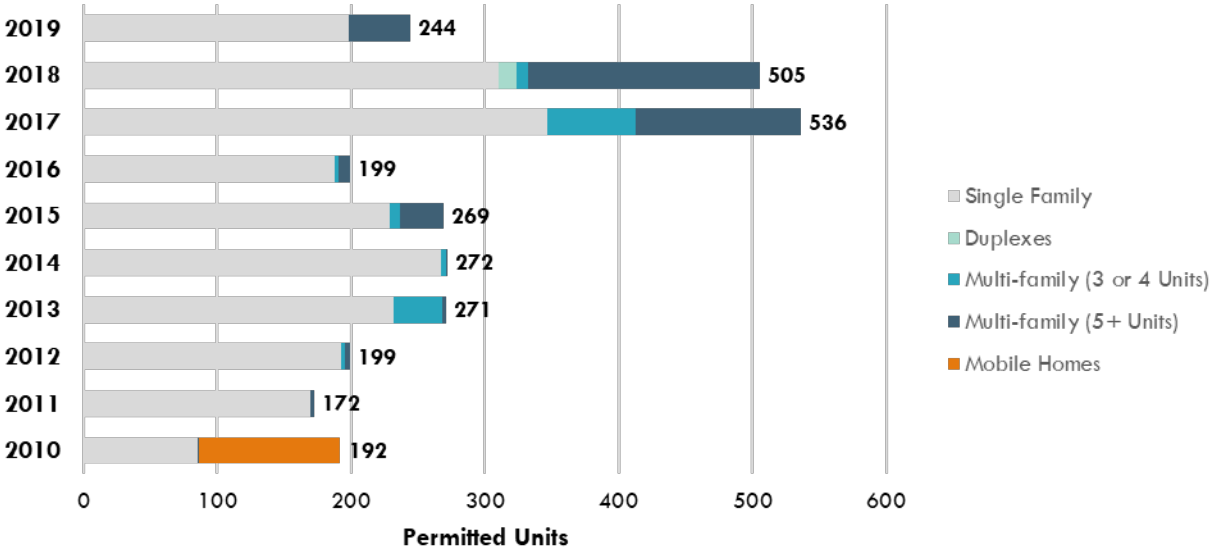


Source: US Census Bureau, 2012–2016 and 2014–2018 ACS 5-Year Estimates (Table B25041); BERK, 2020.

Housing Production

Exhibit 3-39 shows a breakdown of housing units permitted since 2010, according to OFM data. During this time period, single-family homes have been the most prevalent type of housing permitted, comprising 78% of total units permitted between 2010 and 2018. However, during 2017–2019 the number of multi-family housing units permitted increased, especially in buildings containing 5 units or more.

Exhibit 3-39. Permitted Units, 2010-2019



Source: OFM, 2019; BERK, 2020.

Housing Targets

In 2006, the King County Countywide Planning Policies established a 2006–2031 housing growth target for the City of Sammamish of 4,000 new dwelling units. In 2015, this growth target was extended to 4,640 units to reflect the 2035 planning horizon year of the City's updated Comprehensive Plan. The target has since been amended to 4,849 units to reflect the annexation of the Klahanie neighborhood in 2016. A detailed discussion of the methodology used to update the City's growth targets is included in Chapter 3.4–Land Use and Appendix B.

As of 2012, the city had available zoned capacity for 5,466 housing units, more than enough to accommodate its entire 2006–2035 housing growth target of 4,849 units. Of this total, Town Center provided capacity for 2,000 residential units via zoning for higher density multi-family housing. Between 2012 and 2019, the number of housing units in the city increased with 1,915 new units, leaving capacity for 3,551 additional units. As described in Section 3.4 Land Use and Appendix B, 885 units remain unbuilt under the City's 2035 housing growth target; though that number can be exceeded since it is not a cap. Sammamish currently has a zoned housing capacity surplus of approximately 2,665 units.

3.5.1.4 Housing Affordability

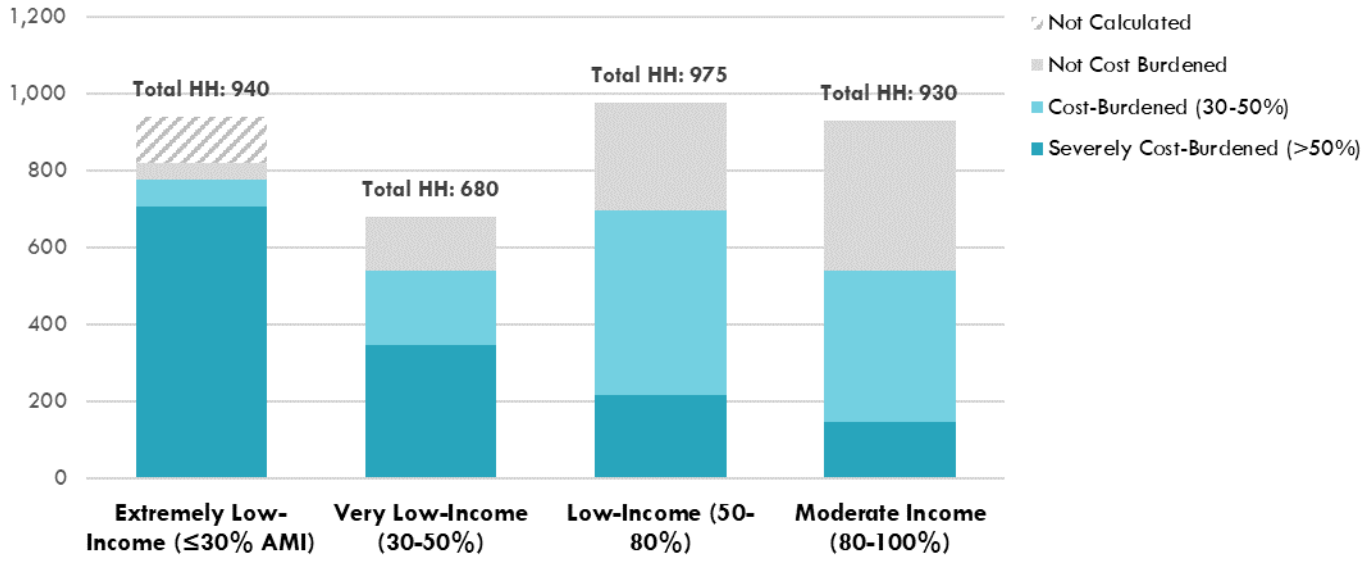
Cost-burdened Households

One of the best indicators of affordable housing needs is the number of households that are "cost-burdened" or spending too much of their income on housing. These households have limited resources left over to pay for other life necessities such as food, clothing, medical care, transportation, and education. They are also at higher risk of displacement when housing costs rise or life circumstances change.

HUD considers housing to be affordable if it costs no more than 30% of a household's income. Households paying more than 30% of their income for housing are cost-burdened, while households paying more than 50% are severely cost-burdened.

In 2016, 21% of all households in Sammamish were cost-burdened. Households with lower incomes are more likely to be cost-burdened. Exhibit 3-40 presents 2016 estimates of total Sammamish households by income level and cost burden status for households earning at or below HUD AMI. While there are cost-burdened households across the income spectrum, cost burden was most prevalent among those earning 80% of HUD AMI or less. About 775 households (82%) with extremely low incomes, 540 households (80%) with very low incomes, and 695 households (71%) with low incomes were cost-burdened. In 2016, nearly 82% of households in Sammamish earned more than the HUD AMI of $90,300; of these households 1,775 (10%) were cost-burdened.

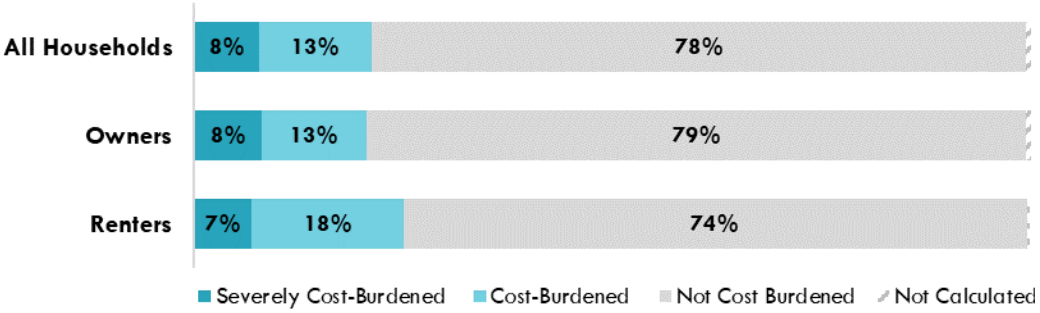
Exhibit 3-40. Households at or Below HUD AMI by Income Level and Cost-Burden Status in the City of Sammamish, 2016



Note: Income categories (Extremely Low, Very Low, etc.) are based on 2016 King County HUD AMI of $90,300.
Source: HUD CHAS (based on ACS 2012–2016 5-year estimates); BERK, 2020.

Overall, renters are slightly more likely to be cost-burdened than owners. Renter households are more likely to be cost-burdened while owner households are more likely to be severely cost-burdened (Exhibit 3-41).

Exhibit 3-41. Cost-Burdened Households by Housing Tenure in the City of Sammamish, 2016



Source: HUD CHAS (based on ACS 2012–2016 5-year estimates); BERK, 2020.

3.5.1.5 Housing Goals, Policies, and Strategies

Comprehensive Plan Housing Element

Goal H.2 and Goal H.3 in the Sammamish Comprehensive Plan support sufficient housing supply, variety, and affordability options within the community:

> *Goal H.2 Housing Supply and Variety: Ensure that Sammamish has a sufficient quantity and variety of housing to meet projected needs, preferences, and growth of the community.*
>
> *Goal H.3 Housing Affordability: Provide for a range of housing opportunities to address the needs of all economic segments of the community.*

Several policies these and other goals in the Housing Element specifically address the ability to provide a variety of housing types, densities, and affordability levels to meet the needs of all Sammamish residents (including a range of income levels, ages, and special needs):

> *Policy H.2.2 Support a variety of residential densities and housing types to meet the needs and preferences of all Sammamish residents.*
>
> *Policy H.2.3 Consider the impacts on citywide housing capacity and diversity when making land use policy decisions or code amendments.*
>
> *Policy H.2.4 Support residential and mixed use development in Town Center and other commercial areas where combining such uses would promote the vitality and economic viability of the area.*
>
> *Policy H.2.8 Avoid creating regulations and procedures that discourage the housing industry's ability to respond to market needs or unnecessarily increase the costs of developing housing.*
>
> *Policy H.3.1 Develop and implement plans and strategies that promote a proportionate amount of the countywide need for housing affordable to households with moderate, low and very low incomes, including those with special needs.*
>
> *Policy H.3.7 Support affordable rental and ownership housing throughout the city especially in areas with good access to transit, employment, education and shopping.*
>
> *Policy H.4.3 Ensure development regulations allow for and have suitable provisions to accommodate housing opportunities for special needs populations in Sammamish.*

Policy H.4.4 Encourage the geographic distribution of special needs housing throughout the city, understanding that some clustering of such housing may be appropriate if proximity to public transportation, employment opportunities, medical facilities or other services is necessary.

2019 Sammamish Housing Strategy

On January 15, 2019, the Sammamish City Council adopted an updated housing strategy, *Sammamish Home Grown: A Plan for People, Housing, and Community* to guide implementation of the goals and policies in the Housing Element of the Comprehensive Plan. This updated housing strategy allows the City to respond to recent market trends and economic data, provides new policy framework to address key housing gaps, and serves as a work plan to help the City transform adopted goals and policies from the 20-year Comprehensive Plan into near-term actions. *Sammamish Home Grown* also determines priorities for the preferred strategies.

The following implementation strategies in Sammamish Home Grown directly address the City's regulatory environment and ability to accommodate sufficient housing supply, variety, and affordability:

Strategy B.1: Consider providing incentives for diverse housing opportunities that meet community needs in current and future sub-area plans.

Strategy C.1. Consider requiring affordable housing & creating incentives for affordable housing in current and future mixed-use subareas.

The Planning Commission recommended Strategy B.1 as high priority, while City Council adopted both strategies as medium priority.[20]

Sammamish Home Grown also recommends specific monitoring activities to inform future planning efforts. These are grouped into three categories: general monitoring of overall housing supply and costs; monitoring of existing City policies or regulations to assess whether they are accomplishing their intended results; and monitoring of specific issues which are known to be significant in other cities and could become more prominent in Sammamish.

City of Sammamish Subdivision Regulations

In 2019, the City of Sammamish adopted Ordinance O2019-482, which amended the City's development regulations regarding the design and platting of subdivisions. These amendments were made to standardize platting requirements, addressing irregularities in older King County development regulations that had been in effect since before Sammamish's incorporation in 1999. These amendments were intended to protect the character of single-family neighborhoods, improve the ability of the City to provide public services (including fire safety), and offer incentives to create greater housing diversity across the city.

Major components of the regulation updates include the following:

- **Street Frontage Requirement:** The ordinance implemented a requirement that all new lots created in the R-1, R-4, and R-6 zones must abut a public or private street. This requirement was added in response to

[20] Strategy C.1 was created after the Planning Commission considered Sammamish Home Grown and is thus marked as N/A for Planning Commission priority.

a trend of subdivisions using shared driveways. While more cost effective for housing developers, this platting pattern can be more challenging for the City to provide utilities and emergency vehicles access.

- **Dynamic Single-Family Setbacks:** The ordinance created a system of setbacks for single-family homes in the R-4 and R-6 zones based on the size of the proposed structure. Generally, as the size of the home increases, required setbacks also increase. This requirement was added to prevent the creation of very large homes on relatively small lots.
- **Accessory Structure Setbacks:** The ordinance established variable structure setbacks, depending on the type of structure constructed. For example, the setback requirements for a primary single-family house are greater than those for a detached accessory dwelling unit (DADU) on the same property. This offers greater flexibility in the placement of DADUs on single-family lots, making them easier to construct, which can help address the current lack of diversity in the city's housing stock.
- **Density Calculations:** The ordinance amended the City's method of calculating the allowed number of lots for subdivisions and short subdivisions. When the density calculation results in a fractional number, the regulations now allow rounding up to the nearest whole number only if the additional unit is used for affordable housing.

3.5.2 Impacts

3.5.2.1 Impacts Common to All Alternatives

As described in Chapter 2, the Action Alternatives would entail the adoption of new transportation LOS standards and related concurrency requirements. None of the alternatives would include changes to land use designations or zoning. Alternatives 3 and 4 include land use measures that would incentivize greater production of smaller single-family housing types and more multi-family housing specifically dedicated to affordable housing or senior housing, though such amendments to development regulations would not directly affect the quantity of housing units constructed in Sammamish over the next 20 years. Implementation of the proposed LOS standards may result in indirect and temporary impacts to individual properties in the vicinity of the affected roads and intersections, as well as to development conditions citywide.

This EIS assumes that all necessary transportation improvements for a given alternative would be constructed consistent with concurrency requirements, but such improvements take time to construct, and funding for all necessary projects may not be immediately available. Therefore, traffic conditions may temporarily affect housing development trends until the necessary improvements are completed.

The following sections describe how each of the alternatives would potentially impact housing conditions in Sammamish, specifically with respect to housing supply, diversity of housing types, housing affordability, and neighborhood character.

3.5.2.2 Housing Supply

Alternative 1 No Action

Alternative 1 would retain the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A. However, Comprehensive Plan amendments would be required to establish

consistency with SMC Title 14A. Use of the current LOS standards and concurrency requirements would not result in any additional housing supply impacts compared to existing conditions.

Action Alternatives 2, 3, and 4

As described in Section 3.4 Land Use, transportation improvement projects to several of the corridors would require property acquisition to accommodate required street widening. Road widenings would require the acquisition of private property for new right-of-way, obstruction or alteration of property access, and potential changes to traffic patterns on connecting streets due to street and intersection reconfigurations. In addition, increasing roadway capacity may attract additional vehicular traffic, altering the character of affected properties and neighborhoods. Creating additional capacity on minor arterials under alternatives 2 and 3 could attract more traffic to residential neighborhoods, creating traffic conditions that are out of character for these locations and reducing local access functions. Under Alternative 4, vehicular capacity increases would be concentrated on principal arterial roadways, directing traffic away from smaller roadways and reducing potential for cut-through traffic.

Acquisition could be for a portion of the property, which would allow the existing residence to remain, or for the full property, which would result in demolition of the existing structure. The largest impact would likely be experienced under Alternative 4, which has the greatest amount of roadway widening, and smallest impact under Alternative 3, which as the least amount of road widening. Alternative 2 and Alternative 3 would result in a significant level of property acquisition and possible loss of housing along the East Lake Sammamish Parkway North Corridor (Inglewood Road NE to the north city boundary). Alternative 4 would result in a significant level of property acquisition and possible loss of housing along Sahalee Way NE (SR 202 to NE 8th Street).

For all the Action Alternatives, the addition of LOS standards and concurrency requirements for corridors and corridor segments adds new permit review requirements and may result in additional development costs. Comprehensive Plan Policy H.2.8 states that the City should avoid implementing regulations that would prevent developers from responding to the market or increasing housing production costs. Construction of concurrency transportation improvement projects to implement the new standards may cause short-term disruption in localized areas. Collectively these potential impacts could slow future residential development in Sammamish. Additionally, Alternative 3 and Alternative 4 would implement land use measures to incentivize smaller-scale single-family residences and more multi-family affordable housing and senior housing. Because these measures would be incentive-based, not required, they are consistent with Policy H.2.8.

As noted in Section 3.4.1—Land Use: Affected Environment and Appendix B, an additional 885 residential units are unbuilt under the City's 2035 housing target. Given the annual rate of residential development experienced in the past decade (Exhibit 3-39), this would likely be achieved. A drop-off in the rate of development to less than a third of 2010–2019 levels would have to occur to impact the City's ability to achieve its 2035 growth target. Based on the City's track record of development activity, this level of impact appears unlikely. However, given the uncertainty of future economic conditions, it may be prudent to monitor trends so that adjustments in the City's policies and codes can be made as needed.

3.5.2.3 Diversity of Housing Types

As described previously, 87% of the housing inventory in Sammamish consists of single-family units. Households seeking one-to two-bedroom units may not have many options. Recent amendments to development standards provide greater flexibility for ADU development and allow for relatively smaller setbacks for smaller homes. These actions may help to increase housing diversity in the city. However, the largest opportunity to provide more diverse housing opportunities is provided through the City's mixed-use commercial centers, which are zoned for multi-family residential densities. In particular, the City's land use designations support development of 2,000 units of residential housing in Town Center.

Adoption of the transportation LOS standards under any of the alternatives would not directly affect the mix of housing types allowed in Sammamish. The potential for indirect impacts that may result from the alternatives is discussed below.

Alternative 1 No Action

Alternative 1 retains the transportation LOS standards and concurrency program requirements currently in effect in SMC Title 14A Public Facilities. Use of current LOS standards and concurrency requirements would not result in any new impacts to housing diversity.

Action Alternatives 2, 3, and 4

As Chapter 2 describes, Alternative 4 would require the most extensive roadway improvements, followed by Alternative 2. Alternative 3 would require the least extensive improvements out of the Action Alternatives.

In all cases, most of the roadway improvements would be located along corridors planned for and developed with single-family housing. As noted above, future concurrency required improvements are expected to result in the demolition of some single-family residences along these corridors.

With respect to multi-family housing, multi-family residential zoning is primary concentrated in the city's mixed-use centers, though single family zoning is also allowed. All three Action Alternatives would require roadway improvements at the southern end of Issaquah-Pine Lake Road SE, which connects to 228th Avenue SE, the primary north-south corridor through central Sammamish that provides access to three centers (Town Center, Pine Lake, and Inglewood). Alternative 4 also includes extensive improvements to the northern end of Sahalee Way NE, which provides northern access to the same three centers. Improved transportation access to these centers could potentially make them more desirable from a development standpoint, leading to future growth in multi-family and mixed-use development, which would further diversify the local housing stock. Comprehensive Plan policies H.2.2, H.3.1, and H.4.3 support the maintenances of adequate housing diversity to meeting the needs of households with a range of incomes and needs.

As described in Chapter 2, alternatives 3 and 4 would also include land use measures designed to promote the development of smaller-scale, single-family housing units and affordable multi-family and senior housing units. As a result of these measures, alternatives 3 and 4 assume that approximately half of future low-density residential units will consist of small-scale detached single-family, townhomes, or duplexes. Similarly, these alternatives assume that half of new multi-family development outside the Town Center and all new multi-family housing within the Town Center will consist of either affordable housing units or senior housing. If the

proposed incentives have the desired effect, development under alternative 3 and 4 would increase the diversity of the city's housing stock, providing a greater range of options for residents.

These long-term benefits would be balanced against short-term costs of potentially increased development costs and disruption as transportation improvements are constructed. How the development market will balance these costs and benefits is not known at this time. However, ongoing monitoring can allow the City to anticipate potential impacts and act accordingly.

3.5.2.4 Housing Affordability

Implementation of updated transportation LOS standards under any of the alternatives would not directly affect the affordability of housing in Sammamish. As described in Section 3.5.1 Affected Environment, the ability of residents to find housing within their financial means is a complex question influenced by a variety of factors at both the local and regional scale. At the local scale, adequate supply and diversity of housing types strongly influence affordability. As described in the discussion of housing supply and diversity above, it is not expected that adoption of new LOS standards and concurrency requirements would significantly restrict overall housing supply or impede the development of multi-family housing, which is often more affordable than single-family housing. As previously discussed, improved transportation access to mixed-use centers, including the Town Center, could accelerate development in these areas, promoting the development of more affordable housing types.

While implementation of the proposed LOS standards would not directly affect housing affordability, the incentive programs proposed under Alternative 3 and Alternative 4 to promote smaller-scale single-family housing, affordable multi-family units, and senior housing could positively affect housing affordability in Sammamish. As stated previously, affordability is a complex question, but greater diversification of the housing stock under these incentives would offer residents a greater range of options; smaller-scale single-family units could offer entry-level home ownership opportunities, and multi-family and senior units specifically targeted for lower-income households would provide more affordable options for renters and seniors. Ongoing monitoring would allow the City to gauge the effectiveness of these land use measures.

3.5.2.5 Neighborhood Character

As described in Section 3.4 Land Use, the construction of transportation improvements under the Action Alternatives could shift traffic patterns in Sammamish, attracting drivers to particular routes and discouraging them from using others. One possible side effect of these changes is an increase in cut-through traffic, where drivers opt to use local streets instead of major corridors to avoid congestion. This could result in greater vehicular traffic on side streets in single-family areas, making these locations less desirable for residential development. However, given the strong demand for housing in Sammamish, it is unlikely that such effects would present a significant long-term barrier to housing development under any of the alternatives.

3.5.3 Mitigation Measures

3.5.3.1 Incorporated Plan Features

- All alternatives continue implementation of the City's Housing Element.
- Alternatives 2 and 3 would amend City codes to offer incentives for additional housing types.

3.5.3.2 Regulations and Commitments

The City's zoning standards in SMC Title 21 A will continue to guide housing development and design across the City. SMC Title 21 B guides Town Center development.

3.5.3.3 Other Potential Mitigation Measures

The alternatives would not directly affect the housing types allowed or quantity of housing constructed in Sammamish, and the associated transportation improvement projects would not create long-term barriers to development of affordable or diverse housing types. To ensure that funding of such transportation improvement projects does not become a deterrent to development, the City should monitor impact fee collection to identify any negative effects on development trends and adjust fees as needed. No additional mitigation measures are required.

3.5.4 Significant Unavoidable Adverse Impacts

With implementation of the specific mitigation measures, no significant unavoidable adverse impacts to housing are anticipated.

3.6 Plans and Policies

This section considers pertinent plans and policies that guide or inform the proposal. The Washington Growth Management Act (GMA), Puget Sound Regional Council (PSRC) VISION 2050, and the King County Countywide Planning Policies (CPPs), and the Sammamish Comprehensive Plan are all considered in this section.

This analysis reviews the alternatives for consistency with the state, regional, and local plans and policies listed above. For the purposes of this analysis, consistency means that the alternative can occur and be implemented together with the selected goal or policy without contradiction. In this section, a finding of significant adverse impact is based on inconsistency or contradiction with plans and policies.

3.6.1 Affected Environment

3.6.1.1 Washington State Growth Management Act

The Washington State GMA was adopted in 1990 in response to concerns over uncoordinated growth and its impacts on communities and the environment. The GMA includes 13 planning goals to help guide its implementation. These goals address the following: 1) encouraging growth in urban areas, 2) reducing sprawl, 3) encouraging multimodal transportation systems, 4) encouraging a variety of housing types, including affordable housing, 5) encouraging economic development, 6) recognizing property rights, 7) ensuring timely and fair permitting processes, 8) protecting agricultural, forest and mineral lands, 9) retaining and enhancing open space and supporting recreation opportunities, 10) protecting the environment, 11) encouraging citizen involvement in planning processes, 12) ensuring adequate public facilities and services, and 13) encouraging historic preservation. A fourteenth goal was added to the GMA to reference the use preferences of the Shoreline Management Act.

Comprehensive plans are mandated by the GMA to include specific chapters, referred to as Elements. Required elements include Land Use, Housing, Capital Facilities, Utilities, Transportation, Economic Development, and Parks and Recreation.[21] The GMA and other state and regional policies provide specific guidance for the contents of these elements.

The entire Comprehensive Plan, including the required and optional Elements, must be internally and externally consistent. Internal consistency means that all Elements of a plan are consistent with the future land use map contained in the Land Use Element, and that the different Elements are mutually supportive. For instance, the transportation projects outlined in the Transportation Element must support the land use patterns called for in the Land Use Element. The requirement for external consistency means that the Comprehensive Plan must be coordinated with adjacent jurisdictions.

The GMA also requires that comprehensive plans address the provision of sufficient land capacity to meet growth targets, the establishment of LOS standards, and public participation. A city must designate adequate land to accommodate twenty-year growth forecasts from OFM and King County, based on the requirement to provide sufficient capacity to meet growth targets. A comprehensive plan must include LOS standards for

[21] A City that has chosen to be a residential community is exempt from the economic development requirement (RCW 36.70a.070).

transportation facilities and may include LOS standards for other types of public facilities as well. The comprehensive planning process must include a public participation program providing for early and continuous opportunities to share input and ideas for the plan and its implementation.

Implementation of comprehensive plans is accomplished largely through development regulations and capital budget decisions. The GMA states that jurisdictions' development regulations and budget decisions must conform to comprehensive plans.

3.6.1.2 VISION 2050

VISION 2050 is the long-range growth management, environmental, economic and transportation strategy for the four-county Puget Sound region. Adopted by the Puget Sound Regional Council (PSRC) in October 2020, it carries forward the regional vision described in its predecessor, VISION 2040.

VISION 2050 builds on prior growth management plans, including a continued commitment to directing future development into the urban growth areas, while focusing new housing and jobs in cities and within a limited number of designated regional growth centers. The roles of different communities in implementing the growth strategy are described in the Regional Growth Strategy chapter. Five types of urban geographies are identified based on their size, function, and access to high-capacity transit: Metropolitan Cities, Core Cities, High Capacity Transit Communities, Cities and Towns, and Urban Unincorporated Areas. Sammamish is identified as one of 42 cities in the Cities and Towns designation. Cities and Towns are described as a diverse category that includes cities near major cities, small residential towns, and free-standing cities and towns surrounded by rural and resource lands. These jurisdictions provide important housing, jobs and services in their local centers and may be served by local transit but are not connected to the regional high-capacity transit service system. This group of cities is expected to accommodate relatively less growth than historical trends and remain relatively stable for the long term.

VISION 2050 multicounty planning policies are designed to achieve the Regional Growth Strategy and address regionwide issues within a collaborative framework. Multicounty planning policies are a regional commitment intended to be reflected and supported by regional, county, and local plans. Policy chapters address regional collaboration, regional growth strategy, environment, climate change, development patterns, housing, the economy, transportation, and public services and mobility.

The transportation goal described in the VISION 2050 multicounty planning policies states: "The region has a sustainable, equitable, affordable, safe, and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment, and health."[22]

3.6.1.3 King County Countywide Planning Policies

The King Countywide Planning Policies (CPPs) were developed by the King County Growth Management Planning Council (GMPC), a body consisting of elected officials from the County, cities and towns, special purpose districts, and the Port of Seattle, in collaboration with cities in the County. The CPPs were adopted

[22] Puget Sound Regional Council. VISION 2050, Multicounty Planning Policies: Transportation. GMPB Recommendation, Adopted October 2020.

and ratified in 2013; the CPPs were last amended in 2016. The CPPs address growth management, provide a countywide vision for the future, and support the region's multicounty planning policies and the GMA. The GMA requires that local comprehensive plans be consistent with the CPPs.

The CPPs are being updated in advance of the 2024 periodic update of comprehensive plans to reflect a number of changes to the regional policy framework and to reflect new priorities addressing equity and social justice in King County communities. The draft CPPs also include updated growth targets to support the 2024 update of GMA comprehensive plans. Based on the current project schedule, the GMPC made a recommendation on the updated CPPs to the King County Council as of June 30, 2021.[23] Ratification of the CPPs requires approval by King County and King County jurisdictions.

This section summarizes applicable sections from the adopted CPPs and the Draft CPPs.

Adopted Countywide Planning Policies

The vision set forth in the CPPs calls for King County to be characterized by four types of land uses: 1) protected critical areas, such as wetlands and fish and wildlife conservation areas; 2) viable rural areas permanently protected with a clear boundary separating urban growth areas from rural areas; 3) bountiful resource lands including farms and forests; and 4) vibrant, compact, diverse urban communities. The vision further describes a strategy for designated centers that is consistent with and supports the PSRC Regional Growth Strategy. The strategy aims to concentrate housing and employment growth in designated centers, providing urban and industrial places with higher intensity development and concentrations of services and amenities to support growth.

Growth target policies in the CPPs set local growth targets for all cities within King County. These targets are based on 20-year growth forecasts prepared by OFM and are allocated to all jurisdictions in King County through a collaborative planning process between the cities and the County.

The Transportation section of the CPPs includes policies organized around three major goals, each with supporting policies:

- **Supporting Growth**
  GOAL STATEMENT: Local and regional development of the transportation system is consistent with and furthers realization of the Regional Growth Strategy.
- **Mobility**
  GOAL STATEMENT: A well-integrated, multi-modal transportation system transports people and goods effectively and efficiently to destinations within the region and beyond.
- **System Operations**
  GOAL STATEMENT: The regional transportation system is well-designed and managed to protect public investments, promote public health and safety, and achieve optimum efficiency.

[23] CPP update information, including the 2021 GMPC CPP update schedule, may be found here: https://kingcounty.gov/depts/executive/performance-strategy-budget/regional-planning/CPPs.aspx

Draft CPPs

The updated Development Patterns chapter of the CPPs carries forward policies establishing urban growth areas, focusing growth into cities and designated centers, promoting urban design strategies to create healthy and sustainable communities, and protecting rural resource lands. Updated policies emphasize the need to address equity in local planning and development and ensures consistency between special purpose district plans and regional and countywide plans. The CPPs will also include updated growth targets for the five types of urban geography described in the PSRC VISION 2050 and described above. These updated targets will address a 2044 planning horizon.

Transportation goals and policies carry forward major transportation goals relating to supporting growth, mobility, and system operations. Overall, proposed updates support the growth strategy described in VISION 2050 and prepare local jurisdictions to meet the transportation needs of forecasted growth.

3.6.1.4 City of Sammamish Comprehensive Plan

The City of Sammamish developed its Comprehensive Plan in compliance with the GMA and the King County CPPs, both of which provide a comprehensive framework for managing growth and coordinating land use planning with the provision of infrastructure. The City of Sammamish Comprehensive Plan was first adopted in 2003. Consistent with the GMA, a major update was conducted in 2015 and annual updates have occurred nearly every year. The next major update is planned for 2024.

The City's Comprehensive Plan consists of eight major elements: Land Use, Environment and Conservation, Housing, Transportation, Utilities, Parks, Capital Facilities, and Shoreline. Each element contains goals and policies intended to guide development and public infrastructure investment for a 20-year time horizon. Relevant to the proposal, applicable goals in the Land Use, Transportation, and Capital Facilities elements are considered below.

Land Use Element

Land Use Element Volume I contains the following goals and policies:

Goal LU.1 Build community character and identity on a Citywide basis to enhance the high quality of family life established in Sammamish.

Discussion: Policies support land use policies and regulations that promote a safe, healthy, and engaged residential community; complementary and compatible development; preservation of the natural environment; and design guidelines to achieve a variety of goals.

Goal LU.2 Preserve and enhance the natural features, quality, character and function of the City's residential neighborhoods.

Discussion: Policies promote a variety of housing types; support for design variety; periodic review of housing standards; establishing a program to acquire property for public purposes consistent with the Comprehensive Plan; clustering to preserve open space and minimize impacts to the natural environment; design of stormwater facilities to provide supplemental benefits; encouragement of infill development in specific conditions; and protection of residential areas from non-residential uses.

Goal LU.3 Promote the four designated commercial/mixed use centers, including the existing centers of Inglewood, Pine Lake, Klahanie and the Sammamish Commons/Town Center to host a diversity of high quality places to live, work, shop and recreate.

Discussion: Policies support a mix of activities in the centers; planning for centers through subarea plans and design guidelines; review and update of performance standards; public private partnerships; preparation of a comprehensive plan economic development element; incorporation of streetscape amenities in public rights-of-way wherever feasible; and protection against light trespass in areas adjacent to commercial centers.

Goal LU.4 Ensure that public facilities support and strengthen community character.

Discussion: Policies support recognition of the role that public rights-of-way play in determining community character; shielding of lights from the surrounding area; and creation of community landmarks through public art and public/semi-public development.

Goal LU.5 Provide for planned population and employment growth and maintain the City's suburban patterns.

Discussion: Polices address the general distribution of land uses; promoting a variety of housing types; reducing traffic congestion and maintaining the Future Land Use Map.

Goal LU.6 Promote development design that maintains a harmonious relationship with the natural environment.

Discussion: Policies address design flexibility; tree retention; existing and native vegetation retention; sustainable water management; and flexible development regulations.

Goal LU.7 Support a land use pattern that promotes community health and connectivity within and between neighborhoods and active transportation routes consistent with public safety needs.

Discussion: Policies address a connected land use pattern, efficient transportation systems, integrated land use/transportation planning, roadway connectivity, safe walking/bicycling routes to school, urban agriculture, opportunities for informal community gathering, and active civic engagement.

Goal LU.8 Participate in inter-agency partnerships to address regional planning issues.

Discussion: Policies address inter-governmental and inter-agency coordination, working with King County and neighboring jurisdictions on future annexations, and updating the Future Land Use Map in accordance with annexations.

Goal LU.9 Encourage sustainable development.

Discussion: Policies support distributed energy generation, water conservation, green building practices, green development, urban agriculture, and access to healthy food.

Goal LU.10 Identify, protect, encourage and preserve historic, cultural and archaeological resources.

Discussion: Policies support preservation of the community's history and cultural roots, a transparent public review process of proposed changes to historically significant features, regional efforts to preserve historic and cultural sites, and community cultural organizations and events.

Goal LU.11 Establish a community that maintains and enhances the quality of life for everyone living and working within Sammamish.

Discussion: Policies support high quality public spaces, encouraging joint use of recreational lands and facilities, creation of community landmarks through public and semi-public facilities, shared use of public facilities, and community cultural and historical projects.

Transportation Element

The Transportation Element Volume I contains the following goals and supporting policies:

Goal T.1 **Supporting growth**: Support the City's and PSRC's growth strategy by focusing on moving people and goods within the city and beyond with a highly efficient multimodal transportation network.

Discussion: Supporting policies address concurrency, LOS standards, regional coordination, and freight movement.

Goal T.2 **Greater options and mobility**: Invest in transportation systems that offer greater options, mobility and access in support of the City's growth strategy.

Discussion: Policies address multimodal transportation options, transportation demand management strategies, and roadway design to improve mobility.

Goal T.3 **Operations, maintenance, management and safety**: As a high priority, maintain, preserve and operate the city's transportation system in a safe and functional state.

Discussion: Policies address maintenance and preservation, transportation systems management, safety, and financial management.

Goal T.4 **Sustainability**: Design and manage the city's transportation system to minimize the negative impacts of transportation on the natural environment, to promote public health and safety, and to achieve optimum efficiency.

Discussion: Policies address sustainability and the natural environment, human health and safety, and balancing the costs and human impacts of transportation.

The Transportation Element Volume II Background Information, addresses roadway classifications, levels of service, transit and non-motorized modes, future travel forecasts, transportation system improvements, financing strategies, and concurrency management. It establishes the technical basis for transportation system development, and for both existing and future improvement of transportation programs and facilities guided by Comprehensive Plan transportation goals and policies. This section describes existing roadway conditions and includes a map of the City's existing roadway inventory and functional classifications, Exhibit 22.

Capital Facilities Element

The Capital Facilities Element Volume I contains the following goals and policies:

Goal CF.1 Provide capital facilities and public services necessary to support existing and new development envisioned in the land use element.

Discussion: Policies address planning for capital facilities that have the capacity and are located to serve existing development and future growth planned in the Land Use Element. Policies also include provisions for all capital facilities necessary to support services that are the responsibility of the City, including transportation.

Goal CF.2 Provide adequate capital facilities that address past deficiencies, meet the needs of growth and annexations, and enhance the quality of life through acceptable levels of service.

Discussion: Policies establish levels of services for city-owned facilities, including transportation; support identification of deficiencies in capital facilities and determining the means for correcting them; support identification of needs for additional facilities and determining the means and timing for providing them; and the meeting of concurrency requirements as defined in City Code and Washington State law.

Goal CF.3 Strive for financially feasible planned capital facilities.

Discussion: Policies address identification of funding sources, use of impact fees, steps for funding shortfalls to serve projected growth at adopted LOS, and funding priority for capital improvements needed to correct existing deficiencies or maintain existing levels of service.

Goal CF.4 Design and locate capital facilities with features and characteristics that support the environment, energy efficiency, aesthetics, technological innovation, cost-effectiveness, and sustainability.

Discussion: Policies address design of natural infrastructure into facilities design; consideration of physical health in decision-making; sustainability and environmental stewardship; accessibility by transit and non-motorized modes; prioritization of transportation investments in Town Center that promote mixed use compact development and provide multi-modal access to regional transit facilities; and facility design that can adapt to changing needs as the City grows.

Goal CF.5 Maintain capital facilities so that they are reliable, functional safe, sanitary, clean, attractive, efficient, and financially sustainable.

Discussion: Policies address facility maintenance, planning for replacement as needed, and minimizing operating and maintenance costs.

The Capital Facilities Element Volume II Background Information contains the background data and analysis that provide the foundation for the Capital Facilities Element goals and policies. This includes an inventory of all public facilities, forecast of future needs, planned capital projects, and funding.

3.6.2 Impacts

Potential impacts of the alternatives to state, regional, and local plans and policies are described below. In general, the alternatives do not differ in potential impacts and none of the alternatives are expected to result in significant adverse impacts with respect to plans and policies. A discussion of the consistency of the alternatives to GMA goals, PSRC VISION 2040 and Draft VISION 2050, the King County CPPs, and the Sammamish Comprehensive Plan follows.

3.6.2.1 Growth Management Act

Exhibit 3-42. Growth Management Act Goals Evaluation

GMA Goal	Discussion
Encourage growth in urban areas	Traffic modeling for all the alternatives supports projected growth to meet the City's 2035 housing and employment growth targets. As discussed in Chapter 2 and Section 3.4 Land Use and Appendix B, the remaining unbuilt portion of growth forecasted to 2035 is 885 dwelling units. Most of this growth is anticipated to be located in Town Center. Under all alternatives, additional growth beyond the 2035 target could occur subject to the City's transportation concurrency requirements. As part of the 2024 Comprehensive Plan update, the City will evaluate and balance land use plans and transportation standards to ensure continued consistency with the Regional Growth Strategy through 2044.
Reduce sprawl	Traffic modeling for all alternatives supports projected growth to meet the City's 2035 housing and employment growth targets. By supporting planned growth in the City of Sammamish, all alternatives are consistent with the goal of reducing sprawl.
Protect rural character	The City currently participates in a transfer of development rights (TDR) program pursuant to an interlocal agreement with King County that authorizes the transfer of TDR credits from unincorporated King County to the Sammamish Town Center subarea. The purpose of this program is to preserve rural and resource lands deemed important to the city on an ongoing basis, while investing in City amenities. The proposed alternatives are consistent with the adopted 2035 growth target, including anticipated growth in Town Center, and with the City's participation the TDR program to protect rural character.
Encourage an efficient multimodal transportation system	The proposed action focuses on vehicular transportation but is consistent with development of an efficient multimodal transportation system, as established in the City's Comprehensive Plan. Transportation improvement projects that result from any of the alternatives would be developed with pedestrian and bicycle improvements, as required through the City's 2016 Public Works Standards.
Encourage a variety of housing types, including affordable housing	Traffic modeling for all alternatives assumes 2035 growth targets, including housing. The Comprehensive Plan provides policy guidance for housing to meet the needs of all economic and demographic groups in the city. The alternatives are consistent with these policies and with planned residential growth. Compared to alternatives 1 and 2, alternatives 3 and 4 would promote an increase in diverse housing types, including small single-family, townhouse and duplexes, and affordable and senior citizen multi-family development. See the discussion of housing in Section 3.5 of this EIS.
Promote economic development	All alternatives would support the City's 2035 employment targets.
Recognize property rights	All alternatives are consistent with protection of property rights.

GMA Goal	Discussion
Ensure timely and fair permit procedures	The concurrency regulations proposed for each of the alternatives would describe concurrency requirements, exemptions, concurrency test methods and review criteria, and level of service standards. The proposal is consistent with the structure of existing regulations and is intended to provide clear, timely and fair permit procedures.
Protect agricultural, forest and mineral lands	The City of Sammamish does not contain any designated agricultural, forest, or mineral lands. As noted above, the City currently participates with King County in a TDR program intended to preserve rural and resource lands on an ongoing basis. All alternatives are consistent with 2035 growth targets, including anticipated growth in Town Center, and with the City's participation in the TDR program to protect rural character.
Retain and enhance open space and support recreation opportunities	The City's Comprehensive Plan and 2018 Park, Recreation & Open Space Plan guide City direction for open space and recreation. The proposed alternatives are consistent with these plans.
Protect the environment	Under all alternatives, the City's policies and regulations that protect the natural environment would continue to ensure that the natural environment is restored and protected for future generations. The Comprehensive Plan, Parks, Recreation and Open Space Plan, and Urban Forest Management Plan are examples of policy guidance for environmental protection. Examples of regulations include critical areas regulations (Chapter 21A.50 SMC), water quality regulations (Chapter 13.30 SMC), surface water design standards (2016 King County Surface Water Design Manual and Sammamish Addendum), surface water runoff regulations (Chapter 13.20 SMC), Low Impact Development Standards (Chapter 21A.85 and 21B.85 SMC), and other related regulations.
Ensure adequate public facilities and services	Together with applicable Comprehensive Plan policies, proposed LOS standards and concurrency program under all alternatives are intended to ensure that adequate transportation facilities will continue to be provided in Sammamish.
Foster citizen participation	This EIS has provided for public comment periods during the scoping process and Draft EIS review period. Additional citizen participation will be invited during the Planning Commission and City Council review process of any potential action that may be proposed following environmental review. See Draft EIS section 2.2.4 for a discussion of public outreach.
Encourage historic preservation	Existing City review processes encourage historic preservation, including use of the City's SEPA review procedures. Any future transportation improvement projects that may result from the proposal will be reviewed in a manner consistent with these procedures.

Source: RCW 36.70A.020; BERK, 2021.

3.6.2.2 VISION 2050

Exhibit 3-43. VISION 2050 Evaluation

VISION 2050 Draft Multicounty Planning Policies: Transportation	Discussion
Regional Growth Strategy Goal: The region accommodates growth in urban areas, focused on designated centers and near transit stations, to create healthy, equitable, vibrant communities well-served by infrastructure and services. Rural and resource lands continue to be vital parts of the regional that retain	The VISION 2050 Regional Growth Strategy recognizes that some cities, such as Sammamish, provide important housing, jobs and services but are not served by the regional high-capacity transit system. Accordingly, the strategy anticipates that this category of cities will accommodate relatively less growth than historical trends and remain relatively stable for the long term. Specific growth allocations based on state and regional forecasts will be made in the

VISION 2050 Draft Multicounty Planning Policies: Transportation	Discussion
important cultural, economic, and rural lifestyle opportunities over the long term.	future as part of the King County CPP update and the upcoming 2024 major update of comprehensive plans for jurisdictions in King County. At that time, the City will evaluate and balance land use plans and transportation standards to ensure continued consistency with the Regional Growth Strategy.
Transportation Overarching Goal: The region has a sustainable, equitable, affordable, safe, and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment, and health."	The proposal studied in this EIS is part of the City's larger transportation planning program that includes Comprehensive Plan goals and policies, regular traffic monitoring, ongoing maintenance and implementation programs, and capital facilities planning, including the 6-Year TIP and long-range list of recommended transportation projects. Collectively, the City's transportation planning program is consistent with the VISION 2050 overarching goal for a well-planned multimodal transportation system that supports the Regional Growth Strategy. As noted above, the City will evaluate and balance land use plans and transportation standards as part of King County CPP update and the 2024 major Comprehensive Plan update to ensure future consistency with the Regional Growth Strategy.

Source: Puget Sound Regional Council, 2020; BERK, 2021.

3.6.2.3 King County Countywide Planning Policies

As described in the existing conditions review of the King County CPPs, an update of the CPPs is underway and may be ratified later in 2021. Based on the information available on the updated CPPs, no significant inconsistencies with updated policies are anticipated. However, if the updated CPPs are ratified prior to issuance of the Draft or Final EIS, a more detailed analysis of policy guidance will be prepared and included as part of the EIS. The discussion in Exhibit 3-44 addresses only the adopted CPPs.

Exhibit 3-44. Adopted King County Countywide Planning Policy Goals Evaluation

Adopted Countywide Planning Policy Goals	Discussion
Environment Overarching Goal: The quality of the natural environment in King County is restored and protected for future generations.	Under all alternatives, the City's policies and regulations that protect the natural environment will continue to ensure that the natural environment is restored and protected for future generations. The Comprehensive Plan, Parks and Recreation, and Open Space Plan, and Urban Forest Management Plan are examples of policy guidance for environmental protection. Examples of regulations include critical areas regulations (Chapter 21A.50 SMC), water quality regulations (Chapter 13.30 SMC), surface water design standards (2016 King County Surface Water Design Manual and Sammamish Addendum), surface water runoff regulations (Chapter 13.20 SMC), Low Impact Development Standards (Chapter 21A.85 and 21B.85 SMC), and other related regulations.
Development Pattern Overarching Goal: Growth in King County occurs in a compact, centers-focused pattern that uses land and	Under all alternatives, the Comprehensive Plan would continue to support a development pattern that focuses growth in Town Center, the City's locally designated compact mixed-use center. The traffic modeling conducted for all

Adopted Countywide Planning Policy Goals	Discussion
infrastructure efficiently and that protects Rural and Resource Lands.	alternatives is consistent with 2035 growth targets and the City's planned development pattern.
Urban Growth Area Goal Statement: The Urban Growth Area accommodates growth consistent with the Regional Growth Strategy and growth targets through land use patterns and practices that create vibrant, healthy, and sustainable communities.	The traffic modeling conducted for the alternatives assumes the City's planned 2035 growth targets remains consistent with the Regional Growth Strategy. All alternatives considered in this EIS are consistent with local targets and the Regional Growth Strategy. As discussed in Chapter 2, Section 3.4 Land Use, and Appendix B, the remaining unbuilt portion of growth forecasted to 2035 is 885 dwelling units. Most of this growth is anticipated to be located in Town Center. Under all alternatives, additional growth beyond the 2035 target could occur subject to the City's transportation concurrency requirements. As part of the 2024 Comprehensive Plan update, the City will evaluate and balance land use plans and transportation standards to ensure continued consistency with the CPPs and VISION 2050 Regional Growth Strategy through 2044.
Centers Goal Statement: King County grows in a manner that reinforces and expands upon a system of existing and planned central places within which concentrated residential communities and economic activities can flourish.	Although Sammamish does not contain a designated regional center, all alternatives connect to regional centers in Redmond, Issaquah, and beyond. Traffic modeling for the alternatives accounts for planned growth and transportation needs in the region. Traffic modeling also plans for future growth in Town Center, Sammamish's locally designated mixed-use center. All alternatives are consistent with regional and local centers planning. As discussed in Chapter 2, Section 3.4 Land Use, and Appendix B, the remaining unbuilt portion of growth forecasted to 2035 is 885 dwelling units. Most of this growth is anticipated to be located in Town Center. Under all alternatives, additional growth beyond the 2035 target could occur subject to the City's transportation concurrency requirements.
Rural Area Goal Statement: The Rural Area provides a variety of landscapes, maintains diverse low density communities, and supports rural economic activities based on sustainable stewardship of the land.	The City currently participates in a TDR program pursuant to an interlocal agreement with King County that authorizes the transfer of TDR credits from unincorporated King County to the Sammamish Town Center subarea. The purpose of this program is to preserve rural and resource lands deemed important to the City on an ongoing basis while investing in City amenities. The proposed alternatives support planned growth in Town Center and, consistent with this program, support protection of rural areas near the city.
Resource Lands Goal Statement: Resources Lands are valuable assets of King County and are renowned for their productivity and sustainable management.	The City of Sammamish does not contain any designated agricultural, forest, or mineral lands. As noted above, the City currently participates with King County in a TDR program intended to preserve rural and resource lands on an ongoing basis. The proposed alternatives support planned growth anticipated in the TDR program, and consistent with this program, support protection of rural resource lands near the city.
Housing Overarching Goal: The housing needs of all economic and demographic groups are met within all jurisdictions.	Traffic modeling for all alternatives assumed planned 2035 growth targets, including housing. The Comprehensive Plan provides policy guidance for housing to meet the needs of all economic and demographic groups in the City. The alternatives are consistent with these policies and with planned residential growth. Compared to alternatives 1 and 2, alternatives 3 and 4 would promote an increase in diverse housing types, including small single-family, townhouses, and duplexes. See the discussion of housing in section 3.5 of this EIS.

Adopted Countywide Planning Policy Goals	Discussion
Economy Overarching Goal: People throughout King County have opportunities to prosper and enjoy a high quality of life through economic growth and job creation.	Traffic modeling for all alternatives assumed adopted 2035 growth targets, including employment growth. All alternatives are consistent with planned employment growth.
Transportation Overarching Goal: The region is well served by an integrated, multi-modal transportation system that supports the regional vision for growth, efficiently moves people and goods, and is environmentally and functionally sustainable over the long term.	Consistent with GMA requirements and Regional Growth Strategy guidance, the alternatives support the regional vision for growth and, through LOS standards, seek to efficiently move people and goods. Sammamish Comprehensive Plan policies support an environmentally and functionally sustainable transportation system and all alternatives would be consistent with this guidance.
Mobility Goal Statement: A well-integrated, multi-modal transportation system transports people and goods effectively and efficiently to destinations within the region and beyond.	The proposed action focuses on vehicular transportation but is consistent with development of an efficient multimodal transportation system, as established in the City's Comprehensive Plan. Transportation improvement projects that result from any of the alternatives would be developed with pedestrian and bicycle improvements, as required through the City's 2016 Public Works Standards.
Systems Operations Goal Statement: The regional transportation system is well-designed and managed to protect public investments, promote public health and safety, and achieve optimum efficiency.	All alternatives are consistent with the City's Comprehensive Plan policy guidance which addresses transportation system design, maintenance, management, safety, and efficiency.
Public Facilities and Services Overarching Goal: County residents in both Urban and Rural Areas have access to the public services needed in order to advance public health and safety, protect the environment, and carry out the Regional Growth Strategy.	Consistent with the Regional Growth Strategy, the proposal and alternatives would establish urban LOS standards and concurrency requirements in Sammamish.

Source: King County, 2016; BERK, 2020.

3.6.2.4 Sammamish Comprehensive Plan

Exhibit 3-45. Sammamish Comprehensive Plan Goals Evaluation

Sammamish Comprehensive Plan Goals		Discussion
Land Use Element		
Goal LU.1	Build community character and identity on a Citywide basis to enhance the high quality of family life established in Sammamish.	The proposal may indirectly impact community character through the transportation improvement projects that would result from each alternative concurrency program. Under all alternatives, future transportation improvements would be consistent with the City's 2016 Public Works Standards, which establish standards for landscape and non-motorized improvements, lighting design, traffic calming, and amenities, such as benches and other hardscape improvements.
Goal LU.2	Preserve and enhance the natural features, quality, character and function of the City's residential neighborhoods.	The concurrency intersections and corridors addressed in this proposal are limited to principal, minor, and collector arterials, while most residential neighborhoods front on local access roads or collector arterials. Transportation improvements that may result from any of the alternatives are unlikely to impact the physical character of most residential neighborhoods. For those residential neighborhoods located along principal and collector arterials, corridor roadway widening that may be required under the Action Alternatives may require partial and full property acquisition that would significantly impact the character and function of these neighborhoods. Among the Action Alternatives, Alternative 4 would likely have the most significant level of roadway widening and property acquisition impacts, particularly on the Sahalee Way–228th Avenue North Corridor and the Issaquah-Pine Lake Road Corridor. Alternative 1 No Action would not require any property acquisitions along roadway corridors and segments. Please see discussion in this EIS Section 3.4 Land Use and Section 3.5 Housing. To the extent that any of the alternatives result in changes to patterns of cut-through traffic in residential neighborhoods positive or negative impacts may result. Please see the discussion of this issue in this EIS, Section 3.4 Land Use.
Goal LU.3	Promote the four designated commercial/mixed-use centers, including the existing centers of Inglewood, Pine Lake, Klahanie and the Sammamish Commons/Town Center to host a diversity of high quality places to live, work, shop, and recreate.	The traffic modeling conducted for the proposal and alternatives assumes the City's adopted 2035 growth targets for population and employment. All alternatives considered in this EIS support planned population and employment growth as established in the Comprehensive Plan for these commercial centers. As discussed in Chapter 2, and Section 3.4 Land Use, and Appendix B, the remaining unbuilt portion of growth forecasted to 2035 is 885 dwelling units. Most of this growth is anticipated to be located in Town Center. Under all alternatives, additional growth beyond the 2035 growth target could occur subject to the City's transportation concurrency requirements.
Goal LU.4	Ensure that public facilities support and strengthen community character.	Under all alternatives, future transportation improvements would be consistent with the City's 2016 Public Works Standards, which establish standards for landscape and non-motorized improvements, lighting design, traffic calming, and amenities, such as benches and other hardscape improvements.
Goal LU.5	Provide for planned population and employment	The traffic modeling conducted for the proposal and alternatives assumes the City's adopted 2035 growth targets for population and

Sammamish Comprehensive Plan Goals		Discussion
	growth and maintain the City's suburban patterns.	employment. All alternatives considered in this EIS support planned population and employment growth as established in the Comprehensive Plan. As discussed in Chapter 2, Section 3.4 Land Use, and Appendix B, the remaining unbuilt portion of growth forecasted to 2035 is 885 dwelling units. Most of this growth is anticipated to be located in Town Center. Under all alternatives, additional growth beyond the 2035 growth target could occur subject to the City's transportation concurrency requirements. As part of the 2024 Comprehensive Plan update, the City will evaluate and balance land use plans and transportation standards to ensure continued consistency with the King County CPPs and VISION 2050 Regional Growth Strategy through 2044.
Goal LU.6	Promote development design that maintains a harmonious relationship with the natural environment.	Future development of transportation improvement projects would be consistent with Comprehensive Plan Transportation Element polices, which call for minimizing existing tree canopy removal, replacing any necessary tree removal, and designing, and operating transportation facilities in a manner that is compatible with and integrated into the natural environment, including natural drainage and native plantings (policies T.4.4, T.4.5.)
Goal LU.7	Support a land use pattern that promotes community health and connectivity within and between neighborhoods and active transportation routes consistent with public safety needs.	The proposed action focuses on vehicular transportation but is consistent with development of active transportation routes, as established in the City's Comprehensive Plan. Transportation improvement projects that result from any of the alternatives would be developed with pedestrian and bicycle improvements, as required through the City's 2016 Public Works Standards.
Goal LU.8	Participate in inter-agency partnerships to address regional planning issues.	Consistent with this policy, the City has considered adjoining and regional transportation facilities as part of the transportation analysis (see Section 3.7). As described in Chapter 2, Alternative 4 includes improvements to roadway segments on Sahalee Way and Issaquah-Pine Lake Road that would require coordination with King County and the City of Issaquah, respectively, for implementation. The City has also provided the scoping notice and notice of this EIS to adjoining jurisdictions to invite their review and comment on the proposal.
Goal LU.9	Encourage sustainable development.	Under all alternatives, the City's policies and regulations that provide for sustainability apply to future transportation projects resulting from the proposal. The Comprehensive Plan Environment & Conservation Element, Parks and Recreation and Open Space Plan, and Urban Forest Management Plan are examples of policy guidance for environmental protection. In addition, the Comprehensive Plan Transportation Element provides specific policy guidance for a sustainable transportation system (Goal T.4 and supporting policies).
Goal LU.10	Identify, protect, encourage and preserve historic, cultural and archaeological resources.	Future transportation improvement projects that result from any of the alternatives would be reviewed through the City's SEPA procedures to identify and mitigate any potential impacts to historic, cultural, and archaeological resources. Review would include consultation with the King County Historic Resources Inventory and

Sammamish Comprehensive Plan Goals		Discussion
		Washington Information System for Architectural and Archaeological Records Data (WISAARD).
Goal LU.11	Establish a community that maintains and enhances the quality of life for everyone living and working within Sammamish.	Through the provision of a transportation system that supports long-term mobility, all alternatives contribute to the quality of life in Sammamish.
Transportation Element		
Goal T.1	Supporting growth: Support the city's and region's growth strategy by focusing on moving people and goods within the city and beyond with a highly efficient multimodal transportation network.	The traffic modeling that was conducted for the proposal and alternatives assumes the City's adopted 2035 growth targets. All alternatives are consistent with these targets and the Regional Growth Strategy. As part of the 2024 Comprehensive Plan update, the City will evaluate and balance land use plans and transportation standards to ensure continued consistency with the King County CPPs and VISION 2050 Regional Growth Strategy through 2044.
Goal T.2	Greater options and mobility: Invest in transportation systems that offer greater options, mobility and access in support of the City's growth strategy.	The proposed action focuses on vehicular transportation but is consistent with development of an efficient multimodal transportation system, as established in the City's Comprehensive Plan. Transportation improvement projects that result from any of the alternatives would be developed with pedestrian and bicycle improvements as required through the City's 2016 Public Works Standards.
Goal T.3	Operations, maintenance, management and safety: As a high priority, maintain, preserve, and operate the City's transportation system in a safe and functional state.	All alternatives seek to implement a transportation system that is safe, efficient and provides for reliable movement of people, goods, and services. Implementation of LOS standards and the concurrency management program rely on Comprehensive Plan policies under this goal that address regular citywide traffic monitoring and strategies to ensure efficient use of public funding for transportation improvements.
Goal T.4	Sustainability: Design and manage the City's transportation system to minimize the negative impacts of transportation on the natural environment, to promote public health and safety, and to achieve optimum efficiency.	Under all alternatives, the City's policies and regulations that protect the natural environment and provide for sustainability. The Comprehensive Plan Environment & Conservation Element, Parks and Recreation and Open Space Plan, and Urban Forest Management Plan are examples of policy guidance for environmental protection. Examples of regulations include critical areas regulations (Chapter 21A.50 SMC), water quality regulations (Chapter 13.30 SMC), surface water design standards (2016 King County Surface Water Design Manual and Sammamish Addendum), surface water runoff regulations (Chapter 13.20 SMC), Low Impact Development Standards (Chapter 21A.85 and 21B.85 SMC), and other related regulations.
Capital Facilities Element		
Goal CF.I	Provide capital facilities and public services necessary to support existing and new development envisioned in the land use element.	The traffic modeling that was conducted for the alternatives assumes the City's adopted 2035 growth targets and all alternatives are consistent with development envisioned in the Land Use Element. As part of the 2024 Comprehensive Plan update, the City will evaluate and balance land use plans and transportation standards

Sammamish Comprehensive Plan Goals		Discussion
		to ensure continued consistency with the King County CPPs and VISION 2050 Regional Growth Strategy through 2044.
Goal CF.2	Provide adequate capital facilities that address past deficiencies, meet the needs of growth and annexations, and enhance the quality of life through acceptable levels of service.	Traffic modeling for all alternatives identify past and anticipated deficiencies based on a 2016 benchmark and future growth to 2035. Under all alternatives, the proposed LOS standards and concurrency program are intended to meet the needs of growth and enhance quality of life through acceptable levels of service.
Goal CF.3	Strive for financially feasible planned capital facilities.	SEPA focuses on environmental impacts and anticipates other considerations like financial feasibility can be addressed through planning processes. Financial feasibility is not analyzed in this EIS, and is not required under SEPA (WAC 197-11-448 and 450). However, it is anticipated that financial feasibility will be considered as part of the City's decision-making process on the alternatives.
Goal CF.4	Design and locate capital facilities with features and characteristics that support the environment, energy efficiency, aesthetics, technological innovation, cost-effectiveness, and sustainability.	All alternatives are consistent with City policies and regulations that protect the natural environment and provide for sustainability. The Comprehensive Plan Environment & Conservation Element, Parks and Recreation, and Open Space Plan, and Urban Forest Management Plan are examples of policy guidance for environmental protection. Examples of regulations include critical areas regulations (Chapter 21A.50 SMC), water quality regulations (Chapter 13.30 SMC), surface water design standards (2016 King County Surface Water Design Manual and Sammamish Addendum), surface water runoff regulations (Chapter 13.20 SMC), Low Impact Development Standards (Chapter 21A.85 and 21B.85SMC), and other related regulations. Cost-effectiveness is not analyzed in this EIS. However, it is anticipated that it will be considered as part of the City's decision-making process on the alternatives.
Goal CF.5	Maintain capital facilities so that they are reliable, functional safe, sanitary, clean, attractive, efficient, and financially sustainable.	Maintenance of facilities is not directly applicable to the proposal and alternatives. However, development of facilities that result from implementation of the alternative LOS standards and concurrency program would be developed consistent with the City's 2016 Public Works Standards, which consider maintenance needs.

Source: City of Sammamish, 2018; BERK, 2020.

3.6.3 Mitigation Measures

Design and engineering of roadway corridor improvements should seek to minimize residential property acquisition under any of the Action Alternatives.

3.6.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated with respect to plans and policy consistency under any of the alternatives.

3.7 Transportation

This section reviews current transportation conditions and compares the impacts of the four alternatives described in Chapter 2. Existing traffic conditions were assessed based on 2016 conditions as part of an update made to the Transportation Element and Transportation Element Background Chapter of the City's Comprehensive Plan in 2018. The evaluation relies on the *Sammamish 2035 Travel Demand Model and Intersection Level of Service Model Update*. Details of the evaluation are found in the *BLUMA Traffic Analysis Report* (July 2021) contained in Appendix C. The comparison of alternatives covers a broad range of transportation-related impacts related to adopted plan consistency, neighboring jurisdictions, performance measures, other transportation modes, safety/emergency responsiveness, and concurrency. General findings are also summarized.

Road Abbreviations

ELSP: East Lake Sammamish Parkway SE

IFCR: Issaquah-Fall City Road

IPLR: Issaquah-Pine Lake Road

3.7.1 Affected Environment

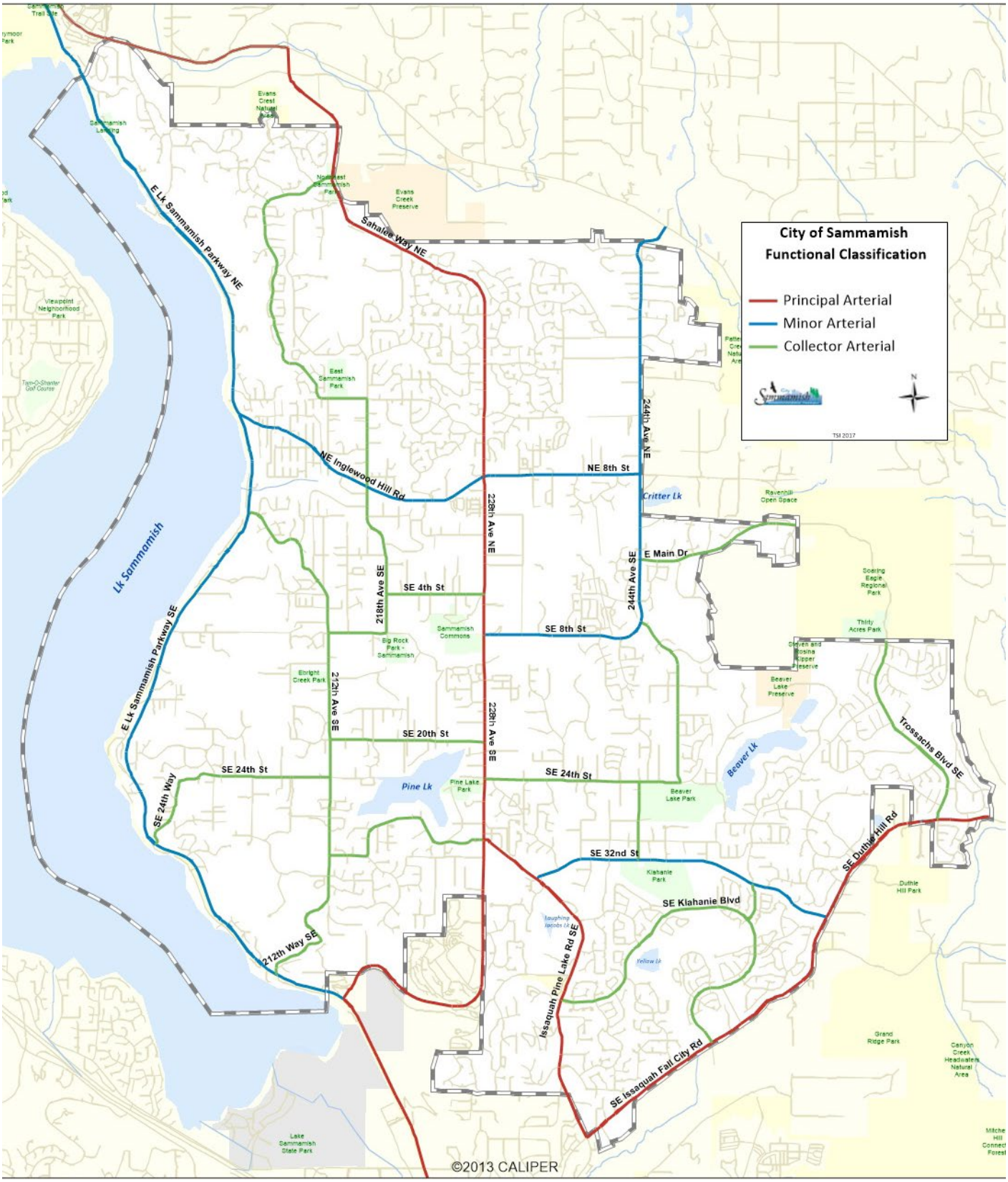
3.7.1.1 Current Road Network in and Near Sammamish

Sammamish's road network consists of principal arterials, minor arterials, collector arterials, neighborhood collectors, and local streets. Due to topography and incremental roadway development, the roadway network in Sammamish lacks continuous east-west and north-south multi-modal connections within City limits and to the regional network. Lake Sammamish is a barrier for east-west connections to regional employment centers west of the City, which results in commuter traffic being focused north to SR 202 and SR 520 and south to I-90.

Roadways in Sammamish are classified by function according to the Federal Functional Classification System. Each roadway is assigned a functional classification based on the roadway's intended purpose of providing priority to through traffic movement or adjoining property access. The City's functional classification system groups roadways into three basic categories identified as 1) arterials, with the function to provide through movement of traffic; 2) collectors, with the function of supplying a combination of through movement and access to property; and 3) locals, with the function of providing access to property and to other streets. The adopted functional classifications are shown in Exhibit 3-46. It should be noted that Issaquah-Fall City Road (IFCR) and Duthuie Hill Road are identified as principal arterials in the Transportation Element of the Comprehensive Plan but are designated as minor arterials by WSDOT and the Federal Highway Administration (FHWA).

Roadways in Sammamish do not follow a typical grid. The principal arterials (Sahalee Way, 228th Ave, and Issaquah-Pine Lake Road) provide continuous routes north/south across the City and to regional highways in adjacent jurisdictions and the minor arterials and collectors provide east/west connections to the principal arterials. This is because of the barrier created by Lake Sammamish, the concentration of employment west of the City, and rural development east of the City. Several of the monitored segments in the concurrency system are defined by jurisdictional boundaries between Sammamish and the neighboring jurisdictions of Redmond, Unincorporated King County, and Issaquah – Sahalee Way, East Lake Sammamish Pkwy NE, ELSP, 228th Avenue SE, and IPLR all cross jurisdictional boundaries; their functional classification, however, remains constant in the adjacent jurisdictions.

Exhibit 3-46. Functional Classification Map: 2018 Comprehensive Plan



Source: Sammamish Comprehensive Plan, 2018.

3.7.1.2 Intersection LOS

LOS is a qualitative description of the operating performance of an element of transportation infrastructure such as a roadway segment or an intersection. LOS is typically expressed as a letter score from LOS A, representing free flow conditions with minimal delays, to LOS F, representing breakdown flow with high delays.

Intersection LOS is based on the delay experienced by a vehicle traveling through an intersection. Delay at a signalized intersection can be caused by waiting for the signal or waiting for the queue ahead to clear the signal. Delay at roundabouts and stop-controlled intersections is caused by waiting for a gap in traffic or waiting for a queue to clear the intersection or roundabout. Volume to capacity ratios (V/C) are a method to measure segment LOS.[24]

Sammamish Intersection LOS Policy

Exhibit 3-47 identifies the amount of delay used to determine the LOS for signalized, roundabout, and stop controlled intersections in Sammamish at the peak hour. Delay is defined differently for signalized, roundabout, and all-way stop controlled intersections than for minor approach stop controlled intersections. For signalized, roundabout, and all-way stop controlled intersections, LOS thresholds are based on average control delay for all vehicles entering the intersection. For minor-approach-only stop controlled intersections, delay is reported for the movement with the worst (highest) delay.

Exhibit 3-47. Intersection Level of Service Thresholds

LOS	Signalized and Roundabout Delay (sec/veh)	Stop-Control Delay (sec/veh)
A	≤10	≤10
B	>10 – 20	>10 – 15
C	>20 – 35	>15 – 25
D	>35 – 55	>25 – 35
E	>55 – 80	>35 – 50
F	>80	>50

Source: City of Sammamish Comprehensive Plan Transportation Element Volume II Tables T-3 and T-4; Highway Capacity Manual 6th Edition, 2016.

The A-F letter designations are generally associated with the letter grades used in school grades. With A signifying excellent work and F signifying failing work. It should be noted that LOS F does not mean an intersection is no longer functioning but that the average or critical movement delay exceeds the delay standard.

The City of Sammamish has adopted tiered intersection LOS standards for 43 intersections based on functional classification. Minimum LOS for intersections with Principal Arterials is LOS D. If LOS D cannot be achieved with three approach lanes per direction, a reduced LOS standard of LOS E applies. Minimum LOS

[24] See Appendix C, for the November 16, 2018 Fehr & Peers memorandum "Measuring Concurrency for Segments and Corridors: HCM 6th Edition, Modified,"

standard C applies for intersections with Minor Arterial or Collector streets. For intersections of roadways with different functional classifications, the higher classification (i.e. lower standard) applies.

2016 Baseline Conditions

Exhibit 3-48 lists intersection LOS for the 2016 baseline conditions. The 2016 baseline included seven intersection LOS failures if measured against the current segment and corridor V/C proposal.

Exhibit 3-48. Intersection LOS Summary (AM and PM), 2016 Baseline

ID. Name	AM		PM	
	Baseline		Baseline	
1. Issaquah-Pine Lk Rd & SE 48th St	42.3	D	15	B
2. 228th Ave SE & NE 12th Pl	7.7	A	9.2	A
3. Klahanie Dr SE & Issaquah-Fall City Rd	23.9	C	35.7	D
4. SE 24th St & 244th Ave SE	13.7	B	18.9	C
5. SE 32nd Way & 244th Ave E	13.5	B	41.4*	E
6. Issaquah-Pine Lake Rd & SE 32nd Way	4.1	A	4.4	A
7. 228th Ave SE & SE 40th St	48.3*	E	36.3*	E
8. SE Klahanie Blvd & 256th Ave SE	64.7*	F	10.5	B
9. Issaquah-Fall City Rd & Pacific Cascade MS drwy	77.4*	E	33.1	C
10. Sahalee Way NE & NE 36th Ln	19.2	C	19.1	C
11. NE 8th Street & 242nd Ave NE	52.1*	D	11.7	B
12. 228th Ave SE & SE 8th St	17.3	B	12.8	B
13. 228th Ave SE & NE 19th Dr	24.2	C	22.4	C
14. Inglewood Hill Rd & 216th Ave NE	5.1	A	5.3	A
15. 228th Ave SE & NE 8th St	24.7	C	21.9	C
16. 228th Ave SE & NE 4th St	22.8	C	14.1	B
17. 228th Ave SE & SE 4th St	17.5	B	14.2	B
18. 212th Ave SE & SE 8th St	15.9	C	13	B
19. 228th Ave SE & SE 16th Pl	12.6	B	11.5	B
20. E Lk Sammamish Pkwy & 212th Way SE	5.3	A	4.1	A
21. E Lk Sammamish Pkwy & SE 24th Wy	13.3	B	16.2	C
22. 212th Ave SE & SE 20th Street	13.1	B	11.3	B
23. E Lk Sammamish Pkwy & Louis Thompson Rd	11.4	B	11.1	B
24. E Lk Sammamish Pkwy & Inglewood Hill Rd	27.5	C	15.5	B
25. Sahalee Way NE & NE 37th Way	11.8	B	21.4	C
26. NE 8th St & 244th Ave NE	4.2	A	3.9	A
27. 228th Ave SE & SE 20th St	15.4	B	15.3	B
28. 228th Ave SE & SE 24th St	48.7	D	28.2	C
29. 228th Ave SE & Issaquah-Pine Lk Rd	54.6	D	34.2	C
30. Issaquah-Pine Lk Rd & Klahanie Blvd	25.9	C	18.2	B
31. Issaquah-Beaver Lake Rd & Duthie Hill Rd	31	C	19.1	B
32. Issaquah-Beaver Lake Rd & 256th Ave SE	61.4*	F	33.7*	D
33. 228th Ave SE & NE 14th St	22.7	C	28.1	D
34. 228th Ave SE & NE 25th Way	18.2	B	10.7	B
35. Issaquah-Pine Lake Rd & SE 42nd St	6.6	A	7.4	A
36. Issaquah-Pine Lake Rd & 230th Lane SE	43.4	D	11.4	B
37. Sahalee Way NE & NE 28th Way	103.9*	F	50.6*	F
38. Issaquah-Pine Lake Rd & SE 47th Way	16.3	B	20.6	C
39. NE 8th St & 233rd Ave NE	6	A	5.3	A
40. 228th Ave SE & E Main Street	3	A	3.1	A
41. 244th Ave NE & E Main Dr	5.4	A	5	A
42. Duthie Hill Rd & Trossachs Blvd SE	18.2	B	12.9	B
43. 228th Ave SE & Skyline HS drwy	16.2	B	9.5	A
63. Sahalee Way NE & SR 202	34.5	C	78*	E

*LOS Delay Exceeds Standard

LOS Exceeds Standard

Note: Intersections outside city limits excluded except for 63.

Notes: Asterisks (*) identify intersection that exceed the LOS delay thresholds. Cells highlighted black exceed the LOS standard. Both indicate a failure (see Exhibit 3-47 above). Intersections outside city limits are excluded except for intersection 63.
Source: Transportation Solutions, Inc., 2021.

3.7.1.3 Corridor and Segment Volume to Capacity (V/C)

As proposed, the City would monitor Corridor LOS along 14 arterial corridors consisting of a total of 43 street segments, with a maximum allowable V/C ratio of 1.1 for corridors and 1.4 for segments.

Corridor LOS is based on the ratio of volume to operating capacity, or volume-to capacity ratio. City of Sammamish policy defines capacity using a modified Highway Capacity Manual 6th Edition (HCM6) methodology, which is described in Appendix C. The V/C LOS capacity methodology accounts for roadway characteristics including posted speed, number of lanes, left-turn lanes, median, right-turn lanes. It also incorporates capacity adjustments for the presence of Intelligent Transportation Systems (ITS) such as adaptive signal control and flashing yellow arrows (FYAs).

The 2016 baseline corridor and segment V/C assumes improvements in place in 2016. The 2016 baseline condition included three segment failures (segments 1, 2, and 39) and two corridor failures (the East Lake Sammamish Parkway North and Sahalee Way-228th Avenue North corridors) if measured against the current segment and corridor V/C proposal. See Exhibit 3-49.

Exhibit 3-49. Corridor and Segment V/C AM and PM, 2016 Baseline

ID	SEGMENT		2016 AM	2016 PM
	East Lake Sammamish Parkway North Corridor	NB	**1.52**	0.78
		SB	0.44	**1.55**
1	E Lk Sammamish Pkwy, City limits - 196th Ave NE (Weber Pl)	NB	**1.62**	0.83
		SB	0.52	**1.76**
2	E Lk Sammamish Pkwy, 196th Ave NE - NE 26th Pl	NB	**1.70**	0.87
		SB	0.44	**1.65**
3	E Lk Sammamish Pkwy, NE 26th Pl - NE Inglewood Hill Rd	NB	1.24	0.64
		SB	0.37	1.25
	East Lake Sammamish Parkway Central Corridor	NB	0.61	0.65
		SB	0.47	0.77
4	E Lk Sammamish Pkwy, Inglewood Hill Rd – Louis Thompson Rd	NB	0.70	0.57
		SB	0.39	0.82
5	E Lk Sammamish Pkwy, Louis Thompson Rd NE – SE 8th St	NB	0.55	0.64
		SB	0.48	0.77
6	E Lk Sammamish Pkwy, SE 8th St – SE 24th Way	NB	0.49	0.74
		SB	0.54	0.70
	East Lake Sammamish Parkway South Corridor	NB	0.53	1.02
		SB	0.87	0.80
7	E Lk Sammamish Pkwy, SE 24th Way – 212th Ave SE	NB	0.47	0.77
		SB	0.64	0.77
8	E Lk Sammamish Pkwy, 212th Ave SE – South City Limit	NB	0.57	1.18
		SB	1.00	0.83
	Sahalee Way–228th Avenue North Corridor	NB	**1.12**	0.67
		SB	0.56	1.03
9	Sahalee Way/228th Ave NE, City Limit – NE 37th Way	NB	1.32	0.60
		SB	0.50	1.16
10	Sahalee Way/228th Ave NE, NE 37th Way - NE 36th St	NB	1.15	0.60
		SB	0.52	1.09
11	Sahalee Way/228th Ave NE, NE 36th St - 223rd Ave NE	NB	1.13	0.59
		SB	0.50	1.04
12	Sahalee Way/228th Ave NE, 223rd Ave NE – NE 25th Way	NB	1.05	0.60
		SB	0.50	0.93
13	228th Ave, NE 25th Way – NE 12th Pl	NB	0.78	0.87
		SB	0.73	0.88

ID	SEGMENT		2016 AM	2016 PM
	228th Avenue Central Corridor	**NB**	**0.54**	**0.68**
		SB	**0.58**	**0.66**
14	228th Ave, NE 12th Pl – NE 8th St/Inglewood Hill Rd	NB	0.75	0.92
		SB	0.83	0.90
15	228th Ave, NE 8th St/Inglewood Hill Rd – Main St	NB	0.43	0.57
		SB	0.55	0.57
16	228th Ave, Main St - SE 8th St	NB	0.50	0.58
		SB	0.44	0.62
17	228th Ave, SE 8th St – SE 10th St	NB	0.46	0.65
		SB	0.51	0.58
18	228th Ave, Se 10th St – SE 20th St	NB	0.58	0.70
		SB	0.58	0.66
	228th Avenue South Corridor	**NB**	**0.55**	**0.83**
		SB	**0.70**	**0.66**
19	228th Ave, SE 20th St – Issaquah Pine Lake Rd SE	NB	0.58	0.73
		SB	0.58	0.69
20	228th Ave, Issaquah Pine Lake Rd SE – SE 43rd Way	NB	0.47	0.98
		SB	0.85	0.58
	244th Avenue North Corridor	**NB**	**0.39**	**0.40**
		SB	**0.48**	**0.42**
21	244th Ave NE, NE 30th Pl - NE 20th St	NB	0.42	0.42
		SB	0.44	0.45
22	244th Ave NE, NE 20th St - NE 8th St	NB	0.45	0.47
		SB	0.66	0.50
23	244th Ave NE, NE 8th St – E Main St	NB	0.40	0.33
		SB	0.32	0.41
24	244th Ave NE/SE, E Main St - SE 8th St	NB	0.21	0.39
		SB	0.42	0.33
	NE Inglewood Hill Road Corridor	**EB**	**0.31**	**0.79**
		WB	**0.77**	**0.39**
25	NE Inglewood Hill Rd, E Lk Sammamish Pkwy – 216th Ave	EB	0.25	0.96
		WB	0.97	0.41
26	NE Inglewood Hill Rd, 216th Ave NE – 228th Ave NE	EB	0.34	0.58
		WB	0.50	0.38
	NE 8th Street Corridor	**EB**	**0.35**	**0.52**
		WB	**0.46**	**0.34**
27	NE 8th St, 228th Ave NE – 235th Ave NE	EB	0.40	0.57
		WB	0.48	0.36
28	NE 8th St, 235th Ave NE – 244th Ave NE	EB	0.26	0.45
		WB	0.44	0.33
	SE 8th Street Corridor	**EB**	**0.28**	**0.40**
		WB	**0.63**	**0.32**
29	SE 8th St, 228th Ave SE – 244th Ave SE	EB	0.28	0.40
		WB	0.63	0.32
	Issaquah-Pine Lake Road Corridor	**EB/SB**	**0.97**	**0.83**
		WB/NB	**0.54**	**1.06**
30	Issaquah-Pine Lk Rd, 228th Ave SE - SE 32nd Way[5]	EB	0.48	0.83
		WB	0.61	0.63
31	Issaquah-Pine Lk Rd, SE 32nd Way - SE Klahanie Blvd	NB	0.57	0.85
		SB	0.69	0.86
32	Issaquah-Pine Lk Rd, SE Klahanie Blvd – SE 46th St	NB	0.44	1.12
		SB	1.11	0.84
33	Issaquah-Pine Lk Rd, SE 46th St - SE 48th St	NB	0.50	1.37
		SB	1.22	0.81

ID	SEGMENT		2016 AM	2016 PM
	SE 32nd Way/Street - Issaquah-Beaver Lake Road Corridor	**EB**	**0.25**	**0.56**
		WB	**0.46**	**0.41**
34	SE 32nd Way, Issaquah-Pine Lk Rd – 235th Place SE	EB	0.25	0.67
		WB	0.55	0.47
35	SE 32nd Way, 235th Place SE – 244th Ave SE	EB	0.25	0.54
		WB	0.40	0.37
36	SE 32nd Way, 244th Ave SE – E Beaver Lake Dr SE	EB	0.31	0.62
		WB	0.52	0.47
37	Issaquah-Beaver Lk Rd, E Beaver Lk Dr – SE Duthie Hill Rd	EB	0.19	0.32
		WB	0.29	0.32
	Issaquah-Fall City Road Corridor	**NB/EB**	**0.26**	**0.91**
		SB/WB	**0.94**	**0.54**
38	SE Issaquah-Fall City Rd, Issaquah-Pine Lk Rd – 245th Pl SE	EB	0.30	0.72
		WB	0.67	0.42
39	SE Issaquah-Fall City Rd, 245th Ave SE - Klahanie Dr SE	EB	0.17	1.32
		WB	**1.43**	0.76
40	SE Issaquah-Fall City Rd, Klahanie Dr SE - SE Duthie Hill Rd	EB	0.27	0.85
		WB	0.74	0.55
41	SE Duthie Hill Rd, SE Issaquah-Beaver Lk Rd – SE Issaquah-Fall City Rd	NB	0.23	0.59
		SB	0.68	0.30
	Duthie Hill Road Corridor	**NB/EB**	**0.32**	**0.93**
		SB/WB	**0.90**	**0.63**
42	SE Duthie Hill Rd, SE Issaquah-Beaver Lk Rd – 266th Ave SE	NB	0.35	1.06
		SB	1.03	0.72
43	SE Duthie Hill Rd, 266th Ave SE – Trossachs Blvd SE	EB	0.29	0.79
		WB	0.77	0.54

Corridor V/C
Segment V/C
Exceeds V/C Standard

Source: Transportation Solutions, Inc., 2021.

3.7.1.4 Systemwide Measures of Effectiveness

Individual intersection, segment, and corridor projects can affect operation of the entire transportation network in Sammamish – for example, improvements at a given intersection or on a segment or corridor can attract users and increase traffic at those locations while reducing traffic at others. Transportation planning commonly uses systemwide measures of effectiveness (MOEs) to best evaluate overall impacts. Key MOEs during the AM and PM peak hours for the Sammamish transportation network include total trips, vehicle miles travelled (VMT), fuel consumption, greenhouse gas (GHG) emissions, average speed, and total delay.

Total Trips

Systemwide total trips is the sum of all trips in the given scenario for the given time period, where "trip" is defined as an origin or a destination internal or external to the city. The 2016 baseline modeled 35,260 trips in the AM peak hour and 38,985 trips in the PM peak hour.

Vehicle Miles Travelled (VMT)

Systemwide VMT represents the total number of miles driven in the network and is the sum of the number of miles travelled along each link in the network. Lower VMT for the same number of vehicle trips represents a

more efficient transportation network resulting in reduced fuel consumption and greenhouse gas emissions per trip. The 2016 baseline modeled 66,228 VMT in the AM peak hour and 80,181 VMT in the PM peak hour.

Fuel Consumption

Systemwide fuel consumption is measured in gallons and can be calculated by dividing VMT by average miles per gallon (MPG) values recommended by the EPA. MPG values vary for passenger vehicles, heavy-duty vehicles, and vehicles of other types. The 2016 baseline modeled 2,970 gallons of fuel consumed in the AM peak hour and 3,596 in the PM peak hour based on an average passenger vehicle MPG of 22.3.

Systemwide fuel consumption values are used to calculate GHG emissions.

GHG Emissions

Systemwide GHG Emissions are influenced by VMT and fuel consumption. This evaluation provides relative GHG emissions statistics measured in metric tons based upon the VMT, passenger vehicle fuel consumption, and a conversion factor of 19.59 lbs CO_2/gallon of gasoline used.[25] The 2016 baseline modeled 26.4 metric tons of CO_2 emissions in the AM peak hour and 36.4 metric tons in the PM peak hour.

Average Speeds

Systemwide average speed is the weighted average vehicle speed throughout the network. This was calculated by multiplying the average speed per path by the vehicle volume per path, then dividing by the total volume in the network. Speed is measured in miles per hour (MPH). The 2016 baseline modeled average speeds of 32.5 MPH in the AM peak hour and 31.8 MPH in the PM peak hour for all links in the network.

Total Delay

Systemwide total delay is the sum of delay experienced by all vehicles in the network for a given time period. The 2016 baseline modeled 339 hours of delay in the AM peak hour and 472 hours of delay in the PM peak hour for all links and nodes modeled in the network.

3.7.1.5 Transit

The City of Sammamish is currently served by King County Metro and Sound Transit. Currently, transit vehicles share roadway facilities with other passenger vehicles and do not have their own dedicated facilities other than a bus pull out space for loading/unloading and the South Sammamish Park & Ride.

King County Metro Route 269 connects Issaquah Transit Center to the Overlake Park & Ride, stopping at the South Sammamish Park & Ride. It is a bidirectional route running at 20-30 minute headways during the AM and PM peak periods. During off-peak periods, this route runs every 30 minutes, providing more reliable bus service to the community throughout the day. Route 269 connects the Sammamish Plateau with Redmond's

[25] The EPA's *Greenhouse Gas Emissions from a Typical Passenger Vehicle* (2016) uses a value of 8,887 grams CO_2/gallon. This value was converted to lbs. for purposes of this analysis.

Bear Creek Park & Ride to the north (terminus at Overlake Park & Ride in Bellevue) and the Issaquah Highlands Park & Ride to the south (terminus at Issaquah Transit Center).[26]

King County Metro Routes 216 and 219 run from Bear Creek Park & Ride in east Redmond along 228th Avenue and Issaquah-Pine Lake Road SE to the Issaquah Highlands Park-and-Ride before heading to Downtown Seattle along I-90. They connect Sammamish with the Issaquah and Downtown Seattle markets. They run westbound to Issaquah Highlands Park-and-Ride and Downtown Seattle in the morning and run eastbound back to Sammamish in the evening with 20-minute headways. These routes only operate on weekdays. During the COVID-19 pandemic, Routes 216 and 219 were suspended indefinitely, with Route 216 planned for partial restoration in fall 2021.

Sound Transit bus route ST 554 runs along 228th Avenue and Issaquah-Pine Lake Road within City limits and provides service between Redmond-Fall City Road (at 185th Avenue NE) and downtown Seattle.

The South Sammamish Park & Ride is located at 3015 228th Avenue SE and has 265 parking stalls. Sammamish Hills Lutheran Church at 22818 SE 8th Street provides an additional 54 parking stalls weekdays from 5AM to 7PM. There are also two carpool and vanpool Park & Ride locations on SE Klahanie Blvd and Klahanie Drive SE.

3.7.1.6 Non-motorized Facilities

The majority of principal and minor arterial streets in Sammamish have sidewalks, paved shoulders, or shared use paths. However, only half of the roadways classified as local roads have similar facilities. Non-motorized facilities in the City of Sammamish are continuous on 228th Avenue from Issaquah-Pine Lake Road to NE 8th Street, on Issaquah-Pine Lake Road from SE 32nd to 228th Avenue SE, on SE 4th Street from 218th Avenue SE to 228th Avenue SE, on E Lake Sammamish Parkway from Inglewood Hill Road to NE 28th, and in many newer developments built to current City of Sammamish 2016 Public Works Standards. Minor arterials, collector streets, and local streets constructed prior to incorporation generally lack sidewalks or dedicated bike lanes.

3.7.1.7 Freight

Freight mobility in Sammamish is exclusively provided by trucks that share roadway facilities with passenger vehicles and transit. Principal arterials (IPLR, 228th Avenue, and Sahalee Way) and minor arterials ELSP and IFCR are the designated freight corridors in the City of Sammamish. These arterials connect regional facilities (SR 202 and SR 520 to the north and I-90 to the south via IPLR and ELSP) to the primary commercial centers of Sammamish.

3.7.1.8 Evacuation/Emergency Response Routes

Effective evacuation routes are a function of the capacity of the route and its accessibility to those that need to use the route. Significant natural or manmade disasters can result in evacuation traffic that far exceeds typical commute volumes. In these cases, capacity in excess of typical AM or PM peak hour needs is necessary to facilitate evacuation. In some cases, two-way roads are converted to one-way operation to create high

[26] King County Metro bus routes 216 and 219 serving the same route within city limits were temporarily suspended in March 2020 and remain suspended in 2021.

capacity evacuation routes. Principal arterials typically represent the highest capacity facilities within a transportation network and are typically relied upon as evacuation routes. Principal arterials (IPLR, 228th Ave, and Sahalee Way) are the primary evacuation routes in the City of Sammamish.

Emergency responders also rely on a community's transportation network to travel from their stations to calls for service. Sammamish is served by contract police services provided by King County stationed at City Hall on 228th Ave NE and by contract fire and emergency and medical services (EMS) provided by Eastside Fire and Rescue (ESFR) with stations located on 212th Ave SE (Station 81), 228th Ave NE (Station 82), and ISPR (Station 83).

3.7.2 Impacts

Impacts of the alternatives were developed based upon modeled 2035 traffic conditions.

3.7.2.1 Transportation Model Assumptions

Network Assumptions

The baseline model assumed no transportation capacity improvement projects would be built by 2035 in order to identify transportation improvement projects which are driven by capacity deficiencies. The modeled transportation network was consistent with the street network as it existed in April 2021.

Development Forecast

The Baseline 2035 development forecast incorporated pipeline permitted development identified in the Sammamish transportation concurrency management system in addition to remaining long-range development identified, consistent with the 2015-2035 forecast in the current Comprehensive Plan.

Pipeline development was modeled consistent with the March 30, 2021 Transportation Concurrency Test #25 for Rachel Carson Elementary School. Permitted development represents a total of 859 new AM peak hour trips and 545 new PM peak hour trips relative to the 2016 base year.

To calculate 2035 growth beyond permitted development, a long-range forecast of 196 new single-family dwelling units and 462,800 square feet of office and retail space were also added to the 2035 model. The 196 new single-family units were allocated throughout the City of Sammamish, with approximately half of the new units allocated to the north of Sammamish Town Center and half of the new units to the south. A total of 462,800 square feet of office and retail growth was allocated to the Sammamish Town Center subarea with a split of approximately 70% retail, 15% general office, and 15% medical/dental office, similar to Sammamish Village ratios. This allocation is consistent with the existing "Sammamish Village" commercial development at the northwest corner of 228th Avenue SE and SE 4th Street.

External trip growth was modeled consistent with regional growth forecasts identified in the previous Sammamish travel demand model update.

Model Assumptions Alternative 1 No Action represented the baseline network and development assumptions described above and identified transportation infrastructure improvements required to maintain the City's existing intersection LOS policy. It did not include a segment or corridor V/C ratio standard.

Alternative 1 objectives included:

- Mitigate intersection LOS failures at the locations defined by the travel demand model with the minimum improvement necessary to meet the required LOS standards for each location.

Model Assumptions Alternative 2 maintained the baseline network and development assumptions described above and added a segment V/C policy. Infrastructure improvements were based on a maximum V/C ratio of 1.4 for segments and 1.1 for corridors in addition to the existing intersection LOS standard.

Alternative 2 objectives included:

- Mitigate intersection LOS failures at the locations defined by the travel demand model with the minimum improvement necessary to meet the required LOS standards for each location.
- Mitigate segment and corridor V/C failures at the locations defined by the travel demand model with the minimum improvement necessary to meet the required V/C standards for each location.

Model Assumptions Alternative 3 considered the impact of reduced travel demand resulting from a shift in development and trip-making behavior. It maintained the intersection, segment, and corridor LOS standards of Alternative 2. Travel demand modifications in Alternative 3 included:

- Existing residential: Assume a global 15% work-from-home (WFH) shift. This includes 15% reduction in home-to-work and work-to-home, and non-home-based trips.
- New single-family residential: Assume the following for new growth:
  - Half are typical single-family homes of 3,000-4,500 square feet with 15% WFH.
  - Half are small-scale single-family homes of under 1,000 square feet with 15% WFH modeled using the ITE Trip Generation Manual 9th Edition residential townhome trip generation rates to reflect the smaller home size.
- New commercial: Assume 15% WFH applied to office growth.

Alternative 3 objectives included:

- Mitigate intersection LOS failures at the locations defined by the travel demand model with the minimum improvement necessary to meet the required LOS standards for each location.
- Mitigate segment and corridor V/C failures at the locations defined by the travel demand model with the minimum improvement necessary to meet the required V/C standards for each location.

Model Assumptions Alternative 4 assumed the shift in development and trip-making behavior associated with Alternative 3 in addition to transportation network improvements that would complete the City's principal arterial network consistent with the regional functional classification system. Transportation improvement projects assumed in Alternative 4 incorporated connections to the regional transportation network and considered the ultimate completion of existing substandard principal arterials to current City Public Works Standards.

Alternative 4 objectives included:

- Increase the capacity of principal arterials to direct the highest traffic volumes to the highest classified roadways: Sahalee Way, 228th Avenue, and Issaquah-Pine Lake Road.
- Remove bottlenecks on principal arterials regardless of jurisdiction to provide system continuity and encourage utilization of increased capacity on Sahalee Way and Issaquah-Pine Lake Road.

- Control the travel demand on minor and collector arterials East Lake Sammamish Parkway, 244th Avenue NE, SE 24th Street, and SE Klahanie Boulevard to maintain the local access functions of lower classified roadways.

3.7.2.2 Transportation Impact (TI) Areas

All alternatives are meant to address the City's anticipated trips resulting from land use and housing assumptions as measured against a new LOS V/C standard; however, the means by which the alternatives would address the City's complete multimodal network differ. See Exhibit 3-50.

Exhibit 3-50. Miles of Multimodal Road Improvements by Alternative

Improvement Type	Alt 1	Alt 2	Alt 3	Alt 4
Intersection/Node Improvements	Yes	Yes	Yes	Yes
Segment /Road Improvements	No	Yes	Yes	Yes
Sidewalks Added (Miles)	0*	5.09	3.54	11.67
Bike Lanes Added (Miles)	0*	5.09	3.54	11.67
Lane Miles Improved (Miles)	0*	5.72	3.6	13.26
Total Roadway Improvement (Miles)	0*	4.26	3.01	7.08

*While segment and non-motorized improvements would not be associated with concurrency projects in Alternative 1, the City's Transportation Improvement Program could include such projects implemented without concurrency.
Source: Transportation Solutions Inc., 2021.

Each alternative is evaluated and compared as follows for unique transportation impacts (TI):

- **TI-1** City of Sammamish Intersection LOS
- **TI-2** City of Sammamish Proposed Corridor and Segment V/C
- **TI-3** Consistency with Adopted Local and Regional Roadway Functional Classification
- **TI-4** Continuity with Adjacent Jurisdictions/Facilities
- **TI-5** Systemwide Measures of Effectiveness
  - **TI-5.1** Total Trips
  - **TI-5.2** VMT
  - **TI-5.3** Fuel Consumption
  - **TI-5.4** GHG Emissions
  - **TI-5.5** Average Speed
  - **TI-5.6** Total Delay
- **TI-6** Transit Mobility
- **TI-7** Non-Motorized Mobility and Safety
- **TI-8** Freight Mobility
- **TI-9** Evacuation/Emergency Response Routes
- **TI-10** Concurrency Implications

3.7.2.3 TI-1 City of Sammamish Intersection LOS

Intersection LOS Calculation Methodology

Intersection LOS and delay were calculated for the 2035 AM and PM peak hour at 43 intersections in Sammamish. Traffic volume forecasts were exported from the 2035 travel demand models into the citywide intersection LOS models for LOS evaluation.

Delay for signalized and stop-controlled intersections was calculated in Synchro 10 software using Highway Capacity Manual 6th Edition (HCM6) methodology. Roundabout delay was calculated in Sidra Intersection 8 software using the Sidra capacity model and signalized level of service thresholds, per WSDOT October 2019 "Sidra Policy Settings."

Peak Hour Factor (PHF) describes the peaking characteristics of the highest 15-minute interval traffic volume for a given peak hour. For the purposes of intersection LOS analysis, average intersection PHF identified in traffic counts was applied to each intersection.

Signalized intersection saturation flow rate, an input in the HCM6 signalized LOS methodology, is defined as the flow rate which would occur at a signalized intersection approach given saturated conditions and no interruption due to signal phasing. The WSDOT "Synchro & SimTraffic Protocol – August 2018 " provides the following recommendations for saturation flow rate.

> *The preferred methodology for determining the appropriate value is to conduct a field study. However, when that is not available, or feasible, the recommended values are 1750 urban areas, 1900 for rural.*

Saturation flow data was for the City of Sammamish was analyzed using data collection methods described in the Institute of Transportation Engineers Manual of Transportation Engineering Studies.

The overall average saturation flow rate of 1,700 vehicles per hour per lane (vphpl) calculated for Sammamish is slightly lower than WSDOT policy of 1,750 vphpl for urban intersections and significantly lower than the software default ideal saturation flow rate of 1,900 vphpl for signalized intersections in previously used in Sammamish. Based on this analysis, a saturation flow rate of 1,750 vphpl was used for all City of Sammamish signalized intersections.

Impacts Common to All Alternatives

Intersection LOS for the 2016 baseline and all alternatives are shown in Exhibit 3-51 on the following page. All 43 identified intersections meet City LOS standards under each alternative. Alternative 4 includes improvements to the SR 202/Sahalee Way intersection to meet City LOS standards for a principal arterial.

3.7.2.4 TI-2 City of Sammamish Corridor and Segment V/C

Exhibit 3-52 on the following pages compares corridor and segment V/C for alternatives 2, 3, and 4 to the 2016 baseline. Corridor LOS is not applied under Alternative 1 so no corridor or segment V/C data is provided.

The improvements included in alternatives 2, 3, and 4 result in all corridors and segments meeting allowable V/C ratio of 1.1 for corridors and 1.4 for segments. Some segments and corridors approach these thresholds with corridor V/C of 1.09. Corridors with forecast V/C in these ranges should be considered carefully as changes between assumed forecast growth and actual future growth could result in V/C changes that require additional or reduced improvements. This applies particularly to the Issaquah-Fall City Road and Duthie Hill corridor. Conceptual corridor and segment project descriptions and the project locations are discussed in Chapter 2 under each alternative (see Exhibit 2-13 and Exhibit 2-14 under Alternative 2, Exhibit 2-16 and Exhibit 2-17 under Alternative 3, and Exhibit 2-19 and Exhibit 2-20 under Alternative 4).

Exhibit 3-51. Intersection LOS Summary (AM and PM), All Alternatives

ID. Name	AM										PM									
	Baseline		Alt1		Alt2		Alt3		Alt4		Baseline		Alt1		Alt2		Alt3		Alt4	
1. Issaquah-Pine Lk Rd & SE 48th St	42.3	D	34.4	C	8.1	A	42.6	D	6.9	A	15	B	21.8	C	43.3	D	25.1	C	8	A
2. 228th Ave SE & NE 12th Pl	7.7	A	8.5	A	8.8	A	7.6	A	6.5	A	9.2	A	10.1	B	10.1	B	9.5	A	8.6	A
3. Klahanie Dr SE & Issaquah-Fall City Rd	23.9	C	9.1	A	8	A	6.7	A	6.0	A	35.7	D	11.3	B	10	A	8.8	A	7.7	A
4. SE 24th St & 244th Ave SE	13.7	B	15.9	C	14.7	B	14.1	B	15.2	C	18.9	C	20.5	C	20.3	C	20.2	C	18.3	C
5. SE 32nd Way & 244th Ave E	13.5	B	13.6	B	12.7	B	12.2	B	12.4	B	41.4*	E	16.7	C	15.6	C	14	B	15.1	C
6. Issaquah-Pine Lake Rd & SE 32nd Way	4.1	A	6.4	A	7.7	A	6.5	A	7.2	A	4.4	A	21.9	C	31.6	C	14.3	B	6.5	A
7. 228th Ave SE & SE 40th St	48.3*	E	23.4	C	22.9	C	19.6	C	13.7	B	36.3*	E	24.9	C	24.9	C	24.9	C	16.7	C
8. SE Klahanie Blvd & 256th Ave SE	64.7*	F	19.4	C	19.5	C	18.6	C	17.5	C	10.5	B	10.4	B	10.4	B	10.4	B	10.4	B
9. Issaquah-Fall City Rd & Pacific Cascade MS drwy	77.4*	E	10.5	B	8.6	A	6.9	A	5.9	A	33.1	C	7.9	A	6.9	A	6.4	A	5.8	A
10. Sahalee Way NE & NE 36th Ln	19.2	C	19.2	C	18.5	C	15.7	C	14.5	B	19.1	C	19.4	C	19.1	C	17.4	C	25.8	D
11. NE 8th Street & 242nd Ave NE	52.1*	D	33.1	C	33.5	C	33.5	C	32.9	C	11.7	B	11.7	B	11.7	B	11.7	B	11.6	B
12. 228th Ave SE & SE 8th St	17.3	B	18.1	B	18.3	B	16.4	B	19.8	B	12.8	B	19.1	B	19.8	B	18.6	B	22.2	C
13. 228th Ave SE & NE 19th Dr	24.2	C	28.7	D	26.2	D	22.9	C	23.3	C	22.4	C	26	D	25.7	D	23.4	C	25.5	D
14. Inglewood Hill Rd & 216th Ave NE	5.1	A	7	A	7.2	A	6.6	A	6.2	A	5.3	A	6.5	A	6.5	A	6.3	A	6	A
15. 228th Ave SE & NE 8th St	24.7	C	30.6	C	31.9	C	28.8	C	35.5	D	21.9	C	30.8	C	32.4	C	29.9	C	42.5	D
16. 228th Ave SE & NE 4th St	22.8	C	33	C	31.3	C	24.5	C	31.5	C	14.1	B	19.5	B	20.4	C	19.2	B	23	C
17. 228th Ave SE & SE 4th St	17.5	B	28.4	C	27.1	C	24.8	C	35.2	D	14.2	B	72.5	E	73.7	E	63.4	E	47.3	D
18. 212th Ave SE & SE 8th St	15.9	C	14.9	B	17.8	C	14.7	B	12.7	B	13	B	15	C	15.2	C	13.6	B	12.3	B
19. 228th Ave SE & SE 16th Pl	12.6	B	11.9	B	11.5	B	11.2	B	13.3	B	11.5	B	12.1	B	12.7	B	11.4	B	14.5	B
20. E Lk Sammamish Pkwy & 212th Way SE	5.3	A	5.9	A	6.4	A	4.8	A	4.3	A	4.1	A	4.5	A	4.2	A	4.2	A	3.9	A
21. E Lk Sammamish Pkwy & SE 24th Wy	13.3	B	14.9	B	14.7	B	12.9	B	12.5	B	16.2	C	18.7	C	17.8	C	16.2	C	13.7	B
22. 212th Ave SE & SE 20th Street	13.1	B	10.1	B	10.8	B	9.8	A	9.0	A	11.3	B	12.6	B	14.4	B	11.6	B	10.6	B
23. E Lk Sammamish Pkwy & Louis Thompson Rd	11.4	B	10.7	B	11.9	B	9.9	A	7.6	A	11.1	B	11.2	B	11.1	B	8.8	A	6.8	A
24. E Lk Sammamish Pkwy & Inglewood Hill Rd	27.5	C	21	C	28.9	C	15.8	B	10.9	B	15.5	B	17	B	17.7	B	15.7	B	13.1	B
25. Sahalee Way NE & NE 37th Way	11.8	B	12.6	B	11.7	B	10	B	9.3	A	21.4	C	16.8	B	15.7	B	9.5	A	9.9	A
26. NE 8th St & 244th Ave NE	4.2	A	4.9	A	4.7	A	4.7	A	4.7	A	3.9	A	4.3	A	4.3	A	4.3	A	4.3	A
27. 228th Ave SE & SE 20th St	15.4	B	12.8	B	13.4	B	11.6	B	12.4	B	15.3	B	19.3	B	20.3	C	17.5	B	16.8	B
28. 228th Ave SE & SE 24th St	48.7	D	42.4	D	46.3	D	41.4	D	49.1	D	28.2	C	44.1	D	41.6	D	39.6	D	50.7	D
29. 228th Ave SE & Issaquah-Pine Lk Rd	54.6	D	55.2	E	59.5	E	47.3	D	29.0	C	34.2	C	57.1	E	58	E	52.1	D	62	E
30. Issaquah-Pine Lk Rd & Klahanie Blvd	25.9	C	46.1	D	48.4	D	38.7	D	31.9	C	18.2	B	24.5	C	38.6	D	25.9	C	20.2	C
31. Issaquah-Beaver Lake Rd & Duthie Hill Rd	31	C	25.3	C	21.6	C	18.3	B	14.1	B	19.1	B	26.3	C	19.7	B	17.6	B	15.5	B
32. Issaquah-Beaver Lake Rd & 256th Ave SE	61.4*	F	5.7	A	5.6	A	5.5	A	5.4	A	33.7*	D	5.9	A	5.7	A	5.3	A	5.2	A
33. 228th Ave SE & NE 14th St	22.7	C	22.1	C	21.1	C	19.7	C	20.7	C	28.1	D	27.2	D	26.7	D	23.9	C	21.2	C
34. 228th Ave SE & NE 25th Way	18.2	B	18.4	B	17.1	B	14	B	10.3	B	10.7	B	11.5	B	11.2	B	10.7	B	9.2	A
35. Issaquah-Pine Lake Rd & SE 42nd St	6.6	A	9	A	13.2	B	9.8	A	6.0	A	7.4	A	7.4	A	7.4	A	7.4	A	6	A
36. Issaquah-Pine Lake Rd & 230th Lane SE	43.4	D	39.6	D	40.6	D	39.8	D	41.9	D	11.4	B	13.4	B	13.8	B	13.4	B	14.1	B
37. Sahalee Way NE & NE 28th Way	103.9*	F	9	A	8.3	A	6.9	A	5.0	A	50.6*	F	4.9	A	4.9	A	4.8	A	3.8	A
38. Issaquah-Pine Lake Rd & SE 47th Way	16.3	B	18.2	B	4.3	A	3.7	A	6.3	A	20.6	C	28.7	C	4.5	A	4.1	A	5.1	A
39. NE 8th St & 233rd Ave NE	6	A	5.5	A	5.6	A	5.5	A	5.5	A	5.3	A	5.6	A	5.6	A	5.6	A	5.7	A
40. 228th Ave SE & E Main Street	3	A	3.2	A	3.2	A	3.2	A	3.2	A	3.1	A	3.5	A	3.5	A	3.5	A	3.5	A
41. 244th Ave NE & E Main Dr	5.4	A	5.4	A	5.5	A	5.4	A	5.4	A	5	A	5.1	A	5.1	A	5.1	A	5.1	A
42. Duthie Hill Rd & Trossachs Blvd SE	18.2	B	31.8	C	29.2	C	22.8	C	19.2	B	12.9	B	17.9	B	15.4	B	12.8	B	12.1	B
43. 228th Ave SE & Skyline HS drwy	16.2	B	18.1	B	18	B	18	B	20.0	C	9.5	A	11.5	B	12	B	11.1	B	13.6	B
63. Sahalee Way NE & SR 202	34.5	C	41.9	D	36.2	D	26.9	C	31.9	C	78*	E	119.5*	F	107.9*	F	61.6*	E	35.5	D

*LOS Delay Exceeds Standard

LOS Exceeds Standard

Note: Intersections outside city limits excluded except for 63.

Notes: Asterisks (*) identify intersection that exceed the LOS delay thresholds. Cells highlighted black exceed the LOS standard. Both indicate a failure (see Section 3.7.1.2 and Exhibit 3-47 above). Intersections outside city limits are excluded except for intersection 63.
Source: Transportation Solutions Inc., 2021.

Exhibit 3-52. Corridor and Segment V/C AM and PM, All Alternatives with Improvements

ID	SEGMENT		2016 AM	Alt2 AM	Alt3 AM	Alt4 AM	2016 PM	Alt2 PM	Alt 3 PM	Alt 4 PM
	East Lake Sammamish Parkway North Corridor	NB	**1.52**	0.92	0.94	0.86	0.78	0.47	0.54	0.54
		SB	0.44	0.27	0.29	0.28	**1.55**	0.97	1.06	0.97
1	E Lk Sammamish Pkwy, City limits - 196th Ave NE (Weber Pl)	NB	**1.62**	0.71	0.57	0.88	0.83	0.36	0.33	0.56
		SB	0.52	0.22	0.20	0.32	**1.76**	0.79	0.70	1.10
2	E Lk Sammamish Pkwy, 196th Ave NE - NE 26th Pl	NB	**1.70**	0.74	1.16	0.96	0.87	0.37	0.66	0.60
		SB	0.44	0.19	0.33	0.25	**1.65**	0.75	1.28	1.01
3	E Lk Sammamish Pkwy, NE 26th Pl - NE Inglewood Hill Rd	NB	1.24	1.30	1.07	0.73	0.64	0.66	0.62	0.47
		SB	0.37	0.38	0.35	0.24	1.25	1.35	1.21	0.81
	East Lake Sammamish Parkway Central Corridor	NB	0.61	0.66	0.60	0.49	0.65	0.72	0.62	0.39
		SB	0.47	0.55	0.45	0.38	0.77	0.85	0.77	0.66
4	E Lk Sammamish Pkwy, Inglewood Hill Rd – Louis Thompson Rd	NB	0.70	0.77	0.67	0.46	0.57	0.61	0.52	0.32
		SB	0.39	0.45	0.37	0.30	0.82	0.89	0.78	0.59
5	E Lk Sammamish Pkwy, Louis Thompson Rd NE – SE 8th St	NB	0.55	0.58	0.56	0.52	0.64	0.72	0.61	0.36
		SB	0.48	0.56	0.46	0.38	0.77	0.85	0.79	0.71
6	E Lk Sammamish Pkwy, SE 8th St – SE 24th Way	NB	0.49	0.54	0.53	0.50	0.74	0.83	0.72	0.47
		SB	0.54	0.64	0.53	0.46	0.70	0.80	0.75	0.68
	East Lake Sammamish Parkway South Corridor	NB	0.53	0.52	0.62	0.60	1.02	1.07	0.99	0.73
		SB	0.87	0.88	0.79	0.69	0.80	0.80	0.87	0.83
7	E Lk Sammamish Pkwy, SE 24th Way – 212th Ave SE	NB	0.47	0.54	0.57	0.55	0.77	0.86	0.74	0.50
		SB	0.64	0.76	0.61	0.54	0.77	0.87	0.85	0.81
8	E Lk Sammamish Pkwy, 212th Ave SE – South City Limit	NB	0.57	0.51	0.66	0.64	1.18	1.18	1.14	0.86
		SB	1.00	0.95	0.90	0.79	0.83	0.74	0.88	0.84
	Sahalee Way–228th Avenue North Corridor	NB	**1.12**	1.00	1.01	0.58	0.67	0.69	0.74	0.39
		SB	0.56	0.58	0.64	0.37	1.03	1.02	1.01	0.68
9	Sahalee Way/228th Ave NE, City Limit – NE 37th Way	NB	1.32	0.63	1.02	0.66	0.60	0.30	0.61	0.35
		SB	0.50	0.26	0.51	0.33	1.16	0.58	0.97	0.71
10	Sahalee Way/228th Ave NE, NE 37th Way - NE 36th St	NB	1.15	1.26	1.09	0.59	0.60	0.73	0.75	0.35
		SB	0.52	0.63	0.66	0.35	1.09	1.30	1.14	0.71
11	Sahalee Way/228th Ave NE, NE 36th St - 223rd Ave NE	NB	1.13	1.25	1.10	0.59	0.59	0.71	0.72	0.34
		SB	0.50	0.61	0.63	0.34	1.04	1.25	1.10	0.69
12	Sahalee Way/228th Ave NE, 223rd Ave NE – NE 25th Way	NB	1.05	1.17	1.06	0.56	0.60	0.73	0.74	0.35
		SB	0.50	0.60	0.63	0.34	0.93	1.11	1.00	0.64
13	228th Ave, NE 25th Way – NE 12th Pl	NB	0.78	0.74	0.74	0.49	0.87	0.89	0.86	0.50
		SB	0.73	0.75	0.72	0.45	0.88	0.90	0.85	0.66

Exhibit 3-52. Corridor and Segment V/C AM and PM, All Alternatives with Improvements (cont.)

ID	SEGMENT		2016 AM	Alt2 AM	Alt3 AM	Alt4 AM	2016 PM	Alt2 PM	Alt 3 PM	Alt 4 PM
	228th Avenue Central Corridor	**NB**	**0.54**	**0.59**	**0.59**	**0.59**	**0.68**	**0.81**	**0.77**	**0.78**
		SB	**0.58**	**0.65**	**0.62**	**0.62**	**0.66**	**0.80**	**0.77**	**0.82**
14	228th Ave, NE 12th Pl – NE 8th St/Inglewood Hill Rd	NB	0.75	0.75	0.75	0.48	0.92	0.99	0.94	0.56
		SB	0.83	0.89	0.84	0.52	0.90	0.99	0.94	0.69
15	228th Ave, NE 8th St/Inglewood Hill Rd – Main St	NB	0.43	0.47	0.46	0.51	0.57	0.69	0.66	0.73
		SB	0.55	0.63	0.60	0.65	0.57	0.69	0.67	0.79
16	228th Ave, Main St - SE 8th St	NB	0.50	0.54	0.52	0.58	0.58	0.71	0.68	0.75
		SB	0.44	0.53	0.50	0.55	0.62	0.74	0.72	0.83
17	228th Ave, SE 8th St – SE 10th St	NB	0.46	0.55	0.55	0.61	0.65	0.81	0.77	0.86
		SB	0.51	0.60	0.57	0.63	0.58	0.77	0.75	0.84
18	228th Ave, Se 10th St – SE 20th St	NB	0.58	0.65	0.66	0.72	0.70	0.86	0.82	0.91
		SB	0.58	0.66	0.64	0.70	0.66	0.85	0.83	0.92
	228th Avenue South Corridor	**NB**	**0.55**	**0.64**	**0.63**	**0.55**	**0.83**	**0.86**	**0.85**	**0.78**
		SB	**0.70**	**0.77**	**0.71**	**0.61**	**0.66**	**0.76**	**0.74**	**0.69**
19	228th Ave, SE 20th St – Issaquah Pine Lake Rd SE	NB	0.58	0.68	0.67	0.66	0.73	0.80	0.79	0.89
		SB	0.58	0.69	0.64	0.70	0.69	0.82	0.79	0.83
20	228th Ave, Issaquah Pine Lake Rd SE – SE 43rd Way	NB	0.47	0.54	0.51	0.27	0.98	0.96	0.94	0.63
		SB	0.85	0.91	0.82	0.47	0.58	0.62	0.60	0.35
	244th Avenue North Corridor	**NB**	**0.39**	**0.31**	**0.25**	**0.25**	**0.40**	**0.47**	**0.46**	**0.48**
		SB	**0.48**	**0.50**	**0.51**	**0.51**	**0.42**	**0.42**	**0.35**	**0.34**
21	244th Ave NE, NE 30th Pl - NE 20th St	NB	0.42	0.35	0.26	0.27	0.42	0.55	0.55	0.58
		SB	0.44	0.52	0.55	0.55	0.45	0.49	0.40	0.37
22	244th Ave NE, NE 20th St - NE 8th St	NB	0.45	0.31	0.25	0.26	0.47	0.50	0.50	0.52
		SB	0.66	0.61	0.62	0.62	0.50	0.43	0.36	0.34
23	244th Ave NE, NE 8th St – E Main St	NB	0.40	0.34	0.30	0.30	0.33	0.36	0.35	0.37
		SB	0.32	0.34	0.34	0.35	0.41	0.40	0.35	0.35
24	244th Ave NE/SE, E Main St - SE 8th St	NB	0.21	0.17	0.14	0.14	0.39	0.44	0.42	0.44
		SB	0.42	0.46	0.45	0.45	0.33	0.34	0.29	0.29
	NE Inglewood Hill Road Corridor	**EB**	**0.31**	**0.32**	**0.33**	**0.29**	**0.79**	**0.89**	**0.80**	**0.48**
		WB	**0.77**	**0.86**	**0.69**	**0.53**	**0.39**	**0.39**	**0.38**	**0.32**
25	NE Inglewood Hill Rd, E Lk Sammamish Pkwy – 216th Ave	EB	0.25	0.28	0.29	0.22	0.96	1.12	1.00	0.54
		WB	0.97	1.10	0.86	0.64	0.41	0.44	0.42	0.36
26	NE Inglewood Hill Rd, 216th Ave NE – 228th Ave NE	EB	0.34	0.34	0.35	0.32	0.58	0.57	0.55	0.43
		WB	0.50	0.51	0.49	0.43	0.38	0.35	0.34	0.29

Exhibit 3-52. Corridor and Segment V/C AM and PM, All Alternatives with Improvements (cont.)

ID	SEGMENT		2016 AM	Alt2 AM	Alt3 AM	Alt4 AM	2016 PM	Alt2 PM	Alt 3 PM	Alt 4 PM
	NE 8th Street Corridor	**EB**	**0.35**	**0.36**	**0.34**	**0.34**	**0.52**	**0.60**	**0.60**	**0.60**
		WB	**0.46**	**0.52**	**0.50**	**0.50**	**0.34**	**0.38**	**0.37**	**0.35**
27	NE 8th St, 228th Ave NE – 235th Ave NE	EB	0.40	0.41	0.39	0.40	0.57	0.67	0.66	0.66
		WB	0.48	0.55	0.53	0.52	0.36	0.40	0.38	0.38
28	NE 8th St, 235th Ave NE – 244th Ave NE	EB	0.26	0.27	0.24	0.24	0.45	0.51	0.52	0.52
		WB	0.44	0.48	0.48	0.47	0.33	0.36	0.35	0.33
	SE 8th Street Corridor	**EB**	**0.28**	**0.35**	**0.35**	**0.35**	**0.40**	**0.57**	**0.54**	**0.54**
		WB	**0.63**	**0.75**	**0.70**	**0.69**	**0.32**	**0.44**	**0.43**	**0.41**
29	SE 8th St, 228th Ave SE – 244th Ave SE	EB	0.28	0.35	0.35	0.35	0.40	0.57	0.54	0.54
		WB	0.63	0.75	0.70	0.69	0.32	0.44	0.43	0.41
	Issaquah-Pine Lake Road Corridor	**EB/SB**	**0.97**	**0.92**	**0.84**	**0.76**	**0.83**	**1.02**	**0.96**	**0.68**
		WB/NB	**0.54**	**0.73**	**0.72**	**0.43**	**1.06**	**1.04**	**0.96**	**0.85**
30	Issaquah-Pine Lk Rd, 228th Ave SE - SE 32nd Way[5]	EB	0.48	0.89	0.81	0.38	0.83	1.37	1.25	0.61
		WB	0.61	1.03	0.98	0.40	0.63	1.07	0.98	0.48
31	Issaquah-Pine Lk Rd, SE 32nd Way - SE Klahanie Blvd	NB	0.57	0.97	0.98	0.42	0.85	1.35	1.29	0.66
		SB	0.69	1.16	1.07	0.53	0.86	1.40	1.36	0.69
32	Issaquah-Pine Lk Rd, SE Klahanie Blvd – SE 46th St	NB	0.44	0.45	0.43	0.44	1.12	0.88	0.78	0.93
		SB	1.11	0.85	0.76	0.89	0.84	0.68	0.65	0.71
33	Issaquah-Pine Lk Rd, SE 46th St - SE 48th St	NB	0.50	0.45	0.45	0.46	1.37	0.97	0.88	1.07
		SB	1.22	0.87	0.79	0.95	0.81	0.64	0.63	0.70
	SE 32nd Way/Street - Issaquah-Beaver Lake Road Corridor	**EB**	**0.25**	**0.21**	**0.19**	**0.18**	**0.56**	**0.54**	**0.49**	**0.54**
		WB	**0.46**	**0.47**	**0.46**	**0.47**	**0.41**	**0.40**	**0.36**	**0.33**
34	SE 32nd Way, Issaquah-Pine Lk Rd – 235th Place SE	EB	0.25	0.18	0.18	0.21	0.67	0.54	0.48	0.57
		WB	0.55	0.50	0.45	0.48	0.47	0.36	0.35	0.41
35	SE 32nd Way, 235th Place SE – 244th Ave SE	EB	0.25	0.20	0.21	0.19	0.54	0.50	0.44	0.55
		WB	0.40	0.40	0.36	0.41	0.37	0.36	0.33	0.32
36	SE 32nd Way, 244th Ave SE – E Beaver Lake Dr SE	EB	0.31	0.27	0.22	0.18	0.62	0.68	0.64	0.64
		WB	0.52	0.58	0.59	0.59	0.47	0.51	0.45	0.31
37	Issaquah-Beaver Lk Rd, E Beaver Lk Dr – SE Duthie Hill Rd	EB	0.19	0.19	0.12	0.07	0.32	0.39	0.37	0.36
		WB	0.29	0.37	0.37	0.37	0.32	0.35	0.31	0.19

Exhibit 3-52. Corridor and Segment V/C AM and PM, All Alternatives with Improvements (cont.)

ID	SEGMENT		2016 AM	Alt2 AM	Alt3 AM	Alt4 AM	2016 PM	Alt2 PM	Alt 3 PM	Alt 4 PM
	Issaquah-Fall City Road Corridor	**NB/EB**	**0.26**	**0.45**	**0.40**	**0.44**	**0.91**	**1.02**	**0.92**	**0.77**
		SB/WB	**0.94**	**0.94**	**0.80**	**0.67**	**0.54**	**0.65**	**0.62**	**0.55**
38	SE Issaquah-Fall City Rd, Issaquah-Pine Lk Rd – 245th Pl SE	EB	0.30	0.46	0.43	0.44	0.72	0.92	0.81	0.65
		WB	0.67	0.82	0.67	0.52	0.42	0.59	0.57	0.51
39	SE Issaquah-Fall City Rd, 245th Ave SE - Klahanie Dr SE	EB	0.17	0.21	0.19	0.19	1.32	0.88	0.80	0.70
		WB	**1.43**	0.85	0.72	0.63	0.76	0.53	0.51	0.46
40	SE Issaquah-Fall City Rd, Klahanie Dr SE - SE Duthie Hill Rd	EB	0.27	0.57	0.50	0.57	0.85	1.39	1.28	1.09
		WB	0.74	1.18	1.02	0.87	0.55	0.94	0.89	0.79
41	SE Duthie Hill Rd, SE Issaquah-Beaver Lk Rd – SE Issaquah-Fall City Rd	NB	0.23	0.53	0.45	0.52	0.59	1.06	0.94	0.75
		SB	0.68	1.07	0.92	0.77	0.30	0.62	0.56	0.46
	Duthie Hill Road Corridor	**NB/EB**	**0.32**	**0.43**	**0.37**	**0.42**	**0.93**	**1.09**	**1.09**	**1.06**
		SB/WB	**0.90**	**0.91**	**0.93**	**0.89**	**0.63**	**0.66**	**0.66**	**0.62**
42	SE Duthie Hill Rd, SE Issaquah-Beaver Lk Rd – 266th Ave SE	NB	0.35	0.43	0.32	0.37	1.06	1.12	0.97	0.94
		SB	1.03	1.03	0.91	0.83	0.72	0.76	0.65	0.58
43	SE Duthie Hill Rd, 266th Ave SE – Trossachs Blvd SE	EB	0.29	0.43	0.41	0.47	0.79	1.05	1.22	1.18
		WB	0.77	0.75	0.96	0.96	0.54	0.53	0.68	0.68

Corridor V/C
Segment V/C
Exceeds V/C Standard

Note: Cells highlighted black exceed V/C standard.
Source: Transportation Solutions Inc., 2021.

3.7.2.5 TI-3 Consistency with Adopted Local and Regional Roadway Functional Classification

Alternative 1 retains the adopted functional class system but does not improve road segments. The roadway improvements developed for Alternative 4 would improve the City's principal arterials to meet the City's adopted 2016 Public Works Standards to meet the travel demand created by growth and to determine if that strategy would reduce the need for required improvements on lower classified arterials. The roadway improvements necessary to meet the V/C standards in alternatives 2 and 3 were developed based strictly on modeled deficiencies and did not consider the particular roadway's functional classification.

Alternative 1 No Action

Alternative 1 is generally consistent with the adopted functional classification system. Alternative 1 does not improve any arterial segments. Identified intersection improvements are located on principal and minor arterials.

Alternative 2

The five-lane improvements required for ELSP's northern segments to meet the V/C standard with modeled traffic demand are inconsistent with its classification as a minor arterial. The three-lane improvements required for ELSP's southern segment to meet the V/C standard with modeled traffic demand are consistent with its classification as a minor arterial. The five-lane improvements required for Sahalee Way and IPLR to meet the V/C standard with modeled traffic demand are consistent with their classifications as principal arterials. The three-lane improvements required for the SE Duthie Hill Rd segments to meet the V/C standard with modeled traffic demand are consistent with its regional classification as a minor arterial. The City's Transportation Element identifies SE Duthie Hill Rd as principal arterial, but that classification has not been approved by WSDOT, PSRC, or FHWA.

Alternative 2 is inconsistent with the City's functional classification system as it provides capacity on ELSP NE that has the effect of attracting traffic away from 228th Avenue NE and Sahalee Way, which are designated principal arterials.

Alternative 3

The five-lane improvements required for ELSP's northern segment to meet the V/C standard with modeled traffic demand are inconsistent with its classification as a minor arterial. The three-lane improvements required for ELSP's northern and southern segments to meet the V/C standard with modeled traffic demand are consistent with its classification as a minor arterial. The three-lane improvements required for the SE Duthie Hill Rd segments to meet the V/C standard with modeled traffic demand are consistent with its regional classification as minor arterial. The City's Transportation Element identifies SE Duthie Hill Rd as a principal arterial, but that classification has not been approved by WSDOT, PSRC, or FHWA.

Alternative 3 is inconsistent with the City's functional classification system as it provides capacity on ELSP NE that has the effect of attracting traffic away from 228th Avenue NE and Sahalee Way, which are designated principal arterials.

Alternative 4

The five-lane improvements required for Sahalee Way, 228th Avenue SE and IPLR in this alternative are consistent with their classifications as principal arterials. The three-lane improvements required for the SE Duthie Hill Rd segment to meet the V/C standard with modeled traffic demand is consistent with its regional classification as minor arterial. The City's Transportation Element identifies SE Duthie Hill Rd as principal arterial, but that classification has not been approved by WSDOT, PSRC, or FHWA.

Alternative 4 is consistent with the City's functional classification system as it provides capacity on designated principal arterials to minimize capacity improvements necessary on minor arterials.

3.7.2.6 TI-4 Continuity with Adjacent Jurisdictions/Facilities

Alternatives 1, 2, and 3 assume no transportation improvements beyond Sammamish City limits. Alternative 4 assumes improvements to Sahalee Way, 228th Avenue, and IPLR are extended to logical connections to facilities in other jurisdictions.

Alternative 1 No Action

Alternative 1 results in no new notable discontinuities. The number of lanes on ELSP, Sahalee Way, 228th Ave, and IFCR remain constant at their connections to adjacent facilities.

Alternative 2

Alternative 2 results in three new notable discontinuities:

- The two northernmost segments of ELSP would be five-lanes in the City of Sammamish narrowing to three-lanes in the City of Redmond.
- The northernmost segment of Sahalee Way would be five-lanes in the City of Sammamish narrowing to two-lanes in King County.
- The two southernmost segments of IPLR would be five-lanes in the City of Sammamish narrowing to two-lanes in the City of Issaquah.

Alternative 3

Alternative 3 results in two new notable discontinuities:

- The northernmost segment of ELSP would be five-lanes in the City of Sammamish narrowing to three-lanes in the City of Redmond.
- The two southernmost segments of IPLR would be five-lanes in the City of Sammamish narrowing to two-lanes in the City of Issaquah.

Alternative 4

Alternative 4 results in no new notable discontinuities and instead provides more consistency with the regional network. The northernmost five-lane segment of Sahalee Way would be extended to the intersection of Sahalee Way and SR 202 in King County, the southernmost five-lane segment of IPLR would be extended to

the intersection of IPLR and IFCR in Issaquah, and the southernmost segment of 228th Ave SE would be extended to the four-lane section of SE 43rd Way in Issaquah.

3.7.2.7 TI-5 Systemwide Measures of Effectiveness

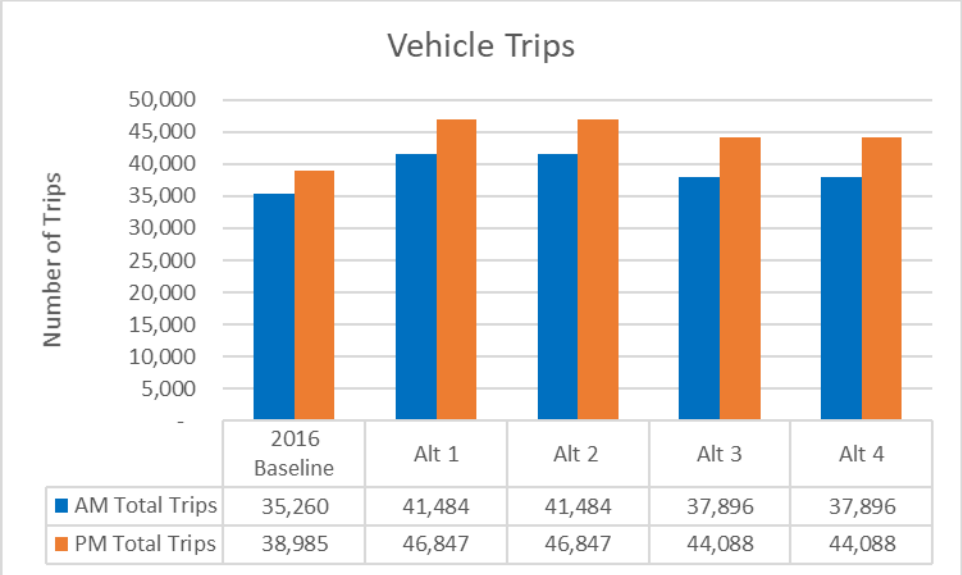
The Sammamish travel demand model was used to assess key MOEs for the Sammamish transportation network under each alternative during the AM and PM peak hours, including total trips, VMT, fuel consumption, GHG emissions, average speed, and total delay.

TI-5.1 Systemwide Total Trips

Impacts Common to All Alternatives

Total vehicle trips increase under all alternatives compared to the 2016 baseline. See Exhibit 3-53.

Exhibit 3-53. Vehicle Trips, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM Total Trips	35,260	41,484	41,484	37,896	37,896
PM Total Trips	38,985	46,847	46,847	44,088	44,088

Source: Transportation Solutions, Inc., 2021.

Alternative 1 No Action and Alternative 2

Alternatives 1 and 2 generate 41,484 trips in the AM peak hour and 46,847 trips in the PM peak hour. This is greater than the peak hour trips generated under alternatives 3 and 4.

Alternative 3 and Alternative 4

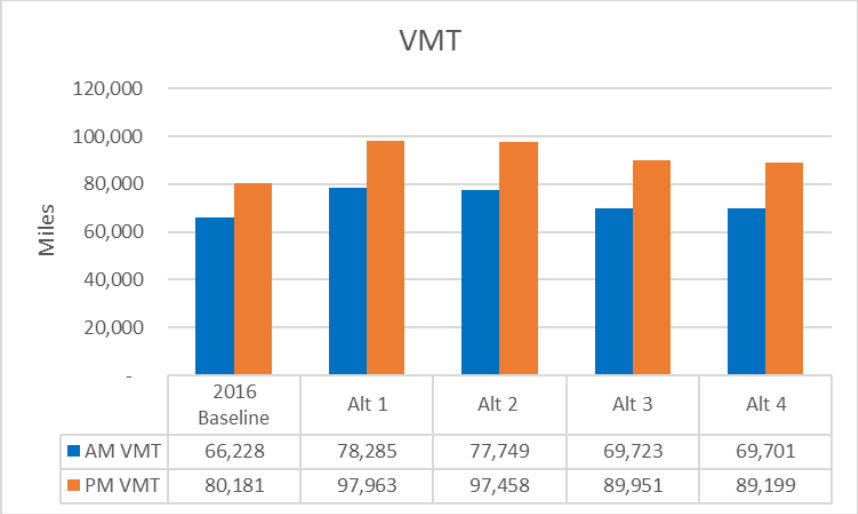
Alternatives 3 and 4 result in 3,588 fewer AM peak hour trips and 2,759 fewer PM peak hour trips than alternatives 1 and 2. This is due to the adjustment to assumed land use and travel behavior.

TI-5.2 Systemwide VMT

Impacts Common to All Alternatives

Systemwide VMT was calculated using the travel demand model and includes roadways inside and outside the city limits. It is provided to show a relative comparison of the alternatives with respect to future travel conditions. VMT is a function of volume and distance and can increase because of an increase in the number of trips or a change in the distance of trips; VMT in the Sammamish model VMT is influenced by both. It appears that as Sammamish growth consumes existing capacity in the center of the city, trips destined across the city are using longer alternative routes. Systemwide VMT increase under all alternatives compared to the 2016 baseline. See Exhibit 3-54.

Exhibit 3-54. Vehicle Miles Travelled, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM VMT	66,228	78,285	77,749	69,723	69,701
PM VMT	80,181	97,963	97,458	89,951	89,199

Source: Transportation Solutions Inc., 2021.

Alternative 1 No Action

Alternative 1 generates 78,285 VMT in the AM peak hour and 97,963 VMT in the PM peak hour, the highest VMT of all the alternatives.

Alternative 2

Alternative 2 results in 536 VMTs less than Alternative 1 during the AM peak hour and 505 VMTs less during the PM peak hour. Alternative 2 reduces VMT less than alternatives 3 and 4 when compared to Alternative 1.

Alternative 3

Alternative 3 results in a 8,562 mile VMT reduction in the AM peak hour and a 8,012 mile VMT reduction in the PM peak hour compared to Alternative 1. Alternative 3 reduces VMT more than Alternative 2 and less than Alternative 4.

Alternative 4

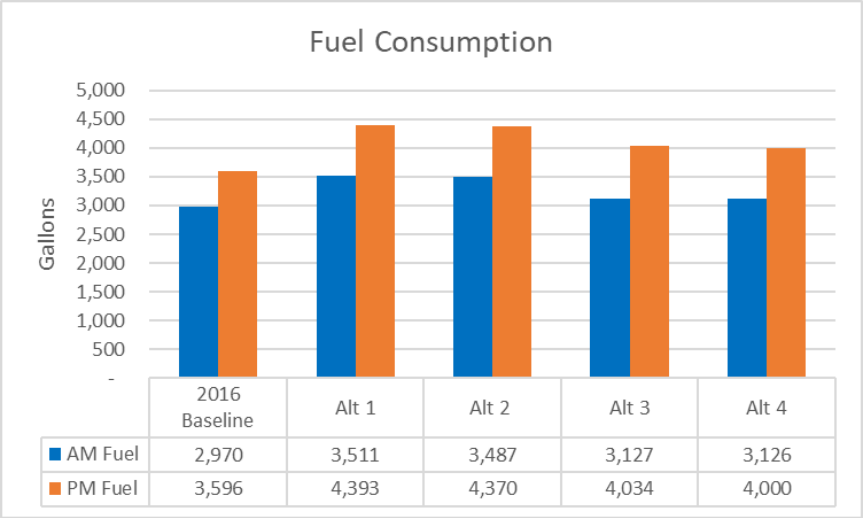
VMT is reduced the most under Alternative 4 of all alternatives. Alternative 4 results in a 8,584 mile VMT reduction in the AM peak hour and a 8,764 mile VMT reduction in the PM peak hour compared to Alternative 1.

TI-5.3 Systemwide Fuel Consumption

Impacts Common to All Alternatives

More gallons of fuel are consumed under all alternatives compared to the 2016 baseline. See Exhibit 3-55.

Exhibit 3-55. Fuel Consumption, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM Fuel	2,970	3,511	3,487	3,127	3,126
PM Fuel	3,596	4,393	4,370	4,034	4,000

Source: Transportation Solutions Inc., 2021.

Alternative 1 No Action

Alternative 1 results in 3,511 gallons of fuel consumed in the AM peak hour and 4,393 gallons of fuel consumed in the PM peak hour, the highest fuel consumption of all alternatives.

Alternative 2

Alternative 2 results in 24 fewer gallons of fuel consumed in the AM peak hour and 23 fewer gallons of fuel consumed in the PM peak hour compared to Alternative 1. More fuel is consumed during the AM and PM peak hours under Alternative 2 than alternatives 3 and 4.

Alternative 3

Alternative 3 results in 384 fewer gallons of fuel consumed in the AM peak hour and 359 fewer gallons of fuel consumed in the PM peak hour compared to Alternative 1. Less fuel is consumed under Alternative 3 during the AM and PM peak hours than under Alternative 2 and more fuel is consumed than under Alternative 4.

Alternative 4

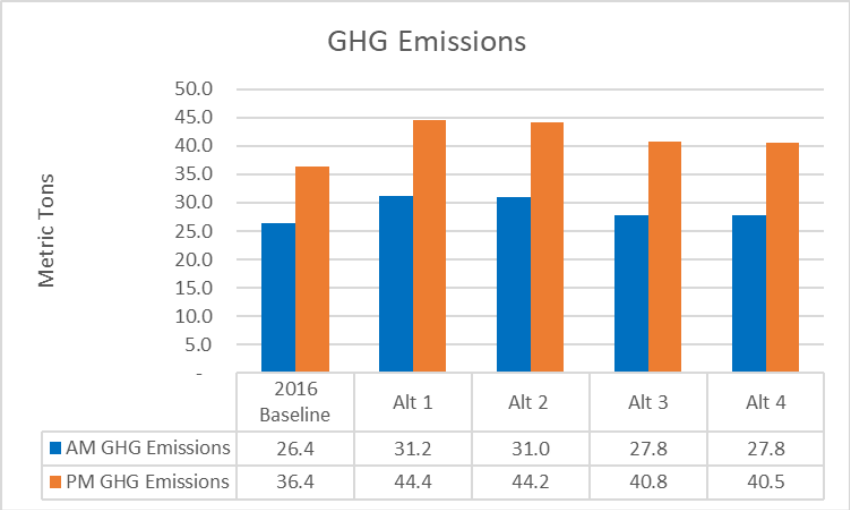
Alternative 4 results in 385 fewer gallons of fuel consumed in the AM peak hour and 393 fewer gallons of fuel consumed in the PM peak hour compared to Alternative 1. The least amount of fuel is consumed during the AM and PM peak hours under Alternative 4.

TI-5.4 Systemwide Greenhouse Gas Emissions

Impacts Common to All Alternatives

Metric tons of CO_2 emissions increase under all alternatives compared to the 2016 baseline. See Exhibit 3-56.

Exhibit 3-56. Greenhouse Gas Emissions, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM GHG Emissions	26.4	31.2	31.0	27.8	27.8
PM GHG Emissions	36.4	44.4	44.2	40.8	40.5

Source; Transportation Solutions Inc., 2021.

Alternative 1 No Action

Alternative 1 results in 31.2 metric tons of CO_2 emissions during the AM peak hour and 44.4 metric tons in the PM peak hour. Alternative 1 results in the greatest amount of CO_2 emissions of all the alternatives.

Alternative 2

Relative to Alternative 1, Alternative 2 results in 0.2 fewer metric tons of passenger vehicle related CO_2 emissions during the AM peak hour and 0.2 fewer metric tons in the PM peak hour. Alternative 2 provides the third most systemwide GHG emissions reductions of all alternatives.

Alternative 3

Relative to Alternative 1, Alternative 3 results in 3.4 fewer metric tons of passenger vehicle related CO_2 emissions during the AM peak hour and 3.6 fewer metric tons in the PM peak hour. Alternative 3 provides the second most systemwide GHG emissions reductions of all alternatives. The primary difference between alternatives 2 and 3 is reduced travel demand (i.e. fewer trips).

Alternative 4

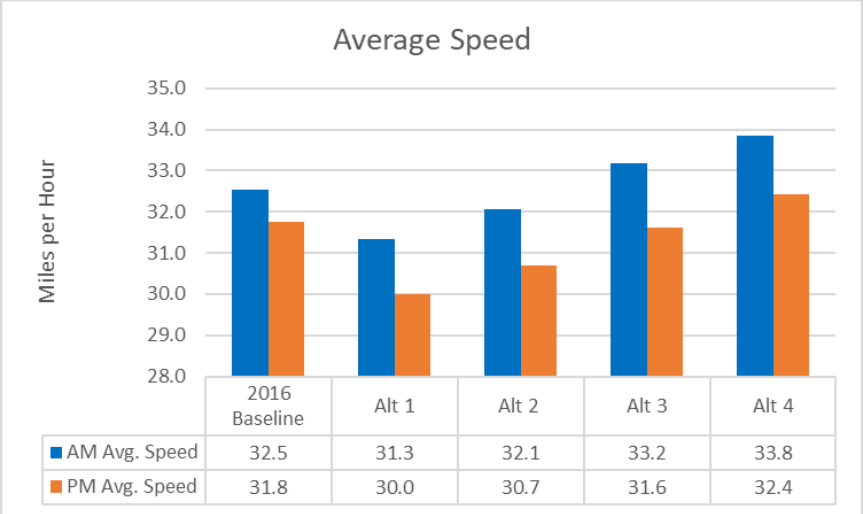
Relative to Alternative 1, Alternative 4 results in 3.4 fewer metric tons of passenger vehicle related CO_2 emissions during the AM peak hour and 3.9 fewer metric tons in the PM peak hour. Alternative 4 provides the most systemwide GHG emissions reductions of all alternatives. The primary difference between alternatives 3 and 4 is reduced travel distance.

TI-5.5 Systemwide Average Speed

Impacts Common to All Alternatives

Improvements under each alternative would impact average speeds. Compared to 2016 baseline conditions, alternatives 1 and 2 would generate lower averages speeds, Alternative 3 would generate higher AM peak hour and lower PM peak hour average speeds, and Alternative 4 would generate higher average speeds. See Exhibit 3-57.

Exhibit 3-57. Average Speed, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM Avg. Speed	32.5	31.3	32.1	33.2	33.8
PM Avg. Speed	31.8	30.0	30.7	31.6	32.4

Source; Transportation Solutions Inc., 2021.

Alternative 1 No Action

Lower average speeds are generated under Alternative 1 than the 2016 baseline. Alternative 1 results in an average speed of 31.3 MPH in the AM peak hour and 30.0 MPH in the PM peak hour, the lowest average speeds of all alternatives.

Alternative 2

Lower average speeds are generated under Alternative 2 than the 2016 baseline. Alternative 2 results in a 0.8 MPH increase in the AM peak hour and a 0.7 MPH increase in the PM peak hour compared to Alternative 1. Average speeds increase less under Alternative 2 than under alternatives 3 and 4.

Alternative 3

Higher AM peak hour average speed and lower PM peak hour average speed are generated under Alternative 3 than the 2016 baseline. Alternative 3 results in a 1.9 MPH increase in the AM peak hour and a 1.6 MPH increase in the PM peak hour compared to Alternative 1. Average speeds increase more under Alternative 3 than Alternative 2 but less than under Alternative 4.

Alternative 4

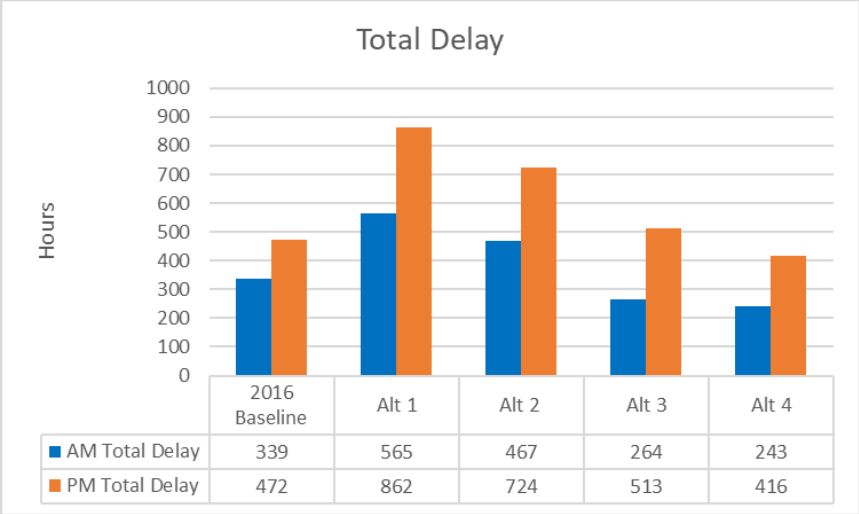
Higher average speeds are generated under Alternative 4 than the 2016 baseline. Alternative 4 results in a 2.5 MPH increase in the AM peak hour and a 2.4 MPH increase in the PM peak hour compared to Alternative 1. Alternative 4 generates the highest increase in average speed in both the AM and PM peak hours of all alternatives.

TI-5.6 Systemwide Total Delay

Impacts Common to All Alternatives

Systemwide total delay for this analysis represents the total delay time experienced by all vehicles in the network for the AM and PM peak hour periods. Systemwide total delay in hours would increase above 2016 baseline conditions under all alternatives except Alternative 4. See Exhibit 3-58.

Exhibit 3-58. Total Delay, All Alternatives



	2016 Baseline	Alt 1	Alt 2	Alt 3	Alt 4
AM Total Delay	339	565	467	264	243
PM Total Delay	472	862	724	513	416

Source: Transportation Solutions Inc., 2021.

Alternative 1 No Action

Alternative 1 results in more delay than the 2016 baseline. Alternative 1 results in 565 hours of delay in the AM peak hour and 862 hours of delay in the PM peak hour, the most delay of all alternatives.

Alternative 2

Alternative 2 results in more delay than the 2016 baseline. Alternative 2 results in 98 fewer hours of delay in the AM peak hour and 138 fewer hours of delay in the PM peak hour compared to Alternative 1.

Alternative 3

Alternative 3 results in less AM and more PM peak hour delay than the 2016 baseline. Alternative 3 results in 301 fewer hours of delay in the AM peak hour and 349 fewer hours of delay in the PM peak hour compared to Alternative 1.

Alternative 4

Alternative 4 results in less delay than the 2016 baseline. Relative to Alternative 1, Alternative 4 results in 322 fewer hours of delay in the AM peak hour and 446 fewer hours of delay in the PM peak hour compared to Alternative 1, the greatest reduction in delay hours for both the AM and PM peak hours of all alternatives.

3.7.2.8 TI-6 Transit Mobility

The City of Sammamish is currently served by King County Metro and Sound Transit. Currently, transit vehicles share roadway facilities with other passenger vehicles and do not have their own dedicated facilities other than a bus pull out space for loading/unloading and the South Sammamish Park & Ride. See the Affected Environment for more information.

Impacts Common to All Alternatives

Improvements under each alternative occur on transit routes. The effect on transit differs by alternative as described below.

Alternative 1 No Action

Alternative 1 provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway with transit service. The intersection improvement would provide safer pedestrian crossings to allow bi-directional transit access from adjacent neighborhoods. No other improvements to transit mobility are expected as a result of this alternative. Alternative 1 provides the least improvement in transit mobility of the four alternatives.

Alternative 2

Alternative 2 provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway with transit service. The intersection improvement would provide safer pedestrian crossings to allow bi-directional transit access from adjacent neighborhoods.

Alternative 2 provides additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR. The additional travel lanes would improve capacity for transit vehicles and the bike lanes/sidewalks would provide additional access to transit stops along IPLR. Similarly, Alternative 2 provides additional travel lanes, bike lanes, and sidewalks on Sahalee Way from NE 37th to the north city limits. The additional travel lanes

would improve capacity for transit vehicles and the bike lanes and sidewalks would provide additional access to transit stops along Sahalee Way.

Alternative 2 provides more improvements in transit mobility than alternatives 1 and 3, but less than Alternative 4.

Alternative 3

Alternative 3 provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway with transit service. The intersection improvement would provide safer pedestrian crossings to allow bi-directional transit access from adjacent neighborhoods.

Alternative 3 provides additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR. The additional travel lanes would improve capacity for transit vehicles and the bike lanes and sidewalks would provide additional access to transit stops along IPLR.

Alternative 3 provides more improvements in transit mobility than Alternative 1, but less than alternatives 2 and 4.

Alternative 4

Alternative 4 provides additional travel lanes, bike lanes, and sidewalks on IPLR from IFCR to 228th Avenue SE, on 228th Avenue SE from the Issaquah city limits to IPLR, and on 228th Avenue/Sahalee Way from NE 8th Street to SR 202 in King County/Redmond. This results in a continuous five lane, multi-modal corridor from IFCR to SR 202 and a continuous five lane, multi-modal corridor from ELSP to the intersection of IPLR/228th Ave SE. The additional travel lanes improve capacity for transit vehicles and the bike lanes and sidewalks provide additional access to transit stops along the entire corridor. If desired, the curb lanes of the five lane roadways could be dedicated for exclusive transit/HOV use during peak hours to provide transit/HOV users with a travel time advantage over SOV users.

Alternative 4 results in the greatest improvements in transit mobility of all alternatives.

3.7.2.9 TI-7 Non-Motorized Mobility and Safety

Impacts Common to All Alternatives

Non-motorized mobility and safety are primarily influenced by the presence and quality of non-motorized facilities. None of the alternative V/C standards consider non-motorized mobility or safety in the improvements necessary to meet the standard, however the roadway improvements required to meet the V/C standards evaluated are assumed to meet City of Sammamish 2016 Public Works Standards and would therefore provide additional non-motorized facilities if constructed. These improvements would be constructed to current City of Sammamish Public Works Standards and ADA requirements.

Segments on ELSP would only receive bike lanes and sidewalks on the east side of the roadway because non-motorized mobility is provided by the East Lake Sammamish Trail (ELST) on the west side of the roadway.

Segments on SE Duthie Hill Road would only receive bike lanes and sidewalks on the north side of the roadway because the south side fronts unincorporated King County rural zoning.

Alternative 1 No Action

Alternative 1 would not require roadway improvements that would typically provide non-motorized improvements when constructed to the 2016 Public Works Standards. The improvements to the intersections required by this alternative would provide localized improvements to non-motorized mobility and safety at intersections.

Alternative 2

In addition to the intersection improvements necessary to meet the intersection LOS Standard, the Alternative 2 segment improvements required to meet the proposed V/C Standard would provide linear non-motorized facilities consistent with the City's 2016 Public Works Standards. Alternative 2 would add 5.09 miles of new sidewalk and 5.09 miles of new bike lanes. In most cases, the improvements would extend existing non-motorized facilities. Alternative 2 includes more new linear miles of non-motorized improvements than alternatives 1 and 3 but fewer than Alternative 4.

The non-motorized improvements provided in Alternative 2 on ELSP and SE Duthie Hill Road would serve low density residential areas with no transit service available. The non-motorized improvements provided on IPLR would serve higher density residential areas but lack full continuity with other non-motorized facilities.

Alternative 3

In addition to the intersection improvements necessary to meet the intersection LOS Standard, the Alternative 3 segment improvements required to meet the proposed V/C Standard would provide linear non-motorized facilities consistent with the City's 2016 Public Works Standards. Alternative 3 would add 3.54 miles of new sidewalk and 3.54 miles of new bike lanes. In most cases, the improvements extend existing non-motorized facilities. Alternative 3includes more new linear miles of non-motorized improvements than Alternative 1 but fewer than alternatives 2 and 4.

Similar to Alternative 2, the non-motorized improvements in Alternative 3 provided on ELSP and SE Duthie Hill Road would serve low density residential areas with no transit service available. The non-motorized improvements provided on IPLR would serve higher density residential areas but lack full continuity with other non-motorized facilities.

Alternative 4

In addition to the intersection improvements necessary to meet the intersection LOS Standard, the Alternative 4 segment improvements required to meet the proposed V/C Standard would provide linear non-motorized facilities consistent with the City's 2016 Public Works Standards. Alternative 4 would add 11.67 miles of new sidewalk and 11.67 miles of new bike lanes. In most cases, the improvements extend existing non-motorized facilities. Alternative 4 includes the greatest number of new linear miles of non-motorized improvements of all alternatives.

The non-motorized improvements provided in Alternative 4 on IPLR, 228th Avenue, and Sahalee Way provide continuous bicycle/pedestrian facilities from IPLR in Issaquah to SR 202 in King County/Redmond. This continuity serves residential, school, commercial, transit stops, existing/future park and rides, community, and recreational sites already located on these principal arterials. The improvements provided on SE Duthie Hill Road would serve low density residential areas with no transit service available.

3.7.2.10 TI-8 Freight Mobility

Impacts Common to All Alternatives

Improvements under each alternative occur on designated freight routes. The effect on freight differs by alternative as described below.

Alternative 1 No Action

Alternative 1 includes an intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a designated freight route. The intersection improvement improves LOS for the minor side street approach (NE 28th Way) and increase stops on Sahalee Way. The new stops would have a negative impact on freight mobility in the city. Alternative 1 reduces freight mobility compared to the other alternatives.

Alternative 2

Alternative 2 provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a designated freight route. The intersection improvement improves LOS for the minor side street approach (NE 28th Way) and increase stops on Sahalee Way. The new stops would have a negative impact on freight mobility in the city.

Alternative 2 provides the following improvements that would improve capacity for freight vehicles on designated freight routes in the city:

- Additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR.
- Additional travel lanes, bike lanes, and sidewalks on Sahalee Way from NE 37th Street to the north city limits.
- Additional travel lanes, bike lanes, and sidewalks on ELSP from NE 26th Street to the north city limits.

The additional travel lanes on the above segments would improve capacity for freight vehicles along Sahalee Way and allow general traffic to pass slower freight vehicles.

Alternative 2 would result in more improvements to freight mobility than alternatives 1 and 3 and less improvements than Alternative 4.

Alternative 3

Alternative 3 provides the following improvements that would improve capacity for freight vehicles on designated freight routes in the city

- Additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR.
- Additional travel lanes, bike lanes, and sidewalks on ELSP from NE 40th Street to the north city limits.

The additional travel lanes on the above segments would improve capacity for freight vehicles and allow general traffic to pass slower freight vehicles.

Alternative 3 provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a designated freight route. The intersection improvement improves LOS for the minor side street approach (NE 28th Way) and increase stops on Sahalee Way. The new stops would have a negative impact on freight mobility in the city.

Alternative 3 would result in more improvements to freight mobility than Alternative 1 and less improvements than alternatives 2 and 4.

Alternative 4

Alternative 4 provides additional travel lanes, bike lanes, and sidewalks on IPLR from IFCR to 228th Ave SE, on 228th Ave SE from the Issaquah city limits to IPLR, and on 228th Ave/Sahalee Way from NE 8th St to SR 202 in King County/Redmond. This results in a continuous five lane, multi-modal corridor from IFCR to SR 202 and a continuous five lane, multi-modal corridor from ELSP to the intersection of IPLR/228th Avenue SE. The additional travel lanes would improve capacity for freight vehicles, and allow general traffic to pass slower freight vehicles, especially when climbing southbound Sahalee Way from SR 202 to NE 28th Way and when climbing northbound 228th Ave SE from the south city limits to SE 40th St.

Alternative 4 would result in the most improvements to freight mobility of all alternatives.

3.7.2.11 TI-9 Evacuation/Emergency Response Routes

Impacts Common to All Alternatives

Improvements under each alternative affect evacuation routes. The effect on emergency response differs by alternative as described below.

Alternative 1 No Action

Alternative 1 adds no new lane miles to the City's transportation network but provides an intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a likely evacuation route. Intersection improvements included under Alternative 1 would include emergency vehicle preemption but would provide little or no improvement to the capacity of existing evacuation routes in the city. Overall, Alternative 1 results in little to no improvement to emergency response times in the City of Sammamish.

Alternative 2

Alternative 2 adds 5.72 new lane miles to the City's transportation network. This alternative results in more new lane miles than alternatives 1 and 3 and fewer new lane miles than Alternative 4. The following

transportation improvements would result in capacity increases for evacuation routes and emergency response under Alternative 2:

- Intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a likely evacuation route and is an emergency response route.
- Additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR. The additional travel lanes would improve capacity for evacuation events and emergency response and interagency response between Sammamish and Issaquah.
- Additional capacity on ELSP from NE 26th Place to the northwest city limits is relatively inaccessible to most of the city's residents and serves fewer residents than other arterials but would support interagency responses between Redmond and Sammamish.
- Additional travel lanes, bike lanes, and sidewalks on Sahalee Way from NE 37th to the north city limits would improve capacity for evacuation events to the north and emergency response.

Alternative 2 would result in more capacity increases for evacuation routes and emergency response than alternatives 1 and 3 and less capacity increases than Alternative 4.

Alternative 3

Alternative 3 adds 3.60 new lane miles to the City's transportation network. This alternative results in more new lane miles than Alternative 1 and fewer new lane miles than alternatives 2 and 4. The following transportation improvements would result in capacity increases for evacuation routes and emergency response under Alternative 3:

- Intersection improvement at NE 28th Way/Sahalee Way on a roadway that is a likely evacuation route and is an emergency response route.
- Additional travel lanes, bike lanes, and sidewalks on IPLR from Klahanie Blvd to SE 48th Street. The roadway improvements include improvements to the signal at SE 48th Street/IPLR. The additional travel lanes would improve capacity for evacuation events and emergency response and interagency response between Sammamish and Issaquah.
- Additional capacity on ELSP from NE 26th Place to the northwest city limits is relatively inaccessible to most of the city's residents and serves fewer residents than other arterial but would support interagency responses between Redmond and Sammamish.

Alternative 3 would result in more capacity increases for evacuation routes and emergency response than alternative 1 and less capacity increases than alternatives 2 and 4.

Alternative 4

Alternative 4 adds 13.26 new lane miles to the City's transportation network. This alternative would result in the greatest number of new lane miles of all alternatives.

Alternative 4 provides additional travel lanes, bike lanes, and sidewalks on IPLR from IFCR to 228th Avenue SE, on 228th Avenue SE from the Issaquah city limits to IPLR, and on 228th Avenue/Sahalee Way from NE 8th Street to SR 202 in King County/Redmond. This results in a continuous five lane, multi-modal corridor from

IFCR to SR 202 and a continuous five lane, multi-modal corridor from ELSP to the intersection of IPLR/228th Ave SE. The additional travel lanes would improve capacity for evacuation events and emergency response and interagency responses.

Alternative 4 would result in the greatest capacity increases for evacuation routes and emergency responders of all alternatives. These capacity increases are located on arterials that are centrally located, accessible to most of the city's residents, front ESFR Stations 82 and 83, and provide continuity with the existing five-lane improvements fronting the City's Police Station at City Hall.

3.7.2.12 TI-10 Concurrency Implications

Implementation of a V/C Standard requires that the monitored infrastructure meets that standard concurrent with the impacts of new development. Concurrent means within 6 years of the time of impact.

Impacts Common to All Alternatives

Improvements identified under alternatives 1, 2, and 3 represent the minimum improvements required to meet the identified LOS and/or V/C Standards of each alternative for the 2035 land use forecast. These improvements may be necessary before 2035 based on the actual rate of growth in the City of Sammamish. Alternative 4 provides improvements beyond those necessary to meet the identified LOS and V/C Standards and all these improvements may not be necessary to support the 2035 land use forecast. All the improvements in Alternative 4 may not be necessary before 2035 based on the actual rate of growth in the City of Sammamish.

Alternative 1 No Action

Alternative 1 will require improvements to multiple intersections to meet concurrency requirements. Development would not be able to demonstrate concurrency unless the City demonstrates that the intersection improvements necessary to meet the intersection LOS standard can be provided within the GMA required 6-year window.

Development in excess of the remaining 196 housing units and 462,800 of non-residential commercial development remaining in the 2035 target that was modeled for the traffic analysis could require additional intersection improvements not identified for this alternative.

Alternative 2

Alternative 2 will require improvements to multiple roadway segments in addition to the intersections identified in Alternative 1 to meet concurrency requirements. Multiple concurrency segments would fail the proposed V/C standard under current and future conditions without improvements. Additional improvements to other roadway segments may be required to meet the proposed V/C standard; in particular, additional segments along Issaquah-Fall City Road and SE Duthie Hill Road may be required depending upon actual development patterns in the future.

Development would not be able to demonstrate concurrency unless the City demonstrates that the improvements necessary to meet the proposed V/C standard can be provided within the GMA required 6-year window.

Development in excess of the remaining 196 housing units and 462,800 of non-residential commercial development remaining in the 2035 target that was modeled for the traffic analysis could require additional intersection and/or segment and corridor improvements not identified in this alternative. The improvements necessary to accommodate growth in excess of the target for this alternative could include improvements to additional segments of ELSP NE or SE, IPLR, IFCR, and Duthie Hill Road.

Alternative 3

Alternative 3 will require improvements to fewer roadway segments than identified in Alternative 2 to meet concurrency requirements. Multiple concurrency segments would fail the proposed V/C standard under current and future conditions without improvements. Additional improvements to other roadway segments may be required to meet the proposed V/C standard; in particular, additional segments along Issaquah-Fall City Road and SE Duthie Hill Road may be required depending upon actual development patterns in the future.

Development would not be able to demonstrate concurrency unless the City demonstrates that the improvements necessary to meet the proposed V/C standard can be provided within the GMA required 6-year window.

Development in excess of the remaining 196 housing units and 462,800 of non-residential commercial development remaining in the 2035 target that was modeled for the traffic analysis could require additional intersection and/or segment and corridor improvements not identified in this alternative. The improvements necessary to accommodate growth in excess of the target for this alternative could include improvements to additional segments of ELSP NE or SE, IPLR, IFCR, and Duthie Hill Road.

Alternative 4

Alternative 4 provides more improvements than necessary to merely meet concurrency requirements. The improvements also provide for multi-modal continuity along principal arterials connecting the city to the region. Multiple concurrency segments would fail the proposed V/C standard under current and future conditions without some of the improvements. Additional improvements to other roadway segments may be required to meet the proposed V/C standard; in particular, additional segments along Issaquah-Fall City Road and SE Duthie Hill Road may be required depending upon actual development patterns in the future.

Development would not be able to demonstrate concurrency unless the City demonstrates that the improvements necessary to meet the proposed V/C standard can be provided within the GMA required 6-year window. Since some of the improvements identified in Alternative 4 are not required to meet the V/C concurrency standard, those improvements would not be necessary within the GMA required 6-year window.

Development in excess of the remaining 196 housing units and 462,800 of non-residential commercial development remaining in the 2035 target that was modeled for the traffic analysis could require additional intersection and/or segment and corridor improvements not identified in this alternative. The improvements necessary to accommodate growth in excess of the target for this alternative could include improvements to additional segments of ELSP NE or SE, IPLR, IFCR, and Duthie Hill Road.

3.7.3 Mitigation Measures

3.7.3.1 Incorporated Plan Features

Each alternative provides a different combination of transportation improvements or demand management based on different LOS and concurrency methods or land use strategies that would be incorporated into the City's Comprehensive Plan and Sammamish Municipal Code:

- Alternative 1 excludes corridor and segment V/C concurrency standards resulting in the least amount of physical construction necessary to meet concurrency requirements.
- Alternative 2 includes only physical improvements necessary to meet intersection LOS and corridor and segment V/C concurrency requirements where the modeled impacts to LOS occur.
- Alternative 3 includes ongoing work-from-home assumptions and future land use changes to support lower trip generation citywide to minimize the need for physical improvements necessary to meet intersection LOS and corridor and segment V/C concurrency requirements.
- Alternative 4 includes ongoing work-from-home assumptions and future land use changes to support lower trip generation citywide and to avoid roadway improvements near Lake Sammamish while maximizing the efficiency of the transportation network by reducing VMT systemwide.

All alternatives implement to a lesser or greater degree City policies that relate to measures of effectiveness such as VMT, GHG, and fuel reduction:

- Policy EC.7.3 Consider a multi-pronged approach to climate change mitigation, including support for energy efficiency, vehicle trip reduction, reforestation, environmental protection and flood control.
- Policy EC.7.4 Promote administrative practices, land use patterns, transportation systems and building practices that will reduce greenhouse gas emissions.
- Policy EC.8.2 Lead by example in the conservation of natural resources, such as energy, water and trees, and the avoidance of adverse environmental impacts.

3.7.3.2 Regulations and Commitments

The physical improvements identified in each alternative will be subject to City, State, and Federal regulations related to the impacts of the construction of the improvements.

- City regulations include SMC Title 14A Public Facilities addressing concurrency, impact fees and Public Works Standards.
- State construction standards include but are not limited to the Local Agency Guidelines Manual provides policies and standards for local agencies to follow when using FHWA funds for transportation projects.

3.7.3.3 Other Mitigation Measures

The physical improvements identified in each alternative are based on 2016 City of Sammamish Public Works Standards. These standards include features that may not be necessary in all or in parts of the city. Additional flexibility in the standards could reduce the footprint of the required roadway improvements.

The corridor and segment V/C standards are based on an urban network. Modifications to the capacity calculation to address the semi-rural conditions in some areas of the city could reduce the need for some roadway improvements. The capacity calculation in Appendix C could be modified to recognize access management and/or the lack of left-turn demand to reduce the scope of some of the required improvements.

Improvements identified under alternatives 1, 2, and 3 represent the minimum improvements required to meet the identified LOS and/or V/C Standards of each alternative for the 2035 land use forecast. These improvements may be necessary before 2035 based on the actual rate of growth in the City of Sammamish. The improvements necessary to accommodate growth in excess of the target for studied alternatives could include improvements to additional segments of ELSP NE or SE, IPLR, IFCR, and Duthie Hill Road.

If growth occurs under approved zoning in different locations than modeled it is possible that trips may be distributed differently and cause segments close to thresholds to require improvement. Additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road and Duthie Hill Road may be required depending upon actual development patterns in the future for either alternatives 2, 3, or 4.

3.7.4 Significant Unavoidable Adverse Impacts

All alternatives support 2035 land use forecasts that would generate trips on the system above the 2016 baseline. Under all Action Alternatives, the City would need to establish a policy to address desired LOS and concurrency procedures and improvements to different degrees would be needed. Improvements would result in changes to travel patterns and travel time, which would alter VMT, fuel consumption, and GHG emissions.

Alternative 1 requires only intersection improvements with no roadway widening but results in the highest VMT, fuel consumption, and GHG emissions of the alternatives.

Alternative 2 requires 4.26 miles of roadway improvements requiring the most roadway widening adjacent to Lake Sammamish of all alternatives. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline and alternatives 3 and 4.

Alternative 3 requires 3.01 miles of roadway improvements requiring less roadway widening adjacent to Lake Sammamish than Alternative 2. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline but lower than alternatives 1 and 2.

Alternative 4 requires 7.08 miles of roadway improvements but no roadway widening adjacent to Lake Sammamish. VMT, fuel consumption, and GHG emissions are higher than the 2016 baseline but lower than alternatives 1, 2, and 3.

Additional improvements to other roadway segments may be required to meet the proposed V/C standard. In particular, additional improvements to segments along Issaquah-Fall City Road and Duthie Hill Road may be required depending upon actual development patterns in the future for either alternatives 2, 3, or 4. As well under all alternatives, it is possible that growth could occur beyond 2035 growth targets and require additional concurrency improvements.

3.8 Utilities: Broadband

This section considers broadband internet access to households in the City of Sammamish. In this section, a finding of significant impact is based on a likelihood that internet access or speed for end users would be reduced as a result of implementation of the proposal or alternatives.

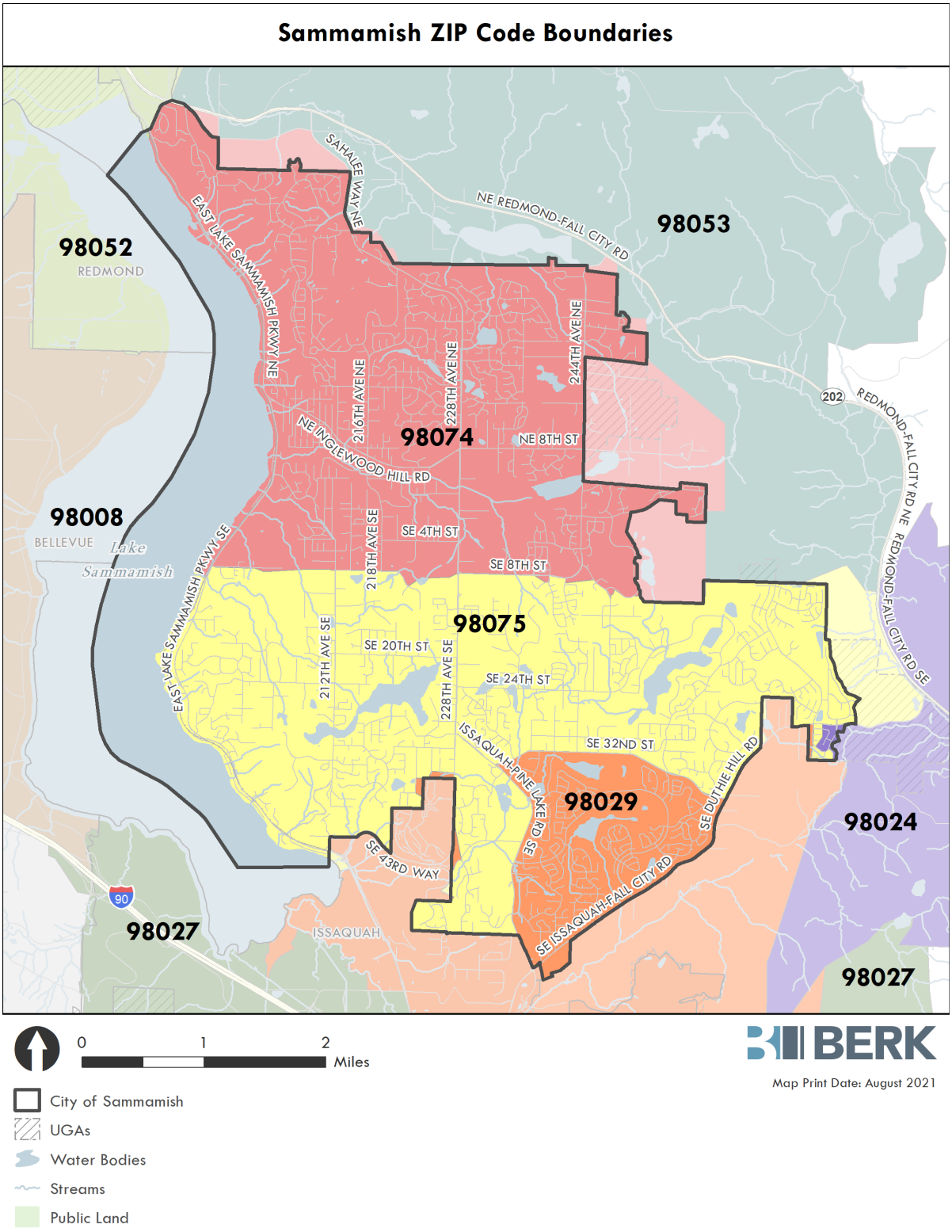
What is broadband internet service?

The term broadband commonly refers to high-speed internet access that is always on and faster than traditional dial-up access. Broadband includes several high-speed transmission technologies, including digital subscriber line (DSL), cable, fiber, wireless, and satellite.

A major source of information for this section is the Broadband Access Study conducted by King County and issued in February 2020. Part 1 of this study considers the County's broadband infrastructure and service with a specific focus on unserved and underserved areas. The analysis of unserved areas focuses on unincorporated King County (and select incorporated areas). The analysis of underserved areas focuses primarily on lower income members of the community. The City of Sammamish generally does not fit within either of these focus areas.

Part 2 of the study is a public survey intended to gain insights from across the County on a wide range of issues related to broadband access, usage, and attitudes. The survey was conducted between June 24 and August 30, 2019 and is referred to in this section as the King County Survey. A total of 3,868 surveys were collected through mail, online, telephone, and in-person methods. In Sammamish, this included 193 respondents collected from zip codes 98074, 98075, and 98029, which include the incorporated city boundaries (see Exhibit 3-59). Relevant findings from this survey are discussed below. The report notes that at the individual zip code level, findings should be viewed as a qualitative. Note also that the survey was conducted in 2019 and are not representative of experiences during the COVID-19 pandemic.

Exhibit 3-59. Sammamish Zip Codes



Source: ESRI, 2021.

3.8.1 Affected Environment

3.8.1.1 Internet Usage

For many people, internet access is an essential service, used every day for a variety of activities, including working, education, socializing, shopping, bill payment, entertainment, and a myriad of other activities. A Pew Research national survey conducted in April 2020 found that 53% of U.S. adults described the internet as essential and 34% described it as important, but not essential.[27] In Sammamish, the King County Survey found that respondents reported using the internet on a daily or weekly basis for a range of activities shown in Exhibit 3-60. As noted above, this survey was conducted in 2019; it is reasonable to expect that reported usage would have been higher during the COVID-19 school closures and work-from-home practices in 2020.

Exhibit 3-60. Sammamish Survey Responses: Internet Usage

Online Activities	Percent Daily or Weekly Usage
Read or send email	97%
Stay in touch with friends or family	86%
Research and buy a product	77%
Use banking services or pay bills	73%
Access social media	76%
Watch videos or TV	75%
Listen to music or radio	69%
Work from home	58%
Do schoolwork or research for school	54%

Note: Shows online activities for which half or more respondents reported using the internet on a daily or weekly basis.
Source: King County 2019 Technology Access and Use Study. https://tableaupub.kingcounty.gov/t/Public/views/KingCountyTechStudyDashboard/Household?:isGuestRedirectFromVizportal=y&:embed=y Accessed May 2019.

3.8.1.2 Access to the Internet

In general, connection to the internet is provided through five basic connection types, as described below:

- **Fiber**. Fiber technology uses fiber-optic cables, which can transmit large amounts of information quickly. Fiber is the fastest widely available internet technology. To date, service areas are limited as providers develop and expand their fiber networks.
- **Cable modem**. Cable modem service enables cable operators to provide broadband using the same coaxial cables that deliver pictures and sound to your TV set. Most cable modems are external devices that have two connections: one to the cable wall outlet, the other to a computer. Transmission speeds vary depending on the type of cable modem, cable network, and traffic load. Speeds are comparable to DSL.

[27] Pew Research Center. April 30, 2020. https://www.pewresearch.org/internet/2020/04/30/53-of-americans-say-the-internet-has-been-essential-during-the-covid-19-outbreak/ Accessed May 2021.

- **DSL (Digital Subscriber Line).** DSL is a wireline transmission technology that transmits data faster over traditional copper telephone lines already installed to homes. DSL-based broadband provides transmission speeds ranging from several hundred thousand to millions of bits per second. The availability and speed of DSL service may depend on the distance from the home to the closest telephone company facility.
- **Wireless.** Wireless broadband connects to the Internet using a radio link between the customer's location and the service provider's facility. Wireless broadband can be mobile or fixed. Wireless technologies using longer-range directional equipment provide broadband service in remote or sparsely populated areas where DSL or cable modem service would be costly to provide. Speeds are generally comparable to DSL and cable modem. An external antenna is usually required.
- **Satellite.** Data is transmitted wirelessly via satellite. Because it is wireless, satellite service is available almost anywhere. A satellite dish is required. Service may be slower than DSL and cable modem. Service can be disrupted in extreme weather.[28]

In Sammamish, internet access is currently provided through private providers as shown in Exhibit 3-61. The City provides permitting for use of City rights-of-way as a pathway for cabling and equipment, but is not involved in the location, speed, or operation of the networks.

Until recently, Washington State law banned public agencies from providing direct internet service to consumers. Public utility districts and port districts could develop networks and provide wholesale internet service to private providers who in turn provided retail connections to consumers.

In the Washington State 2021 regular legislative session, the Public Broadband Act (House Bill 1336) was passed and subsequently signed into law by the governor. This legislation provides unrestricted authority for public entities to provide telecommunications services to end users, including public utility districts, port districts, cities, towns, and counties.

Exhibit 3-61. Major Residential Internet Providers in Sammamish

Provider	Type	Coverage
Xfinity/Comcast	Cable	99%
Century Link	DSL	56%
Ziply Fiber	DSL	49%
Wave Broadband	Cable	37%
Century Link	Fiber	14%
Wave G	Fiber	4%

Source: Broadbandnow.com. https://broadbandnow.com/Washington/Sammamish. Accessed May 2021.
Note: Data does not include satellite or mobile providers.

Access to the internet in Sammamish appears to be widely available. Data from the 2019 American Community Survey (ACS) report that 98.2% of Sammamish households have a broadband internet

[28] Federal Communications Commission. https://www.fcc.gov/general/types-broadband-connections. Accessed May 2021.

subscription. Similarly, the King County Survey found that 99% of Sammamish respondents have internet access with an average of 4.4 devices that connect to the internet per household. This survey also found that most Sammamish respondents used cable and/or cellular/mobile internet for internet service. Only 1% reported no internet, see Exhibit 3-62.

Exhibit 3-62. Sources of Household Internet

Type of Connection	Percent
Cable internet	79%
Cellular/mobile internet	58%
DSL internet	10%
Telephone line/Dial up	16%
Fiber optic internet	14%
Satellite	2%
Fixed wireless internet	1%
Free or public internet	3%
Provided by my building	4%
Other	1%
No internet	1%

Source: King County 2019 Technology Access and Use Study. https://tableaupub.kingcounty.gov/t/Public/views/KingCountyTechStudyDashboard/Household?%3AisGuestRedirectFromVizportal=y&%3Aembed=y. Accessed May 2021 (zip codes 98074, 98074, 98029).

The King County Survey asked respondents for their assessment of the adequacy of the household's internet for daily use. For Sammamish residents, 33% stated that their internet was completely adequate, 54% mostly adequate, 9% sometimes adequate, 1% rarely adequate, 1% not adequate, and 1% do not have access to the internet. A higher percentage of Sammamish respondents found their internet completely or mostly adequate (87%) compared to King County as a whole (76%).

3.8.1.3 Speed

Internet speed is a measure of the rate at which electronic data is transferred. Faster speeds allow data to be sent and received faster. As examples, faster internet speeds support reduced delay in video conferencing, ease in display of web pages and images, and videos that play smoothly.

The Federal Communications Commission (FCC) regulates interstate and international advanced telecommunications and has identified minimum broadband benchmark speeds of 25 Mbps for downloads and 3 Mbps for uploads. In its Broadband Speed Guide, it has also identified general guidelines for minimum

download speeds for a range of activities. For example, general browsing and email are estimated to require 1 Mbps, telecommuting 5–25 Mbps, and gaming 3–4 Mbps.

Through its Measuring Broadband America program, the FCC provides an annual report of a representative sample of providers of fixed broadband service. The *Tenth Measuring Broadband American Fixed Broadband Report (Tenth Report)* is based on data collected in September and October 2019. Major findings of this report include:

How is internet speed measured?

Internet speed is measured in terms of how many seconds it takes data, or "bits," can be transferred per second. These are typically expressed in terms of Kilobits per second (Kbps) for 1,000 bits per second, megabits per second (Mbps) for one million bits/second, or gigabits per second for one billion bits per second.

- The maximum advertised download speeds among the internet service providers ranged from 24 Mbps to 940 Mbps. The weighted average advertised download speed was 146.1 Mbps, an 8% increase over the previous year.
- Actual speeds experienced by individual consumers vary by location and time of day. The Tenth Report found that between 2% to 68% of DSL subscribers experienced greater than or equal to 95% of advertised download speeds during peak hours.[29] Between 93% to 99% of cable subscribers and 65% to 97% of fiber subscribers experienced equal to or better than 95% of their respective advertised download speeds during the peak hours.
- While most users experienced speeds that nearly met or exceeded advertised speeds, some customers of each provider experienced download speeds that fell significantly short of the advertised download speed.

While specific speed data for Sammamish is not available, based on the findings of the Tenth Report and the maximum advertised download speeds shown in Exhibit 3-63, it seems likely that most users of cable and fiber connections are able to meet the minimum benchmark of 25 Mbps set by the FCC for broadband service. Conversely, users of DSL are likely to fall below this minimum benchmark.

Exhibit 3-63. Maximum Advertised Download Speed of Sammamish Internet Services Available

Service	Fiber	Cable	DSL
Mbps	940–1,000	1,000–1,200	24–140

Source: Broadbandnow.com, https://broadbandnow.com/Washington/Sammamish (accessed May 2021).

[29] The *Tenth Report* defines peak hour as weeknights between 7:00 p.m. to 11:00 p.m. local time at the subscriber's. location. This was based on data collected in the September and October 2019.

3.8.2 Impacts

3.8.2.1 Impacts Common to All Alternatives

Under all alternatives the City's public rights-of-way would remain available for installation of telecommunication facilities. Rights-of-way projects resulting from any of the alternatives are not anticipated to result in significant adverse impacts to internet access or speed. Implementation of the alternatives would also not conflict with existing Comprehensive Plan telecommunications services policy guidance.

No significant adverse impacts to broadband internet service are anticipated from implementation of any of the alternatives.

3.8.2.2 Alternative 1 No Action and Alternative 2

No significant adverse impacts to broadband internet service are anticipated from implementation of alternatives 1 and 2.

3.8.2.3 Alternative 3 and Alternative 4

As noted above, no significant adverse impacts to broadband internet service are anticipated from implementation of any of the alternatives, including alternatives 3 and 4.

As described in Chapter 2, alternatives 3 and 4 assume that future travel demand during the AM and PM peak hours will be 15% less than historic levels due to greater participation in part- or full-time work from home by employed Sammamish residents. This is a conservative estimate, based on the reduced levels of AM and PM peak hour travel during the COVID-19 pandemic and the relatively large share of information and technology workers in Sammamish.

The availability of adequate internet access may influence the likelihood that workers will choose to participate in full- or part-time work from home. Based on available information and as discussed in the Section 3.8.1 Affected Environment, there appears to be both access and adequate internet speeds provided to almost all Sammamish households.

It is acknowledged that data was gathered prior to 2020 and does not include experience during the COVID-19 pandemic. The data is also based on a citywide perspective and does not capture the potential for small areas that may not meet minimum benchmarks. For a better understanding of specific local service levels, including differences in service between areas of the city, a focused survey of access, use, speed, and reliability of internet service could be conducted. This information would help the City better understand current needs and, if needed, develop a strategy that maximizes the ability of workers to continue to work from home.

As noted earlier, internet services in Sammamish are provided by private providers. Under this service structure, the primary strategy for the City would be to continue to advocate with providers for improved service to areas of greatest need, consistent with Comprehensive Plan guidance.

The recent adoption of the Public Broadband Act by the State of Washington provides unrestricted authority for public entities to provide telecommunication services to end users. As authorized by this legislation, the City

could determine that direct municipal provision of telecommunication services would allow for an increased ability to achieve desired coverage and service levels. Based on information from the National Telecommunications and Information Administration (NTIA) of the US Department of Commerce, planning for municipal broadband service is a multi-year process requiring robust data describing local resources, gaps, and needs; engaged stakeholders; understanding of technology; and specific planning for the selected organizational model, and implementation and financial plans. The NTIA has developed a series of guides and toolkits for communities planning for broadband services, including *Planning a Community Broadband Roadmap: A Toolkit for Local and Tribal Governments*, which provides a step-by-step guide for municipal broadband planning.

3.8.3 Mitigation Measures

3.8.3.1 Incorporated Plan Features

The Sammamish Comprehensive Plan includes several policies that address internet services:

Policy UT.4.1 Coordinate with utility providers to ensure that services are provided at competitive rates citywide.

Policy UT.4.3 Support the provision of high-quality telecommunications services in both current and emergent technologies throughout the community.

Policy UT.4.4 Coordinate with non-City-owned utilities to ensure that energy and telecommunications resources are available to support the proposed land use plan.

Policy UT.4.5 Increase bandwidth of telecommunications services to enhance service to Sammamish residents.

3.8.3.2 Regulations and Commitments

Per state law, cities have authority to provide fiber optic and broadband services within their boundaries (ESHB 1336, 2021).

3.8.3.3 Other Potential Mitigation Measures

None.

3.8.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to broadband internet service are anticipated under any of the alternatives and no mitigation measures are required or proposed.

4 Acronyms and References

4.1 Acronyms

ADA	Americans with Disabilities Act
BMPs	Best Management Practices
CARA	Critical Aquifer Recharge Area
CIP	Capital Improvement Program
CPPs	King Countywide Planning Policies
DSL	Digital Subscriber Line
EIS	Environmental Impact Statement
ELSP	East Lake Sammamish Parkway SE
EMS	Emergency Medical Services
ESFR	Eastside Fire and Rescue
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
GMA	Growth Management Act
GMPC	King County Growth Management Planning Council
HCM	Highway Capacity Manual
KCSWDM	King County Surface Water Design Manual
IFCR	Issaquah-Fall City Road
IPLR	Issaquah-Pine Lake Road
LOS	Level of Service
MPH	Miles per Hour
NWI	National Wetlands Inventory
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SMC	Sammamish Municipal Code
SMP	Shoreline Master Program
SOV	Single Occupancy Vehicle
SR	State Route
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled
vphpl	Vehicles Per Hour Per Lane
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

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