

Chapter 6 Land Use, Population, and Housing

This chapter analyzes potential impacts to land use compatibility, housing, and population resulting from implementation of the Town Center Sub-Area Plan alternatives. This chapter includes discussion of existing conditions, potential impacts, indirect/cumulative impacts and mitigation measures.

6.1 Affected Environment

This section describes the existing land use patterns within the 243-acre Town Center area, as well as the land use distribution and capacity in the surrounding area. This information provides a baseline for analysis of the potential impacts of the Town Center alternatives.

6.1.1 Land Use and Zoning

An inventory of the existing land use in the city was completed for the City of Sammamish Comprehensive Plan (2003a). Single-family development represents the predominant land use (approximately 57 percent), with vacant land (approximately 21 percent) the second most common land use. Roads (8 percent) and open space/water (7 percent) are the third and fourth most predominant land uses.

The Sammamish Town Center area is located in the heart of Sammamish and is roughly bounded on the north by East Main Street, on the west by 222nd Place, on the south by SE 8th Street, and on the east by 232nd Avenue. The Town Center and surrounding area are shown in Figure 1-1.

Existing uses in the Town Center area include the Sammamish Children's School, detached single-family residences, older farm buildings and undeveloped areas. The area also includes the 30-acre Sammamish Commons project that is currently being developed. Phase I of the Sammamish Commons was completed in the summer of 2006 and includes the new City Hall and park.

Eastside Catholic High School (ECHS) owns property on either side of 232nd Avenue NE and is in the process of constructing a new high school. While its main academic buildings will be located outside the Town Center, access to the new structures and ball fields will be on a new road extending from 228th Avenue SE in the Town Center. The project is scheduled for completion in 2007.

Land uses adjacent to the Town Center include single-family neighborhoods primarily to the north and west, a church and Skyline High School to the north, and vacant lands and ECHS project to the east. The Sammamish Hills Lutheran Church is located across from the Commons on the corner of SE 8th Street and 228th Avenue SE. Two areas of office, commercial, and higher density residential uses are located along 228th Avenue NE. The Inglewood Commercial District is located north of the Town Center at approximately NE 8th Street, and the Pine Lake Village Commercial District is located south of the Town Center at approximately Issaquah-Pine Lake Road SE. These two centers are identified in the City's Comprehensive Plan as designated community centers (City of Sammamish, 2003a). Existing land uses within and surrounding the Town Center are shown in Figure 6-1.

6.1.2 Existing Land Use

The City’s Comprehensive Plan (2003a) identifies the majority of the Town Center area for future zoning changes. Existing Comprehensive Plan land use designations for the planning area include Residential (R-1, R-4, R-6 and R8) and Public/Institutional (P/I). The Comprehensive Plan land use designations within the Town Center and surrounding areas are shown in Figure 6-2. Acreages within each Comprehensive Plan land use designation were calculated. The acreages of lands constrained by critical areas in the Town Center were also calculated and subtracted from those for the entire Town Center planning area. The results are shown in Table 6-1.

Table 6-1. Town Center Planning Area Comprehensive Plan Land Use Designation and Constrained Lands

Comprehensive Plan Designation	Total for Town Center Planning Area		Total for Town Center Planning Area Less Constrained Lands ²	
	Parcels	Acres (percent) ¹	Parcels	Acres (percent) ¹
P	6	29 (13)	6	23 (13)
R-1	10	18 (8)	8	12 (7)
R-4	77	151 (67)	76	118 (68)
R-6	8	20 (9)	8	12 (7)
R-8	3	9 (4)	3	9 (5)
Totals (acres)	104	226	101	174

Source: City of Sammamish Comprehensive Plan, 2003, and City wetlands GIS layer.

¹ Acreages do not include City rights-of-way.

² Constrained lands include wetlands, streams, and buffers as defined in SMC 21A.50.

Zoning classifications in the Town Center planning area are currently all Residential (R-1, R-4, R-6 and R-8) as shown in Figure 6-3. The same calculations described above for the Comprehensive Plan designations were performed for zoning in the Town Center planning area (Table 6-2).

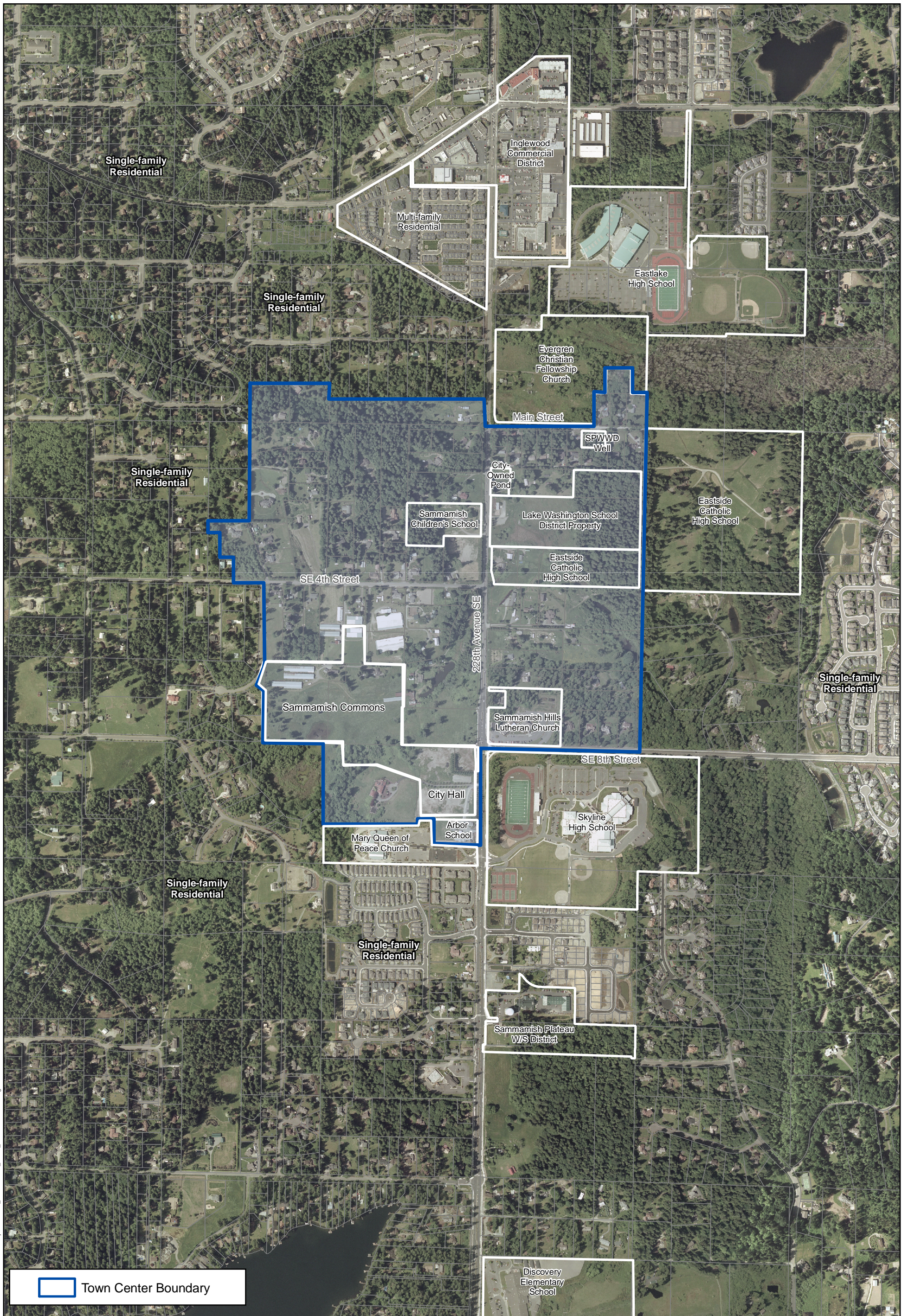
Table 6-2. Town Center Planning Area Zoning Areas and Constrained Lands

Zoning	Total for Town Center Planning Area		Total for Town Center Planning Area less Constrained Lands ²	
	Parcels	Acres (percent) ¹	Parcels	Acres (percent) ¹
R-1	62	149 (66)	61	113 (65)
R-4	28	46 (20)	28	41 (24)
R-6	11	21 (9)	9	11 (6)
R-8	3	10 (5)	3	9 (5)
Totals (acres)	104	226	101	174

Source: City of Sammamish Zoning Map, City Zoning/Parcel Data 11/2004, and City wetlands GIS layer

¹ Acreages do not include City rights-of-way.

² Constrained lands include wetlands, streams, and buffers as defined in SMC 21A.50.

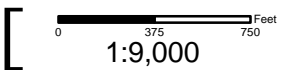


 Town Center Boundary

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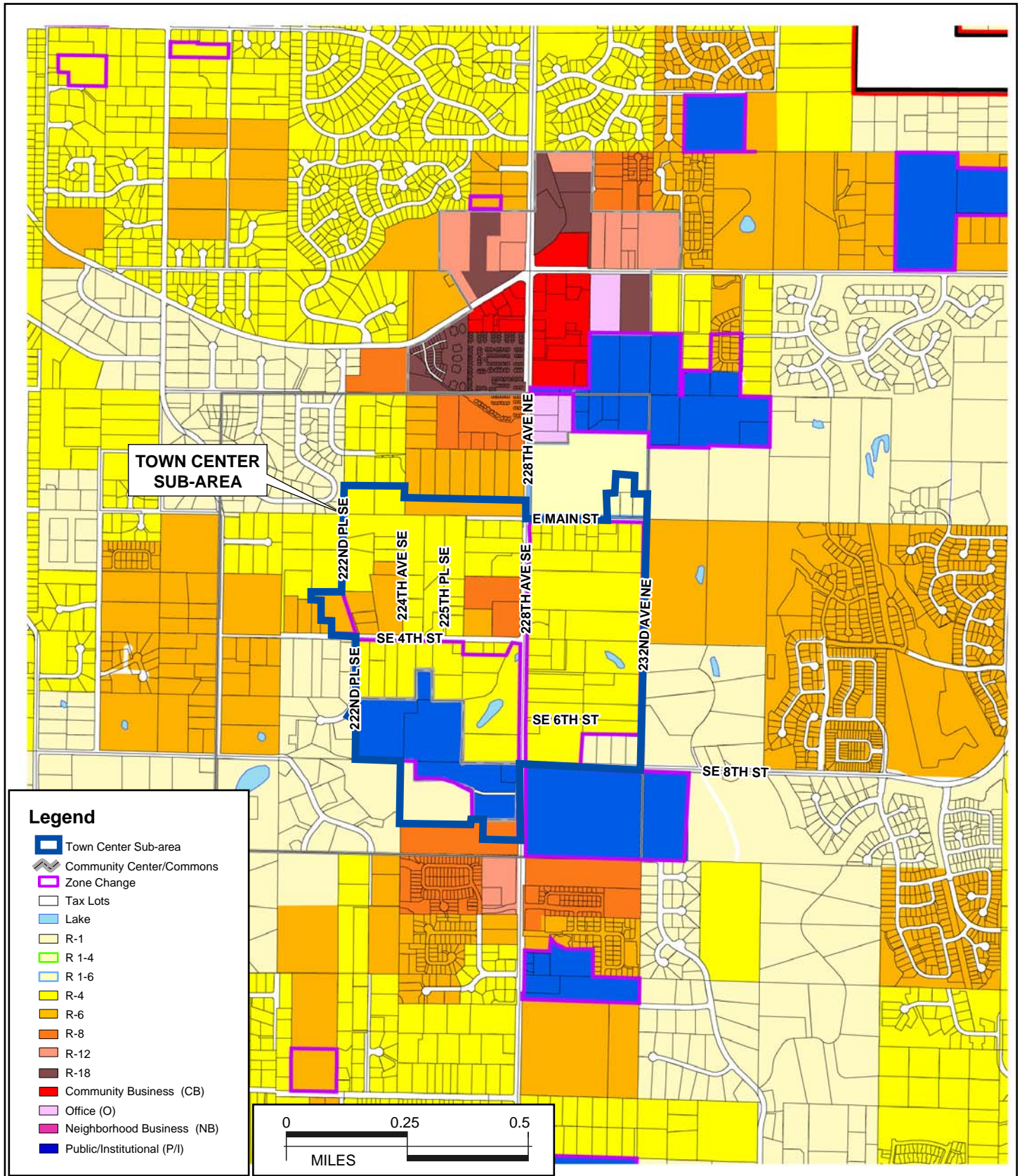


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FIGURE 6-1
TOWN CENTER AREA EXISTING LAND USES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

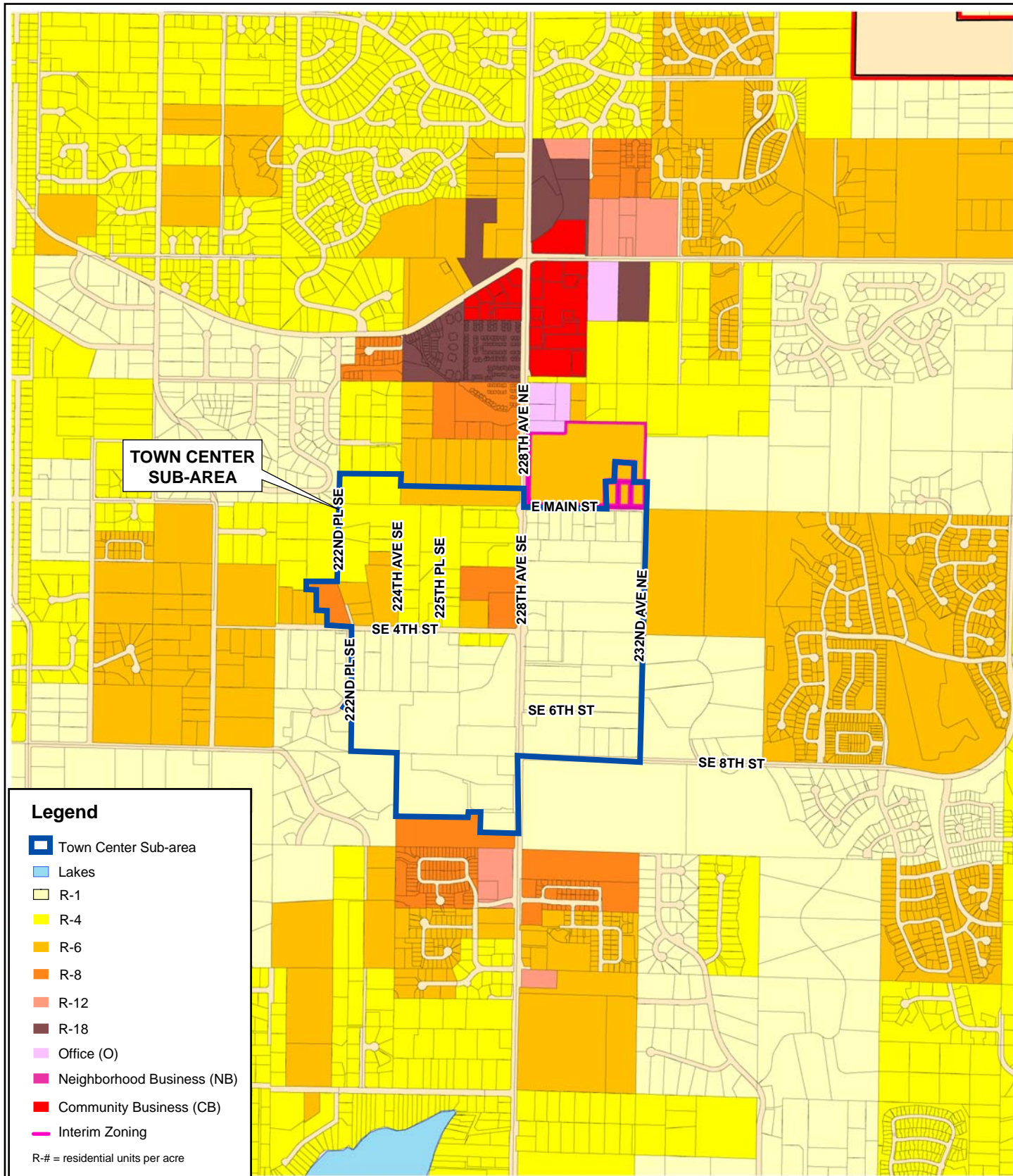


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 SOURCE: City of Sammamish, 2003.

FIGURE 6-2
 COMPREHENSIVE PLAN LAND USE DESIGNATIONS
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



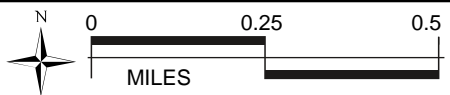
Legend

- Town Center Sub-area
- Lakes
- R-1
- R-4
- R-6
- R-8
- R-12
- R-18
- Office (O)
- Neighborhood Business (NB)
- Community Business (CB)
- Interim Zoning

R-# = residential units per acre



File name: Fig06-3_zoning.ai
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 SOURCE: City of Sammamish, 2003.

FIGURE 6-3
ZONING

SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

6.1.3 Relationship to Plans and Policies

The proposed project is located within the City of Sammamish planning jurisdiction. Land use is regulated and influenced by the City's plans and policies, as well as several state and regional plans and policies. The following plans and policies relate to the Town Center and are discussed below:

1. State Growth Management Act (1990, as revised)
2. Puget Sound Regional Council VISION 2020 (amended 1995 and currently being updated as Vision 2020+20) and Destination 2030 (2001);
3. King County Countywide Planning Policies (1993, as amended);
4. City of Sammamish Comprehensive Plan (2003a);
5. Sammamish Municipal Code (including Zoning and Development regulations; State Environmental Policy Act (SEPA) regulations; Critical Areas Ordinance; Stormwater, Grading, and Drainage Control Code) (2005, as amended).

The Growth Management Act, Puget Sound Regional Council VISION 2020, and King County Countywide Planning Policies provide the framework for development of local plans, policies, and regulations. The Comprehensive Plan, zoning and land use regulations of the City are the primary means of guiding site-specific development. This planning process will also guide planning and development at the sub-area scale of the Town Center.

6.1.3.1 Growth Management Act

Washington State's Growth Management Act (GMA) (RCW 36.70A) of 1990 requires state and local governments to manage statewide growth by identifying urban growth areas (UGAs) and preparing comprehensive plans, capital improvement programs, and development regulations that guide growth into those areas. The GMA includes 13 planning goals (RCW 36.70A.020) to guide the development of comprehensive plans and development regulations. Within the UGAs, adequate infrastructure (transportation, water, sewer, and other urban services) must be provided to achieve population and employment targets established in local comprehensive plans.

One of the primary purposes of the GMA is to limit sprawling and lower density development in rural and resource areas of the state. To accomplish this goal, the GMA makes clear that cities and UGAs bear the responsibility of accommodating most of the forecasted growth, and should do so in compact, urban areas.

6.1.3.2 Puget Sound Regional Council VISION 2020

The Puget Sound Regional Council (PSRC) is the metropolitan planning organization for the central Puget Sound region. PSRC serves as a forum for cities, counties, ports, transit agencies, tribes, and the state to coordinate on important regional issues.

Planning under GMA includes efforts at both a regional and a local level, with local plans detailing and expanding on the goals of broader regional plans. In the Puget Sound region the VISION 2020 plan was first adopted in 1990 by the Puget Sound Council of Governments, the predecessor to the PSRC. The VISION 2020 plan establishes a regional growth, economic, land

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use, and transportation strategy for King, Kitsap, Pierce, and Snohomish Counties. Each county has established a set of planning policies, referred to as Countywide Planning Policies (CPPs), that further the VISION 2020 goals.

The metropolitan transportation plan, Destination 2030 (revised in 2004), is the region's guide for transportation system investment and program development strategies to improve mobility of people and goods. Destination 2030 is intended to identify and address the region's long-range transportation needs arising from regional growth.

Destination 2030 focuses on preserving and managing the existing transportation system and ensuring development of a balanced multi-modal transportation system that includes choices for private vehicles, public transit, ride sharing, walking and bicycling, as well as freight modes. The plan coordinates the diverse ambitions of the region's counties, cities, towns and neighborhoods, and emphasizes the connection between land use and transportation to reduce long-term infrastructure costs and provide better links between home, work, and other activities (PSRC, 2001).

The PSRC is currently working on an update of the VISION 2020 Plan (Vision 2020+20), which will establish the vision for the region for the next 20 years.

6.1.3.3 King County Countywide Planning Policies

The Countywide Planning Policies (CPPs) provide guidance for coordination between cities and counties in comprehensive planning efforts. King County's CPPs were endorsed by the Growth Management Planning Council, a consortium of King County and city elected officials, and adopted by the King County Council in 1992. The CPPs are intended to assist local jurisdictions such as the City of Sammamish in ensuring that each jurisdiction's own comprehensive plan is consistent with the King County Comprehensive Plan, as required by the GMA. Goals and objectives of Sammamish's Comprehensive Plan have been coordinated with King County's Comprehensive Plan to ensure consistency under the GMA.

6.1.3.4 City of Sammamish Comprehensive Plan

The City of Sammamish adopted its Comprehensive Plan in 2003 and amended the plan through annual amendments in 2005 and 2006.

The Sammamish Comprehensive Plan is a 20-year policy plan that, consistent with GMA requirements, includes land use, environmental, transportation, housing, utilities, public services, capital facilities, and parks and open space elements. These elements are summarized in the discussion below.

Land Use Element: The Land Use Element provides for land uses reflective of the City's vision statement for a small-town character, suburban residential style development, but with acknowledgement of community gathering areas in "centers" and attention to environmental characteristics (City of Sammamish, 2003a). Distinguishing characteristics and policies established in the Comprehensive Plan include:

- Preservation of the character and development patterns in existing single-family neighborhoods through R-4 and R-6 zoning;

- Protection of the high rank order and functions of environmentally sensitive areas through policies, development regulations, and through R-1 zoning as appropriate;
- Targeting future commercial growth and mixed use development to three designated community centers, the Inglewood and Pine Lake Centers, and the Sammamish Commons;
- Development of a City Hall and City Park project as a designated Community Center, in accordance with an approved master plan, known as the Sammamish Commons; and
- Establishment of locally determined level of service standards for transportation, a priority list of capital improvements, revised mitigation fees and concurrency requirements, and direction to execute interlocal agreements with neighboring jurisdictions to relive bottlenecks affecting access to and from the community.

The Comprehensive Plan calls for the three designated community centers (Inglewood, Pine Lake Village, and Sammamish Commons) to host a diversity of high-quality places to live, work, shop and recreate. The Comprehensive Plan also calls for a sub-area planning process for the area now under consideration as the Town Center.

The Town Center Sub-Area Plan is intended to implement the Comprehensive Plan by addressing the population and land use designations that will be allocated within Sammamish's Town Center. The Sub-Area Plan will address the specific issues and features of a limited geographic area, and provide more detailed policies and implementation strategies that are tailored to the Town Center.

The Sub-Area Plan is intended to implement specific policies identified in the Comprehensive Plan such as planned urban densities and land uses, identification and protection of critical areas, and provision of adequate capital facilities and services. In addition, it provides planning level guidance for future public and private investments within the Town Center.

Environmental and Conservation Element: This element of the Comprehensive Plan reflects the City's strong emphasis on the value of and need to protect environmentally sensitive features. It provides the policy direction for the City's active role in participating in regional environmental protection efforts, developing and applying local environmental regulations, promoting education, and other programs. Specific goals established by this element focus on:

- Preserving trees and greenways by encouraging the preservation or development of large areas of greenery, which provide a visual impact;
- Protecting and enhancing streams, wetlands and wildlife corridors; and
- Maintaining a harmonious relationship between the natural environment and future urban development.

Transportation Element: The Transportation Element establishes the goals and policies that guide the development of surface transportation in the city of Sammamish, in a manner consistent with the overall goals of the Comprehensive Plan. Based upon existing and projected land use and travel patterns, the Transportation Element addresses roadway classifications, levels of service, transit and non-motorized modes, future travel forecasts, transportation system

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improvements, financing strategies, and concurrency management. It establishes policy for transportation system development, and for existing and future improvement of transportation programs and facilities (City of Sammamish, 2003a).

Housing Element: The Housing Element of the Sammamish Comprehensive Plan responds to the GMA, the Washington Housing Policy Act, and the King County CPPs identified in the Growth Management Element of the Comprehensive Plan. The objectives of the Washington Housing Policy Act (RCW 43.185B.009) are to attain the state’s goal of a decent home in a healthy, safe environment for every resident of the state.

The state’s goal for housing is to “Encourage the availability of affordable housing to all economic segments of the population of this state, promote a variety of residential densities and housing types, and encourage preservation of existing housing stock” (RCW 36.70A.020(4)). The Sammamish housing vision, consistent with the state goals, is to protect residential single-family areas, to develop new opportunities for housing diversity and affordability, and to work cooperatively on a region-wide housing plan (City of Sammamish, 2003a).

The Housing Element also directs the City to establish a Housing Strategy Plan (HP-35b) with a stated purpose to “outline implementation strategies, and periodically assess implementation progress.” A Plan was adopted by the City Council in March of 2006 (R2006-231). The Plan is essentially a prioritized list of possible programs, regulations, and other strategies meant to enact the goals and policies of the Comprehensive Plan. One of the high priority items in the Plan is the development of sub-area plan for the Town Center and the two other centers (Inglewood and Pine Lake) in the City.

Utilities and Public Services Element and Capital Facilities Element: These Elements address the public and franchise services and infrastructure required to serve the community. The primary goal for the Utilities and Public Services Element is to provide reliable the reliable delivery of essential utilities and public services to the Sammamish service area while reducing safety, environmental and aesthetic impacts that can result from the construction and operation of provider’s facilities.

The Capital Facilities Element establishes policies to guide the development of the City’s capital investment program in support of the City’s vision for the future by:

- Providing a clear definition of the role and purpose of the City’s capital investment program;
- Assuring that capital facility investments are prioritized to support anticipated growth in the locations targeted in the Land Use Plan;
- Identifying service standards for capital facilities which meet community expectations for municipal service delivery; and
- Requiring that adequate, long-term financial capacity exists to provide capital facilities needed to support expected growth while maintaining adopted service standards (City of Sammamish, 2003a).

Parks, Recreation and Open Space Element: The Comprehensive Plan’s vision statement and vision goals highlight the aspirations for outstanding recreational opportunities in the community, as well as preservation of natural features. The vision states that the City will:

- Establish a park and recreation system that meets the high standards of the community;
- Create a safe and interesting network of trails; and
- Preserve trees and greenways by encouraging the preservation or development of large areas of greenery, which provide a visual impact as opposed to creating small unusable areas (City of Sammamish, 2003a).

The City adopted its Parks, Recreation, and Open Space Plan in 2004 and completed the Trails, Bikeways and Paths Master Plan in December of 2004. Both plans establish goals, policies and long-range planning and capital investment priorities for their respective subjects. The plans are discussed in more detail in Chapter 9, Public Services and Utilities.

6.1.3.5 City of Sammamish Municipal Code

The Sammamish Municipal Code (SMC) embodies the laws that implement the policies in the Comprehensive Plan. Chapter SMC 21A provides zoning and development regulations that implement the City’s Comprehensive Plan. It establishes standards and procedures for the use and development of land within the city. In addition to general use or activity requirements, these provisions include specified height and size limits, as well as requirements for setbacks, parking, and landscaping. This chapter also includes the regulatory version of the Environmentally Critical Areas Ordinance, implementing the policies related to protecting streams, wetlands and wildlife corridors. SMC Chapter 20.15 specifies implementation of the State Environmental Policy Act, further identifying how the documentation of development proposal impacts will be prepared and reviewed. Other SMC chapters govern how development projects will share in the cost of transportation and school infrastructure; noise levels during construction; and the use of public rights of way for utilities.

6.1.4 Population and Housing

This section discusses the existing population, demographic, and housing characteristics in the city of Sammamish.

6.1.4.1 Population

The estimated population for the city of Sammamish is 39,730 (OFM, 2006), which represents an approximately 16 percent increase from the population (34,119) reported in the 2000 census. Census demographic data were collected for the city of Sammamish, the Town Center Sub-Area vicinity, and King County for comparison. The area identified as the Town Center Planning area vicinity for purposes of this analysis includes three census blocks extending roughly from 218th Avenue on the west to 244th Avenue on the east, and from NE 8th Street in the north to SE 8th Street to the south.

Table 6-3 shows population and race information for both the city and the Town Center vicinity as described above. The information indicates that demographics in the Town Center are similar to the city as a whole, but less racially diverse than King County.

Table 6-3. City of Sammamish and Town Center Vicinity Demographics

	Town Center & Vicinity		City of Sammamish		King County	
	Count	Percent	Count	Percent	Count	Percent
Total Population	1,436	-	34,119	-	1,737,034	-
White	1,223	85.2%	29,810	87.4%	1,315,507	75.7%
Black or African American	22	1.5%	194	0.6%	93,875	5.4%
American Indian and Alaska Native	3	0.2%	145	0.4%	15,922	0.9%
Asian	111	7.7%	2,530	7.4%	187,745	10.8%
Native Hawaiian & Other Pacific Islander	7	0.5%	58	0.2%	9,013	0.5%
Hispanic or Latino	47	3.3%	894	2.6%	95,242	5.5%
Other	70	4.9%	1,382	4.1%	114,972	6.6%

Source: U.S. Census Bureau, 2000

Sammamish also has more households with children (54 percent) and fewer one-person households (9 percent) than East King County or King County as a whole. The median age of Sammamish residents (35.3 years) is comparable to the median age in King County (35.7 years). However, Sammamish has significantly more children and fewer elderly persons (City of Sammamish, 2003a).

6.1.4.2 Housing

Sammamish is a young community characterized primarily by suburban, single-family neighborhoods. The latest U.S. Census (2000) estimated an average Sammamish household size of 3.0 persons, while the average King County or East King County household size is about 2.4 persons. Census 2000 also shows that of the 11,599 dwelling units in the city of Sammamish, over 90 percent of housing units are detached single-family housing. This compares to about 40 percent for other parts of East King County. Housing ownership is also much higher in Sammamish (90 percent) than in King County (60 percent) or East King County (66 percent). Sammamish housing is relatively new, with nearly 75 percent of the city’s housing stock built in the 20-year period between 1980 and March 2000 (City of Sammamish, 2003a).

More recent estimates from the Washington State Office of Financial Management (OFM) indicate that in 2005, Sammamish had an estimated 13,602 housing units, of which 93 percent were single-family units, about 6 percent were two-plus housing units, and less than 1 percent were multi-family or special housing (OFM, 2005).

One of the goals included in the City’s Comprehensive Plan (Goal HG-3) establishes that “City policies and regulations should allow for a diversity of housing types and densities in order to accommodate housing alternatives that meet changing population needs and preferences.” (City

of Sammamish, 2003a) These choices would allow Sammamish to develop and provide housing for a more diverse population. For example, as the city's population grows over time, there will be an associated increase in the senior and young adult populations. Additionally, improved neighborhood services may create new jobs for employees who would like to live near their work. The land use decisions made in the Sub-Area Plan may give the market the opportunity to respond to an increasing need for additional housing choices for smaller, more affordable starter homes, homes suitable for "empty nesters," as well as homes for those who work in the community.

6.1.4.3 Household Growth

According to the 2003 Comprehensive Plan, Sammamish is primarily a bedroom community, with a small employment base (4,757 jobs in 2000). Most jobs in Sammamish are for those who provide community services such as teachers, police and city workers, and those working in retail shops and restaurants (City of Sammamish, 2003a).

Through local and regional population projections, in accordance with the provisions of the GMA, 20-year population growth estimates were established for the City's comprehensive planning efforts. Based on the population projections, future development "targets" (expressed in the number of housing units) were determined through an interactive, multi-jurisdictional process between King County and its cities. The City's preliminary growth target, published in the Comprehensive Plan (2003a) for the years 2001 to 2022, is currently estimated to be 3,842 net new housing units.

Affordable housing targets were established in the Sammamish Comprehensive Plan and are calculated as a percent of the City's total housing growth target. When the City of Sammamish incorporated in 1999, approximately 2,300 new residential units were vested under King County development regulations (City of Sammamish, 2003a). Because the City could not impose new development standards on these units, the affordable housing targets are based on net new growth after deducting the vested residential units.

The King County CPPs state more specific targets for moderate-income housing units equal to 17 percent of the City's housing growth target or 177 –262 units (8 – 12 units annually). Similar to other cities in East King County, the preliminary low-income housing target for Sammamish is 24 percent or 250 – 370 units (11 – 17 units annually) (City of Sammamish, 2003). These affordable housing targets are not absolute but rather planning goals to accommodate the City's share of housing that is affordable to low- and moderate-income households.

6.2 Impacts

Four land use alternatives have been developed to meet the goals outlined for the Sammamish Town Center by the City's Comprehensive Plan (2003a) and the City Council's vision statement (Resolution R2006-229). Under all of the action alternatives (Alternatives 1 through 3), the land use pattern in the Town Center would intensify by including a new mix of residential, retail, office, or public land uses. The difference between the alternatives involves the amount, mix, and location of these new uses. In general, potential impacts will be discussed for the four quadrants of the Town Center as described in Chapter 1. These four areas are divided roughly from north to south by 228th Avenue SE and from east to west by SE 4th Street (Figure 1-2).

6.2.1 Land Use Patterns

This analysis looks at the patterns of land development for each alternative expected after the 25-year planning horizon. The analysis compares these patterns to each other and to existing conditions. Each alternative is designed to achieve a distinct character for the Town Center. Alternative 1 envisions a commercial center surrounded by residential neighborhood with a diversity of housing types and densities. Alternative 2 envisions a smaller commercial area surrounded by a low-density residential neighborhood. Alternative 3 envisions a civic-oriented Town Center with commercial areas along 228th Avenue SE surrounded by a residential neighborhood with a variety of housing types. A No-Action Alternative, included to meet SEPA requirements, analyzes the impacts of future growth based on the current Comprehensive Plan land use designations. Table 6-4 shows a comparison of the land use scenarios for the three action alternatives and the No-Action Alternative.

Table 6-4. Town Center Alternatives Land Use Scenarios

Land Use	Alt 1 Commercial Focus	Alt 2 Low Intensity	Alt 3 Civic Focus	Alt 4 No Action
Building Areas (1,000 square feet)				
Commercial/Retail	400	165	195	0
Commercial/Office	75	0	120	0
Civic/Institutional ¹	100	60	190	26
Open Space (acres)				
Public Parks	31	42	38	30
Streams, Wetlands & Buffers	60	60	60	60
Private Open Space ²	55	45	50	NA ³
Total Open Space ⁴	136	137	137	90
Housing Units				
Low Intensity				
Detached Single-Family	20	240	35	325
Townhouses	170	525	125	0
Medium Intensity				
Mid-rise Multi-family and Mixed-use (3-5 stories)	2,800	320	2,850	0
High Intensity				
High-rise Multi-family (12-stories)	500	0	0	0
Total Housing Units	3,490	1,085	3,010	325
Public Parking (1,000 square feet)				
Surface Parking	290	230	420	0
Structured Parking	360	0	85	0
Total Public Parking	650	230	500	0

¹ Civic/institutional includes City Hall (~26,000 square feet) for all alternatives.

² The amount of private open space is dependant on numerous individual development decisions; these quantities are provided as working assumptions.

³ Open space under the No-Action Alternative is assumed to include existing parks, wetlands, and buffers.

⁴ Total open space does not equal the sum of open space types because some areas overlap.

6.2.1.1 *Alternative 1 - Commercial Focus*

Under Alternative 1, future development in the Sammamish Town Center would be of higher density and intensity than currently exists or that would be developed under the No-Action Alternative or Alternative 2. It would result in a transformation of the Town Center area from a largely undeveloped suburban residential area to an urbanized, pedestrian-oriented district centered around a retail core west of 228th Avenue SE. The change in character would be significant, but would be consistent with the adopted Comprehensive Plan policies and Council vision for the Town Center.

As shown in Table 6-4, this alternative would introduce approximately 400,000 square feet of retail and 75,000 square feet of office space. This alternative would have approximately twice the amount of retail as Alternatives 2 and 3. Retail space would be located in both single-use buildings and mixed retail/residential buildings. This alternative would also include 650,000 square feet of new public parking mostly in structured parking lots with some surface lots.

As shown in Figure 2-5, growth in retail, mixed-use, and high-density multi-family uses would be focused on the west side of 228th Avenue SE near the intersection of SE 4th Street and 224th Place SE. A primary commercial corridor would be established leading from the Sammamish Commons park north, with retail and mixed-use on either side. This commercial center would be surrounded by several types of multi-family housing. Mid-rise residential development characterized by five-story multi-family buildings and high-rise buildings up to eight stories would surround the commercial core north of SE 4th Street. Smaller residential buildings would be located east and south of the commercial core.

The retail spaces in the commercial core would be located toward the front of the lots, close to the sidewalk. Most parking would be located underground, in stand-alone structures, or in surface lots located behind commercial buildings. The mixed-use buildings would consist of underground parking, street-level retail, and one or two stories of residential units above. High-rise residential buildings would also include underground parking and would be surrounded by open space.

Under Alternative 1, the east side of 228th Avenue SE would be characterized primarily by residential development, with some limited commercial development along 228th Avenue SE. The area north of SE 4th Street would become a relatively high-density residential area characterized by mid-rise (three- to five-story) multi-family buildings and a 2-acre park/open space alongside George Davis Creek and its buffer. The area south of SE 4th Street would be characterized by lower density, mid-rise (three-story), multi-family buildings and townhomes.

This alternative includes high-density development types absent in the other action alternatives, including the eight-story high-rise residential buildings and the retail/residential mixed-use buildings. This alternative also provides more parking in structured facilities rather than surface lots.

The higher density development features in this alternative allow for a more compact land use pattern than would result from the other alternatives. The commercial core of Alternative 1 would contain more residential units and commercial space than the other alternatives, while also allowing more open space. The northwest quadrant of the Town Center (north of SE 4th Street

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and west of 228th Avenue SE) would contain approximately 1,650 residential units, 230,000 square feet of commercial space, and up to 50 acres of open space (including parks, private open space and wetlands and buffers). Figure 6-4 shows a comparison of residential units by location in the Town Center for each alternative.

6.2.1.2 *Alternative 2 - Low Intensity*

Under Alternative 2, development in the Sammamish Town Center would be of moderate intensity. Residential and retail density would be greater than under the No-Action alternative, but less than under either Alternative 1 or 2. Similar to Alternative 1, Alternative 2 would result in a transformation of the Town Center area from a largely undeveloped suburban residential area to a more urbanized residential neighborhood centered around a commercial core and surrounded by moderately dense mid-rise multi-family buildings and low-density single-family residential development. The change in character would be significant, but would be consistent with the adopted Comprehensive Plan policies and Council vision for the Town Center.

As shown in Table 6-4, this alternative would introduce approximately 165,000 square feet of retail space, less than any of the other action alternatives, and no office space. Retail space would be located in single-use commercial buildings with surface parking lots. This alternative would also include 230,000 square feet of new public parking in surface lots, less than either action alternative.

Under this alternative, the commercial core would be considerably smaller in scale than that envisioned under Alternative 1. It would be located south of SE 4th Street on the west side of 228th Avenue SE. Unlike the other action alternatives, there would be no commercial development elsewhere in the Town Center.

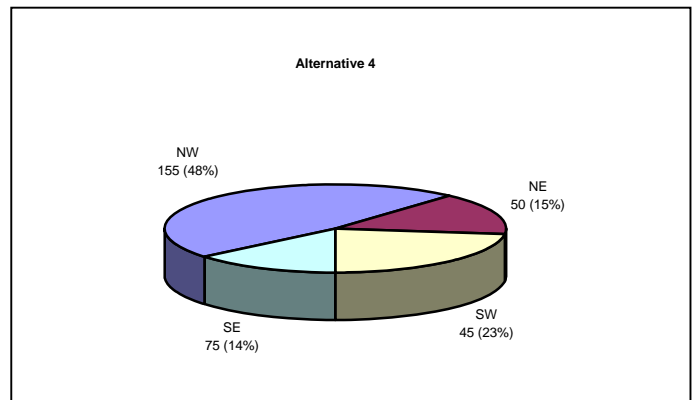
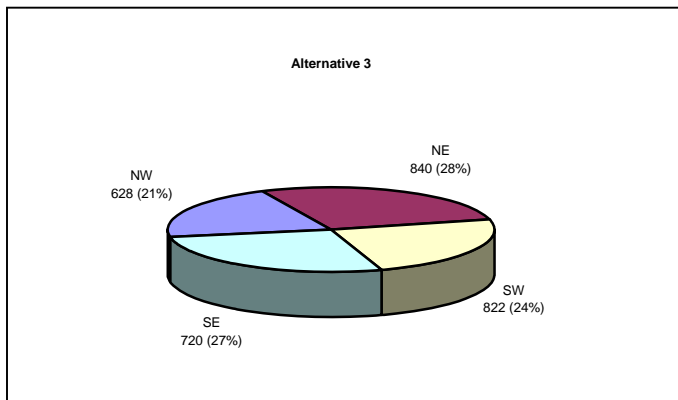
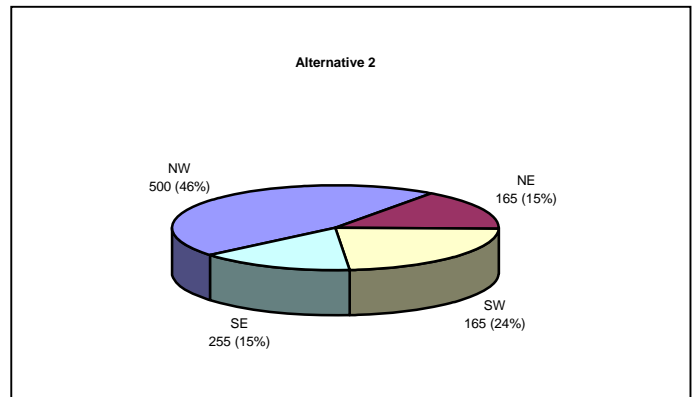
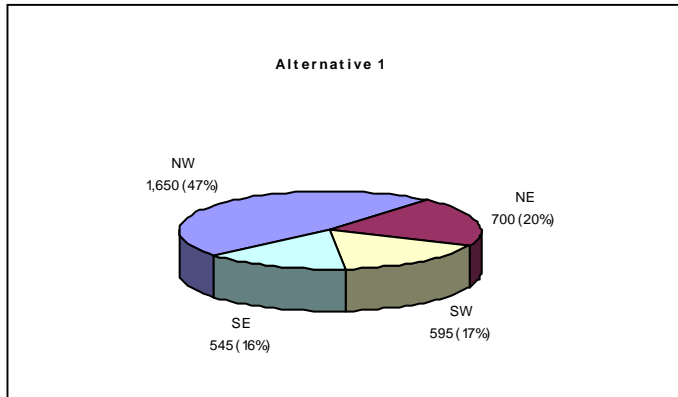
As shown in Figure 2-6, the commercial core would be surrounded by moderate-intensity residential development. A small area of mid-rise (three-story) multi-family buildings would be located immediately north of the Town Center core. Beyond this area, the rest of the Town Center would be characterized by relatively low-density residential development. A small area of multi-family development is also planned for the corner of SE 8th Street and 228th Avenue SE, immediately north of City Hall. There are no other areas of multi-family or commercial development proposed in the Town Center under this alternative. The relative distribution of housing under this alternative is shown in Figure 6-4.

In addition to the Sammamish Commons, this alternative would also include a large public park (approximately 2.5 acres) north of SE 4th Street on the west side of 228th Avenue SE. The total area of public park space would be approximately 41 acres, the most of any of the four alternatives.

6.2.1.3 *Alternative 3 - Civic Focus*

Similar to Alternative 1, future development in the Town Center under Alternative 3 would result in increased density and intensity of land use. The Town Center would change from a largely low-density suburban area to a more urbanized district. The focal point of the Town Center would be a civic-oriented core west of 228th Avenue SE near the intersection of SE 4th Street and 224th Place SE. Other high-intensity uses within the Town Center would be more dispersed under this alternative.

Figure 6-4. Housing Distribution for Each Alternative



As shown in Table 6-4, this alternative would introduce approximately 190,000 square feet of indoor civic space in the Town Center focal point, more than any of the other alternatives. Alternative 3 would also include approximately 195,000 square feet of retail space and 120,000 square feet of office space in two mixed-use buildings. This alternative includes the most office space of the three action alternatives. Approximately 505,000 square feet of new public parking would be provided in surface lots (83 percent) and structured parking (17 percent).

Similar to Alternative 1, the civic core of the Town Center would be a corridor of development extending from SE 4th Street north. The corridor would be lined with public buildings that would house civic amenities. A limited amount of retail would also be located in the Town Center core. Buildings would be located up to the sidewalks and surface parking would be located behind the buildings. The civic core would be surrounded by moderate-density residential development including some mid-rise (three-story) multi-family buildings, townhouses, and single-family homes.

High-intensity land uses including office and retail would be more dispersed under this alternative. In addition to the civic focal point near SE 4th Street, a separate area of retail development would be located on either side of the intersection at SE 4th Street and 228th Avenue SE. This area would be connected by a pedestrian bridge over 228th Avenue SE. It would also be served by a parking structure located on the west side of 228th Avenue SE. An area of mixed-use office development would also be located separately in the northeast section of the Town Center.

Under this alternative, areas of high-density residential development would differ from those under Alternative 1. Residential density would be concentrated on the east side of 228th Avenue SE. The area south of SE 4th Street would be characterized primarily by five-story multi-family buildings with a smaller number of units in three-story buildings and townhouses.

The area north of SE 4th Street and east of 228th Avenue SE would also differ significantly from existing conditions and the other alternatives. It would include mixed-use developments containing parking, office space, and residential units. These developments could be up to 12 stories high. The office use in this area would be surrounded by moderately high-density residential development consisting of three- to five-story multi-family buildings. This area is expected to contain approximately 840 residential units. Figure 6-4 shows a comparison of residential units by location in the Town Center for each alternative.

A significant difference in the land use pattern between this alternative and the others is that the Sammamish Commons Park would be expanded north. The expansion would include approximately 13 additional acres of active recreational space that would be immediately adjacent to the civic center.

6.2.1.4 *Alternative 4 - No-Action*

Under the No-Action Alternative, development in the Town Center area would follow the Comprehensive Plan's land use plan without development of a Town Center Sub-Area Plan. Housing density would be expected to increase moderately to achieve the allowable densities adopted in the Comprehensive Plan. Potential land use impacts resulting from the Comprehensive Plan's land use designations were identified in the City's Draft SEIS for the

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Comprehensive Plan (2003b). While this analysis was conducted for the entire city, its conclusions are applicable to the Town Center area.

Under current land use designations in the Town Center, most of the residential land area would be developed at 4 units per acre. As shown in Figure 6-2, limited areas of higher density residential development (6 and 8 units per acre) are located at the intersection of SE 4th Avenue and 28th Avenue SE. Small areas of lower density (1 unit per acre) are located in the northeast, southeast, and southwest corners of the Town Center area. Acreages of each land use designation in the Town Center are shown in Table 6-1.

Under these designations the Town Center area would be characterized by low-intensity single-family development. It would have the capacity for far fewer housing units than the action alternatives. This would drive residential development to other areas of the city. According to the Comprehensive Plan's Draft SEIS, more intensive land uses would be concentrated in the two existing community centers located at the Pine Lake Village and Inglewood commercial districts.

Current zoning allows institutional development under conditional use permits, and would continue to do so. There are several institutional developments in the Town Center, including the Sammamish Hills Lutheran Church, the Eastside Catholic High School, and the Sammamish Children's School. These existing institutional uses are likely to remain in the area, but no commercial uses would be allowed.

6.2.2 Land Use Compatibility

The analysis of land use compatibility examines land use patterns to identify potential conflicts between adjacent or nearby land uses. In general, conflicts arise from lighting, noise and general activity levels that may spill over from commercial or civic uses to residential areas.

Under all of the action alternatives, significant changes in the intensity and form of development as well as the character of the Sammamish Town Center area would occur. Land would become more intensively used and existing uses would be displaced and redeveloped. Impacts to adjacent land uses could occur because of disparate types of land uses. For example, residential land uses may experience impacts from commercial uses in the form of additional traffic, general activity, noise, light and changes to the visual character. Likewise, lower intensity residential uses may experience these impacts from adjacent higher intensity residential uses.

6.2.2.1 Alternative 1 - Commercial Focus

Under this alternative, the Town Center would transform into an intensively developed, mixed-use urban area. While significant, this change is consistent with the City's planning goals and policies as outlined in the Comprehensive Plan and the City Council's vision statement. As such, it should be viewed as a positive change.

Building height and bulk would be greater than those assumed under the other two action alternatives and the No-Action Alternative. Alternative 1 would include both mid-rise (three- to five-story) and high-rise (up to 12-story) residential buildings, as well as four- and six-story mixed residential/commercial buildings. Exact heights and locations of buildings will vary depending on market forces, but are expected to be within this general range.

Internal and external land use conflicts would likely result from the increase in development intensity. The majority of retail and residential density would take place within the commercial core located in the NW and SW quadrants of the Town Center area. Within the remainder of the Town Center, residential density would also increase substantially. Internal land use conflicts may include increases in noise, light and general activity levels associated with higher density residential development and commercial activities. These conflicts would be more pronounced around the commercial core, where activity levels would be higher.

The increases in noise, traffic, and general activity levels are inherent characteristics of medium- and high-density, mixed-use urban land use patterns. In general, residents who choose to live in the Town Center will expect and tolerate these impacts. In addition, significant amounts of public and private open space are planned for the Town Center. The high-rise development, in particular would be surrounded by open space. The amount of building footprint relative to open space would be much lower for this development type than less dense developments. These open spaces would provide corridors for connectivity and buffers between land uses, which will reduce the impacts of land use density.

Internal land use conflicts would likely be more severe for current residents who would experience construction noise and increased activity levels associated with the higher intensity uses included under this alternative. If unmitigated, development of higher intensity uses adjacent to existing low-intensity uses would create land use conflicts.

City staff conducted an informal survey of Town Center residents to ascertain generally which residents thought they would remain in their current homes and which would prefer to sell or develop their properties. A review of the survey results show two concentrations of single-family/farm properties that have indicated a desire to remain in their current homes. These areas are generally located in the northwest and southwest corners of the Town Center planning area. The results of the survey are available on the City's Website (City of Sammamish, 2006).

External land use conflicts are expected where increases in land use intensity within the Town Center boundary are located nearby existing low-intensity residential land uses outside the boundary. Areas of potential external land use conflicts are shown in Figure 6-5. Several institutional land uses are adjacent to the Town Center where land use conflicts are not likely. These include Skyline High School and the Mary Queen of Peace Church to the south, Eastside Catholic High School to the east, and the proposed Evergreen Christian Fellowship Church to the north.

Residential development is located adjacent to the Town Center along its east boundary and along its northern and southern boundaries on the east side of 228th Avenue SE. Only one section of the west side of the Town Center abuts residential development. It is located north of SE 8th Street and south of the Eastside Catholic High School property. In general, building heights and densities will transition down as they approach the Town Center boundary.

Land uses along the edges of the Town Center will be compatible with adjacent land uses. Development intensity in the NW and SW quadrants will taper down to townhomes, detached single-family residences, and open space along the east boundary. Open space and a steep ravine will buffer the north boundary. Development in the SE quadrant will be buffered from the east by an open space/wetland area.

6.2.2.2 *Alternative 2 - Low Intensity*

Under this alternative, the Town Center would transform into a moderate-density residential neighborhood with a small commercial and community core. While this transformation would be a significant change from existing conditions and the conditions likely resulting from the No-Action Alternative, development intensity and building density would be at a much smaller scale than with Alternative 1 or 3. Similar to Alternative 1, the change would be consistent with the City's planning goals and policies as outlined in the Comprehensive Plan and the City Council's vision statement.

Building height and bulk would be far less intense than those assumed under the other two action alternatives, but would be greater than that expected under the No-Action Alternative. Retail buildings would be limited to the commercial core area, immediately south of SE 4th Street. Under Alternative 2, the commercial core would include three to four, one-story retail buildings. A community center building will be located south of the Sammamish Commons.

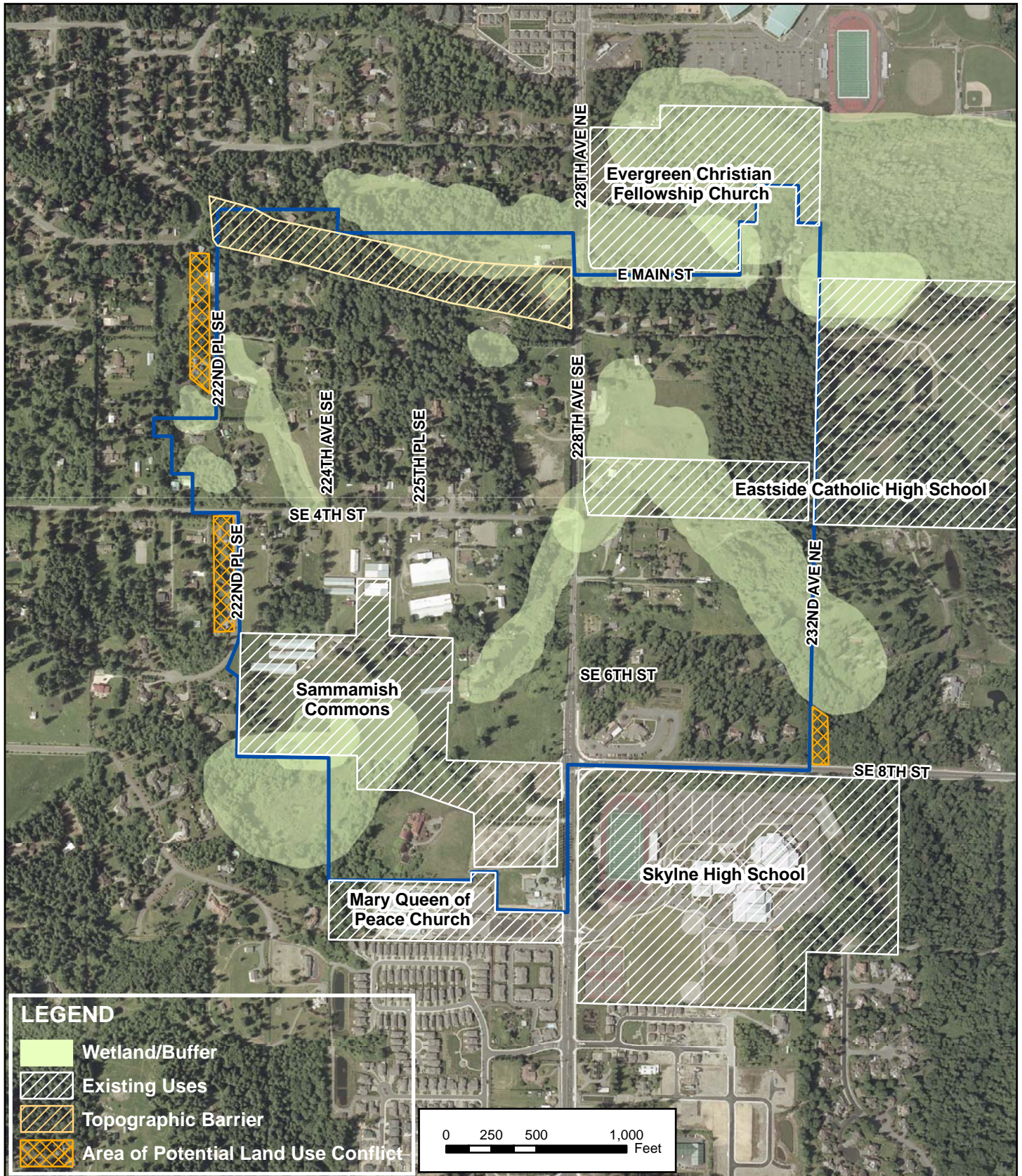
Alternative 2 would include approximately one-third the number of residential units as under Alternatives 1 and 3. Approximately 75 percent of residential units would be low-density townhomes and detached single-family homes. A limited number of mid-rise (three-story) residential buildings would be allowed adjacent to the commercial core and immediately north of City Hall.

Potential internal land use conflicts are essentially the same as under Alternative 1, but at a much smaller scale. As discussed under Alternative 1, if unmitigated, land use conflicts are likely to occur where new higher intensity uses are developed adjacent to existing low-intensity residential uses. These conflicts would likely include increases in noise, light and general activity levels associated with the moderately higher density residential development and commercial activities in the commercial core. It is more likely that new residents who choose to live in the area would expect and tolerate these impacts. In addition, significant amounts of public and private open space are planned for the Town Center.





External land use conflicts are unlikely to occur. Areas of potential conflicts are the same as under Alternative 1 (shown in Figure 6-5). These transition areas would avoid land use conflicts through similar land uses and buffering by open space and topographical features. Low-density single-family development is planned for areas along the Town Center boundary adjacent to existing low-density residential development outside the Town Center.

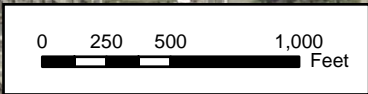
6.2.2.3 *Alternative 3 - Civic Focus*

Land use compatibility issues under Alternative 3 are similar to those described under Alternative 1. The Town Center would transform into a high-density residential neighborhood with a small community core. This transformation would be a significant change from existing conditions and the conditions likely resulting from the No-Action Alternative, although development intensity and building density would be at a smaller scale than Alternative 1. Also, similar to Alternative 1, the change would be consistent with the City's planning goals and policies as outlined in the Comprehensive Plan and the City Council's vision statement.



LEGEND

-  Wetland/Buffer
-  Existing Uses
-  Topographic Barrier
-  Area of Potential Land Use Conflict



File name: Fig06-5_landuse.ai
 Created/last edited by: JAB
 Date last updated: 10/31/06
 Reference: 25164eis



Map data are the property of the sources listed below.
 Inaccuracies may exist, and Adolphson Associates, Inc. implies no warranties or guarantees regarding any aspect of data depiction.
 SOURCE: King County GIS, 2004.

FIGURE 6-5
LAND USE

SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

The overall building height and bulk in the Town Center's core would be less intense under Alternative 3 than Alternative 1, but more intense than assumed under Alternative 2 and the No-Action Alternative. However, building height and bulk would be greater under this alternative at the intersection of 228th Avenue SE and SE 4th Street and in the NE quadrant than the other three alternatives.

The Town Center's core would contain primarily single-story civic buildings with some single-story retail buildings lined along a central plaza and surface parking lots behind the buildings. An area of retail development is envisioned on either side of 228th Avenue SE at approximately SE 4th Street. Building in this area would be larger and more visible along 228th Avenue SE than under the other alternatives. The NE section of the Town Center would contain mixed-use development along an expanded E Main Street and 232nd Avenue SE. Buildings in this area would contain office space below three or four stories of residential units with underground parking. This type of development would represent a significant increase in building massing in the area compared to the other alternatives.

Alternative 3 would include slightly fewer residential units than Alternative 1 (2,500 – 3,000). Approximately 95 percent of new residential units would be in mid-rise, multi-family buildings of three to five stories. The remainder would be townhomes and detached single-family homes.

Potential internal land use conflicts are essentially the same as under Alternative 1, but at a slightly smaller scale, although more likely than under Alternative 2As discussed under Alternative 1, if unmitigated, land use conflicts are likely to occur where new higher intensity uses are developed adjacent to existing low-intensity residential uses. Conflicts would likely result from increases in noise, light and general activity levels associated with the moderately higher density residential development and commercial activities in the commercial core and NE quadrant.

In general, new residents who choose to live in this area would expect and tolerate these impacts. As in the other alternatives, significant amounts of public and private open space are planned for the Town Center. In addition, the types of uses planned under this alternative include more civic and office use. These uses are likely to experience shorter hours of daily use than under Alternative 1 with fewer nighttime users, and are subsequently less likely to create conflicts with adjacent residential development.

External land use conflicts are unlikely to occur. Areas of potential conflicts are the same as under Alternative 1 (shown in Figure 6-5). Transition areas would provide open space buffers to avoid land use conflicts. Low-density single-family development is planned for areas along the Town Center boundary adjacent to existing low-density residential development outside the Town Center.

6.2.2.4 Alternative 4 – No-Action

Under the No-Action Alternative, development in the Town Center would follow the Comprehensive Plan's land use pattern without development of a Town Center Sub-Area Plan. Under this alternative the Town Center area would change from very low-density housing on larger lots to a more developed suburban configuration. Approximately three-quarters of the land would be designated residential (R4 or 4 units per acre) and smaller areas would be

Land Use

developed at 1, 6, and 8 units per acre. As noted in Table 6-4, this could increase the number of units in the Town Center area to 300- 350, all detached single-family residences.

The general height and bulk of the Town Center area would remain similar to existing R4 zones in the city of Sammamish. With the exception of existing institutional uses, no new land use types would be allowed in the Town Center area. Therefore, internal land use conflicts would be unlikely because of the uniformity of residential development. External land use conflicts would also be unlikely as the development pattern inside and outside the Town Center area would be the same.

6.2.3 Population and Housing

Under all of the alternatives, new housing units and population would increase. The difference would be in the mix of housing types and how that mix is expected to influence population growth. Although the number of housing units is reported as a range for each alternative in Table 6-4, specific numbers within those ranges are used in this section to generate the proportionate share of each housing type and population estimates, as shown in Table 6-5.

6.2.3.1 Housing

As shown in Table 6-5, new housing units under Alternatives 1 and 3 are expected to be primarily in multi-family and mixed-use buildings (approximately 95 percent), with a smaller amount of townhomes (approximately 4- 5 percent) and limited single-family homes (less than 1 percent) included primarily as transition zones. Under Alternative 3, approximately half of the new units in the Town Center would be townhomes. The number of housing units in multi-family buildings would be less than under Alternatives 1 and 3 (approximately 30 percent) and the number of single-family homes would be greater (approximately 20 percent).

As shown, all of the action alternatives would provide a variety of housing types and choices, which is encouraged by the City Council's vision statement and the City's Comprehensive Plan. Within this context, the additional housing would not be considered an adverse impact.

Under the No-Action Alternative, single-family homes are the only housing type allowed under current Comprehensive Plan land use designations. The number of single-family homes is likely to increase, but housing types would remain constant and no new housing options would emerge.

Table 6-5. Town Center Housing Type Proportions

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Number (Percent)	Number (Percent)	Number (Percent)	Number (Percent)
Single-family	20 (< 1)	240 (20)	35 (< 1)	323 (100)
Townhomes	170 (5)	525 (48)	125 (4)	0 (0)
Mid-rise Multi-family	2,800 (80)	320 (30)	2750 (95)	0 (0)
High-rise Multi-family	500 (14)	0 (0)	0 (0)	0 (0)

6.2.3.2 Population

For the purpose of this analysis, population estimates were generated by applying assumed household sizes to numbers of single-family detached, townhomes, and multi-family units expected under each alternative. Household sizes for each of these unit types were derived from U.S. census data. Because the city of Sammamish has very few multi-family units currently, data from Issaquah and Redmond were used for multi-family assumptions. In addition, for single-family and townhomes, 100 percent occupancy was assumed, while for multi-family housing units a vacancy rate of 5 percent was assumed. Table 6-6 shows estimated population resulting from the Town Center alternatives.

As shown in Table 6-6, the Sammamish Town Center Sub-Area Plan would generate an estimated new residential population roughly between 1,200 and 4,500 above what would occur under the No-Action Alternative. As shown, Alternative 1 would generate the highest population increase followed by Alternatives 3 and 2, respectively. Under the No-Action Alternative the Town Center population could increase to approximately 975.

Table 6-6. Estimated Town Center Planning Area Population by Quadrant, 2030

	HH size	Occupancy	NW		NE		SW		SE		Total	
			Units	Pop.	Units	Pop.	Units	Pop.	Units	Pop.	Units	Pop.
Alt 1 – Commercial Focus												
Single-Family	3.0	100%	5	15	0	0	15	45	0	0	20	60
Townhouse	2.0	100%	20	40	0	0	80	160	70	0	170	200
Mid-rise	1.6	95%	1,125	1,710	700	1,064	500	760	475	722	2,800	4,256
High-rise	1.6	95%	500	760	0	0	0	0	0	0	500	760
Total			1,650	2,525	700	1,064	595	965	545	722	3,490	5,276
Alt 2 – Low-intensity												
Single-Family	3.0	100%	110	330	55	165	10	30	65	195	240	720
Townhouse	2.0	100%	170	340	110	220	145	290	100	200	525	1,050
Mid-rise	1.6	95%	220	334	0	0	100	152	0	0	320	486
High-rise	1.6	95%	0	0	0	0	0	0	0	0	0	0
Total			500	1,004	165	385	255	472	165	395	1,085	2,256
Alt 3 – Civic Focus												
Single-Family	3.0	100%	35	105	0	0	0	0	0	0	35	105
Townhouse	2.0	100%	63	126	0	0	0	0	62	124	125	250
Mid-rise	1.6	95%	530	806	840	1,277	720	1,094	760	1,155	2,850	4,332
High-rise	1.6	95%	0	0	0	0	0	0	0	0	0	0
Total			628	1,037	840	1,277	720	1,094	822	1,279	3,010	4,687
Alt 4 – No Action												
Single-Family	3.0	100%	155	465	50	150	75	225	45	135	325	975
Townhouse	2.0	100%	0	0	0	0	0	0	0	0	0	0
Mid-rise	1.6	95%	0	0	0	0	0	0	0	0	0	0
High-rise	1.6	95%	0	0	0	0	0	0	0	0	0	0
Total			155	465	50	150	75	225	45	135	325	975

6.3 Mitigation Measures

Conflicts between adjacent buildings or land uses of varying levels or intensity can be largely mitigated through site planning, building orientation, or design features. Many of these potential conflicts would also be minimized by development of design guidelines. Guidelines could include provisions to regulate the height and bulk of buildings to ensure compatible transitions from high-intensity to lower intensity land uses. Guidelines could also include: site and building lighting limits, requirements for buffer landscaping, and placement of building elements (such as delivery docks, trash compactors, garage entrances, etc.) to help control noise.

Several measures could be employed to mitigate potential impacts from new development on existing low-density residential and farm properties. Design guidelines could require buffer areas and landscaping that would separate conflicting uses. Implementation of the Sub-Area Plan could be phased to protect areas where single-family or farm uses are likely to remain. Phasing of City financed infrastructure would assist in controlling where development is prioritized and could postpone development in areas adjacent to existing sensitive land uses.

Potential external land use conflicts could be minimized by site planning which locates taller buildings in the interior of the Town Center, or uses the Town Center's physical characteristics (such as topographical features or protected natural areas) as buffers between incompatible land uses. In general, the three action alternatives are planned such that where potential conflicts are likely, land use intensity transitions to low-density residential along the edges of the Town Center area. As development occurs, however, transition areas should be reevaluated to maintain long-term functional transitions that do not create land use compatibility impacts.

The implementation strategy in a Final Town Center Sub-Area Plan could include a requirement that developers provide transition assistance for neighboring properties that would be adversely impacted by the development proposal. Transition assistance could include assistance in locating and paying for temporary relocation. It could also include public information programs that would provide neighbors with information on adjacent development proposals, such as site plans, construction schedules, and mitigation measures.

6.4 Significant Unavoidable Adverse Impacts

Under all three of the action alternatives, land use in the Town Center would significantly change over the next 25 years as the planning area develops. The current low-density suburban landscape would be replaced with an urbanized neighborhood featuring higher intensity commercial and higher density residential land uses, as well as a change in the height, bulk, and scale of development. While these changes would be significant relative to existing conditions and the No-Action alternative, they would be consistent with the policies and goals established by the City Council in the City's Comprehensive Plan and Town Center vision statement. Given this consistency, the proposed action would not be considered adverse from a land use perspective.

Chapter 7 Transportation

7.1 Affected Environment

This section describes the existing transportation conditions within the Sammamish Town Center planning area and vicinity. This includes the roadway network, traffic volumes, traffic operations, traffic safety, transit service, and non-motorized facilities.

7.1.1 Roadway Network

The site is centrally located within the City of Sammamish along the 228th Avenue SE corridor. In general, the street network serving the Town Center planning area consists of principal and minor arterials connecting to regional highways to the north and south, collectors that connect two or more neighborhoods or commercial areas, and local streets providing access and circulation within the Town Center area. Figure 7-1 illustrates the roadway functional classification within the City. Figure 7-2 illustrates the location of existing traffic signals and roundabouts.

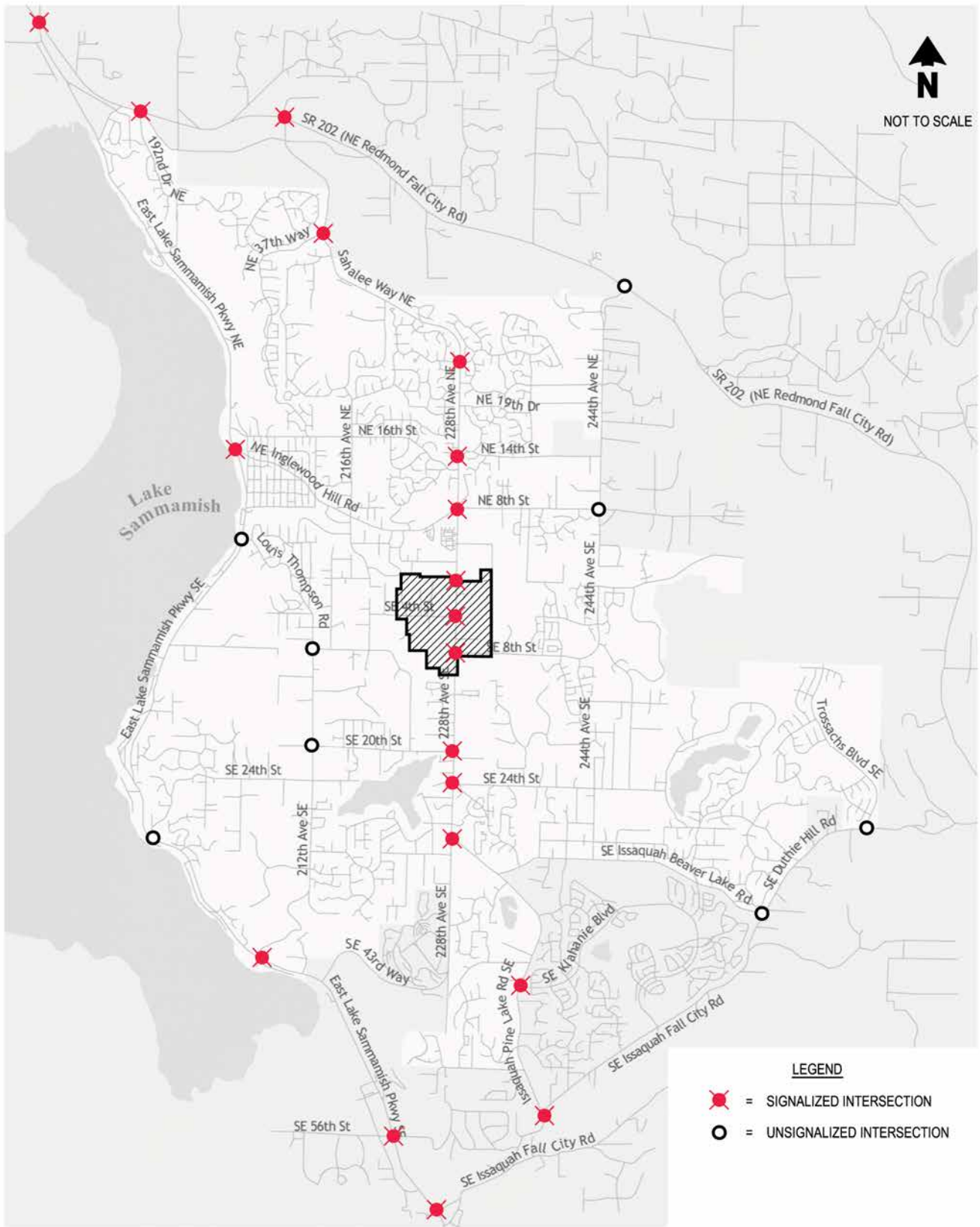
- **Principal Arterials** are high volume corridors with limited access that connect to major rural highways entering an urban area.
 - **228th Avenue** is the main north-south roadway through Sammamish and travels through the Town Center site and provides the primary access to Town Center. It has been recently widened from two to four lanes and extends from Issaquah-Pine Lake Road SE to Sahalee Way NE. The posted speed limit is 40 mph in the Town Center vicinity.
 - **SE 43rd Way** connects the southern terminus of 228th Avenue SE to E Lake Sammamish Parkway and allows Town Center traffic to access Interstate 90. It is a two-lane roadway with a posted speed limit of 35 mph.
 - **Issaquah-Pine Lake Road** connects 228th Avenue SE to SE Issaquah-Fall City Road. It is a two-lane roadway with left-turn pockets and a posted speed limit of 35 mph and provides access to Issaquah Highlands and I-90.
 - **Sahalee Way NE** connects the northern terminus of 228th Avenue NE to SR 202 and allows Town Center traffic to access the regional roadway system. The roadway has one travel lane in each direction with left-turn pockets. The posted speed limit is 45 mph.
- **Minor Arterials** are high volume corridors that connect principal arterials and highways to neighborhood areas.
 - **244th Avenue NE** connects the neighborhoods in eastern Sammamish and allows Town Center traffic to connect to SR 202 northeast of the site. The roadway has one travel lane in both the northbound and southbound directions and will include a connection between SE 8th Street and NE 8th Street with completion of the City's planned improvement.

- **NE 8th Street** provides an east west connection between 228th Avenue and 244th Avenue. It is a two-lane east/west roadway with a posted speed limit of 35 mph.
 - **SE 8th Street** connects between 228th Avenue SE and 244th Avenue SE and provides the primary access for the southeast portion of Town Center. It is a two-lane east/west roadway with a posted speed limit of 30 mph.
 - **NE Inglewood Hill Road** connects between 228th Avenue and NE 8th Street, and E Lake Sammamish Parkway. It allows Town Center traffic to connect to E Lake Sammamish Parkway. It is a two-lane east/west roadway with a posted speed limit of 35 mph.
 - **E Lake Sammamish Parkway** travels along the east side of Lake Sammamish and the western edge of the City of Sammamish. This roadway provides a north-south connection between SR 202 and I-90 allowing north-south access to the regional system. This is primarily a two-lane roadway with a posted speed limit of 35 mph within the City.
- **Collectors** are roadways that connect two or more neighborhoods or commercial areas and provide a high degree of property access. These roadways collect traffic and carry it to the arterial roadway system.
 - **SE 4th Street** connects between 228th Avenue SE and 218th Avenue SE and travels through the western portion of the Town Center. It is a two-lane east/west roadway with a posted speed limit of 25 mph. This roadway would serve as the primary access for the western portion of Town Center.
 - **218th Avenue SE** connects SE 4th Street and SE 8th Street immediately west of the Town Center. It is a two-lane roadway with a posted speed limit of 25 mph.
 - **SE 8th Street** connects between 218th Avenue SE and 212th Avenue SE and provides the primary access for the west portion of Town Center.
 - **212th Avenue SE** connects between Louis Thompson Road and E Lake Sammamish Parkway and would serve southbound traffic from the western side of the Town Center. It is a two-lane north/south roadway with a posted speed limit of 35 mph.
 - **Louis Thompson Road** connects northbound traffic from the western side of the Town Center to E Lake Sammamish Parkway. It is a two-lane east-west roadway.

7.1.2 Traffic Volumes

Existing (2006) average daily traffic volumes are shown in Figure 7-3. This illustrates the daily traffic volumes for the year 2006 for the entire City roadway network.

The highest traffic volumes occur on arterial roadways including 228th Avenue, SE 43rd Way, Issaquah-Pine Lake Road, E Lake Sammamish Parkway, and Sahalee Way NE. Volumes on each of these roadways are typically 10,000 vehicles per day (vpd) or greater. Of these roadways, the greatest volumes are on the southern end of 228th Avenue SE (~26,000 vpd) and the northern end of E Lake Sammamish Parkway (~18,000 vpd). Collectors within the City typically carry less than 8,000 vpd.



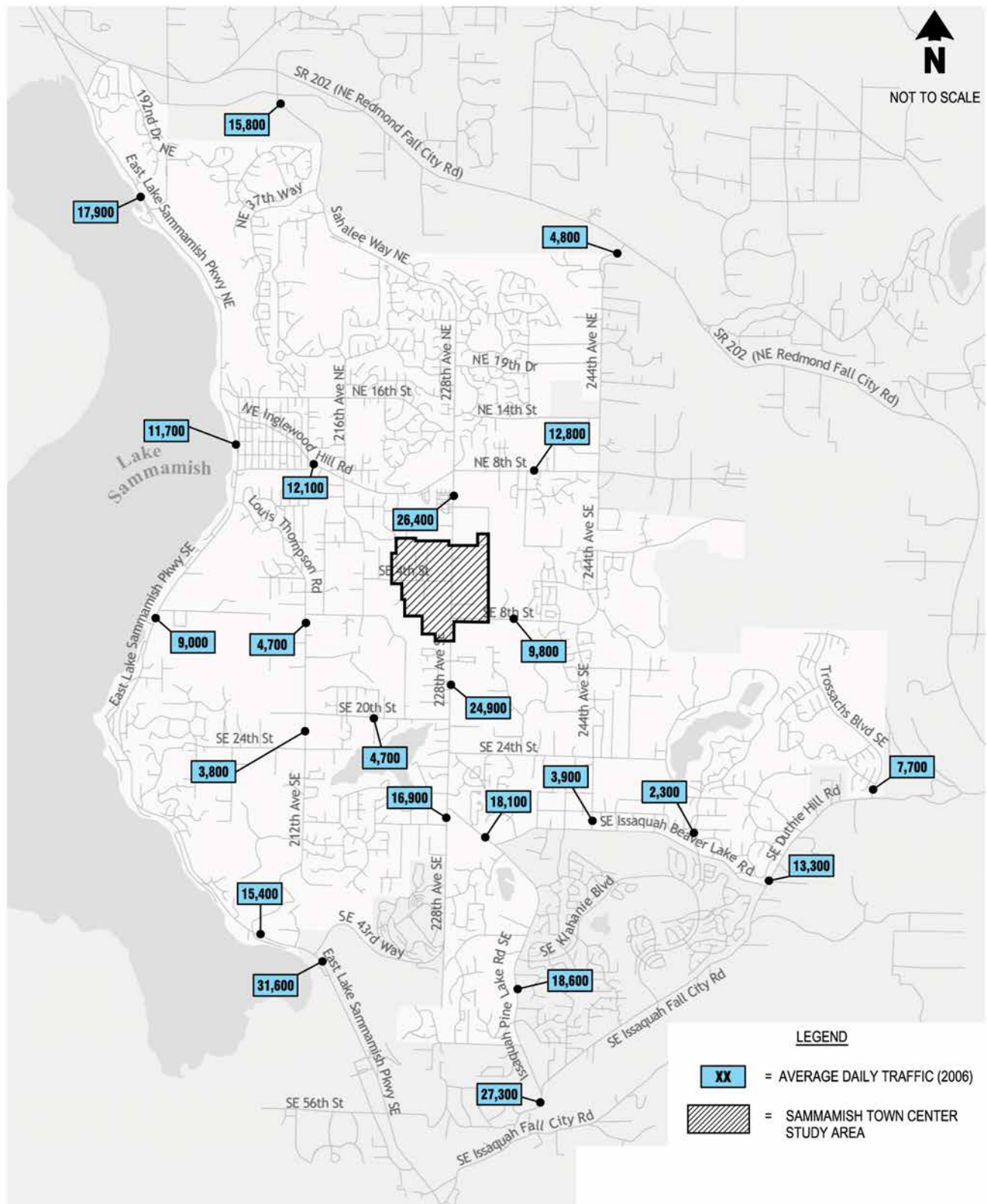
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 SOURCE: The Transpo Group, 2007; City of Sammamish Comprehensive Plan, 2003.

FIGURE 7-2
EXISTING TRAFFIC SIGNAL LOCATIONS
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



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FIGURE 7-3
EXISTING TRAFFIC VOLUMES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

7.1.3 Traffic Operations

Traffic operations for the major intersections throughout the City are provided in this section to identify the traffic conditions of the existing system during the PM peak hour. The PM peak hour is the most heavily traveled hour of the day, when commuters are typically traveling home from work. Individual intersection levels of service were calculated at the study area intersections based on the methodology identified in the *Highway Capacity Manual* (2000), using the Synchro v.6 software.

At signalized intersections, LOS is measured in stopped delay per vehicle and is typically reported using the intersection delay and volume-to-capacity (v/c) ratio. At two-way stop-controlled intersections, LOS is measured in stopped delay per vehicle and is reported for the worst turning movement. LOS is reported for the entire intersection when it is all-way stop-controlled. At roundabouts, the Intersection Capacity Utilization (ICU) method is used to be consistent with the analysis completed in the Comprehensive Plan. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix A includes the LOS criteria and definitions.

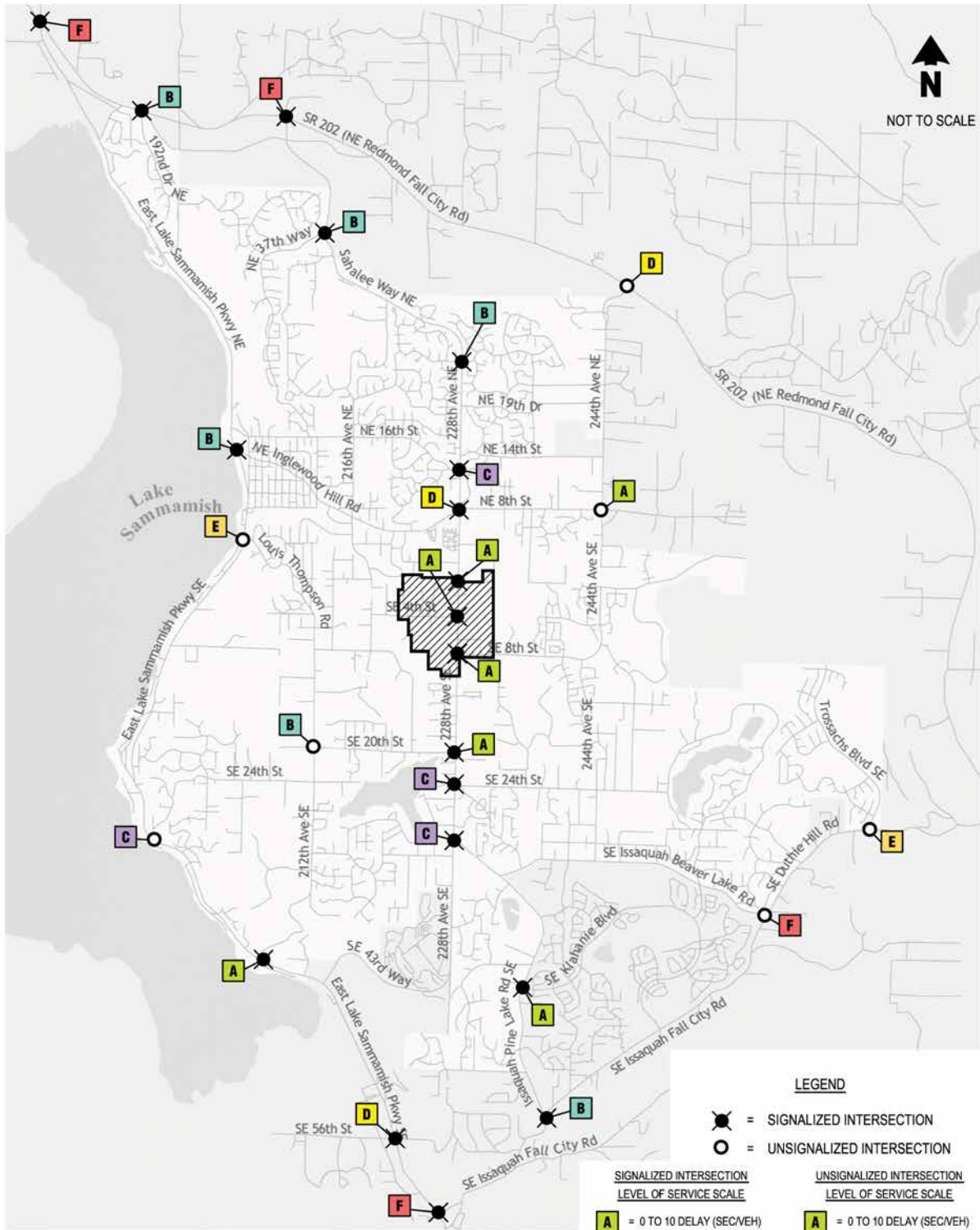
Traffic operations are summarized in Table 7-1 and are illustrated in Figure 7-4. LOS standards vary by intersection and are based upon the classification of the roadways at a given intersection. The LOS standard for each intersection is included in Table 7-1.

As shown in Table 7-1, a total of seven intersections were determined to operate below the City's LOS standard. Of these intersections four are located within the City while the remaining are located in the City of Issaquah or unincorporated King County. Of the remaining intersections included in the analysis, four operate at the City's LOS standard.

Table 7-1. Existing (2006) Intersection LOS Summary

Comp Plan No.	Intersection	LOS Standard ¹	Traffic Control ²	Delay ³ (sec)	LOS ⁴
1	228th Ave NE/NE 12th St	D	Signalized	21.0	C
2	Sahalee Way NE/NE 37th St	D	Signalized	11.0	B
4	228th Ave NE/SE 4th St	D	Signalized	4.8	A
5	228th Ave NE/SE 8th St	D	Signalized	6.7	A
6	228th Ave NE/SE 20th St	D	Signalized	9.0	A
7	228th Ave NE/SE 24th St	D	Signalized	29.9	C
8	228th Ave NE/Issaquah-Pine Lake Rd SE	D	Signalized	24.8	C
9	Issaquah-Pine Lake Rd/SE Klahanie Blvd	D	Signalized	8.4	A
10	E Lake Sammamish Pkwy/NE Inglewood Hill Rd	C	Signalized	16.1	B
11	E Lake Sammamish Pkwy/212th Way SE	C	Signalized	6.0	A
13	228th Ave NE/NE 8th St	D	Signalized	44.6	D
14	192nd Dr NE/SR 202	D	Signalized	11.6	B
17	E Lake Sammamish Pkwy/Louis Thompson Rd NE	C	TWSC	45.3	E*
18	212th Ave SE/SE 20th St	C	TWSC	13.2	B
19	SE Duthie Hill Rd/SE Issaquah-Beaver Lake Rd	D	TWSC	87.4	F*
20	Trossachs Blvd SE/SE Duthie Hill Rd	D	TWSC	49.7	E*
21	E Lake Sammamish Pkwy/SE 24th Way	C	TWSC	18.6	C
22	244th Ave NE/NE 8th St	C	AWSC	8.9	A
n/a	228th Ave NE/NE 25th Way	D	Signalized	13.3	B
n/a	228th Ave SE/E Main St	D	Signalized	1.4	A
These Intersections are Outside the City of Sammamish					
3	Sahalee Way NE/SR 202 (King County)		Signalized	153.2	F
12	Issaquah-Pine Lake Rd SE/SE Issaquah-Fall City Rd (City of Issaquah)		Signalized	14.3	B
15	244th Ave NE/SR 202 (King County)		TWSC	34.0	D
23	E Lake Sammamish Pkwy/SR 202 (City of Redmond)		Signalized	137.0	F
24	E Lake Sammamish Pkwy/SE 56th St (City of Issaquah)		Signalized	48.0	D
25	E Lake Sammamish Pkwy/SE Issaquah-Fall City Rd (City of Issaquah)		Signalized	112.3	F

1. LOS standards are based upon the functional classification of the intersection roadways. Intersections that include Principal Arterials have a standard of LOS D. Intersections that include Minor Arterials or Collectors have a standard of LOS C.
2. Intersections: TWSC=two-way stop controlled; AWSC=all-way stop-controlled
3. Delay is measured in seconds per vehicle. At S and AWSC intersections, it represents average delay for all movements in the intersection. For TWSC intersections, it represents average delay for the minor leg movements.
4. LOS is the level-of-service based on the methodology outlined in the Highway Capacity Manual (HCM 2000). (*) Denotes an LOS below the defined standard, indicating that the intersection is considered deficient.



LEGEND

- = SIGNALIZED INTERSECTION
- = UNSIGNALIZED INTERSECTION

**SIGNALIZED INTERSECTION
LEVEL OF SERVICE SCALE**

- A** = 0 TO 10 DELAY (SEC/VEH)
- B** = 10 TO 20 DELAY (SEC/VEH)
- C** = 20 TO 35 DELAY (SEC/VEH)
- D** = 35 TO 55 DELAY (SEC/VEH)
- E** = 55 TO 80 DELAY (SEC/VEH)
- F** = 80+ DELAY (SEC/VEH)

**UNSIGNALIZED INTERSECTION
LEVEL OF SERVICE SCALE**

- A** = 0 TO 10 DELAY (SEC/VEH)
- B** = 10 TO 15 DELAY (SEC/VEH)
- C** = 15 TO 25 DELAY (SEC/VEH)
- D** = 25 TO 35 DELAY (SEC/VEH)
- E** = 35 TO 50 DELAY (SEC/VEH)
- F** = 50+ DELAY (SEC/VEH)



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FIGURE 7-4
EXISTING (2002/2006) INTERSECTION LEVELS OF SERVICE
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

7.1.4 Traffic Safety

This section identifies existing traffic safety concerns that may be impacted by future Town Center development. Collision data for the major corridors within the City are summarized in Table 7-2. This information was derived from Table V-K of the City’s Comprehensive Plan, based upon data from 1999 and 2000.

Table 7-2 indicates that 228th Avenue had a higher average collision rate than the county average during 1999 and 2000. Significant widening and safety improvements have occurred on 228th Avenue SE since 2000. Therefore, updated collision data for the three major intersections within the Town Center area were provided by the City of Sammamish for the most recent three years of available data. Table 7-3 summarizes the intersection collision data for 2002-2004 at the three major intersections within the Town Center area.

Table 7-2. Corridor Collision Summary (1999 – 2000)

Corridor	From	To	Collisions (PER 1,000,000 VMT)	
			Sammamish ¹	County Average ²
228th Ave	Sahalee Way	South city limits	2.5	1.75
E Lake Sammamish Pkwy NE	187th Ave NE	212th Way SE	1.0	1.81
Inglewood Hill Rd	E Lake Sammamish Pkwy NE	228th Ave NE	1.3	1.81
Issaquah-Pine Lake Rd	228th Ave NE	Issaquah-Fall City Rd	0.7	1.75
244th Ave NE	Redmond-Fall City Rd	NE 8th St	1.5	1.81
Louis Thompson/212th Ave/212th Way SE	E Lake Sammamish Pkwy NE	E Lake Sammamish Pkwy SE	1.2	2.24
Sahalee Way	Redmond-Fall City Rd	228th Ave NE	0.4	1.75
SE 8th St	228th Ave SE	East end of road	1.5	2.24
NE 8th St	228th Ave NE	244th Ave NE	0.7	1.81

1. Based upon two years (1999 and 2000) of recorded accident data by the WSDOT.
2. Source: 2000 Accident Rates for Arterial Highways, King County Department of Transportation, Road Services Division, Traffic Engineering Section.

Collisions at the three intersections within the Town Center area are within reasonable limits and do not indicate a traffic safety concern. As shown in Table 7-3, a general reduction in vehicle collisions is shown from 2002 to 2004, which corresponds with safety and widening improvements made along the 228th Avenue SE corridor including signalization of the intersections at E Main Street and at SE 4th Street.

Table 7-3. Intersection Collision Data Summary (2002-2004)

Location	Number of Reported Collisions			Annual Average	Collisions per MEV ¹
	2002	2003	2004		
E Main St/228th Ave SE	1	0	0	0.3	0.04
SE 4th St SE/228th Ave SE	6	1	2	3.0	0.33
SE 8th St SE/228th Ave SE	9	1	6	5.3	0.50

1. MEV = Million Entering Vehicles.

7.1.5 Transit Service

King County Metro provides all of the transit service to the City of Sammamish. There are three routes that currently provide service along 228th Avenue SE, and as a result would serve the Town Center. They are listed below. Figure 7-5 shows the transit routes.

Route 216 provides weekday peak hour service from Sahalee Way to Pine Lake, Issaquah, Mercer Island, and downtown Seattle. This route provides five AM peak routes out of the City and five PM peak routes into the City with 30-minute headways each weekday.

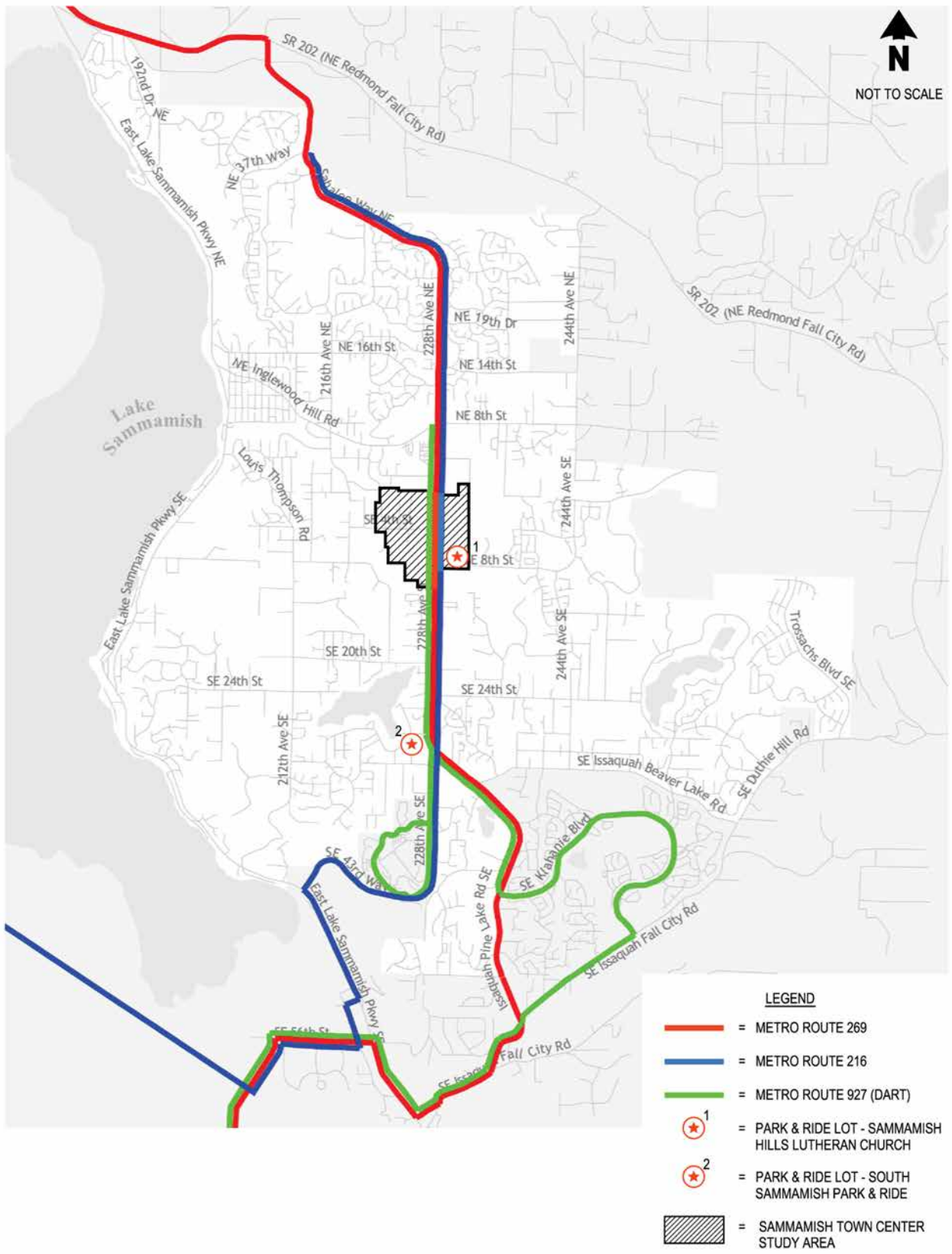
Route 269 provides weekday peak hour service from Issaquah Park & Ride, Issaquah Highlands Park & Ride, both Sammamish Park & Rides, Bear Creek Park & Ride, and Overlake Park and Ride. This route provides 50 to 70-minute AM and PM peak service headways on weekdays.

Route 927 provides weekday and Saturday service from Providence Point or NE 8th Street on Sammamish Plateau to Pine Lake, Issaquah Park & Ride, and downtown Issaquah. This route provides one to two-hour service headways Monday through Saturday for most of the day. Route 927 also provides a Dial A Ride Transit (DART) service for the Issaquah and Lake Sammamish Plateau areas.

In addition to these three routes, two Park & Ride lots are located within the City. The first is located at the Sammamish Hills Lutheran Church, and the South Sammamish Park & Ride is located near the intersection of 228th Avenue SE and Issaquah-Pine Lake Road.

7.1.6 Non-Motorized Facilities

The 228th Avenue corridor between SE 20th Street and NE 8th Street has 6-foot-wide sidewalks on the west side and 12-foot-wide bike and pedestrian trail on the east side. A landscaped strip is provided between the curb and sidewalk/trail. Within this corridor, signalized intersections have crosswalks with push-button controls. Curb and sidewalk are provided within a short distance of 228th Avenue SE on both E Main Street and SE 4th Street, after which both roads do not have sidewalks. Curbs and sidewalks are also provided along SE 8th Street in the vicinity of the Town Center area. Most other roadways near the Town Center area, with the exception of SE 8th Street, do not have many non-motorized amenities such as bike lanes or sidewalks.



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FIGURE 7-5
 EXISTING (2002) TRANSIT SERVICE
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

7.2 Impacts

This section identifies projected transportation impacts of the four land use alternatives. This includes the three action alternatives (Alternatives 1-3) and a no-action alternative (Alternative 4). The No-Action Alternative provides a baseline for comparing the traffic operational impacts from the three action alternatives.

The long-term future horizon year analysis of the City’s roadway network utilized the City’s travel demand forecasting model. The City’s travel forecast model was updated and used to systematically compare the Town Center land use alternatives. The model is used to develop traffic forecasts based on changes in land uses and improvements to the transportation system. The model was set up to forecast weekday PM peak hour traffic volumes for 2030 (the planning horizon) at all major roadways within the City and regional connections serving the City. Utilizing the model provides consistency with the Comprehensive Plan. Some modifications were made to the operational analyses to account for updated signal timing plans along 228th Avenue SE and revised intersection geometry, where known.

7.2.1 PM Peak Hour Trip Generation & Travel Patterns

The assessment of the amount of vehicular traffic that each alternative would generate was based on the land use quantities estimated from the Town Center land use scenarios described in Chapter 2, The Description of the Alternatives, and shown in Figures 2-6 through 2-8. Estimates for the No-Action Alternative were based on current Comprehensive Plan land use designations.

The trip generation estimates were derived from the City’s travel demand forecasting model and are consistent with the trip rates and methodology used in preparing the City’s Transportation Element of the Comprehensive Plan. This provides a consistent evaluation of trip generation across all the alternatives. The model also accounts for the production and attraction of trips between land uses. This is broken down into three types of trips as identified below:

1. Vehicular trips that would travel between uses within the Town Center planning area,
2. Vehicular trips that would occur between the Town Center and other areas within the City of Sammamish, and
3. Vehicular trips that would occur between the Town Center and locations outside of the City of Sammamish limits.

Table 7-4 compares the PM peak hour trip generation estimates for each of the four alternatives. This includes a summary of the three trip types described above.

Table 7-4. Sammamish Town Center PM Peak Hour Trip Generation Summary

Trip Type	Trip Generation Area	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Trips	Percent	Trips	Percent	Trips	Percent	Trips	Percent
1.	Connects Within Town Center	1,370	24%	380	15%	870	22%	10	2%
2.	Connects Within Sammamish	2,600	46%	1,560	60%	1,980	51%	320	78%
3.	Connects External to City	1,710	30%	650	25%	1,070	27%	80	20%
<i>Total Gross Trips</i>		5,680	100%	2,590	100%	3,920	100%	410	100%

As shown in Table 7-4, the Town Center planning area is estimated to generate approximately 400 gross PM peak hour trips in the No-Action Scenario. Alternatives 1-3 are estimated to generate approximately 2,600 – 5,700 gross PM peak hour trips. The trip generation estimates are directly related to the land uses included in each alternative, with the more intensive land use scenarios (Alternative 1 and 3) generating the highest levels of traffic.

7.2.1.1 Alternative 1 Trip Generation & Travel Patterns

Alternative 1 would generate the highest levels of traffic as it has the greatest density and level of development. This development alternative includes a large quantity of mixed-use development. Mixed-use developments encourage internal trips and provide for more pedestrian and non-motorized activity among the uses. This is shown in the calculations by having the highest percentage of trips occurring within the Town Center. In addition, Alternative 1 would have the most traffic generated to/from outside the City as development would be large enough to serve and attract patrons from outside City limits.

The majority of traffic traveling to/from outside the Town Center for Alternative 1 would travel along 228th Avenue SE with more traveling to/from the south (40 percent) than the north (30 percent). The remaining external trips would travel to/from the east and west along SE 4th Street and SE 8th Street, respectively. A greater amount of the non-228th Avenue SE traffic would travel to/from the west on SE 4th Street (20 percent). Of the traffic heading west on SE 4th Street, approximately half would ultimately be coming to/from the north and half to/from the south. This alternative has the highest percentage of trips heading to the south toward I-90 and the regional roadway system.

7.2.1.2 Alternative 2 Trip Generation & Travel Patterns

Alternative 2 would generate the least amount of traffic of the three action alternatives, with less than half of that generated under Alternative 1 and two thirds of that generated under Alternative 3. This reflects the lower intensity of land uses included in the alternative. Alternative 2 has the highest percentage of trips that would remain within the City of Sammamish due to providing smaller commercial and civic uses that would primarily serve the local community. This alternative also has a relatively low percentage of internally captured trips since the mix of uses does not foster as much internal interaction as the higher density land uses would.

Similar to all alternatives, the majority of traffic traveling to/from outside of the Town Center for Alternative 2 would travel along 228th Avenue SE. However, of the external trips traveling on 228th Avenue SE, the majority would travel north (30 percent) as opposed to the south (25 percent). This differs from Alternative 1 due to having more locally focused land uses that would not attract as much traffic from outside the City limits. The lower quantity of retail would have a more localized attraction whereas a greater quantity of retail would draw from a regional area. Of the remaining external trips, the majority would travel to/from the west on SE 4th Street (30 percent). Approximately half of the traffic heading west on SE 4th Street would ultimately be traveling to/from the north and half to/from the south.

7.2.1.3 Alternative 3 Trip Generation & Travel Patterns

Trip generation for Alternative 3 falls between Alternatives 1 and 2, which correlates with the quantity of development falling between Alternatives 1 and 2. In addition, the percentage of trips within each destination category (Town Center, within Sammamish, external) also fall between Alternatives 1 and 2.

Travel patterns for Alternative 3 are similar to Alternative 2 with a slightly larger percentage of trips traveling on 228th Avenue SE (35 percent to/from the north, 30 percent to/from the south) and 25 percent traveling to/from the west on SE 4th Street. Of the traffic heading west on SE 4th Street, approximately half would ultimately be traveling to/from the north and half to/from the south. As with Alternative 2, the lower quantity of commercial/retail and higher quantity of civic land uses provide for more of a localized attraction to the surrounding community and less to the regional transportation system.

7.2.1.4 Alternative 4 (No-Action) Trip Generation & Travel Patterns

The No-Action Alternative includes the land use designations assumed in the Comprehensive Plan (2003a), which is primarily single-family. The No-Action Alternative would have the lowest level of trip generation; less than 15 percent of the trips generated in Alternative 2 (the next lowest trip generating alternative). The No-Action Alternative also would have the highest percentage of trips that travel outside the Town Center area, but within Sammamish (80 percent) and would have very few trips internally captured. This is due to the lack of retail and office components that foster the internalization of trips. As with Alternatives 2 and 3, the land uses for this alternative are more localized to the surrounding community with less impact to the regional transportation system.

7.2.2 Traffic Volumes

Traffic volume forecasts for each alternative were provided through use of the City's travel demand forecast model. The traffic volumes derived from the forecasting model for each alternative are shown in Figures 7-6 through 7-9. In general the corridors immediately surrounding the Town Center area would have the highest levels of traffic volume growth.

The greatest increase in traffic would occur along SE 4th Street, 218th Avenue SE, and SE 8th Street west of the project site. This corridor is projected to carry approximately 9,200 daily trips under Alternative 1, 6,400 daily trips under Alternative 2, 7,000 daily trips under Alternative 3 and 1,300 daily trips under Alternative 4 (No-Action).

The 212th Avenue SE corridor is currently projected to carry approximately 3,800 daily trips under the No-Action scenario and would increase to 11,800 daily trips under Alternative 1, 6,400 daily trips under Alternative 2, and 7,000 daily trips under Alternative 3. This indicates that vehicular traffic to/from the Town Center area would be utilizing the corridors to the west as relief from the congested areas along 228th Avenue SE.

The 228th Avenue SE corridor just north of SE 20th Street is projected to carry approximately 27,900 daily trips under the No-Action scenario and would increase to 38,100 daily trips under Alternative 1, 29,400 daily trips under Alternative 2, and 31,400 daily trips under Alternative 3.

The SE 8th Street corridor east of 228th Avenue SE is projected to carry approximately 9,500 daily trips during under the No-Action Alternative and would increase to 12,600 daily trips under Alternative 1, 10,100 daily trips under Alternative 2, and 11,300 daily trips under Alternative 3.

7.2.3 Traffic Operations

Traffic operations for all of the alternatives were compared through evaluation of the impacts to both intersections and roadway segments. The intersection analysis focused on evaluating the PM peak hour operations based on estimated delays. The roadway segments were evaluated based on comparing the daily volumes to the City's planned roadway capacities. The future capacities are based on those improvements that are funded and planned for in the City's 18-year Capital Facilities Plan. The methodologies for evaluating both intersections and roadways were consistent with those used in the Transportation Element of the Comprehensive Plan (2003a). With a long range horizon year (2030) and traffic volume forecasts that are significantly different from current conditions, signal timings were optimized for each individual alternative.

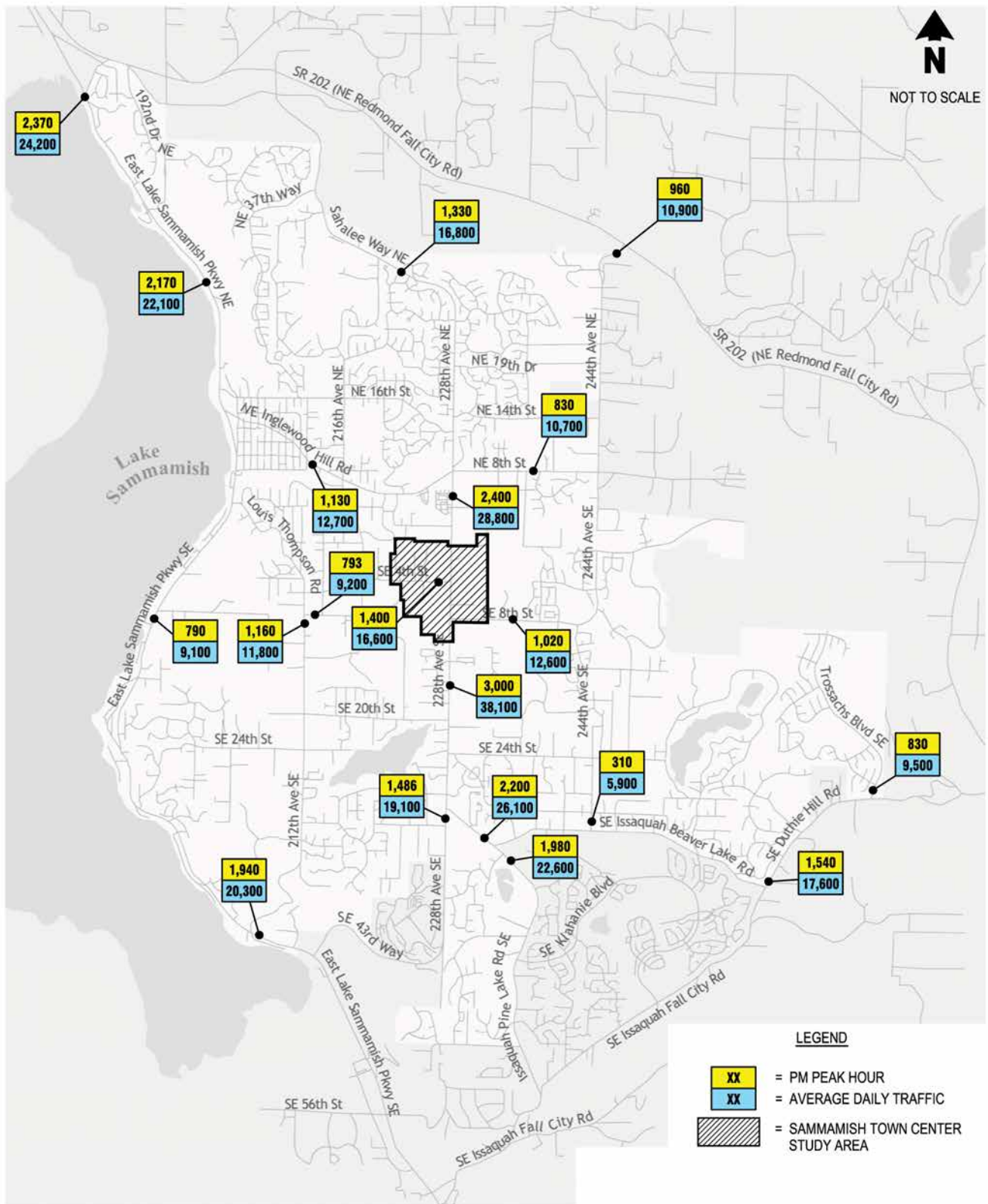
7.2.3.1 Intersection Operations

PM peak hour intersection traffic operations for each alternative are summarized in Table 7-5 and illustrated in Figures 7-10 through 7-13. The City's adopted LOS standards are shown along with the forecasted LOS operations to provide a comparison for identifying locations where potential future improvements would be needed. The City of Sammamish LOS standards are determined based on intersection control and roadway classification as described within the Comprehensive Plan. The detailed LOS worksheets are included in Appendix B.

Several intersections that are located outside of the City limits were included in this analysis. These locations were included since they have been identified as important intersections for accessing the City. Since these locations are outside of the City limits, coordination with adjacent jurisdictions would be required to implement any potential improvements.

In general, under all of the Town Center alternatives, traffic operations at many key individual intersections within the City would degrade slightly. Most of the intersections would operate at acceptable standards when timing plans are optimized with the exception of two or three locations within the City and two locations just outside the City limits. Intersection locations that exceeded the LOS standard by less than an average delay of 5 seconds and those that exceeded the LOS standard by more than an average delay of 5 seconds per vehicle are indicated in Table 7-5.

Intersection operations along 228th Avenue SE would generally operate at acceptable levels but some areas would have significant queuing and would potentially have long delays on some of the minor street approaches. A brief summary of forecasted operations for each alternative is provided below. The potential need for intersection improvements (beyond what is identified in the Comprehensive Plan) are described for comparison purposes in the mitigation section (section 7-3). More specific mitigation measures will be explored in the Final Environmental Impact Statement (FEIS), once a preferred alternative is selected.



SOURCE: DEA Inc.



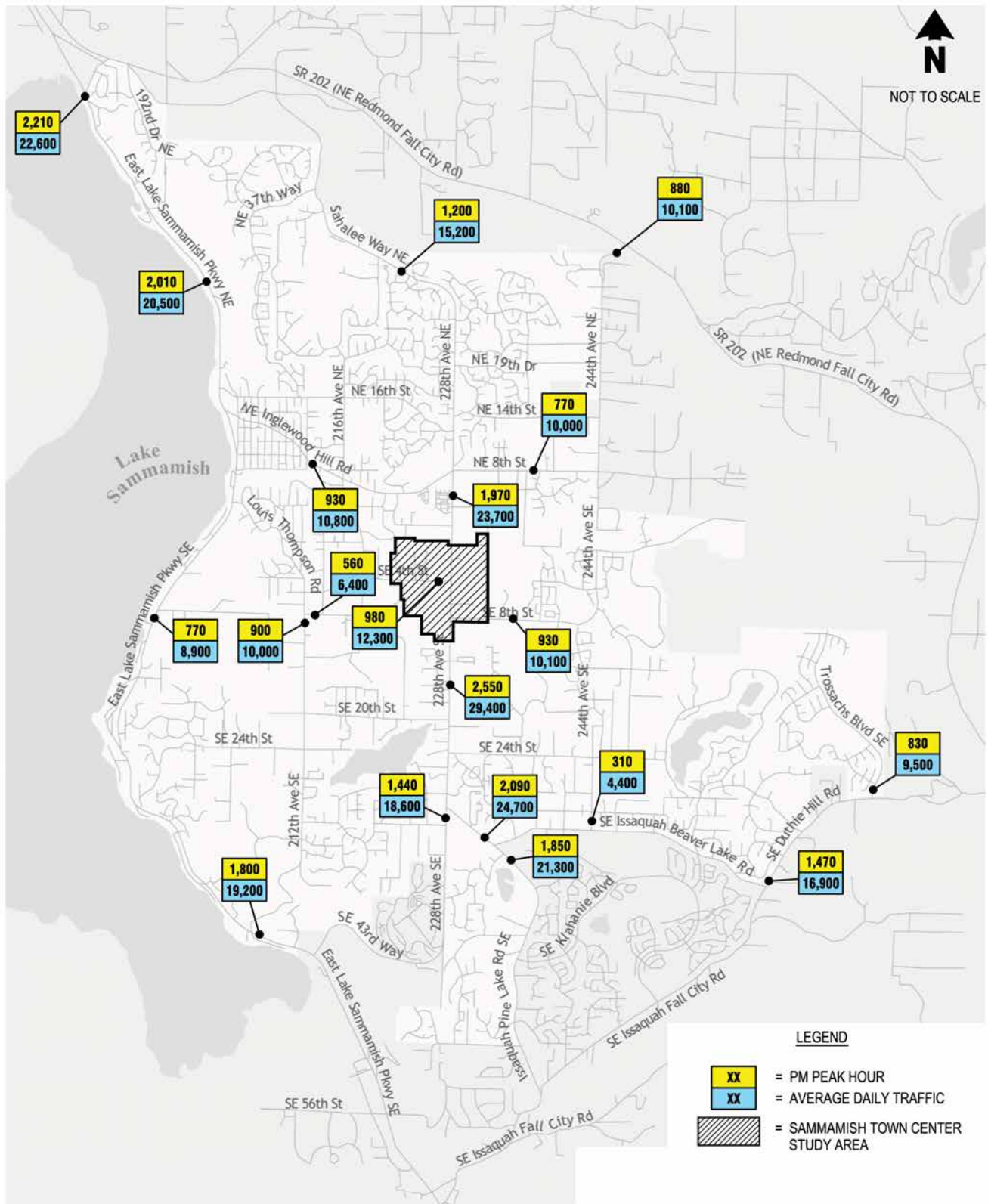
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FIGURE 7-6
 2030 ALTERNATIVE 1 TRAFFIC VOLUMES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



SOURCE: DEA Inc.



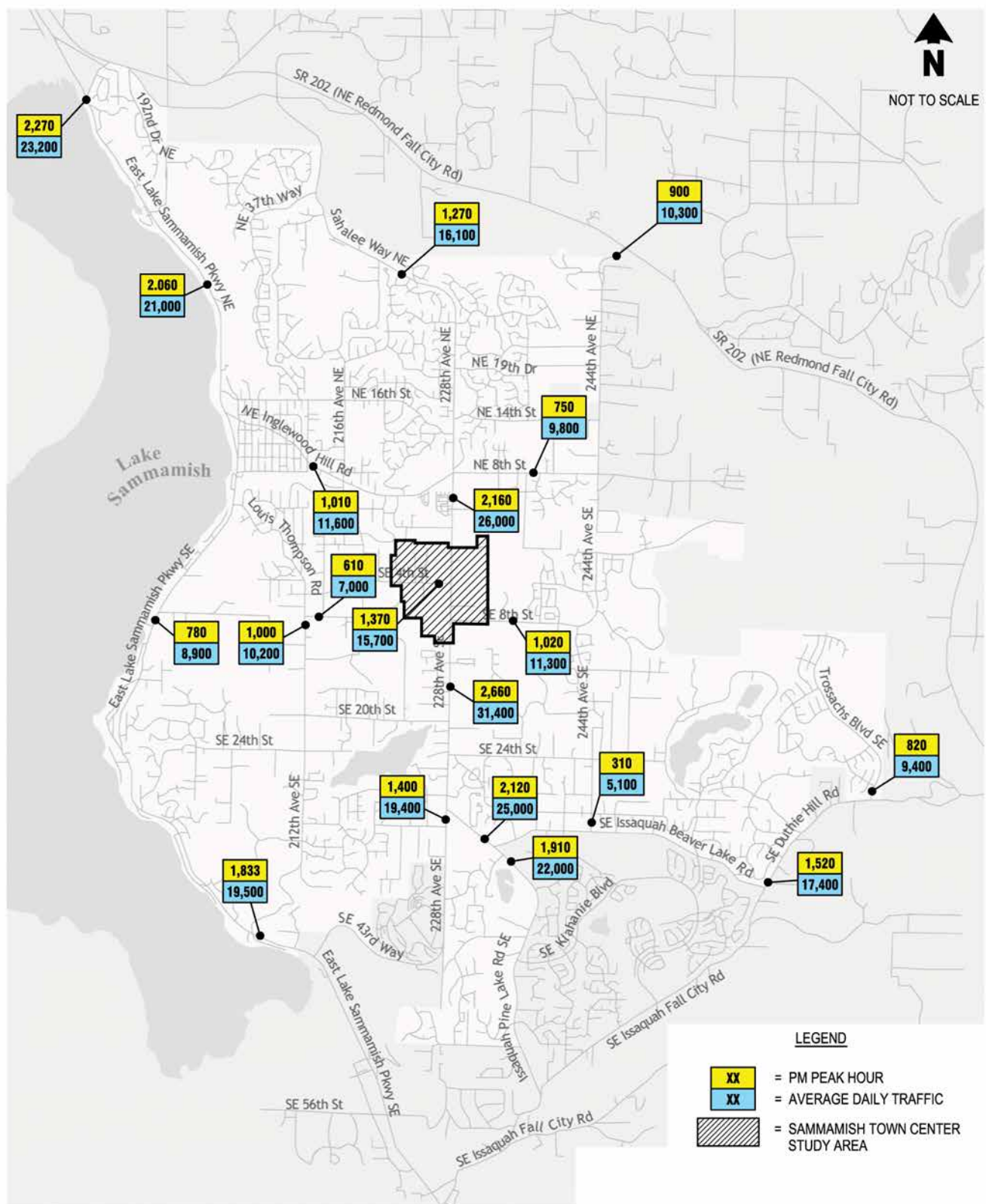
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FIGURE 7-7
 2030 ALTERNATIVE 2 TRAFFIC VOLUMES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



SOURCE: DEA Inc.



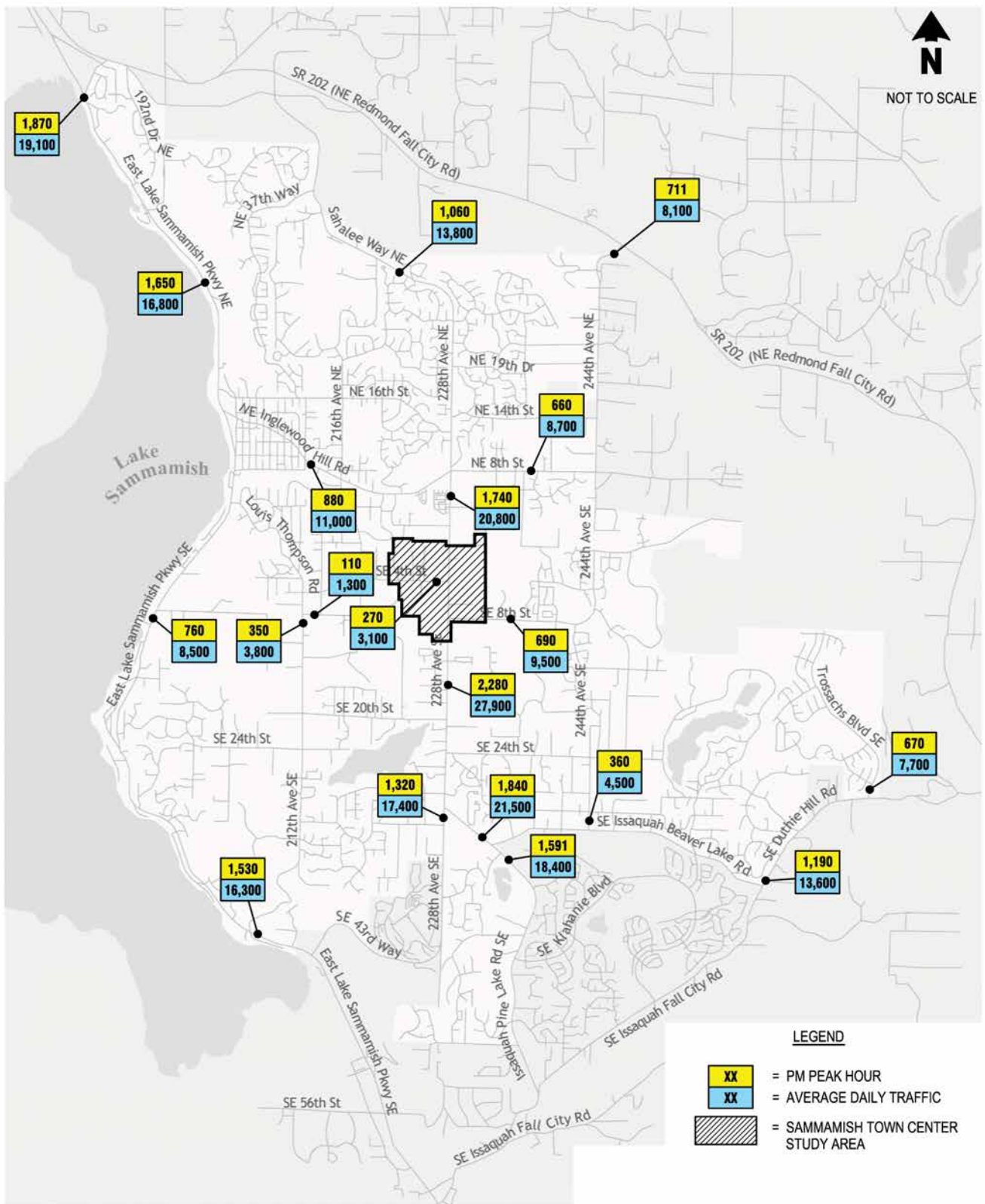
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FIGURE 7-8
 2030 ALTERNATIVE 3 TRAFFIC VOLUMES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



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FIGURE 7-9
 2030 ALTERNATIVE 4 (NO ACTION) TRAFFIC VOLUMES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

7.2.3.2 Roadway Operations

The average weekday traffic volumes for all of the roadway segments are summarized in Table 7-6 along with their future planned capacities. The future capacities are based on those improvements that are funded and planned for in the City's 18-year Capital Facilities Plan. Long range improvements identified in the comprehensive plan that are not certain of being completed or funded were not accounted for. Locations where the forecasted traffic volumes exceed the capacity thresholds are those locations where potential improvements. The locations that were less than 5 percent over capacity, those locations that were between 5 and 10 percent over capacity, and those locations that were more than 10 percent over capacity are identified in Table 7-6.

In general, all three of the Town Center action alternatives (Alternatives 1-3) would have impacts that would exceed the capacity of at least seven roadway segments.

The potential need for roadway improvements (beyond what is identified in the Comprehensive Plan) are described for comparison purposes in the mitigation section (section 7-3). More specific mitigation measures will be explored in the Final Environmental Impact Statement (FEIS), once a preferred alternative is selected.

7.2.3.3 Alternative 1 Traffic Operations

Alternative 1 Intersection Operations

Alternative 1 would generate the highest levels of traffic and, as a result, have the most congested operations. As shown in Table 7-5 and in Figure 7-14, three study intersections within the City of Sammamish are forecast to operate below the City's LOS standards:

- Issaquah-Pine Lake Road SE/SE Klahanie Boulevard (LOS E)
- 212th Avenue SE/SE 20th Street (LOS F)
- 212th Avenue SE/SE 8th Street (LOS F)

Issaquah-Pine Lake Road/SE Klahanie Boulevard would operate below the City's LOS standard due to the high northbound and southbound through volume on Issaquah-Pine Lake Road. The stop-controlled intersections of 212th Avenue SE at SE 8th Street and SE 20th Street would operate below the LOS standard due to increased traffic volumes on all intersection approaches. The locations of these intersections are identified in Figure 7-14 with potential improvements described in the mitigation section (section 7-3).

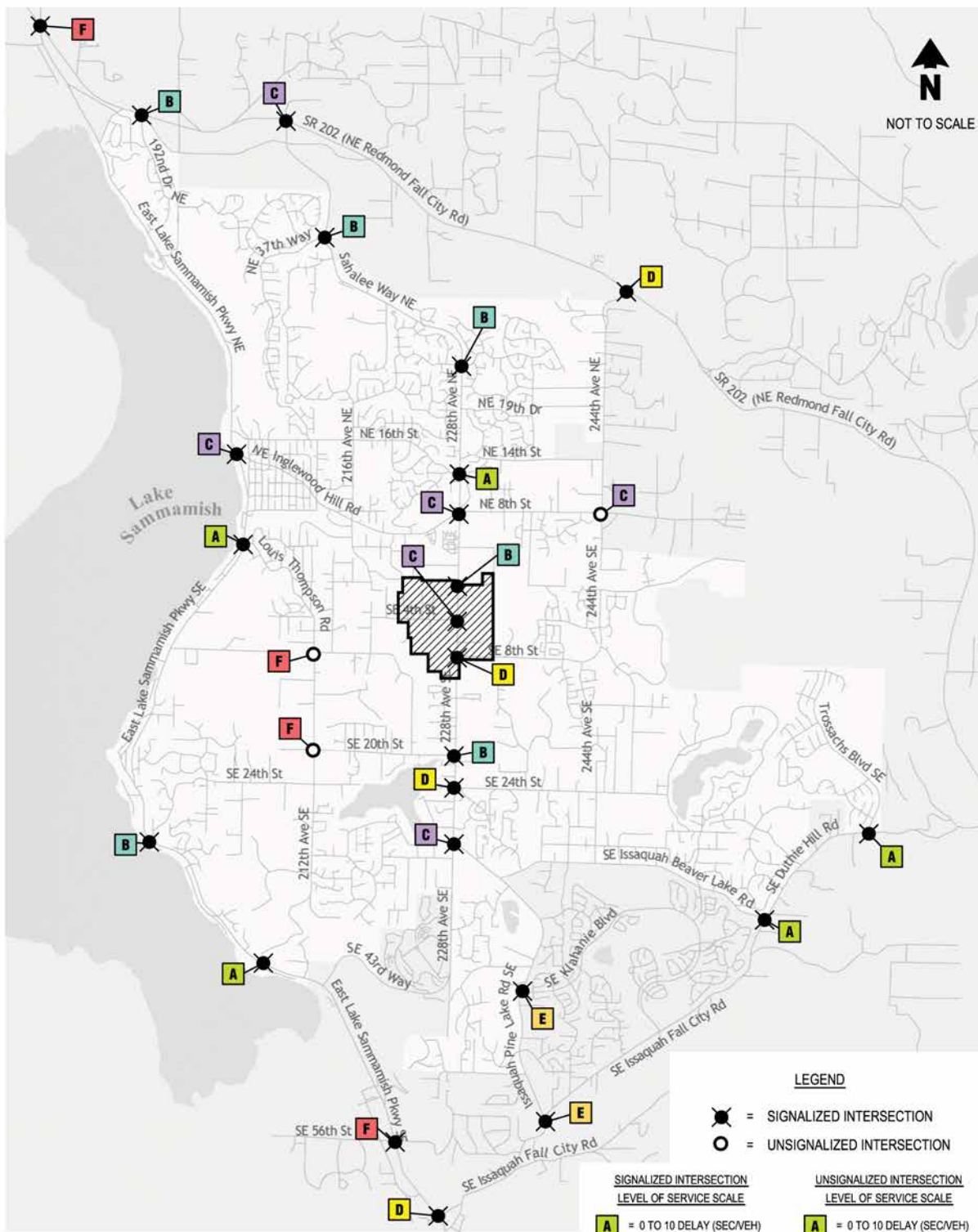
Alternative 1 also has four intersections within the City that operate at the level of service standard and three intersections located outside of the City limits (Issaquah-Pine Lake Rd SE/SE Issaquah-Fall City Rd, E Lake Sammamish Parkway/SR 202, and E Lake Sammamish Parkway/SE 56th Street) operate at LOS E or F.

Table 7-5. Sammamish Town Center PM Peak Hour LOS Summary (2030)

Comp Plan No.	Intersections Within the City of Sammamish	LOS Standard	Traffic Control	Alternative 1			Alternative 2			Alternative 3			Alternative 4 (No-Action)		
				Delay	LOS	Exceeds LOS Standard?	Delay	LOS	Exceeds LOS Standard?	Delay	LOS	Exceeds LOS Standard?	Delay	LOS	Exceeds LOS Standard?
1	228th Ave NE/NE 12th St	D	Signalized	9.3	A		9.4	A		9.4	A		10.3	B	
2	Sahalee Way NE/NE 37th St	D	Signalized	10.9	B		9.2	A		10.5	B		9.4	A	
4	228th Ave NE/SE 4th St	D	Signalized	24.9	C		21.9	C		24.9	C		7.4	A	
5	228th Ave NE/SE 8th St	D	Signalized	39.5	D		18.0	B		26.6	C		12.6	B	
6	228th Ave NE/SE 20th St	D	Signalized	18.1	B		15.3	B		15.2	B		12.2	B	
7	228th Ave NE/SE 24th St	D	Signalized	44.4	D		24.2	C		21.6	C		12.9	B	
8	228th Ave NE/Issaquah-Pine Lake Rd SE	D	Signalized	26.8	C		27.0	C		27.0	C		29.4	C	
9	Issaquah-Pine Lake Rd/SE Klahanie Blvd	D	Signalized	56.1	E	○	54.9	D		59.0	E	○	34.7	C	
10	E Lake Sammamish Pkwy/NE Inglewood Hill Rd	C	Signalized	30.7	C		16.9	B		18.8	B		9.6	A	
11	E Lake Sammamish Pkwy/212th Way SE	C	Signalized	9.4	A		9.8	A		9.5	A		9.0	A	
13	228th Ave NE/NE 8th St	D	Signalized	32.4	C		31.4	C		32.3	C		31.6	C	
14	192nd Dr NE/SR 202	D	Signalized	10.7	B		10.2	B		10.4	B		10.0	A	
17	E Lake Sammamish Pkwy/Louis Thompson Rd NE	C	Signalized	6.4	A		6.1	A		6.0	A		4.8	A	
18	212th Ave SE/SE 20th St	C	TWSC	84.7	F	●	33.9	D	●	34.8	D	●	12.1	B	
19	SE Duthie Hill Rd/SE Issaquah-Beaver Lake Rd	D	Signalized	9.1	A		7.9	A		8.1	A		6.1	A	
20	Trossachs Blvd SE/SE Duthie Hill Rd	D	Signalized	9.4	A		9.1	A		9.2	A		6.5	A	
21	E Lake Sammamish Pkwy/SE 24th Way	C	TWSC	20.1	C		20.3	C		21.8	C		24.1	C	
22	244th Ave NE/NE 8th St	C	AWSC	17.2	C		15.2	C		15.4	C		11.9	B	
N/A ¹	228th Ave NE/NE 25th Way	D	Signalized	14.2	B		13.6	B		14.0	B		13.3	B	
N/A	228th Ave SE/E Main St	D	Signalized	17.3	B		7.6	A		10.0	B		6.6	A	
N/A	212th Ave SE/SE 8th St	C	TWSC	102.6	F	●	32.2	D	●	33.6	D	●	10.4	B	
Comp Plan No.	Intersections Outside the City of Sammamish	Traffic Control	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS			
3	Sahalee Way NE/SR 202	Signalized	29.7	C	30.9	C	30.7	C	18.6	B					
12	Issaquah-Pine Lake Rd SE/SE Issaquah-Fall City Rd	Signalized	79.6	E	64.7	E	61.2	E	32.5	C					
15	244th Ave NE/SR 202	Signalized	39.7	D	36.5	D	36.9	D	16.8	B					
23	E Lake Sammamish Pkwy/SR 202	Signalized	127.6	F	114.9	F	123.5	F	85.1	F					
24	E Lake Sammamish Pkwy/SE 56 th St	Signalized	103.5	F	95.8	F	100.8	F	92.1	F					
25	E Lake Sammamish Pkwy/SE Issaquah-Fall City Rd	Signalized	39.5	D	33.9	C	34.9	C	24.9	C					



N/A = Not Applicable as these intersection were not evaluated in the 2003 Comprehensive Plan.

- Indicates intersection locations that exceeded the LOS standard by less than an average delay of 5 seconds. May be resolved by intersection optimization.
- Indicates intersection locations that exceeded the LOS standard by more than an average delay of 5 seconds.




 NOT TO SCALE

LEGEND

 = SIGNALIZED INTERSECTION
 = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE		UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE	
A	= 0 TO 10 DELAY (SEC/VEH)	A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)	B	= 10 TO 15 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)	C	= 15 TO 25 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)	D	= 25 TO 35 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)	E	= 35 TO 50 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)	F	= 50+ DELAY (SEC/VEH)



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 SOURCE: The Transpo Group, 2007; DEA Inc., 2006.

FIGURE 7-10
2030 ALTERNATIVE 1 INTERSECTION LEVELS OF SERVICE
SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
SAMMAMISH, WASHINGTON

Table 7-6. Sammamish Town Center Average Weekday Daily Traffic Summary (2030)

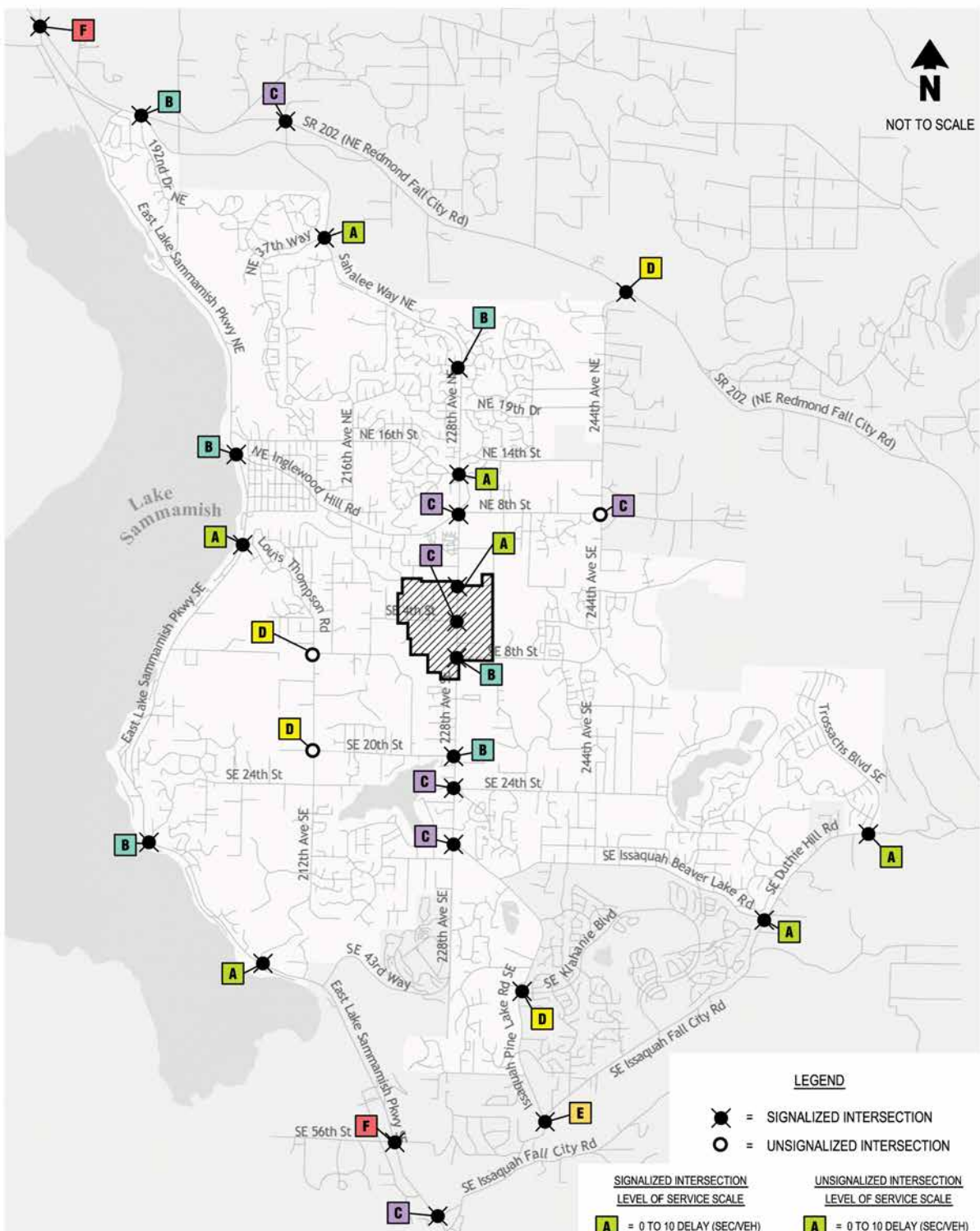
Comp Plan No.	Route Name	Segment Location	Capacity	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
				Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard
1	E Lake Sammamish Pkwy NE	s/o 187th	22,010	24,200	⊙	22,600	○	23,200	⊙	19,100	
2	E Lake Sammamish Pkwy NE	about NE 30th St	22,010	22,100	○	20,500		21,000		16,800	
3	E Lake Sammamish Pkwy NE	n/o Inglewood Hill Rd	22,010	22,100	○	20,500		21,100		16,800	
4	E Lake Sammamish Pkwy NE	s/o Inglewood Hill Rd	17,370	13,500		13,600		13,500		11,000	
5	E Lake Sammamish Pkwy NE	s/o Thomson Hill Rd	17,370	9,100		8,900		8,900		8,500	
6	E Lake Sammamish Pkwy NE	n/o SE 25th St	17,370	8,400		8,300		8,300		8,300	
7	E Lake Sammamish Pkwy NE	s/o 24th Way SE	17,370	11,500		11,600		11,600		12,000	
8	E Lake Sammamish Pkwy NE	s/o 212th Way SE	17,370	20,300	●	19,200	●	19,500	●	16,300	
9	SE 24th Way	e/o E Lake Sammamish Pkwy	9,420	1,900		2,000		2,200		2,500	
10	SE 24th St	w/o 212th Ave SE	9,420	2,500		2,400		2,300		1,800	
11	NE Thompson Hill Rd	s/o E Lake Sammamish Pkwy	9,820	6,100		6,000		5,900		3,500	
12	212th Ave SE	s/o SE 8th St	9,820*	11,800	TBD	10,000	TBD	10,200	TBD	3,800	
13	212th Ave SE	s/o SE 20th St	11,350	8,900		7,100		7,500		3,600	
14	212th Ave SE	s/o SE 32nd St	10,550	8,100		6,700		7,100		3,400	
15	NE Inglewood Hill Rd	e/o E Lake Sammamish Pkwy	16,790	12,700		10,800		11,600		11,000	
16	NE Inglewood Hill Rd	w/o 228th	17,370	11,100		10,200		11,200		11,800	
17	SE 8th St	e/o 212th Ave SE	9,420	9,200		6,400		7,000		1,300	
17	218th Ave SE	n/o SE 8th St	9,420	9,100		6,300		6,900		1,300	
18	SE 4th St	w/o 228th Ave SE	9,420	16,600	●	12,300	⊙	15,700	●	3,100	
19	SE 20th St	e/o 212th Ave SE	10,950	6,500		6,200		6,000		4,000	
20	SE 20th St	w/o 228th Ave SE	11,350	7,100		7,000		6,800		5,000	
21	Sahalee Way NE	s/o NE 37th	22,010	16,800		15,200		16,100		13,800	
22	Sahalee Way NE	n/o NE 25th	16,790	14,400		12,700		13,600		10,900	
23	228th Avenue SE	n/o NE 12th St	17,370*	20,800	TBD	18,400	TBD	19,600	TBD	16,200	
24	228th Avenue SE	s/o NE 8th St	34,950	28,800		23,700		26,000		20,800	
25	228th Avenue SE	s/o SE 8th St	34,950	38,100	⊙	29,400		31,400		27,900	
26	228th Avenue SE	s/o SE 20th St	34,950	39,900	●	37,200	⊙	38,400	⊙	32,100	
27	228th Avenue SE	s/o Issaquah Pine Lake Rd	21,430	19,100		18,600		19,400		17,400	

Comp Plan No.	Route Name	Segment Location	Capacity	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
				Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard	Volume	Exceeds Capacity Standard
28	NE 8th St	e/o 228th Ave NE	21,430	10,700		10,000		9,800		8,700	
29	SE 8th St	e/o 228th Ave SE	15,390	12,600		10,100		11,300		9,500	
30	SE 24th St	e/o 228th Ave SE	10,550	6,000		5,500		5,200		4,600	
31	SE 24th St	w/o 244th Ave SE	10,550	6,700		5,100		5,600		5,200	
32	Issaquah-Pine Lake Rd SE	s/o 228th Ave SE	31,480	26,100		24,700		25,000		21,500	
33	Issaquah-Pine Lake Rd SE	s/o 32nd Way	23,170	22,600		21,300		22,000		18,400	
34	Issaquah-Pine Lake Rd SE	n/o SE 48th St	38,310	29,900		29,000		29,300		25,800	
35	244th Ave NE	uninc, s/o SR 202	15,050	10,900		10,100		10,300		8,100	
36	244th Ave NE	n/o NE 8th	15,050	10,700		9,700		10,000		7,800	
37	244th Ave NE	s/o NE 8th St	22,010	9,700		9,000		9,300		8,000	
39	244th Ave NE	s/o SE 24th	15,630	5,900		4,400		5,100		4,500	
40	SE 32nd Way	e/o Issaquah Pine Lake Rd	16,790	8,600		8,900		9,000		9,000	
41	SE 32nd St	e/o 244th Ave SE	16,790	8,800		6,900		7,700		6,200	
42	SE Issaquah-Beaver Lake Rd	w/o Duthie Hill Rd	17,950	6,400		4,700		5,400		3,800	
43	SE Duthie Hill Rd	e/o SE Issaquah Beaver Lk Rd	16,790	17,600	○	16,900	○	17,400	○	13,600	
44	SE Duthie Hill Rd	w/o Trossachs Blvd	16,790	17,000	○	16,300		16,800	○	12,900	
45	Trossachs Blvd SE	n/o Duthie Hill Rd	13,680	9,500		9,500		9,400		7,700	

* Recent capacity improvements at these road segments have not yet been entered into the City's traffic model. Capacities are actually greater than indicated in the table.

- Exceeds capacity by less than 5 percent.
- ◉ Exceeds capacity by 5-10 percent.
- Exceeds capacity by more than 10 percent.

TBD To Be Determined as the capacity will increase with the inclusion of developer improvements being completed at these locations.



LEGEND

- ⦿ = SIGNALIZED INTERSECTION
- = UNSIGNALIZED INTERSECTION

**SIGNALIZED INTERSECTION
LEVEL OF SERVICE SCALE**

- A** = 0 TO 10 DELAY (SEC/VEH)
- B** = 10 TO 20 DELAY (SEC/VEH)
- C** = 20 TO 35 DELAY (SEC/VEH)
- D** = 35 TO 55 DELAY (SEC/VEH)
- E** = 55 TO 80 DELAY (SEC/VEH)
- F** = 80+ DELAY (SEC/VEH)

**UNSIGNALIZED INTERSECTION
LEVEL OF SERVICE SCALE**

- A** = 0 TO 10 DELAY (SEC/VEH)
- B** = 10 TO 15 DELAY (SEC/VEH)
- C** = 15 TO 25 DELAY (SEC/VEH)
- D** = 25 TO 35 DELAY (SEC/VEH)
- E** = 35 TO 50 DELAY (SEC/VEH)
- F** = 50+ DELAY (SEC/VEH)



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 SOURCE: The Transpo Group, 2007; DEA Inc., 2006.

FIGURE 7-11
2030 ALTERNATIVE 2 INTERSECTION LEVELS OF SERVICE
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

Alternative 1 Roadway Operations

When evaluating the roadway capacity thresholds established by the City, eleven roadway segments are forecast to exceed the established thresholds (Table 7-6). The roadway segments exceeding the City's capacity thresholds are listed below and identified in Figure 7-14:

- E Lake Sammamish Parkway NE south of 187th Avenue NE,
- E Lake Sammamish Parkway NE about NE 30th Street,*
- E Lake Sammamish Parkway NE north of Inglewood Hill Road,*
- E Lake Sammamish Parkway NE south of 212th Way SE,
- 212th Avenue SE south of SE 8th Street, (Capacity increasing with improvements currently under construction)
- SE 4th Street west of 228th Avenue NE,
- 228th Avenue SE north of NE 12th Street, (Capacity increasing with improvements currently under construction)
- 228th Avenue SE south of SE 8th Street,
- 228th Avenue SE south of SE 20th Street,
- SE Duthie Hill Road east of SE Issaquah Beaver Lake Road,*
- SE Duthie Hill Road west of Trossachs Boulevard.*

The volumes on each of the roadway segments would exceed the daily roadway capacities by a minimum of 210 vpd and a maximum of 7,180 vpd (SE Duthie Hill Road west of Trossachs Boulevard and SE 4th Street west of 228th Avenue NE, respectively). In terms of the percentage of the available capacity, the minimum and maximum values are 1 percent and 76 percent above the planned capacities, respectively. These over capacity values are representative of the more intensive land uses included in Alternative 1.

Roadway capacity improvements are anticipated to be completed by new projects currently under construction along the roadway segments of 212th Avenue SE south of SE 8th Street and 228th Avenue SE north of NE 12th Street, which are not reflected in the current capacity. Once these improvement projects are accounted for in the capacity, these roadway segments may no longer exceed the threshold.

The roadway segments listed above with an asterisk have traffic volumes that exceed the planned capacity of the roadway by less than five percent. Traffic impacts at these locations could be more easily mitigated through other measures besides widening the roadway. With the implementation of all of the roadway improvements identified in the Comprehensive Plan, five of the roadway segments would be improved to meet the City's capacity standards. In order for all roadway segments to meet the capacity standards, additional improvements would likely require widening of these roadway segments or other measures as identified in the mitigation discussion (section 7-3).

7.2.3.4 *Alternative 2 Traffic Operations*

Alternative 2 Intersection Operations

Alternative 2 would generate the lowest levels of traffic among the action alternatives, but would still require additional improvements beyond those assumed in this analysis. As shown in Table 7-5 and in Figure 7-14, two study intersections located within the City of Sammamish would operate below the City’s LOS standards:

- 212th Avenue SE/SE 20th Street (LOS D)
- 212th Avenue SE/SE 8th Street (LOS D)

The stop-controlled intersections of 212th Avenue SE/SE 20th Street and 212th Avenue SE/SE 8th Street intersections would operate below the LOS C standard, with respectively 9 and 7 seconds of delay beyond the threshold. The locations of these intersections are identified in Figure 7-14 with potential improvements described in the mitigation section (section 7-3).

Alternative 2 also has three intersections within the City that operate at their level of service standard and three intersections located outside of the City limits (Issaquah-Pine Lake Rd SE/SE Issaquah-Fall City Rd, E Lake Sammamish Parkway/SR 202, and E Lake Sammamish Parkway/SE 56th Street) that operate at LOS E or F.

Alternative 2 Roadway Operations

When looking at the roadway capacity thresholds established by the City, seven roadway segments would exceed the established thresholds (Table 7-6). The roadway segments exceeding the City’s capacity thresholds are listed below and illustrated in Figure 7-14:

- E Lake Sammamish Parkway NE south of 187th Avenue NE,*
- E Lake Sammamish Parkway NE south of 212th Way SE,
- 212th Avenue SE south of SE 8th Street, * (Capacity increasing with improvements currently under construction)
- SE 4th Street west of 228th Avenue NE,
- 228th Avenue SE north of NE 12th Street, (Capacity increasing with improvements currently under construction)
- 228th Avenue SE south of SE 20th Street,
- SE Duthie Hill Road east of SE Issaquah Beaver Lake Road.*

Each of the segments listed above would also exceed the established capacity threshold under Alternative 1; however, under Alternative 2 the volumes would exceed the capacity to a lesser degree. SE Duthie Hill Road east of SE Issaquah Beaver Lake Road would exceed the capacity by 110 vpd, which is 1 percent of the planned capacity. SE 4th Street west of 228th Avenue NE would exceed the capacity by 2,880 vpd, which is 31 percent of the capacity. These relatively lower impacts demonstrate the less intensive land uses included under Alternative 2.

Roadway capacity improvements are anticipated to be completed by new projects currently under construction along the roadway segments of 212th Avenue SE south of SE 8th Street and

228th Avenue SE north of NE 12th Street, which are not reflected in the current capacity. Once these improvement projects are accounted for in the capacity, these roadway segments may no longer exceed the threshold.

The roadway segments listed above with an asterisk have traffic volumes that exceed the planned capacity of the roadway by less than five percent. Mitigation for these locations could be more easily mitigated through other measures besides widening the roadway. All but two of the roadway segments listed above would meet the City's roadway segment capacity standards with implementation of all improvements identified in the Comprehensive Plan. In order for all roadway segments to meet the capacity standards, additional improvements would likely require widening of these roadway segments or other measure as identified in the mitigation discussion (section 7-3).

7.2.3.5 Alternative 3 Traffic Operations

Alternative 3 Intersection Operations

The traffic impacts resulting from Alternative 3 would fall between Alternatives 1 and 2. As shown in Table 7-5 and in Figure 7-14, a total of three study intersections within the City of Sammamish would operate below the City's LOS standards:

- Issaquah-Pine Lake Road SE/SE Klahanie Boulevard (LOS E)
- 212th Avenue SE/SE 20th Street (LOS D)
- 212th Avenue SE/SE 8th Street (LOS D)

Issaquah-Pine Lake Road/SE Klahanie Boulevard would operate below the City's LOS standard due to the high northbound and southbound through volume on Issaquah-Pine Lake Road. This intersection would only operate at five seconds of average vehicle delay beyond the standard. The stop-controlled intersections of 212th Avenue SE at SE 8th Street and SE 20th Street would operate below the LOS standard due to increased traffic volumes on all intersection approaches. The locations of these intersections are identified in Figure 7-14 with potential improvements described in the mitigation section (section 7-3).

Alternative 3 also has two intersections within the City that operate at their level of service standard and three intersections located outside of the City limits (Issaquah-Pine Lake Rd SE/SE Issaquah-Fall City Rd, E Lake Sammamish Parkway/SR 202, and E Lake Sammamish Parkway/SE 56th Street) that operate at LOS E or F.

Alternative 3 Roadway Operations

When looking at the roadway capacity thresholds established by the City, eight roadway segments would exceed the established thresholds (Table 7-6) under Alternative 3. The roadway segments exceeding the City's planned capacity thresholds are listed below and illustrated in Figure 7-14:

- E Lake Sammamish Parkway NE south of 187th Avenue NE,
- E Lake Sammamish Parkway NE south of 212th Way SE,

- 212th Avenue SE south of SE 8th Street, * (Capacity increasing with improvements currently under construction)
- SE 4th Street west of 228th Avenue NE,
- 228th Avenue SE north of NE 12th Street, (Capacity increasing with improvements currently under construction)
- 228th Avenue SE south of SE 20th Street,
- SE Duthie Hill Road east of SE Issaquah Beaver Lake Road, *
- SE Duthie Hill Road west of Trossachs Boulevard *

The volumes on each of the roadway segments would exceed the planned daily roadway capacities by a minimum of 110 vpd and a maximum of 6,280 vpd. In terms of the percentage of available capacity, these minimum and maximum values are less than 1 percent, and 67 percent respectively. Both the maximum and minimum would occur at the same locations as Alternative 1.

Roadway capacity improvements are anticipated to be completed by new projects currently under construction along the roadway segments of 212th Avenue SE south of SE 8th Street and 228th Avenue SE north of NE 12th Street, which are not reflected in the current capacity. Once these improvement projects are accounted for in the capacity, these roadway segments may no longer exceed the threshold.

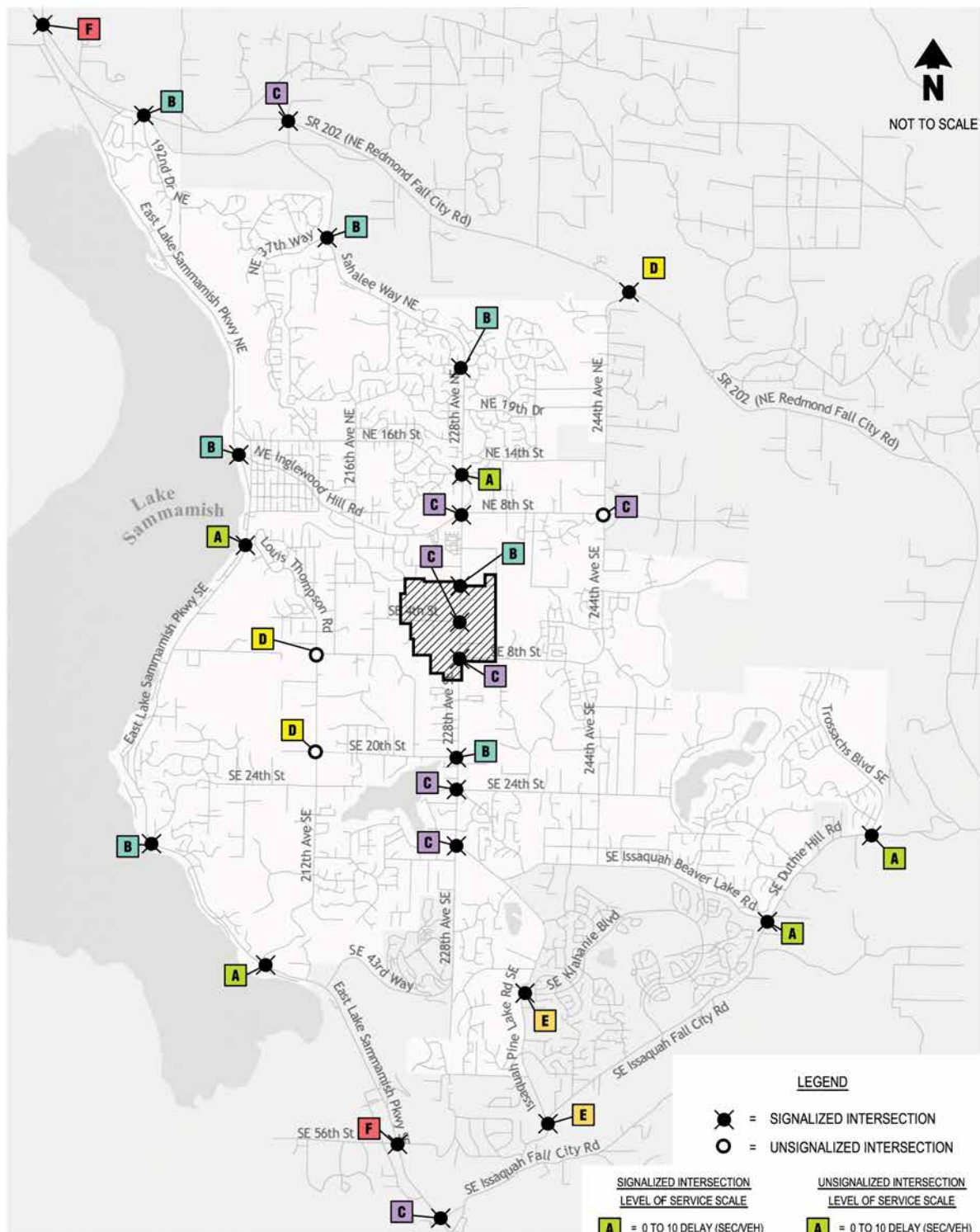
The roadway segments listed above with an asterisk have traffic volumes that exceed the planned capacity of the roadway by less than five percent. Mitigation for these locations could be more easily mitigated through other measures besides widening the roadway. All but three of the roadway segments listed above would meet the City's roadway segment capacity standards with implementation of all improvements identified in the Comprehensive Plan. In order for all roadway segments to meet the capacity standards, additional improvements would likely require widening of these roadway segments or other measure as identified in the mitigation discussion (section 7-3).

7.2.3.6 Alternative 4 (No-Action) Traffic Operations

As shown in Table 7-6 and in Figure 7-14, none of the study intersections located within the City of Sammamish are expected to operate below the City's LOS standard in Alternative 4.

Alternative 4 does have one intersection within the City that operates at its level of service standard and two intersections located outside of the City limits (E Lake Sammamish Parkway/SR 202, and E Lake Sammamish Parkway/SE 56th Street) that operate at LOS F.

Average weekday daily traffic volumes for the No-Action Alternative along the studied roadway segments are forecast to operate within the planned capacity of the roadway network (Table 7-7). This is consistent with the results identified in the Comprehensive Plan.



LEGEND

= SIGNALIZED INTERSECTION
 = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE		UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE	
A	= 0 TO 10 DELAY (SEC/VEH)	A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)	B	= 10 TO 15 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)	C	= 15 TO 25 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)	D	= 25 TO 35 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)	E	= 35 TO 50 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)	F	= 50+ DELAY (SEC/VEH)

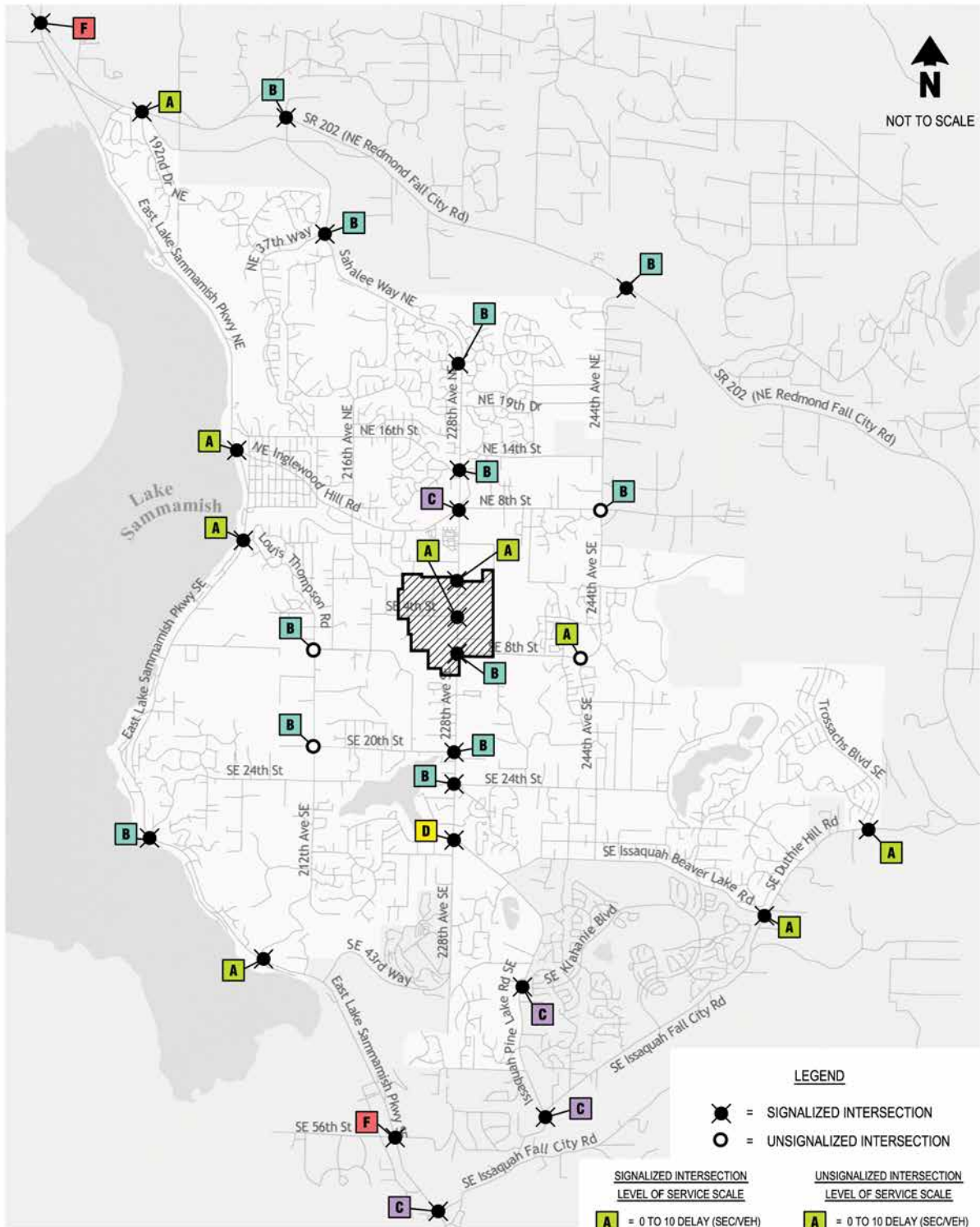


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 SOURCE: The Transpo Group, 2007; DEA Inc., 2006.

FIGURE 7-12
 2030 ALTERNATIVE 3 INTERSECTION LEVELS OF SERVICE
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON



LEGEND

- ⦿ = SIGNALIZED INTERSECTION
- = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE		UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE	
A	= 0 TO 10 DELAY (SEC/VEH)	A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)	B	= 10 TO 15 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)	C	= 15 TO 25 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)	D	= 25 TO 35 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)	E	= 35 TO 50 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)	F	= 50+ DELAY (SEC/VEH)

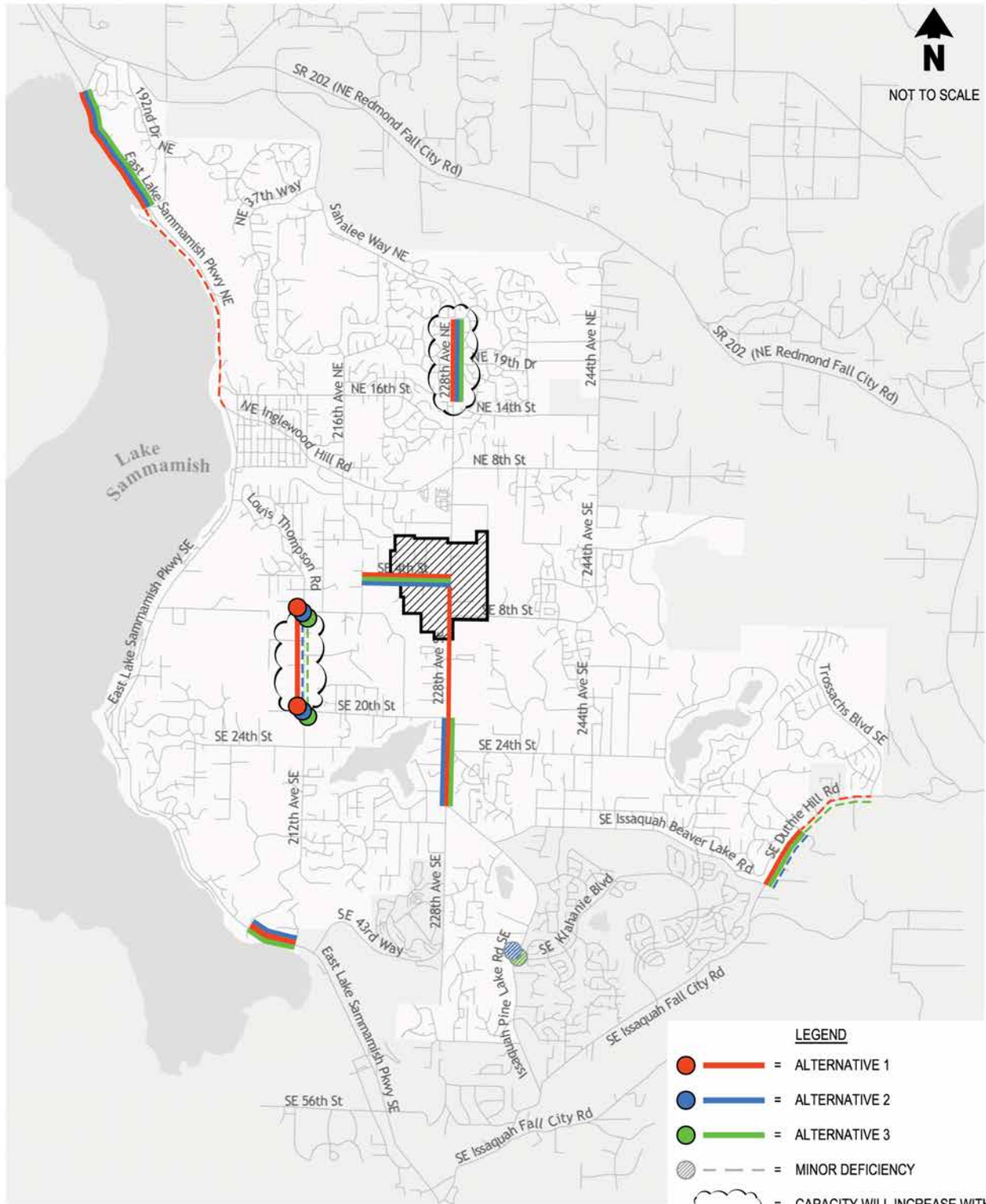


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 no warranties or guarantees regarding any aspect of data depiction.
 SOURCE: The Transpo Group, 2007; DEA Inc., 2006.

FIGURE 7-13
2030 ALTERNATIVE 4 (NO ACTION)
INTERSECTION LEVELS OF SERVICE
SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
SAMMAMISH, WASHINGTON



*Alternative 4 (No Action) has no failing Intersections or Roadway segments.

LEGEND

- = ALTERNATIVE 1
- = ALTERNATIVE 2
- = ALTERNATIVE 3
- - - = MINOR DEFICIENCY
- ☁ = CAPACITY WILL INCREASE WITH IMPROVEMENTS CURRENTLY UNDER CONSTRUCTION. ROADWAY LINK MAY NOT BE DEFICIENT.



File name: Fig07-14_2030_failing.ai
 Created/last edited by: JAB
 Date last updated: 01/25/07
 Reference: 25164eis



NOT TO SCALE

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 SOURCE: The Transpo Group, 2007; DEA Inc., 2006.

FIGURE 7-14
2030 FAILING INTERSECTION AND ROADWAY LINK LOCATIONS
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

7.2.4 Site Access & Town Center Circulation Roadways

Under any of the action alternatives, four primary roadways would provide access for the Town Center planning area. These include 228th Avenue SE, E Main Street, SE 4th Street, and SE 8th Street.

The majority of traffic coming to and from the Town Center would utilize 228th Avenue because it is the primary arterial traveling north/south through the Town Center area and through the entire City. Primary access points for the Town Center should be limited to the major signalized intersections at E Main Street, SE 4th Street and SE 8th Street. Secondary access points along 228th Avenue SE would likely be restricted to right-in/right-out only operations.

Access and local circulation would also be provided via the east-west streets of E Main Street, SE 4th Street, and SE 8th Street. These streets would provide more direct access to the local internal roadway network and have lower volumes of traffic than 228th Avenue SE under any alternative. Full turning movement access from these streets can occur through proper location and design of intersections. This would require that access locations meet City intersection spacing and sight distance standards. It is also desirable that intersections on each side of the roadway be aligned to prevent turning conflicts and other safety problems.

Each of the action alternatives (Alternative 1-3) includes a different internal roadway network to serve the various levels of development. The preferred alternative selected for evaluation in the FEIS may very well combine various elements of the land use scenarios and local circulation systems. Typically, the more roadway connectivity and options for travel that are provided, the more dispersed the impacts are on the entire roadway network. Specific roadway connections may be required to mitigate impacts to local intersections or access points within the Town Center area.

Based on a preliminary evaluation of the PM peak hour link volumes from the travel demand forecasting model, none of the access points along E Main Street, SE 4th Street, or SE 8th Street appear to have high enough peak vehicular volumes to meet signal warrants for any of the alternatives. Further evaluation for traffic control would be needed as specific development proposals occur, which would include considerations for safety and for providing controlled pedestrian crossings. The major access point along these roadways would most likely require separated turn pockets to provide for ample queuing and refuge space or the installation of roundabouts. The specific design details with regards to channelization and traffic control at the site access points will greatly depend on the specific type and quantity of land use that would need to be served. Most of these details would need to be determined and evaluated through the permitting process and cannot be designed with great detail at this stage of the planning process.

7.2.4.1 *Alternative 1 Site Access & Circulation*

Alternative 1 provides a high level of connectivity in the northwest quadrant with a new roadway connection between SE 4th Street and 228th Avenue SE. This connection would provide for added circulation options reducing impacts to the intersection of SE 4th Street/228th Avenue SE. This roadway would provide another major access point from 228th Avenue NE and a through route that could be used to bypass SE 4th Street/228th Avenue SE. This intersection is within

the heart of the Town Center and would be heavily utilized. Providing this connection would require more expenses than a typical road due to the significant topography challenges and potential impacts to wetlands.

Under Alternative 1, there are four key access points along SE 4th Street, three along 228th Avenue SE, and two along SE 8th Street. Circulation within Town Center would be accommodated by existing roadways and the new roadway between the northwest and northeast quadrants. This improved circulation would accommodate the intensity of land uses included in Alternative 1.

7.2.4.2 Alternative 2 Site Access & Circulation

Alternative 2 would provide a basic level of access and circulation with the least amount of connectivity as it provides for the lowest level of development among the action alternatives. Key access points are similar to Alternative 1, but would reduce the number along SE 8th Street to only one key access point. The Main Street access differs from Alternative 1 by only providing access to/from the east of 228th Avenue SE.

7.2.4.3 Alternative 3 Site Access & Circulation

Alternative 3 would provide for a high level of connectivity on the east side of the study area with a new north-south roadway along the eastern boundary. This type of connection would help alleviate impacts to 228th Avenue SE, provide for a more connected grid network, and aid onsite circulation. The roadway would also serve and provide access and additional circulation for areas outside of the Town Center planning area. Key access points for Alternative 3 would be similar to Alternative 2.

Circulation would be enhanced compared to Alternative 2 through the addition of a roadway along the eastern boundary but would not include the roadway connection in the northwest quadrant between SE 4th Street and 228th Avenue S as provided in Alternative 1.

7.2.4.4 Alternative 4 (No-Action) Access & Circulation

Access and onsite circulation would remain similar to the current circulations patterns with improvements made to the major roads as identified in the Comprehensive Plan. This includes improvements to Main Street, SE 4th Street and exploring north-south connections along the eastern boundary of the Town Center planning area.

7.2.5 Parking

Specific quantities for parking demands and supplies are not identified for this planning level analysis. Those quantities will be determined through project level environmental review as individual projects within the Town Center are developed. Parking supply requirements for new developments are detailed in Chapter 21A.40 of the Sammamish Municipal Code. General parking conditions for each alternative are described below.

7.2.5.1 Alternative 1 Parking

Much of the parking for Alternative 1 would be provided through a combination of surface parking lots and parking garages. This alternative would provide the densest levels of mixed-use

development; because of the density of use, parking garages could be more easily accommodated and feasible for developers to build. Accommodating parking in garages, either as part of a development or as a stand alone garage, provides for a more efficient use of land, allows for more developable area, a more pedestrian oriented environment, and often has less impact on the environment. This alternative also provides the greatest mix of land use options, which could provide for opportunities to have shared parking fields. This is desirable given that the topography will probably limit the ability to have large surface parking lots.

7.2.5.2 Alternative 2 Parking

The parking needs for the lower intensity land uses of Alternative 2 would be much lower than under Alternative 1; however, parking for commercial and higher density residential development would primarily be provided by large surface lots while lower density residential parking would be accommodated on individual residential lots and along the local streets.

7.2.5.3 Alternative 3 Parking

The parking supply for Alternative 3 would be provided through surface parking lots, parking garages, and residential driveways for individual residential lots. Under this alternative, the majority of the parking supply would be provided in surface parking lots. Opportunities for shared parking may be feasible in areas with mixed-use developments.

7.2.5.4 Alternative 4 Parking

With the majority of the Town Center area designated for single-family residential under the No-Action alternative, no surface parking lots would be needed to serve the residential parking demand. Residential driveways and some on-street parking would adequately serve the residential parking demand.

7.2.6 Non-Motorized Facilities

In general, all of the action alternatives (Alternatives 1-3) are intended to provide a comprehensive network of non-motorized facilities that would include bike lanes, recreation trails, sidewalks, and connections between developments.

All new streets would be designed to meet City standards and include sidewalks, bike lanes (where appropriate), crosswalks or walkway structures at critical areas, and landscaping to enhance the non-motorized system. There are also many opportunities to provide recreational trails and other pedestrian connections along some of the environmentally sensitive areas, which could provide key connections among the various developable areas.

The more dense and urban the development scenario, the more non-motorized facilities are likely to be used and needed. With a higher density land use alternative, such as Alternative 1, providing for a more pedestrian friendly environment and other amenities to encourage the use of non-motorized travel could provide some relief from vehicular congestion.

In the lower density alternatives, such as the No-Action Alternative and Alternative 2, the non-motorized facilities are still important but the level of non-motorized travel would be more

directed to recreational users and not provide as much relief to vehicular travel along the local streets.

Consideration will need to be given to the location and design of pedestrian crossing for the action alternatives (Alternatives 1-3). Enhanced pedestrian crossing areas are already provided along 228th Avenue SE, but crossings of SE 4th Street and SE 8th Street would need to be enhanced with development, particularly under Alternatives 1, 2, and 3. These roadways are anticipated to have a significant level of crossings, which would require special treatment to provide for safe and controlled pedestrian mobility.

7.2.7 Transit Impacts

Transit service within the City of Sammamish is limited to the north-south corridor of 228th Avenue SE. Additional transit service could be supported through the Town Center planning area for the action alternatives. Alternatives 1-3 would provide enough development to justify increased transit access, frequency, and service. This is more easily accommodated with internal roadway networks that provide enhanced roadway connectivity between developable areas. The design of the internal roadways should consider their potential use for transit through evaluating turning radii, grades, and locations of bus stops and pedestrian crossings.

7.3 Mitigation Measures

A preliminary evaluation of measures to reduce potential significant adverse environmental impacts on transportation (intersection congestion and arterial capacity) was completed at a planning level for comparing alternatives. More specific mitigation measures will be explored for a preferred alternative during the Final Environmental Impact Statement (FEIS) analysis. At this stage of the planning process, the improvements have not been evaluated in detail and no feasibility or cost analyses have been completed. In general, mitigating impacts to roadway and intersection segments can either be done through completing improvements that add capacity, through measures that reduce demand, or through adopting new policies that allow for higher levels of congestion.

7.3.1.1 Intersection Mitigation Measures

Alternative 1 Intersection Mitigation Measures

To mitigate intersection impacts the following improvements could be considered:

- 212th Avenue SE/SE 20th Street.
 - This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.
- 212th Avenue SE/SE 8th Street

- This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.
- Issaquah-Pine Lake Road/SE Klahanie Boulevard:
 - Provide additional turn lanes and modify the signal phasing.

Alternative 2 Intersection Mitigation Measures

- 212th Avenue SE/SE 20th Street:
 - This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.
- 212th Avenue SE/SE 8th Street
 - This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.

Alternative 3 Intersection Mitigation Measures

- 212th Avenue SE/SE 20th Street:
 - This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.
- 212th Avenue SE/SE 8th Street
 - This intersection could be redesigned to provide turn lanes. Future volumes should be evaluated to determine if a traffic signal or roundabout would be warranted.
- Issaquah-Pine Lake Road/SE Klahanie Boulevard:
 - Provide additional turn lanes and modify the signal phasing.

7.3.1.2 Roadway Mitigation Measures

Many of the roadway segments that fail under each action alternative can be mitigated by implementing all of the long-range improvements identified in the City’s Comprehensive Plan. In general, mitigating impacts to roadway segments can either be done through completing improvements that add capacity, through measures that reduce demand, or through adopting new policies that allow for higher levels of congestion. Some examples are listed below:

- Widen or add capacity to the failing roadway segment,
- Widen or add capacity to alternative routes that would alleviate the impacts to failing segments,
- Complete new roadway connections through the City to provide for improved connectivity and circulation that would provide alternative routes and better disperse traffic impacts,

- Implement higher levels of transportation demand management to reduce the vehicular demand on the roadway network,
- Reduce or change the mix and level of development,
- Adopt new level of service standards that allow for higher levels of congestion.

Often, traffic impacts and congestion are mitigated through a combination of the above measures. The mitigation measures would be needed upon development of the Town Center and funding of improvements can be completed through a number of mechanisms including updating the Traffic Impact Fee program, implementing Local Improvement Districts, obtaining grant funding, and through developer contributions.

Alternative 1 Roadway Mitigation Measures

As presented under the impact analysis, Alternative 1 would require the most extensive roadway segment mitigation. Five of the eleven segment deficiencies could be resolved through implementation of the improvements identified in the City's Comprehensive Plan. The remaining six segments will require a combination of widening, intersection improvements, and transportation demand management strategies. Widening improvements could be along the impacted corridors or alternative routes. The City also could choose to adopt a lower LOS standard for some of the corridors where widening is not feasible or desired.

Alternative 2 Roadway Mitigation Measures

Alternative 2 would require the least amount of mitigation for roadway segment impacts. All but two of the seven segments that are below the City's standard under this alternative could be mitigated through implementation of the Comprehensive Plan improvements. The remaining two segments will require a combination of widening, intersection improvements, and transportation demand management strategies. Widening improvements could be along the impacted corridors or alternative routes. The City also could choose to adopt a lower standard for some of the corridors where widening is not feasible or desired.

Alternative 3 Roadway Mitigation Measures

Mitigation of road segment impacts under Alternative 3 would be similar to Alternatives 1 and 2. All but three of the eight corridors below the City's standards would be resolved with the previously identified Comprehensive Plan improvements. The other segments could be mitigated with widening and other improvements to these corridors or alternative corridors that could shift traffic away from the impacted corridor. Reducing peak hour travel demands also would help mitigate the impacts. The City also could modify the standards under Alternative 3.

7.4 Significant Unavoidable Adverse Impacts

The corridors of E Lake Sammamish Parkway NE (south of 187th Avenue SE) and 228th Avenue SE (south of SE 20th Street) have traffic volume increases in each of the action alternatives (Alternatives 1-3) that would exceed the City's capacity thresholds even with implementing all roadway improvements identified in the Comprehensive Plan. These could be

considered significant unavoidable adverse impacts if widening or other capacity improvements are not feasible or desirable.

Recently, the City of Sammamish has adopted a policy to limit widening of major arterials beyond five lanes to ensure pedestrian friendliness. This includes the roadway segment of 228th Avenue SE (south of SE 20th Street), which would require other system measures besides widening of the corridor to mitigate impacts.

Chapter 8 Air and Sound

8.1 Affected Environment

This section discusses the existing environmental health conditions within the Town Center planning area, primarily sound and air quality. This section also provides an overview of the agencies and regulations that govern sound and air-quality in the study area.

8.1.1 Sound

When sounds are unpleasant or disturbingly loud, they are usually considered “noise.” Sound is any change in air pressure that the human ear can detect. Sound ranges from barely perceptible to levels that cause hearing damage. In general, the greater the change in air pressure, the louder the sound. Sound is measured in terms of loudness and frequency. The unit used to measure the loudness of sound is called a decibel (dB). A range from 0 to 120 dB is the typical range of human hearing. To account for the human ear’s sensitivity to different sound frequencies, the dB measurement scale is adjusted to provide an accurate measure of what the human ear can actually hear. When the adjusted dB scale is used, these measures are referred to as the A-weighted decibel scale, or dBA.

Normal human conversation ranges between 44 to 65 dBA when people are about 3 to 6 feet apart. The smallest change in sound level that a human ear can perceive is about 3 dBA. For most people, each 10 dBA increase in sound seems twice as loud, while a 10 dBA decrease in sound levels is perceived to be half as loud. The point at which sound begins to harm hearing is 70 dB (USEPA, 1974).

Human response to sound varies from person to person. Some key factors that can influence an individual’s response include the loudness, the frequency, the amount of background sound present, and the nature of the activity that is being affected by the sound. As stated previously sounds that are unpleasant, disturbingly loud, or disruptive are considered “noise.”

Community sound (also called environmental noise, residential noise, or domestic noise) is defined as sound emitted from all sources except sound at the industrial workplace (World Health Organization, 1999). Primary sources of community sound include road, rail, and air traffic; industries; construction and public work; and the neighborhood. The main indoor sources of noise sound are ventilation systems, office machines, home appliances, and neighbors. In residential areas, noise is generated from mechanical devices (e.g., heat pumps, ventilation systems, and traffic), as well as voices, music, sounds generated by neighbors (e.g., lawn mowers, vacuum cleaners, and other household equipment, music, and noisy parties), and domestic animals such as barking dogs (World Health Organization, 1999). In general, residential land uses do not create an excessive amount of noise. Commercial and industrial activities can sometimes produce a significant amount of noise.

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There are several noise-sensitive uses located in the City of Sammamish, including residences, schools, parks, and churches. Residential receptors are spread throughout the Town Center planning area.

8.1.1.1 Town Center Sound Sources

Within the Sammamish Town Center planning area, the primary sources of sound are associated with existing traffic on 228th Avenue SE and the surrounding street network. Background evening rush-hour sound levels are estimated to be between 58 and 65 dBA depending on distance from the roadway (75 to 250 feet) (City of Sammamish, 2003b). Activities related to the area schools (Skyline High School, East Catholic High School, Arbor Elementary, and Sammamish Children's School) including arrival and departure of students, sports events, and other school events are also sources of sound. Current land use in the Town Center planning area is primarily residential.

The City's comprehensive land use plan includes Public/Institutional land uses, which typically produce more environmental sound than residential. There are currently no industrial or manufacturing activities located or proposed within the Town Center planning area. These would represent an even greater noise source. Construction of the Sammamish Commons constitutes an existing noise source in the Town Center planning area.

8.1.1.2 Applicable Regulations

The Washington Administrative Code (WAC) noise regulations establish limits for sound levels that cross property lines, but the regulations also include exemptions for noise from construction activities between the hours of 7:00 a.m. and 10:00 p.m. As shown in Table 8-1, residential areas have the lowest permissible noise levels, and the allowable nighttime levels are 10 dBA lower than the daytime levels. For weekdays the WAC defines nighttime as 10:00 p.m. to 7:00 a.m.

**Table 8-1. Maximum Permissible Environmental Noise Levels (dBA)
Under Washington State Regulations**

Type of Noise Source	Type of Receiving Property		
	Residential Day / Night	Commercial	Industrial
Residential	55 / 45	57	60
Commercial	57 / 47	60	65
Industrial	60 / 50	65	70

Source: WAC 173-60-040

The State law recognizes that the function of noise abatement and control are primarily the role of local government. However, local sound control measures may not differ with these without approval from the Washington State Department of Ecology (WAC 173-60-110).

The Sammamish Municipal Code (SMC) Chapter 8.15, Public Disturbance Noise, establishes a policy to minimize the exposure of its citizens to the harmful physiological effects of excessive sound. Section SMC 8.15.012 makes it unlawful for sound that is a public nuisance to originate

from any property. Construction noise in the City is exempt from noise regulations from 7:00 a.m. to 8:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. Saturday and holidays. Construction noise is not allowed on Sundays (SMC 16.05.030).

8.1.2 Air

Air quality is measured by the concentration of chemical compounds and particulate matter in outdoor air. Air that contains certain compounds and particulates can degrade the health of humans, animals, and plants.

Human health risks from poor air quality range from headaches and dizziness to cancer, respiratory disease, and other serious illnesses that can lead to premature death. Potential ecological impacts include damage to trees and other types of vegetation. Quality of life concerns from air pollution include reduced visibility and deposition of soot and other particulate matter on homes and property.

8.1.2.1 Town Center air pollution sources

The City of Sammamish is located in eastern King County. King County is compliant with all of EPA's emissions-based standards and thus is not considered a non-attainment area. The primary sources of air pollution in the Sammamish Town Center planning area are automobile traffic and wood burning. These are characteristic of residential suburban areas.

Wood smoke from fireplaces and wood stoves contains fine particles (PM_{2.5}), toxic air pollutants (TAPs), volatile organic compounds (VOC), nitrogen oxides (NO_x), carbon dioxide (CO₂), carbon monoxide (CO), and other combustion constituents that are a health threat. High levels of particulates occur in the Puget Sound area during temperature inversions. Recent studies link high levels of fine particle pollutants to an increase in asthma attacks, emergency-room visits, hospital admissions, and premature deaths. Children, older people, and people with lung and heart diseases are more at risk. As with cigarette smoke, fine particles are linked to lung cancer and heart disease. Fine particles accelerate hardening of the arteries and affect heart function (PSCAA, 2005).

Ecology and the Puget Sound Clean Air Agency (PSCAA) maintain air quality monitoring stations throughout the Puget Sound region. Stations are located in areas where there may be air quality problems such as urban areas or in proximity to air pollution sources. Stations are also located in remote areas, which provide indicators of regional air quality. There are no air quality monitoring stations in the City of Sammamish. The nearest monitoring station is located in Lake Sammamish State Park for ozone. Three stations in downtown Bellevue monitor particulates and carbon monoxide.

8.1.2.2 Applicable Agencies & Regulations

The United States Environmental Protection Agency (EPA), Ecology, and PSCAA establish regulations that govern both the concentrations of pollutants in the outdoor air and contaminant emissions from air pollution sources. PSCAA has jurisdiction to regulate air quality for King, Kitsap, Pierce, and Snohomish Counties.

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In addition to monitoring pollutants, the PSCAA manages two programs focused on identifying health risks, providing information to the public, and regulating individual actions. The first of these programs is the Burn Ban program and is a mandatory set of requirements. Burning of any material in residential fireplaces and uncertified wood stoves are prohibited when PM_{2.5} (particulate matter with a diameter of 2.5 μm) levels reach 35 micrograms per cubic meter per 24-hour period (μg/m³/24 hrs) unless the fireplace or stove is the only source of adequate heat. A ban at this stage is known as a first stage ban. A second stage ban is enforced if PM_{2.5} levels exceed 60 μg/m³/24 hours. This ban prohibits the use of all wood-burning devices. The federal PM_{2.5} standard is 65 μg/m³/24 hours.

The second program, called Smog Watch, is a voluntary program designed to advise residents of potential smog problems and to recommend short-term actions they can take to help reduce maximum ozone levels (PSCAA, 2005). A smog watch is issued if temperatures in the upper 80s (°F) or higher with little or no wind are forecast for at least a 48-hour period.

The PSCAA regularly monitors six pollutants of concern or criteria air pollutants (CAPs) to reduce public health risks. Each CAP has been shown to cause significant human health effects, especially in the respiratory system. Table 8-2 lists some of the sources and health effects of CAPs.

Table 8-2. Criteria Air Pollutants, Sources, and Health Effects

Pollutant	Major Sources	Potential Health Effects
Particulate Matter (PM ₁₀ and PM _{2.5}) ^a	Motor vehicles Wood stoves Slash burning	Mortality Respiratory distress Asthma
Carbon Monoxide (CO)	Motor vehicles Aluminum production	Aggravated angina Headaches and dizziness from short-term exposure to high concentrations
Sulfur Dioxide (SO ₂)	Fossil fuel burning Industrial sites (smelters, paper mills, power plants and steel manufacturing plants)	Increased respiratory infections Asthma
Nitrogen Dioxide (NO _x)	Fuel combustion (industrial furnaces and boilers) Motor vehicles	Respiratory diseases
Ozone (O ₃)	Motor vehicles Gasoline delivery, storage	Asthma, chronic bronchitis Headache from short-term exposures
Lead (Pb)	Lead smelting Motor vehicles Lead-based paint	Learning deficits in children Hyperactivity

Source: PSCAA, 2005.

^a Particulate matter with a diameter of less than or equal to 10 micrometers (μm) is referred to as PM₁₀ and particulate matter with a diameter of less than or equal to 2.5 μm is referred to as PM_{2.5}. Particles as small as 2.5 micrometers or smaller may pose a more serious health danger because these particles have the ability to penetrate deeper into lung tissue. The EPA established new federal standards for PM_{2.5} in 1997 (PSCAA, 2005).

These compounds represent a high priority for compliance with the federal Clean Air Act and contribute directly to the Air Quality Index (AQI), an EPA measure that monitors air quality. CAPs are monitored for each county throughout the year.

8.2 Impacts

Impacts related to sound and air environmental conditions were analyzed qualitatively in terms of potential effects resulting from implementation of the three Town Center action alternatives and the No Action alternative. Differences between the alternatives involve the amount and location of new and expanded roads, associated vehicular use increases, intensity and type of land use, and area remaining undeveloped.

8.2.1 Sound

8.2.1.1 *Temporary Construction Impacts Common to All Action Alternatives*

All three of the action alternatives would create construction related noise impacts, which could extend over the 25-year planning horizon. Construction of individual components of any adopted alternative would vary temporally and geographically, with noise impacts to any one portion of the Town Center planning area or adjacent areas occurring over a portion (or portions) of the 25-year planning period.

In general, it is expected that the greatest amount of noise would be produced during earth-moving and excavation stages of any construction activity, when heavy equipment (dozers, backhoes, etc.) and heavy trucks would be used. Diesel-powered construction equipment typically makes more noise compared to gasoline-powered vehicles. The low frequency noise of diesel engines travels farther and can impact older homes with less insulation and single-pane windows. Additionally, chains, metal truck beds, and vehicles rattling may temporarily create metal-to-metal noise.

As discussed above, temporary construction noise is exempt from city and state noise limitations. In the City of Sammamish, construction noise is exempt from noise regulations from 7:00 a.m. to 8:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. Saturday and holidays. Construction noise is not allowed on Sundays (SMC 16.05.030).

8.2.1.2 *Alternative 1 – Commercial Focus*

Under Alternative 1, the Commercial Focus alternative, the highest densities of both residential and retail development would occur within the Town Center planning area. Approximately 46 percent of projected residential development would occur within the northwest quadrant of the planning area, largely due to the residential towers and mixed-use development included in this area under. Additional increases in densities would be spread throughout the remaining quadrants of the planning area.

Under this alternative, vehicular traffic is expected to increase more than for the other proposed alternatives, as discussed further in Chapter 7, Transportation. Likewise, noise produced from vehicular traffic under this alternative is expected to have a greater impact than under Alternatives 2, 3, and 4.

Generally, noise impacts will likely be most pronounced during typical a.m. and p.m. commutes, during which noise from vehicular traffic would be expected along all existing and proposed

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roadways, and especially at the major intersections of: SE 4th Street and 228th Avenue SE; E Main Street and 228th Avenue SE; and at other proposed intersection locations.

Noise impacts from vehicular traffic and pedestrian traffic would be expected to occur throughout the day (during typical retail hours) at the commercial core proposed for the vicinity of the existing intersection of SE 4th Street and 224th Place SE. Residential noise, including lawn mowers and other landscaping equipment, generators, music, and other sources, would be expected to increase with higher residential densities. Certain outdoor noise sources would be reduced in high-density (multi-family and residential tower) residential areas, as outdoor noise making opportunities would no longer be available. Higher recreational use, and increased noise impacts, would be expected in the planning area's public parks.

8.2.1.3 *Alternative 2 – Low Intensity*

Noise impacts under Alternative 2, the Low Intensity Alternative would be from similar sources as those discussed under the Commercial Focus Alternative. The sources of noise would be largely the same, but a large reduction in vehicular traffic (as identified in Chapter 3-7, Transportation) is anticipated. This alternative would result in a large reduction in the frequency of noise production compared to the frequency anticipated under Alternatives 1 and 3. As in the other alternatives, the highest frequencies of vehicular noise would occur at existing and proposed major intersections.

Approximately 22 percent of residential density increase anticipated under Alternative 2 would occur as single-family development. Noise impacts from higher density single-family development differ from the predominantly multi-family development noise impacts associated with Alternatives 1 and 3. Outdoor residential noise sources, such as lawn mowers and other landscaping equipment, generators, music, and human voices, would increase above existing conditions and above Alternative 1 and 3 conditions.

8.2.1.4 *Alternative 3 – Civic Focus*

Noise impacts under Alternative 3, the Public Facility Focus Alternative would be similar to those occurring under Alternative 1. The sources of noise would be largely the same, but a small reduction in vehicular traffic (as identified in Chapter 3-7, Transportation) is anticipated. This alternative would result in a reduction in frequency of noise production. Specifically, residential development is projected to occur at 85% of the full build-out potential of Alternative 1. Additionally, the large residential/retail mixed-use development areas under Alternative 1 would occur as mixed-use residential/office development under Alternative 3. Although vehicular traffic would be reduced from Alternative 1 levels under this alternative, significant increases in noise impacts – above existing and Alternative 2 levels – associated with vehicular traffic should be anticipated, especially at the intersection of SE 4th Street and 228th Avenue SE.

The 4 acres of civic center land-use proposed under Alternative 3 would be a source of noise impacts from vehicular and pedestrian traffic during normal daytime hours. Additionally, certain civic locations would likely be the site of meetings and events both during daytime, evening, and occasional weekend hours; noise impacts associated with civic events would be anticipated.

8.2.1.5 *Alternative 4 – No-Action*

Under the No Action Alternative, limited expansion of existing residential densities would be expected within the Town Center planning area. Impacts would not be expected to increase or decrease from the existing levels described previously in Section 8.1, Affected Environment. No temporary or permanent noise impacts would result from this alternative.

8.2.2 **Air**

8.2.2.1 *Temporary Impacts Common to All Action Alternatives*

All three action alternatives would create construction related air impacts, which could extend periodically throughout the 25-year planning horizon. Construction of individual components of any adopted alternative would vary temporally and geographically, with air impacts to any one portion of the Town Center planning area or adjacent areas occurring over a portion (or portions) of the 25-year period.

In general, it is expected that the greatest amount of air impact would be produced during earth-moving and excavation stages of any construction activity, when heavy equipment (dozers, backhoes, etc.) and heavy trucks would be used. Diesel-powered construction equipment emits particulate pollutants to the air, affecting both a project site and project vicinity. Other project vehicles can release carbon monoxide, a green house gas, into the atmosphere. Additionally, earth moving, clearing, and grading activities can result in dust being released to the air, affecting both a project site and the project vicinity.

8.2.2.2 *Alternative 1 – Commercial Focus*

Under the Commercial Focus Alternative, the planning area under maximum potential build out would have higher residential densities than under any other action alternative. Levels of vehicular traffic, and vehicular carbon monoxide emissions would be higher under Alternatives 1 than any other alternative. High-density multi-family and townhome residential development would be expected to reduce emissions of fine particles and other pollutants (discussed in Section 8.1.2.2) from wood burning stoves and fireplaces and controlled outdoor fires.

8.2.2.3 *Alternative 2 – Low Intensity*

Under the Low Intensity Alternative, the planning area under maximum potential build out would have the lowest residential densities of the three action alternatives under consideration. Levels of vehicular traffic, and vehicular carbon monoxide emissions would be higher under Alternative 2 than with existing land use, however would be lower than under Alternatives 1 and 3. More residential development is planned as single-family homes under this alternative than other action alternatives; as such, higher levels of air pollution would be expected from wood burning fires.

8.2.2.4 *Alternative 3 –Civic Focus*

Under Alternative 3, the planning area under maximum potential build out would have residential densities similar to but lower than those under the Commercial Development

Alternative. Levels of vehicular traffic, and vehicular carbon monoxide emissions would be expected to be similar to those produced under Alternative 1. As discussed in the transportation impacts analysis in Chapter 3-7, however, vehicular emissions would be expected to be somewhat lower under Alternative 3 than Alternative 2. High density multifamily and townhome residential development would be expected to reduce emissions of fine particles and other pollutants (discussed in Section 8.1.2.2) from wood burning stoves and fireplaces and controlled outdoor fires.

8.2.2.5 *Alternative 4 – No-Action*

Under the No Action Alternative, no expansion of existing residential densities would be expected within the Town Center planning area. Air pollution sources and impacts would not be expected to increase or decrease from the existing levels described in previously in Section 8.1, Affected Environment. No temporary or permanent air impacts would result from this alternative.

8.3 Mitigation Measures

8.3.1 Sound

Mitigation measures to control noise impacts would be considered and developed on a project-by-project basis within the Town Center planning area. All infrastructure, civic, and private development activities would be required to comply with local and state noise regulations.

8.3.2 Air

Mitigation measures to control air impacts would be considered and developed on a project-by-project basis within the Town Center planning area. All infrastructure, civic, and private development activities would be required to comply with local, state, and national air regulations.

8.4 Significant Unavoidable Adverse Impacts

8.4.1 Sound

No significant unavoidable adverse noise impacts are expected to result from any of the proposed alternatives. Any adopted Town Center Sub-Area Plan would require associated development to comply with all local and state noise regulations.

8.4.2 Air

No significant unavoidable adverse air impacts are expected to result from any of the proposed alternatives. Any adopted Town Center Sub-Area Plan would require associated development to comply with all local and state air protection regulations.

Chapter 9 Public Services and Utilities

Development projects can affect public services and utilities by increasing the demand for services beyond the capabilities of the service providers, or by disrupting service. Public services typically include fire, emergency services, police, parks, and public schools. Utilities typically include water, sewer, electricity, natural gas and solid waste. Potential impacts on public services and utilities expected to result from development of the Town Center land use alternatives were evaluated.

9.1 Affected Environment

9.1.1 Public Services

9.1.1.1 Fire Protection and Emergency Medical Services

The Eastside Fire and Rescue District (EFRD) serves the entire City of Sammamish, including the Town Center planning area. EFRD provides the City with a full range of fire suppression and emergency medical response services. The service area for EFRD includes Carnation, Issaquah, North Bend, Sammamish, Preston, May Valley, Tiger Mountain, and Wilderness Rim. Emergency call management (911) and dispatch for the EFRD is provided by the Eastside Regional Communications Center in Bellevue, Washington. There are approximately 35 dispatchers who process approximately 173,000 calls per year, 54,500 of which are for fire and EMS (Eastside Regional Communications Center, 2006).

There are three fire stations in the City of Sammamish, all of which are within 2 miles of the Town Center planning area: Station 81, located at 2030 212th Avenue SE, Station 82 located at 1851 228th Avenue NE, and Station 83 located at 3425 Issaquah-Pine Lake Road SE (Eastside Fire & Rescue, 2006). Table 9-1 lists the staff and equipment housed at each station. The fire station locations are shown in Figure 9-1.

Table 9-1. Fire Station Staffing and Equipment

Stations	Station Firefighting Staff	Station Equipment
Station 81	12 Career 13 Volunteer	1 Engine 1 Aid Car 1 Air Support Unit
Station 82	12 Career 11 Volunteer	1 Engine 1 Aid Car 1 Ladder Truck
Station 83	12 Career	1 Engine 1 Aid Car 1 Wildland Fire Brush Engine

Source: Eastside Fire and Rescue, 2006; Murphy, 2006.

Public Services and Utilities

Washington State law requires that all fire service providers establish response time goals, or level of service (LOS) standards (SHB 1756; Chapter 376, Laws of 2005, Section 102(10)). Response time is defined as the time beginning when units are enroute until they arrive at the scene. The City of Sammamish has set its LOS standard as “eight minutes or less 80% of the time.” When the LOS cannot be met for two consecutive calendar years the LOS must be reviewed for adequacy and strategies developed to address the issue the inadequacy (City of Sammamish, 2003a).

EFRD receives approximately 9,000 calls annually, of which approximately 70 percent are calls for EMS. The average response time from the three fire stations servicing the Town Center planning area is approximately seven minutes for both fire and EMS calls (Eastside Fire & Rescue, 2006).

A Capital Facilities Plan (CFP) specific to City of Sammamish-owned stations is currently being developed. While strongly focused on maintaining existing facilities, the CFP also contains elements that will be necessary as the community grows.

9.1.1.2 Law Enforcement

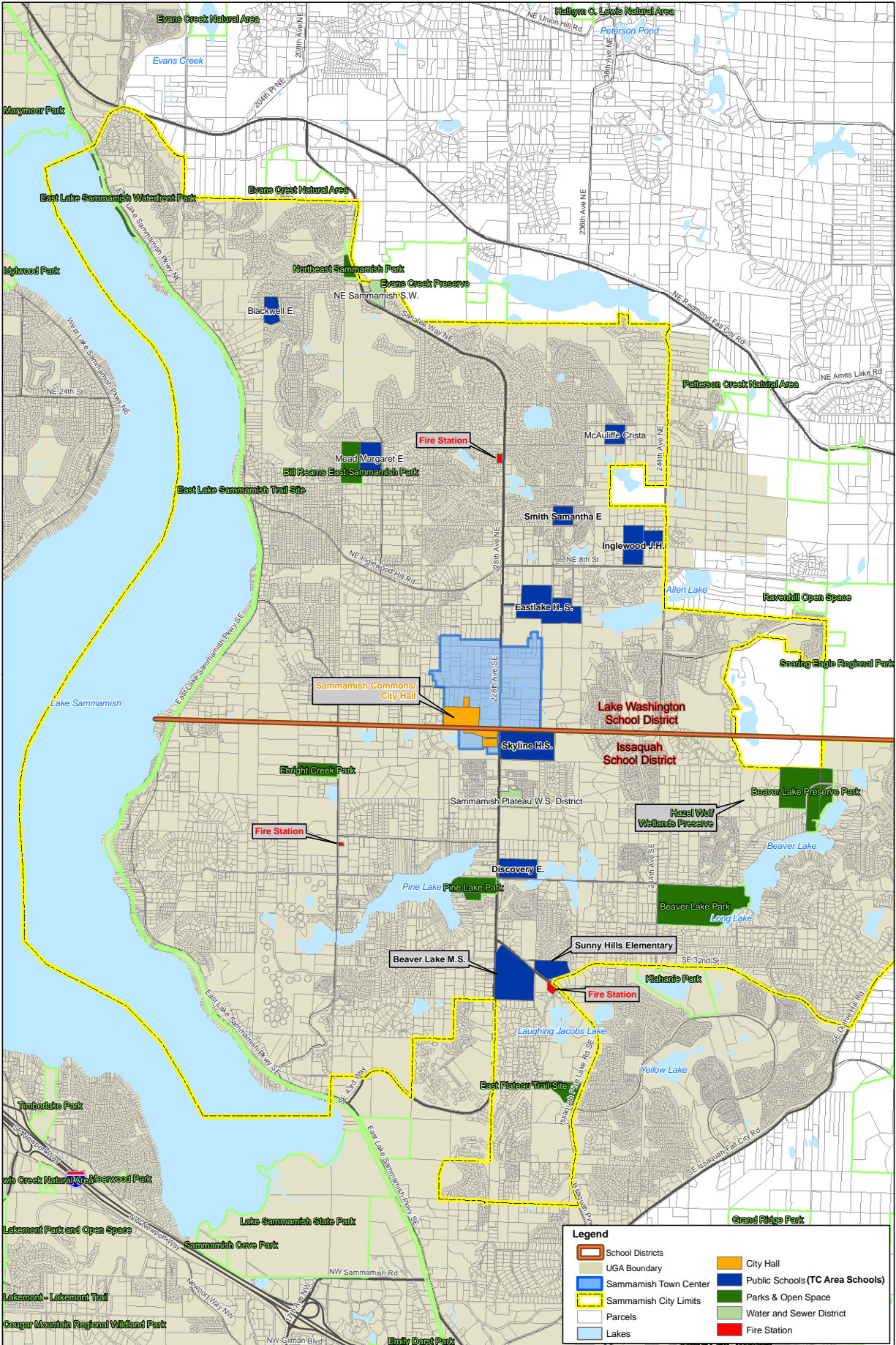
The City of Sammamish contracts with the King County Sheriff’s Department to provide law enforcement services in the city. The Sammamish station currently has 22 police officers dedicated to policing the area (Wills, 2006). The City’s level of service is 0.6 commissioned officers per 1,000 residents, which is comparable to the neighboring cities of Bellevue, Issaquah, and Redmond (approximately 0.65, 0.60, and 0.62 officers per 1000 residents respectively).

The police station is located in the Sammamish City Hall (Figure 9-1). In addition to the sworn officers, the Sheriff’s Department also provides search and rescue, major crimes detectives, K-9 teams, the Guardian One Helicopter, and a fully trained SWAT team as needed (King County Sheriff, 2006).

9.1.1.3 Public Schools

The city is served by the Lake Washington School District (LWSD) No. 414 and the Issaquah School District (ISD) No. 411. The districts provide public elementary, junior high, and high school education. Six of the city’s 13 public schools serve the Town Center planning area, however, none of these schools are located within the Town Center planning area boundary. LWSD owns an undeveloped parcel within the planning area boundaries that is currently being held in reserve for future needs. Students living within the planning area boundaries would travel to the nearest school, still within city limits. Figure 9-1 shows the location of the public schools in the Town Center vicinity.

The boundary between the LWSD and ISD school districts runs east/west through the southern portion of the Town Center planning area along SE 8th Street. Residents of the Town Center planning area north of SE 8th Street would attend LWSD’s Samantha Smith Elementary, Inglewood Middle School, and Eastlake High School. Residents south of SE 8th Street would attend ISD’s Discovery Middle School, Beaver Lake Middle School, and Skyline High School.



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 Inaccuracies may exist, and Addition Associates, Inc. implies no
 warranties or guarantees regarding any aspect of data depiction.
 SOURCE: USGS Ortho Image, 2002; King County GIS, 2006



FIGURE 9-1
PUBLIC FACILITIES
 SAMMAMISH TOWN CENTER SUB-AREA PLAN DEIS
 SAMMAMISH, WASHINGTON

School Capacity and Enrollment

The LWSD currently has the capacity to house 3,417 students in the three schools that would serve the Town Center planning area. Actual enrollment, as of the 2005-2006 school year, was 3,243. The existing ISD facilities that would serve Town Center residents have a capacity of 3,120, with an actual enrollment of 2,771, as of the beginning of the 2006/2007 school year. Both school districts utilize portable facilities to house students in addition to permanent structures, due to the fact that some schools are over capacity while others are not yet at capacity. These “relocatables” are taken in to account when calculating the total capacity available. Where enrollment exceeds the total capacity available, class sizes are increased to accommodate students until facilities are available.

Table 9-2 lists the location, capacity and enrollment of public schools that would be attended by Town Center students.

Table 9-2. Public Schools Serving Students from The Sammamish Town Center Planning Area

School	Grade Level	Address	Existing Capacity ¹	Current Enrollment (2005/2006)
Lake Washington School District (LWSD)				
Samantha Smith	Elementary	23305 NE 14th	702	777
Inglewood	Middle school	24120 NE 8th Street	1,011	1,139
Eastlake	High school	400 - 228th NE	1,704	1,327
Total			3,417	3,243
Issaquah School District (ISD)				
Discovery	Elementary	2300 - 228th Avenue SE	624	575
Beaver Lake	Middle school	25025 SE 32nd St	960	1,004
Skyline	High school	1122 - 228th Avenue SE	1,536	1,192
Total			3,120	2,771

Source: LWSD Six-Year Capital Facility Plan 2006-2011, 2006; ISD Six-Year Capital Facilities Plan, 2006.

¹ Including relocatable, or portable, classrooms.

9.1.1.4 Parks and Open Space

This section describes the existing parks and open space resources in the City of Sammamish and focuses specifically on those resources that serve the Town Center planning area. Plans and policies that will guide use and development of these resources include the Parks, Recreation and Open Space Plan (2004), the Trails, Bikeways, and Paths Master Plan (2005b), and the Sammamish Municipal Code. These plans are discussed below.

Plans and Policies

Parks, Recreation and Open Space Plan – The Parks, Open Space and Recreation Plan (2004) was prepared by the Parks and Recreation Department in coordination with other City departments, the Parks and Recreation Commission, and the public. The purpose of the plan is the establishment, management, and maintenance of a comprehensive system of parks, open space lands, and greenways. The development objectives outlined in the plan include improving existing parks, acquiring new parkland, and concentrating initial development efforts on neighborhood, community and school parks.

The plan's development policies lay out a framework to guide the development of a comprehensive park system in an orderly and efficient manner in support of the objectives. Policies are provided for parkland acquisition, park and facility improvement, economic performance and finance, and support. The support policies are administrative actions that support the basic policies of the Parks Department and include conservation of open space land for natural, cultural and recreation values. The support policies encourage joint use of existing public resources, and encourage planning, development and full use of trails and greenways.

The plan establishes the objective of upgrading the four existing City parks (discussed below). The plan also establishes, through its first six-year Capitol Improvement Plan, acquisition and development of facilities as its priority. These efforts are to focus on new community and neighborhood parks connected by trails pathways, and corridors. The plan also establishes a need for a Community Center.

Long-term objectives established in the plan include developing greenways, trails, and open space corridors. These projects include acquisition of shoreline access points along Lake Sammamish, development of Beaver Lake Natural Preserve (see description below), and development of the East Sammamish Parks and Greenway, which is envisioned as a greenway that could eventually serve as the eastern edge of the city.

Trails, Bikeways, and Paths Master Plan – The Trails, Bikeways, and Paths Master Plan (2005b) provides a comprehensive planning document that establishes a 20-year vision for development of recreational trails and non-motorized transportation facilities within the city with connections to regional systems. The master plan was based on an existing conditions inventory, surveys, feedback from the Trails, Bikes, and Paths Subcommittee, and guidance from state and regional policy on non-motorized facilities. The result was two 20-year plans with short and long-term project priorities identified; a pathways and trails system plan and a bicycle system plan.

The master plan identifies several primary east-west and north-south travel corridors to provide connectivity throughout the city. These corridors were developed into a pathway and trail system plan and a bicycle system plan.

Evaluations of recreational and non-motorized transportation projects resulted in lists of high priority projects to be considered for inclusion in the City's six-year Parks Capital Improvement Plan (CIP). The Master Plan also considered non-motorized transportation facilities that have been programmed into the 2004 – 2009 City Transportation Improvement Program (TIP).

According to the Master Plan's Project Identification Map, there are two projects proposed inside the Town Center planning area. A combination bike and pedestrian trail through the Sammamish Commons is listed the City's TIP as a medium priority project, and a bicycle and pedestrian improvement project is listed in the "future" category. There are currently no bike lanes or trails in the Town Center planning area. Pedestrian facilities include sidewalks along 228th Ave SE and SE 4th Street. A bike lane runs east and west along SE 8th Street to the Town Center planning area boundary, then turns south along 228th Avenue SE.

Sammamish Municipal Code – The Sammamish Municipal Code (SMC) outlines requirements for the creation and maintenance of public recreation and open spaces and the payment of fees for new development. All new single-family, multifamily and townhouse developments of more than four units are required to provide on-site recreation space for leisure, play or sport activities (Title 21A.30.140 SMC). Residential developments of eight units per acre or less require the creation of 390 square feet of recreation space per unit. Residential developments of more than eight units per acre require the creation of 90 square feet per studio or one-bedroom unit, 130 square feet per two-bedroom unit, and 170 square feet per unit that is three or more bedrooms.

If on-site recreation space cannot be provided, or is not appropriate, a fee-in-lieu can be paid, at the City's discretion. An example of when it would not be appropriate for new facilities to be created would be if there were already an existing City recreational facility in the vicinity that would be of greater benefit to the prospective residents than a new facility. Fees are determined annually by the City based on current market values.

Existing and Planned Parks and Open Space

The City owns and operates four park properties totaling approximately 125 acres (City of Sammamish, 2004). In addition four new park/open spaces will be completed in 2006 or 2007. These include Ebright Creek Park, the Beaver Lake Preserve, the Sammamish Commons, and the Community Sports Field at Skyline High School.

Currently, the Sammamish Commons is the only park within the Town Center planning area. Nearby parks include the proposed Ebright Park located approximately 0.75 miles west of the Town Center planning area and Pine Lake Park, located approximately 1 mile south of the Town Center planning area. A map of city and regional parks is shown in Figure 9-1. Parks and open space owned and operated by the City are described below, followed by a discussion of regional parks.

Existing City Owned Parks

Northeast Sammamish Neighborhood Park – Northeast Sammamish Neighborhood Park is located approximately 2.75 miles from the proposed Town Center planning area, at Sahalee Way and NE 36th Street. This 4-acre community park has a basketball court, tennis courts, two new play structures, and open space. A paved trail connects the park to the Timberline neighborhood. Restoration projects completed to date include resurfacing the tennis courts, resurfacing and updating the basketball court, renovating the parking lot, pathways, and landscaping, and replacing the children's play area.

Public Services and Utilities

Bill Reams East Sammamish Park – This 19-acre neighborhood park is located approximately 1.75 miles from the proposed Town Center planning area, at NE 16th and 224th Avenue NE, directly behind Margaret Mead Elementary School. The park offers a play area, soccer field, two baseball fields, tennis courts, and open space. A picnic shelter is available for private party reservations. Restoration projects completed to date include replacement of restroom fixtures, installation of a new play structure, infield, turf, and safety upgrades to the athletic fields, installation of a new path walkway, and several landscape renovations.

Pine Lake Park – This 19-acre wooded park, located approximately 1 mile from the proposed Town Center planning area along the shores of Pine Lake, on 228th Avenue SE at SE 24th Street. It offers a swim area, a car-top boat launch, a fishing pier, a multi-purpose sports field, and play areas. Recent improvements to the park include the replacement of restroom fixtures, the construction of two new play structures, installation of new swings, and maintenance improvements to the swim area. Improvements to the park in 2004 (totaling \$1.1 million) included a new multi-purpose sports field, basketball court, youth climbing wall, and parking lot. The park hosts numerous community events, including the annual “Summer Nights at the Park,” a series of music concerts and selected Shakespeare plays.

Beaver Lake Park – This 83-acre park is located approximately 1.75 miles from the proposed Town Center Planning area at SE 24th Street and 244th Avenue SE. It offers opportunities for recreation, hiking, and nature exploration in the forest. The park consists of a large pavilion and lodge, three ball fields, and a picnic shelter. The Lodge at Beaver Lake is an original Northwest log building, which is used for weddings, private parties, and business meetings.

Community Sports Field at Eastlake High School – This is a multi-purpose sports complex located approximately 0.25 miles north of the Town Center Planning area at Eastlake High School. The new facilities include two synthetic surface fields for year-round baseball, softball, lacrosse and soccer. This facility is being operated by the City in cooperation with Lake Washington School District.

New Parks in Development

Sammamish Commons – The Sammamish Commons project encompasses the development of approximately 30 acres of land. The park will serve as the central park/hub of the future Sammamish parks system. Ten of the park’s 30 acres, referenced as the “upper site,” will include city hall, parking, active recreation areas, and open areas. Parking will be accommodated both below the civic center structure and at ground level. A civic plaza is proposed adjacent to the new building for use by the public. The upper site will also include a youth activity area with a sport court, a skate park, and a climbing wall.

The remaining 20 acres are referenced as the “lower site,” which will be primarily for passive use. The existing wetlands and buffers will be preserved. Structures proposed for the park include three picnic shelters, a viewing tower, and a playground. In addition, an informal play field will be developed in the northwestern corner of the site. The remainder of the site will be maintained in undeveloped grassland.

Ebright Creek Park – This planned 12-acre neighborhood park is located approximately 0.75 mile from the proposed Town Center Planning area, on the west side of 212th Avenue SE near SE 13th Place. It will feature a play lawn, sports court, climbing rock, picnic area, and children’s play area. Enhancements will also be made to the creek and wetland that cross the park. When complete, it will help fill a recreational void in the western section of the city. The Park will open mid-February 2007 (City of Sammamish, 2006).

Beaver Lake Preserve – The Beaver Lake Natural Area Preserve was purchased by the City in 2001, and is currently being developed. The preserve is a 54-acre property that is to be retained in its open space and natural condition and designed for public enjoyment and education. Public activities in the preserve will include passive recreation, such as hiking and bird watching. Phase one is scheduled to open in 2006 and includes building 1.3 miles of trails, a parking lot for 10 cars, entry sign, regulatory signs, and some minimal site furniture.

Community Sports Field at Skyline High School – The City entered into an agreement with the Issaquah School District to build a multi-purpose sports field at Skyline High School. The facility includes a synthetic surface field for baseball, softball, lacrosse, football and soccer for the community and students.

There are two other City parks listed in the Parks, Open Space, and recreation plan as undeveloped. These include the 185-acres Evans Creek Preserve located immediately outside the City’s northeast boundary and a 0.5-acre waterfront park located along the shore of lake Sammamish near the north end of the city.

Regional Parks

Hazel Wolf Wetlands Preserve – The Hazel Wolf Wetlands Preserve is one of the most pristine wetland-based wildlife refuges in King County. This area was preserved in 1995 through the efforts of citizens, corporations, county government, and the Cascade Land Conservancy. The 116 acres within the preserve contain several different wetland and forest habitats. The Hazel Wolf Wetlands are part of a network of protected habitats and help control the quality and quantity of water flowing through Beaver Lake to Lake Sammamish (Cascade Land Conservancy, 2006).

Marymoor Park – Marymoor Park is the most popular park in the King County Park System. More than 3 million people visit the 640-acre park each year. The park is a square mile in size and accommodates large special events and a variety of activities that have large space requirements (King County Parks and Recreation, 2006).

Lake Sammamish State Park – Lake Sammamish State Park is a 512-acre day-use park with 6,858 feet of waterfront on Lake Sammamish. The park has boating, swimming, fishing, and picnic facilities. The park also features deciduous forest and wetland vegetation, a salmon-bearing creek, and a great blue heron rookery (Washington State Parks and Recreation Commission, 2006).

East Lake Sammamish Trail – This 7-mile stretch of pathway opened on March 21, 2006. It connects to previously completed segments in Redmond and Issaquah to form an 11-mile trail along the eastern shore of Lake Sammamish. The trail can be accessed from various points along E. Lake Sammamish Parkway.

Public Services and Utilities

There are two undeveloped regional parks included in the Parks, Open Space, and Recreation Plan. These include the 628-acre Soaring Eagle Park, owned by King County and located immediately east of the City's boundary and Duthie Hill Park, also owned by King County and located southeast of the City's boundary.

9.1.2 Utilities

9.1.2.1 Water

Water facilities serving the Town Center area are provided by the Sammamish Plateau Water and Sewer District (District). The District is a Class A water system which is divided into two parts: the Plateau Zone, located south of Redmond-Fall City Road, and the Cascade View Zone, located north of Redmond-Fall City Road. Both zones have experienced rapid population growth, particularly during the last decade. The Town Center area is located within the Plateau Zone, which has 11 wells spaced throughout the zone and 6 storage tanks. Wells are re-drilled and rehabilitated as necessary, and are kept on a strict maintenance schedule to ensure water quality and supply. The Plateau Zone has more than 270 miles of transmission and distribution pipelines, ranging in size from 2 to 30 inches in diameter. The condition of the system is generally good (Regenstreif, 2006). There are two water supply wells in the Town Center planning area, both of which are located in the northeast corner of the study area (see Figure 4-5).

Because of the expanding need for water, the District has augmented the local groundwater supply with connections to the regional system as part of the Cascade Water Alliance (CWA). In addition to the Sammamish Plateau Water and Sewer District, the CWA includes seven other eastside municipalities and districts that have combined resources to provide water for the growing area. The District will continue to utilize groundwater supplies in the area, in addition to the regional supply, to accommodate future growth.

9.1.2.2 Sewer

Sewer service in the Town Center planning area is provided by the Sammamish Plateau Water and Sewer District. The wastewater collection system consists of gravity sewers, lift stations, associated force mains, low-pressure collection sewers, and a control structure. In addition, the District has operated and maintained a community drainfield system. Large areas of the District's service area still have private on-site septic systems. It is estimated that approximately 9,300 septic systems are currently in operation in the District (Sammamish Plateau Water and Sewer District, 2006). Sanitary sewer projects are installed by developers through Developer Extension Agreements (DEAs), or by the District as part of utility local improvement districts (ULIDs) or capital improvement projects (CIPs), all under the supervision of District staff.

The District is divided into 13 sewer basins. Wastewater generated within the District's sewer basins are currently routed to King County's South Treatment Plant located in Renton. All wastewater that enters the South Treatment Plant undergoes secondary treatment. The treated water is then disinfected and pumped through a 12-mile effluent pipe and discharged into Puget Sound through a deep-water outfall.

The Town Center planning area is located almost entirely in the Inglewood East Sewer Basin, with a small portion of the northwest corner in the Tiburon Basin, and a small portion of the southern end in the North Sunny Hills Basin. According to the Draft Wastewater Comprehensive Plan (2003), it is assumed that by the year 2010 the Inglewood East Sewer Basin, that encompasses the majority of the Town Center planning area, will have sewer service to 70 percent of the basin.

9.1.2.3 *Electricity and Natural Gas*

Puget Sound Energy (PSE) provides electricity and natural gas to the city through franchise agreements. Energy is both generated by PSE and purchased from other utilities and independent producers. PSE provides electricity to all residential, commercial, and public customers in the city. Approximately one-third of the electricity provided by PSE is produced from their own power plants, a majority of which is generated by hydropower. Other sources include thermal (coal) plants and wind farms (PSE, 2006).

Peak demands for power occur during the winter, while demands in the spring through the fall are considerably less. Commercial/retail demand varies considerably more than residential demand. As an example, a large grocery store may require 300 to 500 kilowatts (kW), while a condominium may require only 2 to 3 kW (City of Sammamish, 2003b). The city is served primarily by the following substations:

- Sahalee Substation on Sahalee Way and NE 36th Street;
- Pine Lake Substation on 228th Avenue SE and SE 31st Street;
- Klahanie Substation on Issaquah-Fall City Road and Klahanie Drive SE; and
- Plateau Substation on NE 8th Street east of 228 Avenue NE (completed 2005).

Prior to the completion of the Plateau Substation, the system was not expected to accommodate projected growth. The three other substations were at capacity during the winter months. According to the City Comprehensive Plan Supplemental Draft EIS, the addition of the Plateau Substation has shifted the load from Pine Lake and Sahalee Substations and alleviated capacity issues. The new substation has ensured adequate backup in the event of a station outage (City of Sammamish, 2003b). Commercial kilowatt demand was not used in developing these estimates because only a small amount of vacant/undeveloped land was zoned for commercial use.

Natural Gas is also supplied to the city by PSE. Natural gas is conveyed to the City by Williams Pipeline Corporation, which operates pipelines that run north to south, roughly three quarters of a mile east of the Town Center planning area. Natural gas is not an essential service and therefore PSE is not mandated to serve all areas. Extension of service is based on requests and results of a market analysis to determine if revenues from an extension will offset costs of construction. Due to growing population in the city, PSE is continually evaluating the necessity of increasing existing gas mains from 4 inch to 8-inch pipes (City of Sammamish, 2003b).

Public Services and Utilities

9.1.2.4 Solid Waste

Solid waste collection and disposal for the study area is provided by Rabanco Companies (Rabanco). Rabanco provides weekly garbage, recycling, and yard waste pick-up service (yard waste pick-up is decreased to monthly from December to February). Solid waste, or garbage, from the city of Sammamish is taken to the Factoria transfer station in Bellevue (Frey, 2006). From there, it is transferred to the Cedar Hills Landfill operated by King County Solid Waste Division (SWD). The landfill receives nearly one million tons of solid waste a year, and is expected to reach capacity and close between 2012 and 2014. At that time, the County will begin to export solid waste by rail lines or barge to an out-of-county landfill. SWD is currently looking at various methods for implementing waste export (King County, 2006).

9.2 Impacts

9.2.1 Public Services

9.2.1.1 Fire Protection and EMS

Potential impacts from future growth are determined by the ability of Fire and EMS services to operate within the City's established LOS standard, and not by the direct population growth. For this reason, it is difficult to quantify the impacts that could result from implementation of a Town Center Sub-Area Plan. New development under a proposed plan would incrementally increase the demand for Fire Protection and EMS services over the 25-year planning period. Based on the variation in expected development levels under each alternative, it is possible to qualitatively discuss the differences in potential impacts.

Alternative 1 includes the largest amount of new retail and new housing units. Alternative 2 would have a slightly lower level of development with a focus on civic facilities. Alternative 3 would include the lowest level of development of the action alternatives. The No-Action Alternative would experience the least development and likely the lowest increase in population. Population and land use intensity are both factors that could lower the fire and EMS LOS. The potential impacts on fire and EMS LOS would likely follow the Alternatives in the order of expected population and land use intensity, with the highest for Alternative 1 and lowest for the No-Action Alternative. Increases in staffing, equipment, and facilities would be determined by ongoing monitoring of LOS as any of the alternatives is implemented.

9.2.1.2 Law Enforcement

New development under a Town Center Sub-Area Plan would likely increase the demand for law enforcement services over the 25-year planning horizon. The Town Center land use alternatives could increase the population of Sammamish by approximately 1000 to 5,300 people, depending on the alternative (See chapter 3.6, Land Use for population estimates). Following the district standard, this development would require the addition of 1 to 5 officers (Wills, 2006). It is likely that this increase is attainable within the next 25 years.

The land use mix in the Town Center may also effect the ultimate law enforcement staffing levels. In some cases the level of service required a single-family development may be lower than that required for multi-unit development. Ultimately, the number of officers would be

determined by the Sammamish Police Department based on ongoing evaluations of the Town Center's service needs (Thomson, 2006)..

9.2.1.3 Public Schools

Planned Growth and Improvements

The school districts have made projections for enrollment to address the existing and future capacity needs for school services. The projections are based on several factors, including birth rates, past enrollment, and development trends. Both school districts also have set standards of service for class sizes, which are used to determine the number of students that can be housed in each facility. As a result, they have identified what schools will need to be upgraded, as well as when and where new schools will be required.

The LWSD *Six-Year Capital Facility Plan 2006-2011* projects that enrollment for the whole school district will increase by 760 students, or 3.2%, by the 2011-2012 school year (LWSD, 2006). Likewise, the ISD *Six-Year Capital Facilities Plan* projects enrollment to increase by 1,581 students, or 9.6%, in the same time frame (ISD, 2006). The school districts currently do not have the capacity to house these extra students, but are able to plan the construction of new facilities based on capacity needed during upcoming school years.

The LWSD is currently over capacity in both the elementary and middle schools serving the planning area but has the capacity for an additional 377 students at the high school. Based on the projected growth rates discussed above, the LWSD schools serving the planning area will increase their enrollment by 103 students by the 2011-2012 school year. The ISD has the capacity for an additional 49 students in the planning area elementary school, 344 students in the high school, and is over capacity in the middle school. The ISD has projected an increase of 266 students in their enrollment in the Town Center planning area schools by the 2011-2012 school year. Both of these growth projections are above and beyond that which would be caused by the proposed project. Enrollment projections for the proposed project horizon of 20-years were not available at this time.

The only new facility currently planned for the Town Center planning area is an elementary school in the LWSD. The exact location of this new school has not yet been determined, but will be funded by a bond measure that was passed in February 2006 (LWSD, 2006).

Project Related Growth

Development under a Town Center Sub-Area Plan would contribute to the student population. Each of the school districts has developed factors, or student generation rates, that enable them to estimate the number of new students that will be added to the district from each new single family dwelling (SFD) or multi-family dwelling (MFD). Table 9-3 shows the student generation rates for each school district, by age group. Table 9-4 shows the estimated number of students that would be added to each school district by each of the proposed land use alternatives.

Table 9-3. Student Generation Rates

Public Services and Utilities

	Elementary School	Middle School	High School	Total
Lake Washington School District				
SFR	0.373	0.106	0.07	0.548
MFR	0.075	0.025	0.024	0.124
Issaquah School District				
SFR	0.365	0.146	0.14	0.651
MFR	0.102	0.049	0.052	0.203

Source: LWSD Six-Year Capital Facility Plan 2006-2011, 2006; ISD Six-Year Capital Facilities Plan, 2006.

Table 9-4. Number of Students Generated within Each School District

	Alternative 1 Commercial Focus	Alternative 2 Low Intensity	Alternative 3 Civic Focus	Alternative 4 No Action
Number of SFR units in LWSD	20	240	35	323
New LWSD students from SFR	11	132	19	177
Number of MFR units in LWSD	3442	845	2741	0
New LWSD students from MFR	427	105	340	0
Total New Students in LWSD¹	438	236	359	177
Number of SFR units in ISD	0	0	0	0
New ISD students from SFR	0	0	0	0
Number of MFR units in ISD	28	0	234	0
New ISD students from MFR	6	0	48	0
Total New Students in ISD¹	6	0	48	0

Source: LWSD Six-Year Capital Facility Plan 2006-2011, 2006; ISD Six-Year Capital Facilities Plan, 2006.

¹ The number of new students generated is a combination of elementary, middle and high school students.

The majority of the planning area lies within the LWSD boundaries. Consequently, the proposed project will impact LWSD school services more than at the ISD. Alternative 1 would add the largest number of students to the LWSD, creating the greatest need for expansion of facilities. Alternatives 2 and 3 would not impact the LWSD as much as Alternative 1, but would still create a larger demand for facilities than is planned under the District's Facility Plan (LWSD, 2006). Under the No-Action Alternative, development, guided by the existing Comprehensive Plan, would cause the least amount of growth and would not impact the school district above what it has currently projected.

Alternative 3 would add more students (48) to the ISD than any of the other alternatives, but not a significant enough number to create the need for additional facilities beyond what is currently anticipated under the District's Capital Facilities Plan (ISD, 2006).

9.2.1.4 Parks and Open Space

According to the requirements outlined in SMC Title 21A.30.140, all residential developments of more than four units must provide on-site recreation space for leisure, play or sport activities. The amount of recreation space required is based on the size of the development and the number of bedrooms per unit. For the purposes of this analysis, a breakdown of the residential types within each land use alternative has been estimated to calculate the total acreage of on-site recreational space that would be required upon full build-out¹. A summary of these requirements is shown in Table 9-5 below.

Table 9-5. New Recreation Space Required

Residential Density	Recreation Space Required (square feet) per unit ¹	New Recreation Space Required (acres)			
		Alternative 1 Commercial Focus	Alternative 2 Low Intensity	Alternative 3 Civic Focus	Alternative 4 No Action
8 units/acre, or less	390	0.18	2.15	0.31	2.89
Attached residential and mixed use, greater than 8 units/acre					
Studio and 1-bedroom	90	2.57	0.63	2.20	0
2-bedroom	130	5.00	1.22	4.29	0
3-bedroom or more	170	2.15	0.52	1.85	0
Total		9.9	4.5	8.6	2.9²

Source: Sammamish Municipal Code, Title 21A.30.140.

¹ See SMC Title 21A.30.140 for specific facility requirements.

² This analysis assumes that SFR units would be developed in block of four or more. Residences developed individually, or in developments of less than four units, would be exempt from this requirement.

The requirements shown in Table 9-5 are for on-site facilities that would be created concurrently with each residential development. An analysis of the exact amount of dedicated recreation land required will be completed during the planning stages of specific projects.

This does not take into account the potential impacts to existing parks and open space facilities from population growth resulting from Town Center development. Alternatives 1 and 2 would result in the largest number of new residences, and consequently, the largest increases in demand on existing facilities.

All of the Town Center action alternatives are designed to include the creation of new recreation and open spaces. Alternative 1 includes approximately 30 acres of public open space and parks;

¹ The number of bedrooms per housing unit was based on statistical averages from the neighboring communities of Redmond and Issaquah, Washington. Statistical information was obtained from the U.S. Census Bureau, Census 2000 Table QT-H8, retrieved October 2006.

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Alternative 2 includes approximately 40 acres; and Alternative 3 includes approximately 37 acres. Park and recreational facilities would develop as planned in the current Parks CIP (City of Sammamish, 2004) with Alternative 4.

The Town Center alternatives would comply with the goals and policies outlined in the Parks, Recreation and Open Space Plan (City of Sammamish, 2004) and the Trails, Bikeways and Paths Plan (City of Sammamish, 2005b). In addition, all development of new parks and recreation facilities would comply with City standards for parks and recreation facilities (SMC title 7).

9.2.2 Utilities

9.2.2.1 Water

The size and number of new water lines and meters needed for development under the Town Center alternatives would be determined to a large extent by the underlying zoning and by fire flow requirements for the size and type of use buildings. During project planning, each new development would be evaluated for the availability of water and appropriate infrastructure improvements. Developments would be required to comply with all District guidelines, as well as Sammamish Municipal Code (21A.60.040) and Fire District standards. In addition, individual development projects would be subject to connection and maintenance fees. Non-single family projects would require a minimum of 12-inch diameter water mains.

The District's Water Comprehensive Plan (2002) projects future water demand is based on population forecasts. The District uses equivalent residential units (ERUs) as the measuring standard for new water users. One ERU is equivalent to the amount of water that is required by a single-family residence (Sammamish Plateau Water District, 2002). The number of ERUs attributed to a specific user is based on the size of the water meter. For example, a single-family residence typically has a three-quarters-inch meter, which equates to 1 ERU, while a school that has a higher water consumption rate might have a 3-inch meter, which equates to 16 ERUs². This system allows the District to use one standard (meter size) to estimate future water use from both residential and non-residential customers.

The 2002 Water Comprehensive Plan did not anticipate the proposed development of the Town Center planning area in its projected water needs. The plan did conclude, however, that projected new water demands would require the development of new sources of supply. Since then, the District has connected to the regional water supply through the CWA. According to the water district, there is currently adequate water supply to serve any of the Town Center land use alternatives (Regenstreif, 2006).

9.2.2.2 Sewer

The District's Draft Wastewater Comprehensive Plan (2003) projects future wastewater flows based on population and weather forecasts. Similar to the water services provided, the District uses equivalent residential units (ERUs) as the measuring standard for the amount of wastewater produced by a single-family residence. Very little of the Town Center planning area is currently

² The weighting factors for various meter sizes are determined using American Water Works Association capacity ratings (Sammamish Plateau Water District, 2002).

connected to the sewer system. All new development within the Town Center planning area would be required to connect to the District’s sanitary sewer system, which will require the installation of new and upgraded infrastructure. The District would likely develop a conceptual layout of the proposed sewer collection system considering the land use pattern of the preferred alternative. The conceptual layout would endeavor to achieve gravity service to the Town Center planning area and, if possible, avoid lift stations. The District does not anticipate any problems with connecting new development in the Town Center planning area to the wastewater system.

During the planning stages, each new development segment would be evaluated for appropriate infrastructure improvements. The development would be required to comply with all Sammamish Plateau Water and Sewer District guidelines, as well as Sammamish Municipal Code (SMC 21A.60.030) standards. In addition, individual development projects would be subject to all connection fees required to provide service to new users and maintain system standards.

9.2.2.3 Electricity and Natural Gas

Average peak demands for electricity have been calculated for both residential and non-residential uses, based on “instantaneous maximum loads,” rather than daily, monthly, or yearly average uses. PSE measures these uses by power meters/residential units (not per capita). The average kW/residential customer is 3.7kW and the average kW/non-residential customer is 15 kW (Van Nort, 2006).

PSE projects demand for natural gas services using a forecast analysis calculation based on PSE’s revenue report that is generated by city tax codes. Because natural gas is not an essential service, PSE is not required to serve all areas. Service additions are based on request and an analysis of revenue production. This analysis assumes that natural gas will be provided to the entire Town Center planning area. The increase in demand for natural gas that would result from each of the land use alternatives was calculated by PSE for use in this analysis, and is measured in standard cubic feet per hour (SCFH).

Table 9-6 shows the estimated increase in demand on electrical and natural gas supplies from each of the proposed alternatives.

Table 9-6. Estimated Energy Demand

Development Type	Alternative 1 Commercial Focus	Alternative 2 Low Intensity	Alternative 3 Civic Focus	Alternative 4 No Action
Electricity (kW)	13,000	4,200	10,700	1,100
Natural Gas (SCFH)	379,500	168,750	330,750	67,000

Source: Van Nort, 2006.

Alternative 1 would create the greatest increase in demand for electricity and natural gas, with an increase in demand of 13,000 kW and 379,500 SCFH, respectively. Other than Alternative 4, which has the least amount of development, Alternative 2 would have the least demand for electricity and natural gas.

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With the recent completion of the Plateau Substation, the existing electrical system would be able to service the additional demand under Alternative 4, and would likely handle most of the additional demand from the action alternatives. Likewise, the existing natural gas infrastructure would service the development under Alternative 4, but not under any of the action alternatives. Additional infrastructure improvements could be required to service full build-out of the Town Center. However, according to PSE, these improvements could also be required, even without the proposed project, due to growth in surrounding areas by 2030 (Van Nort, 2006).

PSE's anticipated energy need in 2007 is expected to be approximately 3,000 annual megawatts (aMW). By 2025, that energy need increases to approximately 4,080 aMW. Due to expiring resource contracts within the next 6-7 years, there will be a significant shortfall in energy resources (approximately 2080 aMW) by 2025 (Van Nort, 2006).

9.2.2.4 Impacts to Solid Waste Services

Development of a Town Center Sub-Area Plan would occur incrementally, contributing proportionally larger amounts of solid waste to the total generated by the city. As new residences and businesses are added to the planning area, Rabanco will be required to expand the services currently provided to the planning area. Alternative 1 would have the highest concentration of solid waste-generating development, resulting in the greatest need for expanded disposal services. Alternatives 2 and 3 would have fewer impacts to solid waste services, but more than Alternative 4, which has the least amount of development.

All new residential and commercial developments under a Town Center Sub-Area Plan will be required to pay service fees for pick-up of garbage, recycling and yard waste. These fees will reduce the impacts associated with the addition of services required by Rabanco (Frey, 2006). None of the Town Center land use alternatives would exceed the provider's ability to service the planning area.

9.3 Mitigation

9.3.1 Public Services

9.3.1.1 Fire Protection and EMS

The CFP being prepared for the three Sammamish area fire stations contains project elements that may be required to provide adequate services for full build-out of the Town Center. If it is found that new development in the planning area has caused a failure to meet the LOS standard, a number of actions would be evaluated. Actions to restore the LOS may include, but are not limited to, the creation of a fourth station in the area, relocating existing stations, increasing staffing levels, making transportation improvements, and automatic response agreements with other service providers.

9.3.1.2 Law Enforcement

There are no mitigation measures required for impacts to law enforcement services.

9.3.1.3 Public Schools

Development of new residential units in the Town Center planning area is subject to impact fees to offset the cost of accommodating new students. LWSD and ISD have set impact fees based on property values (land acquisition costs) within each district and estimated construction costs. They also take into account state matching funds.

The LWSD impact fee for new single-family homes is \$2,975 per dwelling unit, and \$307 per multi-family dwelling unit. The ISD impact fee for new single-family homes is \$6,136, and \$1,264 for multi-family units. These fees are paid by the developer at the time of construction and would reduce the impacts of adding additional students to LWSD and ISD by providing the funding necessary to expand school facilities. No additional mitigation is proposed.

9.3.1.4 Parks and Open Space

The Sammamish City Council adopted Ordinance No. 02006-207 on November 21, 2006 requiring any applicant seeking residential development approval to pay an impact fee for parks and recreational facilities. The fees assessed are intended to mitigate the impacts from new development on the current parks system (i.e. to maintain the current level of service), and not for the creation of new parks or for on-site improvements that are required of new development. However, the fees may only be applied towards project listed in the six-year Parks CIP. The impact fees are assessed at \$2,681.42 per SFR unit and \$1,549.13 per MFR unit. The impact fees collected from development under any of the project alternatives would mitigate the impacts to parks and open space from the incremental increase in population.

9.3.2 Utilities

9.3.2.1 Water

There are no anticipated negative impacts to water services from a proposed Town Center Sub-Area Plan. No mitigation is proposed.

9.3.2.2 Sewer

There are no anticipated negative impacts to sewer services from a proposed Town Center Sub-Area Plan. No mitigation is proposed.

9.3.2.3 Electricity and Natural Gas

Upgrades and/or expansion of both the existing electrical and natural gas systems would be required to support full build-out of the Town Center under any of the action alternatives. It is likely that PSE will need to install an additional transformer at the Plateau Substation, the Pine Lake Substation, or possibly both, prior to 2030. In addition, the six-inch diameter natural gas pipeline along 228th Avenue would likely need to be increased to an 8" pipeline prior to full build-out. These improvements would be required under all of the action alternatives. However, it is possible they could also be required, even without the proposed project, due to growth in surrounding areas within that time frame.

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Due to expiring resource contracts within the next 6-7 years, there will be a significant shortfall in region-wide energy resources (approximately 2080 aMW) by 2025. PSE expects to meet this shortfall using a variety of activities including, but not limited to: 1) continued implementation of energy efficiency goals; 2) acquiring cost-effective renewable resources to meet the required target of 15% by 2020³; 3) initiating a competitive acquisition process for new long-term resources and for bridging power purchase agreements; and, 4) negotiating contract extensions for existing resources (Van Nort, 2006).

PSE also anticipates a regional natural gas peak day demand higher than existing delivery resources can provide by 2009. By 2025, this shortfall is expected to be significant. PSE will consider acquisition of long-term transportation capacity on existing “upstream” pipelines that connect to the PSE natural gas infrastructure and expansion of existing underground storage facilities to meet the growing supply deficit by 2025 (485 million cubic ft/hr) (Van Nort, 2006).

As with other utility services provided to the planning area, the impacts to electrical and natural gas services will be evaluated on a case-by-case basis for individual development projects. Development of a Final Town Center Sub-Area Plan would require consultation with PSE to assure adequate capacity for projected demand.

All new development would conform to PSE guidelines and Sammamish Municipal Code development standards. In addition, individual development projects will be subject to all connection fees required to provide service to new users and maintain system standards.

9.3.2.4 *Solid Waste*

There are no anticipated negative impacts to solid waste services from a proposed Town Center Sub-area Plan. No mitigation is required.

9.4 Significant Unavoidable Adverse Impacts

There are no anticipated significant unavoidable adverse impacts to public services and utilities.

³ As required by Initiative 937, passed on November 13, 2006, all large utilities must “obtain fifteen percent of their electricity from new renewable resources such as solar and wind by 2020 and undertake cost-effective energy conservation.” The full text of the initiative can be viewed at: <http://www.secstate.wa.gov/elections/initiatives/text/i937.pdf>.