City of Kenmore Comprehensive Plan

March, 2020

KENMORE
BY THE LAKE

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INTRODUCTION
COMPREHENSIVE PLAN

PURPOSE OF COMPREHENSIVE PLAN

A Comprehensive Plan contains the community's vision of the City's future and a statement of the City's long-range goals and policies. The Plan serves as the guide for City staff and the City Council in making decisions regarding ordinances, regulations, and public facility investments to ensure that the overall goals and policies are furthered by those decisions.

Washington's Growth Management Act (GMA) requires preparation of a Comprehensive Plan addressing land use, housing, economic development, parks and recreation, capital facilities, utilities, and transportation issues. Certain topics such as open space corridors and essential public facilities must also be considered within Plan "Elements" or chapters. Optionally, the City may choose to include subarea plans and/or other elements, such as conservation and solar energy. GMA does not limit optional topics.

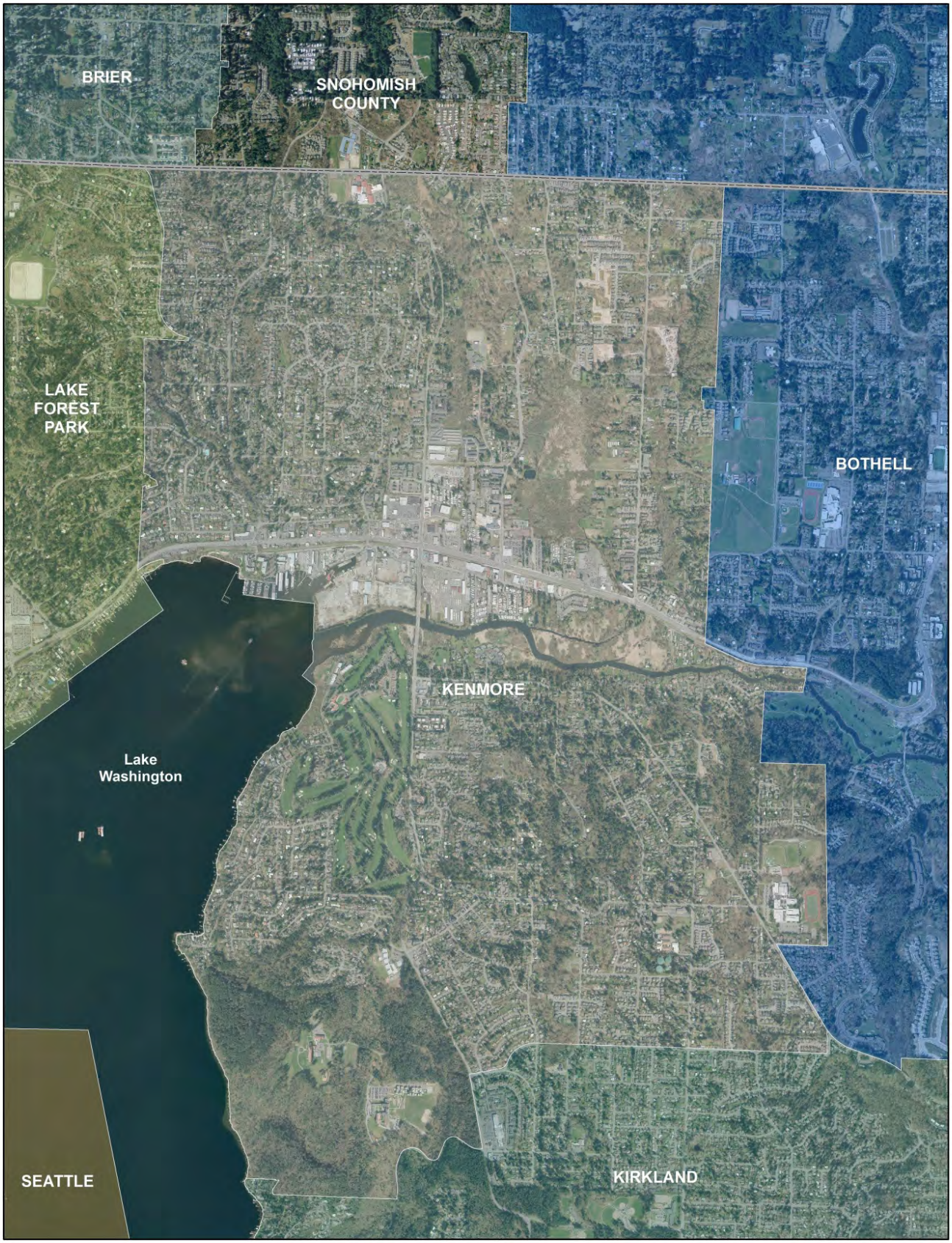
The City has chosen to include optional sub-elements on downtown, community design, natural environment, and shorelines as part of the Land Use Element. Surface Water and Public Services are additional optional elements adopted by the City.

The GMA mandates regular updates of the Comprehensive Plan to ensure that the Plan remains relevant and responsive to changing conditions. After adoption of the City's original Comprehensive Plan in 2001, the City took the approach of regularly updating individual Elements of the Plan rather than letting the Plan lie static for several years until the next State-mandated update deadline. Each year, the City Council determines which portions of the Plan will be reviewed. For the 2015 Comprehensive Plan update, background information in each Element has been refreshed, and goals, objectives and policies have been reconsidered in light of amendments to the GMA and new planning directions in the City.

STUDY AREA

The City of Kenmore is located in the northern portion of King County commonly known as the "Northshore" area. Kenmore is defined by its shoreline along Lake Washington as well as the hillsides and Sammamish River valley that ultimately drain to the Lake. State Route (SR) 522 is the main transportation corridor.

As incorporated in 1998, the City of Kenmore boundaries contain about 6.1 square miles of land. See **Figure INT-1**. Since incorporation, Bothell and Kirkland have annexed property to the east and south of the City. Currently, no unincorporated King County areas exist along Kenmore's borders. The City is bounded by Bothell to the east, Kirkland to the south and Lake Forest Park to the west. The City of Brier in Snohomish County borders the City to the north, along with an area of unincorporated Snohomish County.



City of Kenmore

Figure INT-1

Not to Scale

April 2015

PLANNING PROCESS/CITIZEN INVOLVEMENT

Planning Commission

The City has a seven-member Planning Commission that meets regularly to review components of the Comprehensive Plan as directed by the City Council. As each Element is considered, the Planning Commission hosts public workshops and hearings, or uses other public involvement techniques to engage citizens.

Recent public participation efforts have included web page updates and direct mailings, as well as:

- A Citizen's Advisory Committee, public open houses, and a public hearing on the revised Shorelines sub-Element and related portions of the Natural Environment Element (2007-2012);
- Multiple citizen surveys, a public open house and a public hearing on the revised Parks, Recreation and Open Space Element (2013);
- Multiple workshops and a public hearing on planning for the Regional Business commercial area—a significant component of the Land Use Element (2013-2014);
- A public workshop and public hearing on revisions to the Transportation Element, including feedback from the Pedestrian and Bicycle Safety Ad Hoc Citizen Committee (2014);
- A public hearing on the revised Surface Water Element (2014);
- A public survey on the Comprehensive Plan Vision Statement (2015); and
- A public hearing on the revised Vision Statement and Housing, Public Services and Utilities Elements (2015).

In addition to soliciting public input towards the preparation of amendments to the Plan, the Commission:

- Revises the Vision Statement based upon citizen input during the visioning process,
- Studies current conditions, and
- Prepares draft goals, objectives, and policies based upon the Vision Statement and current conditions information.

City Council

Along with assigning Comprehensive Plan updates to the Planning Commission, the City Council reviews the recommendations of the Planning Commission and provides final direction through adoption of an ordinance. In some cases, the City Council holds its own public hearing before making a final decision on recommended Plan amendments.

Regional Coordination

The City works with representatives of special agencies and districts in Kenmore, including A Regional Coalition for Housing (ARCH) and service and utility providers, as well as adjacent jurisdictions. The representatives provide input and perspectives about their responsibilities and their relationship to Kenmore, and they serve as contact points to obtain information.

A draft of the Comprehensive Plan Transportation Element is provided to the Puget Sound Regional Council, as the Regional Transportation Planning Organization (RTPO), for certification. Comments are

received and changes are integrated into the final Element. Review by the Washington State Department of Commerce and the State agencies occurs with every amendment to the Comprehensive Plan.

PLAN ORGANIZATION

Element Summaries

The Kenmore Comprehensive Plan is divided into several chapters or "Elements" which address land uses, downtown, community design, natural environment, shorelines, economic development, housing, transportation, parks and recreation, surface water, public services, utilities, and capital facilities. Each element is characterized below.

Land Use Element

The Land Use Element plays the central role of directing land use patterns and guiding land use decision-making. It provides the basis for housing, transportation, public service, utility, and capital facility plans and policies. The Land Use Element is divided into sub-elements due to the variety and complexity of issues:

- Land Use
- Downtown
- Community Design
- Natural Environment
- Shorelines
- Economic Development

Housing Element

The Housing Element recognizes the vitality of existing neighborhoods, inventories existing and projected housing needs, identifies sufficient land for a variety of housing types and needs, and makes adequate provision for housing needs for all economic segments of the community. The Housing Element is intended to promote and maintain residential neighborhoods, ensure a range of densities and housing types for all incomes, address special needs housing, and the quality of the residential environment.

Transportation Element

The Transportation Element addresses street classifications, levels of service, travel forecasts, travel improvements, alternative modes, funding strategies, and concurrency management. It is based upon current and projected land use and travel patterns. Both local and State transportation facilities are addressed.

Parks, Recreation and Open Space Element

The Parks, Recreation, and Open Space Element provide policies addressing: open space and parks; priorities for park maintenance and acquisition; and coordination and improvement of recreation programs.

Surface Water Element

A separate Surface Water Element is an optional item under the Growth Management Act, although the Act calls for adequate public facilities and services to serve development. The Surface Water Element addresses management of the City's municipal separate storm sewer system, private surface water systems and natural surface water systems.

Public Services Element

An element addressing public services is not directly required by the Growth Management Act, but the Act's goals address providing adequate public services to serve development. The Public Services Element focuses upon citizen participation and communication, efficient municipal services, emergency services, education, and human services.

Utilities

The Growth Management Act requires that a utility element address the location and capacity of existing and proposed utilities including electric, telecommunication, and natural gas lines. The Utilities Element addresses electric, communication, and natural gas services as well as water, wastewater, and solid waste services, and conservation.

Capital Facilities Element

The Growth Management Act requires that comprehensive plans include a Capital Facilities Element which addresses capital facility needs sufficient to support the designated land use intensities. The element establishes the levels of service for the necessary capital facilities. The Element includes goals, objectives, and policies which outline level of service standards, infrastructure provided concurrent with development, preparation of capital facility plans, facility funding, and essential public facilities.

Format of Goals, Objectives and Policies

A comprehensive plan is a statement of policy identifying environmental, social, and economic desires, and its accompanying maps are a reflection of stated policies. This means that the goals, objectives and policies play a central role in the plan. The following definitions have guided the preparation of the goals, policies and objectives as used in the plan:

Goal:	Goals are broad, general statements of the desired long-term future state towards which the Plan aims. They indicate what ought to exist in a community or what is desired to be achieved in the future.
Objective:	Objectives are statements of the desired short-term and more measurable aims of the Plan; the objectives show how a goal will be pursued.
Policy:	A policy describes a particular course or method of action to accomplish the purposes of the comprehensive plan. Policies are decision-oriented statements which guide the legislative or administrative body while evaluating a new project or proposed change in ordinance.

In sum, goals are value-based statements that are hard to measure. Objectives state more specifically how a particular goal will be pursued. Policies help guide the review of development applications, and also help guide the City Council in adopting ordinances or preparing budgets.

For the purposes of the Kenmore Comprehensive Plan, the policies often use "should" rather than shall. The approach is to use "should" in the Comprehensive Plan. The word "shall" would then be used in implementing ordinances or codes.

Implementation Strategies

Each Element contains more specific implementation strategies to move the City closer to achievement of the goals, objective and policies of the Comprehensive Plan. These strategies identify approaches to regulations, educational or incentive programs, and/or coordination with agencies, service providers, or adjacent jurisdictions.

KENMORE 20-YEAR VISION

As we look into the future, we see Kenmore as a place that residents, businesses and visitors find welcoming, with courteous people, and that offers a high quality of life to live, raise children, shop, work, recreate, and socialize. In 2035, we see Kenmore as a fun, vibrant waterfront community that

- is connected both visually and physically to its waterfront, recognizing it as a significant local and regional asset
- supports recreation and health through well-maintained parks, trails, and open spaces
- protects natural and environmentally sensitive areas, significant open space, trees, and air and water quality
- provides a safe, reliable and effective system of streets, sidewalks, bike ways, trails, and transit routes, linking significant local and regional destinations
- has its own sense of place and an identifiable, walkable downtown offering commercial, civic, cultural and park spaces, integrated with multifamily housing
- has an economic base that provides a range of goods and services, offers quality employment opportunities, and supports local businesses
- has clear design standards creating attractive, functional, and enduring buildings and places
- supports the character of its single family residential neighborhoods
- offers a diversity of housing types to provide a choice of attractive living accommodations for all residents
- encourages volunteerism and public involvement and works as a good partner with citizens and governments throughout the region
- supports the safety, health, and welfare of all of its citizens
- supports and encourages education and quality schools
- is inclusive and family friendly, with a small town feeling, that fosters a sense of belonging and pride
- supports local arts, culture and history

To achieve this vision, responsible commitments in planning and resources will be made. We share and support this vision for Kenmore.

DEMOGRAPHICS AND ECONOMICS

INTRODUCTION

Population information can help describe a community's social and economic characteristics. Population projections are a foundation for land use, capital facility, and utility planning. This section describes historical population and employment growth and future population and employment projections.

EXISTING CONDITIONS

Population

Recent population information is available for the City of Kenmore from the Washington State Office of Financial Management (OFM) and the U.S. Census. The OFM collects U.S. Census Information and building permit information to prepare annual population estimates. Refer to **Table DE-A**.

TABLE DE-A
CITY OF KENMORE
EXISTING POPULATION/HOUSING

CHARACTERISTIC	2000 U.S. Census	2005 OFM	2010 U.S. Census	2014 OFM
Population	18,678	19,227	20,460	21,370
Housing	7,488	8,066	8,569	8,835
Single-family	5,235 (70%)	5,599 (69%)	6,024 (70%)	6,276 (71%)
Two+ Units	1,892 (25%)	2,091 (26%)	2,254 (26%)	2,268 (26%)
Mobile Home & Special Housing Units	361 (5%)	376 (5%)	291 (3 %)	291 (3%)

Sources: US Census 2000 and 2010; Washington State Office of Financial Management, 2005 and 2014

Table DE-A shows a 14 percent increase in population in the 14 years between 2000 and 2014 and an 18 percent increase in housing units.

Resident Characteristics

2010 U.S. Census and American Community Survey (ACS) information is available at the City limits level. Unlike the Census, the ACS, initiated by the Census Bureau in 2005, collects estimated information about social, economic and housing characteristics in both 3- and 5-year intervals. Information about resident characteristics is shown in **Tables DE-B and DE-C.**

TABLE DE-B
2010 US CENSUS

CHARACTERISTICS	YEAR 2010
Population	20,460
Households	7,984
Sex	
Male	10,142 (49.6%)
Female	10,318 (50.4%)
Age	
Under 5 years	6.7%
65 years and over	11.9%
Median Age	39.5 years
Race	
White	80%
Black or African American	1.6%
American Indian & Alaska Native	.5%
Asian	10.5%
Native Hawaiian and other Pacific Islander	.3%
Other, including two or more races	7%
Hispanic or Latino Population	7%

TABLE DE-C
2009-2013 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES

CHARACTERISTICS	YEAR 2013
Educational attainment, age 25 yrs. +	
Less than 9th grade	1.9%
9th-12th, no diploma	4.9%
High school grad/GED	14%
Some college, no degree	22.2%
Associate degree	8.3%
Bachelor's degree	29.9%
Graduate or professional degree	18.8%
Civilian employed population, age 16 yrs.+	**10,181**
Agric., forestry, fishing and hunting, mining	34 (<1%)
Construction	581 (6%)
Manufacturing	1,124 (11%)
Wholesale trade	405 (4%)
Retail trade	1,110 (11%)
Transportation and warehousing, and utilities	184 (2%)
Information	395 (4%)
Finance and insurance, and real estate and rental and leasing	697 (7%)
Professional, scientific, management, administrative and waste management	1,851 (18%)
Educational services, and health care and social assistance	2,200 (22%)
Arts, entertainment, recreation, accommodation and food services	775 (8%)
Other services, except public administration	515 (5%)
Public administration	310 (3%)
Median Household Income	**$82,334**

U.S. Census information for 2010 showed the median age to be 39.5 years. Most of the population was between the ages of 5 and 65; there were relatively few young children or senior citizens. The majority of residents were white, with the next greatest number being Asian.

The 2009-2013 American Community Survey shows a highly educated population with the majority either having attended college or attained an associate's degree, a bachelor's degree or a graduate or professional degree. Residents tended to be employed in the following industries: education/health/social services, retail trade, manufacturing, or professional services. Median household income was at $82,334, according to the 2009-2013 American Community Survey.

Employment in Kenmore

Based upon all employees "covered" under the State's unemployment insurance act, the Puget Sound Regional Council (PSRC) estimates that there were 3,606 jobs located in the City in 2013. Covered employment accounts for approximately 85-90% of all employment, but excludes some jobs, for example, proprietors and self-employed individuals. The employment breakdown is shown in **Table DE-D**. The jobs tend to be in services (including information, professional services, management, administrative support, health care, and arts and entertainment) and education.

TABLE DE-D
EMPLOYMENT IN THE CITY OF KENMORE (2013)

INDUSTRY/TRADE	NO. EMPLOYED
Construction and Resources (Mining, Forestry)	366
FIRES (Finance, Insurance, Real Estate)	116
Services (including information, professional services, management, administrative support, health care, and arts and entertainment)	1,768
Manufacturing	54
Retail	384
WTCU (Wholesale trade, Transportation, Communication, Utilities)	301
Education	495
Government	123
Total	3,606

Source: Puget Sound Regional Council 2013 Covered Employment Estimates by Jurisdiction

Kenmore's larger private employers are shown in **Table DE-E**. Bastyr University, the City's largest employer, employs approximately 500 staff and faculty, including those who work part-time.

TABLE DE-E
KENMORE BUSINESSES (2014)

TOP PRIVATE EMPLOYERS	EMPLOYEES	DESCRIPTION
Bastyr University	500	Education
Kenmore Air Harbor	250 (summer peak season)	Airline
Safeway	120	Grocery

FUTURE TRENDS

Puget Sound Regional Council

The Puget Sound Regional Council (PSRC) provides historical population, housing, and employment information as well as future population, housing and employment forecasts. The PSRC prepares the

forecasts for Forecast Analysis Zones (FAZs) and Transportation Analysis Zones (TAZs) in order to prepare regional transportation and land use plans (i.e. Transportation 2040 and Vision 2040). Information in this section uses PSRC data, information from the City's 2014 travel demand forecasting model, as well as historic U.S. Census data. **Table DE-F** shows both past and future population, housing and employment information.

TABLE DE-F
POPULATION & HOUSING TRENDS

Year	Population	Housing Units	Employment
2000	18,678	7,488	4,601
2010	20,460	8,569	3,625
2035	28,473	12,236	6,704

Source: 2000 and 2010 US Census; Puget Sound Regional Council

The number of housing units in the City has increased steadily over time. In the 10 years between 2000 and 2010, 1,081 new housing units were built. It is anticipated that an additional 3,667 units will be built over the 25 years between 2010 and the 2035 planning horizon. This averages to an additional 147 new units annually. Jobs actually were lost in the City during the decade between 2000 and 2010, reflecting impacts of the Great Recession. Over the 25 years between 2010 and 2035, it is anticipated that an additional 3,079 jobs will come to Kenmore--an average of 123 new jobs per year.

SUMMARY

- Population and housing units increased 9.5 percent and 14 percent, respectively, between the year 2000 and 2010.
- U.S. Census information for 2010 shows a median age of 39.5 years. Most of the population is between the ages of 5 and 65; there are relatively fewer young children or senior citizens, although the relative proportions of both of these groups are growing.
- In 2010, the majority of residents were white, with Asians the next largest ethnic group.
- The 2009-2013 American Community Survey shows a highly educated population with the majority either having attended college, or attained an associate's degree, a bachelor's degree or a graduate or professional degree. Residents tended to be employed in the following industries: education/health/social services, retail trade, manufacturing, or professional services.
- In the five years between 2009 and 2013, the average median household income in the City was $82,334.
- Based upon all employees "covered" under the State's unemployment insurance act, approximately, 3,606 jobs were located in the City as of 2013. Many jobs are service-oriented.
- Bastyr University, Kenmore Air Harbor, and Safeway employ the greatest number of people.
- The Kenmore area saw steady growth in population and housing between 2000 and 2010. This growth is expected to continue to the 2035 planning horizon.
- The estimated 2014 population of the City was 21,370. It is forecast that there will be 28,473 persons and 12,236 housing units within the City by 2035. The net increase in population would equal 7,103.

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LAND USE ELEMENT

INTRODUCTION

Purpose

The Land Use Element plays the central role of directing land use patterns and guiding land use decision-making. It provides the basis for housing, transportation, public service, utility, and capital facility plans. The Land Use Element is divided into sub-elements due to the variety and complexity of issues:

- Land Use
- Downtown
- Community Design
- Natural Environment
- Shorelines
- Economic Development.

Growth Management Act

The land use element is the central requirement in the Growth Management Act (GMA). It provides the basis for all the other required elements including housing, transportation, capital facilities, and utilities elements. These other elements rely on the future land use pattern and the population and housing accommodated by the land use pattern in determining needed improvements and strategies. The specific GMA requirements for the land use element include addressing:

- Distribution/location/extent of land uses: Agriculture, timber production, housing, commerce, industry, recreation, open spaces, general aviation airports, public utilities, public facilities, other
- Population densities, building intensities, and estimates of future population growth
- Protection of the quality and quantity of ground water used for public water supplies
- Urban planning approaches that promote physical activity
- Drainage, flooding, and stormwater runoff within and nearby the jurisdiction as well as guidance for corrective actions to mitigate or clean discharges to waters of the state.

Although the GMA directs growth at urban densities to the Urban Growth Area (including Kenmore), lower development densities may be used as a strategy to protect critical areas.

Vision 2040

Vision 2040 is a regional growth strategy prepared by the Puget Sound Regional Council (PSRC) addressing King, Kitsap, Pierce, and Snohomish Counties. Vision 2040 directs future development into the urban growth area, while focusing new housing and jobs in cities and within a limited number of designated regional growth centers. In Vision 2040, Kenmore is identified as a "Larger City," which is described below:

> **Larger City** A Larger City has a combined population and employment total over 22,500, but is smaller than a Metropolitan or Core City. Many of these 18 cities (which include Edmonds, Kenmore, Mountlake Terrace, Shoreline, and Woodinville) are home to important local and regional transit stations, ferry terminals, park-and-ride facilities, and other transportation connections. Central places within this group of cities are expected to become the more important subregional job, service, cultural, and housing centers over time. The Regional Growth Strategy envisions an expanding role for these cities in accommodating growth.

Vision 2040 contains the Multi-County Planning Policies required by the Growth Management Act and provides a common regionwide framework for countywide and local planning in the central Puget Sound region. Policies address the environment, development patterns, housing, economy, transportation, and public services. The policies reflect the commitment in the Vision 2040 vision statement to, "protect the environment, support and create vibrant, livable, and healthy communities, offer economic opportunities for all, provide for safe and efficient mobility, and use the region's resources wisely and efficiently."

Countywide Planning Policies

The 2012 King County Countywide Planning Policies define an Urban Growth Area within which urban development should occur. The City of Kenmore is included within the Urban Growth Area. Residential, commercial, and industrial development should occur in an urban context and be sufficiently dense to efficiently support urban services.

The policies establish a "centers" strategy. Growth is to be focused within cities with a countywide designated Urban or Manufacturing/Industrial Center such as Seattle's Northgate and Kirkland's Totem Lake areas. Local centers, including Kenmore, accommodate housing, employment and services in a compact form and at sufficient densities to support transit service and to make efficient use of urban land. As in Vision 2040, Kenmore is identified as a "Larger City."

EXISTING CONDITIONS

History of Kenmore

Kenmore's beginnings and cultural features help provide a context for understanding Kenmore today. This section addresses archaeological and historic resources in the City of Kenmore.

Native Americans

The Native Americans who lived in the Sammamish River Valley Area were known as the Simump Tribe. Local settlers called them the Squaks, a corruption of the word "Squowh." According to historical accounts, not more than 200 Native Americans lived along Lake Sammamish or the Sammamish River Valley when white settlers arrived in the 1860s. Numerous arrowheads were found by early settlers at the mouth of the Sammamish River along Lake Washington.

According to the King County Office of Cultural Resources, there are no registered archaeological sites in Kenmore. However, the 1975 Washington Environmental Atlas, prepared by the US Army Corps of Engineers, indicates that along Lake Washington and the mouth of the Sammamish River are "areas known to contain large numbers of sites." It is therefore possible that there are unknown archaeological sites in Kenmore due to its lake and river frontage and low elevations.

Kenmore Founders

Abundant timber lured settlers to the Kenmore area in the 1860s. The forest-covered hills were owned by investors in Washington timber lands. Philo Remington, gun inventor, purchased vast land holdings including some in Kenmore. His son-in-law Watson C. Squire moved west, settling in the Seattle area, and purchased most of Remington's land holdings in Kenmore in 1880. Squire owned most of what is the northwest quadrant of Kenmore, from 62nd Avenue NE to 68th Avenue NE and from the waterfront to the top of the hill at NE 190th Street. He platted this land in 1892. Squire later became Territorial Governor in 1884, and then the first U.S. Senator from the State of Washington in 1889.

John McMasters leased property from Squire and operated McMasters' Shingle Mill from 1900 to 1920, the first commercial business in Kenmore. The mill was located just east of the current Kenmore Pre-Mix site. It was McMasters who named the community Kenmore because it reminded him of his birthplace Kenmore, 40 miles south of Ottawa, in Canada. This in turn had been named after Kenmore, Scotland, which is similar to the study area with its large lake and surrounding mountains.

Kenmore was considered rural and was connected to the region via railroads and logging roads as far back as 1876. In 1887, Seattle's Lake Shore and Eastern train went around Lake Washington along the route of today's Burke-Gilman trail and was a major regional line serving Puget Sound logging areas.

Seattle residents would take Sunday train rides rather than risk primitive roads to visit Kenmore and its "wilderness." There were early wagon roads between Seattle and Kenmore and by 1909 a road had been paved as far as Lake Forest Park. During 1913-1914, the brick road between Lake Forest Park and Bothell was opened and followed the original wagon trail. Other than travel by train or wagon, the area was accessible by steamboats that would stop at various landings on the lake.

After completion of the brick road (now Bothell Way) in 1913-1914, restaurants sprang up in the Kenmore portion of the road and it became a custom to drive out to Kenmore for Sunday dinner. A piece of the original brick road is still visible just north of the Wayne Golf Course clubhouse.

About the time of the completion of the brick road, Kenmore School District built its first school in 1914 on McMasters Street, now NE 181st Street. Classes ranged from eight to 12 students in one class, with a class for each age. When no longer used as a school, the Kenmore Community Club used the building from 1925 to 1930. The Kenmore School District joined with Bothell School District in 1916.

After the end of logging and in the days after World War I, Kenmore's population increased when Puget Mill sold a number of small tracts for residential use. The mill owners held much of the land in what is now Kenmore and when lots were put on the market, many homes were built north of what would be Bothell Way. Even with this boost in residents, the town was still a small community of about 150 persons and a few businesses.

The area began to develop and increase its population in the early 1930s. This growth and development included restaurants, dance halls, and roadhouses along Bothell Way, and earned Kenmore a questionable reputation. The area was known as "Roadhouse Strip."

In contrast to the development of the roadhouses, St. Edward Seminary was built in 1931 on 300 acres of Archdiocese property. Neighboring St. Thomas Seminary was built in 1959. Due to the lack of enrollment, St. Edward was closed in 1976 and St. Thomas was closed in 1977. A citizen campaign resulted in the State's purchase of the St. Edward portion of the property while the former St. Thomas seminary was leased to and eventually purchased by Bastyr University.

In the 1940s several businesses, many still operating, were established and provided local employment. Continuing Kenmore's connection to Lake Washington, in 1946 Bob Munro established Kenmore Air Harbor with one hangar and one two-seater aircraft.

Historic Structures and Places

The King County Historic Preservation Program maintains an inventory of over 1,000 historic resources located throughout the County. Development proposals for resources listed on the inventory are circulated to the King County Historic Preservation Officer for review and comment. The approximately 100 sites in Kenmore which are included in the 2010-2011 Historic Reconnaissance-Level Survey conducted by the King County Historic Preservation Program include:

- Kenmore Bridge over the Sammamish River
- Kenmore Community Clubhouse
- Aqua Club
- Inglewood Golf Course Clubhouse
- St. Edward Seminary
- St. Thomas Seminary (Bastyr University)
- Kenmore Air Harbor House
- Arnston-Hartlove Grocery
- Northlake Lutheran Church
- Church of the Redeemer
- Charles Thomsen House.

The above sites are located on **Figure LU-1**. Most are potentially eligible for local landmark status. The Kenmore Community Clubhouse was designated as a local landmark in 2015. The Thomsen House was designated as a King County Landmark prior to Kenmore's incorporation. Both of these local landmark properties are described more fully below.

According to the State of Washington Office of Archaeology and Historic Preservation, the St. Edward Seminary is listed on the State of Washington Heritage Register and in the National Register of Historic Places. The Charles Thomsen House may also be eligible for the Washington Heritage Register or the National Register.

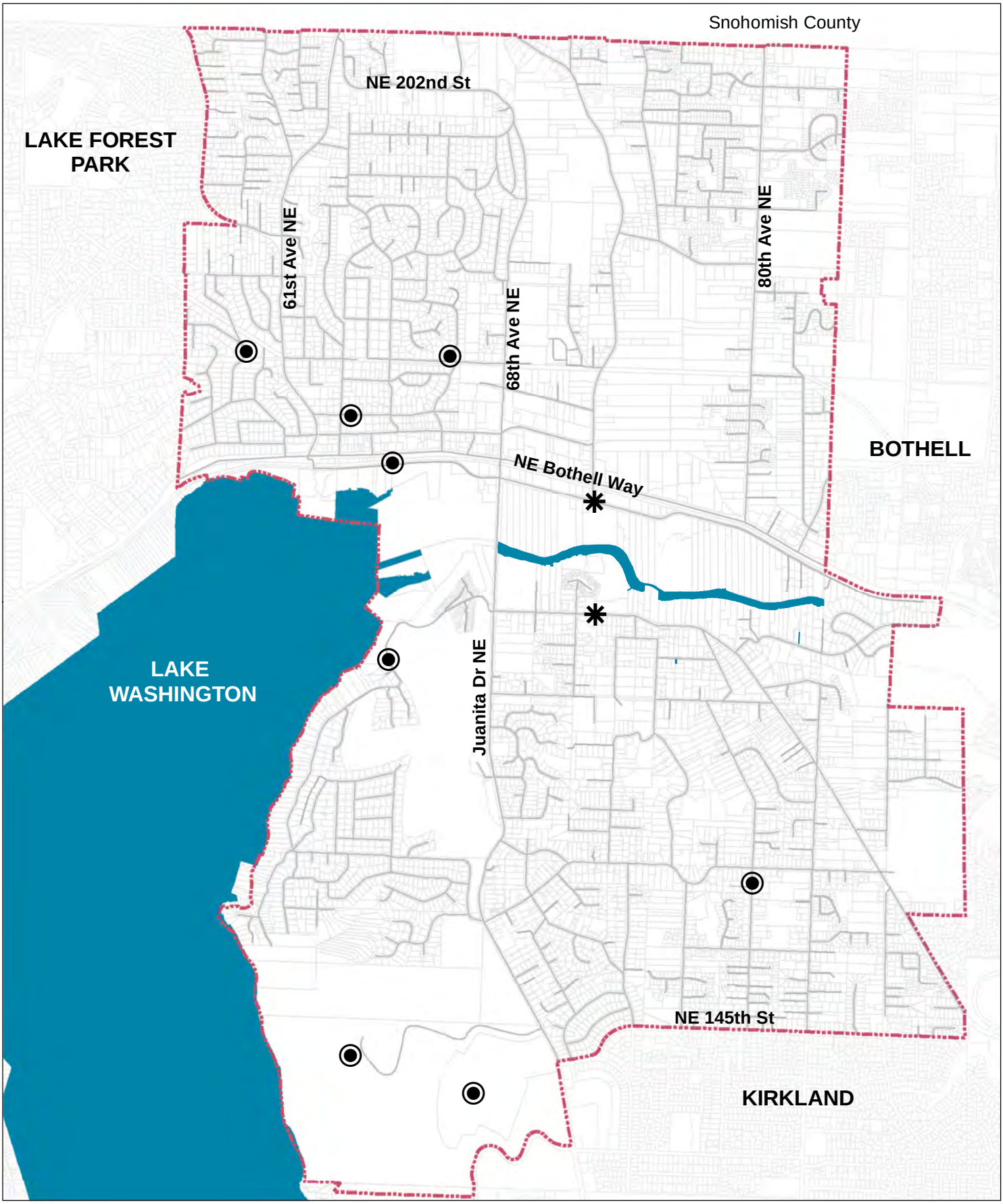
The 2010-2011 reconnaissance survey also identified many homes in the Uplake Terrace neighborhood that may be eligible for local landmark status as representative of Mid-Century Modern architecture. Additional historic surveys would identify potential landmarks in other neighborhoods of the City.

Charles Thomsen House

The Charles M. Thomsen House was built in 1927 in the French Provincial Style. While the vast majority of Period Revival style residences in King County are located in Seattle, the handful of Period Revival homes in rural, unincorporated areas of the County consist of variations of the English Cottage and Colonial Revival Styles. The Thomsen Estate is notable as it is the only known example of a rural residence constructed in the French Provincial Style and it is considered to be in good condition with many original features.

Kenmore Community Club

The Kenmore Community Clubhouse was constructed in 1929-1930 for the Kenmore Community Club. The Landmarks Commission's landmark designation report states that the Clubhouse is a rare surviving building that exemplifies the importance of clubs and civic organizations in early to mid-20th century King County. The Clubhouse has served as a meeting space for a wide variety of organizations and activities, especially during the 1930s, 40s and 50s, and is still being used for its original purpose.



Historic Resources Inventory

Date: 4/10/2015

Legend

- ✱ Designated Landmark
- ◉ Historic Site

0 0.1 0.2 0.4 0.6 0.8 Miles

Figure LU-1

Land Use Patterns

This section analyzes existing land use patterns in the City of Kenmore. Both existing and planned land uses are addressed.

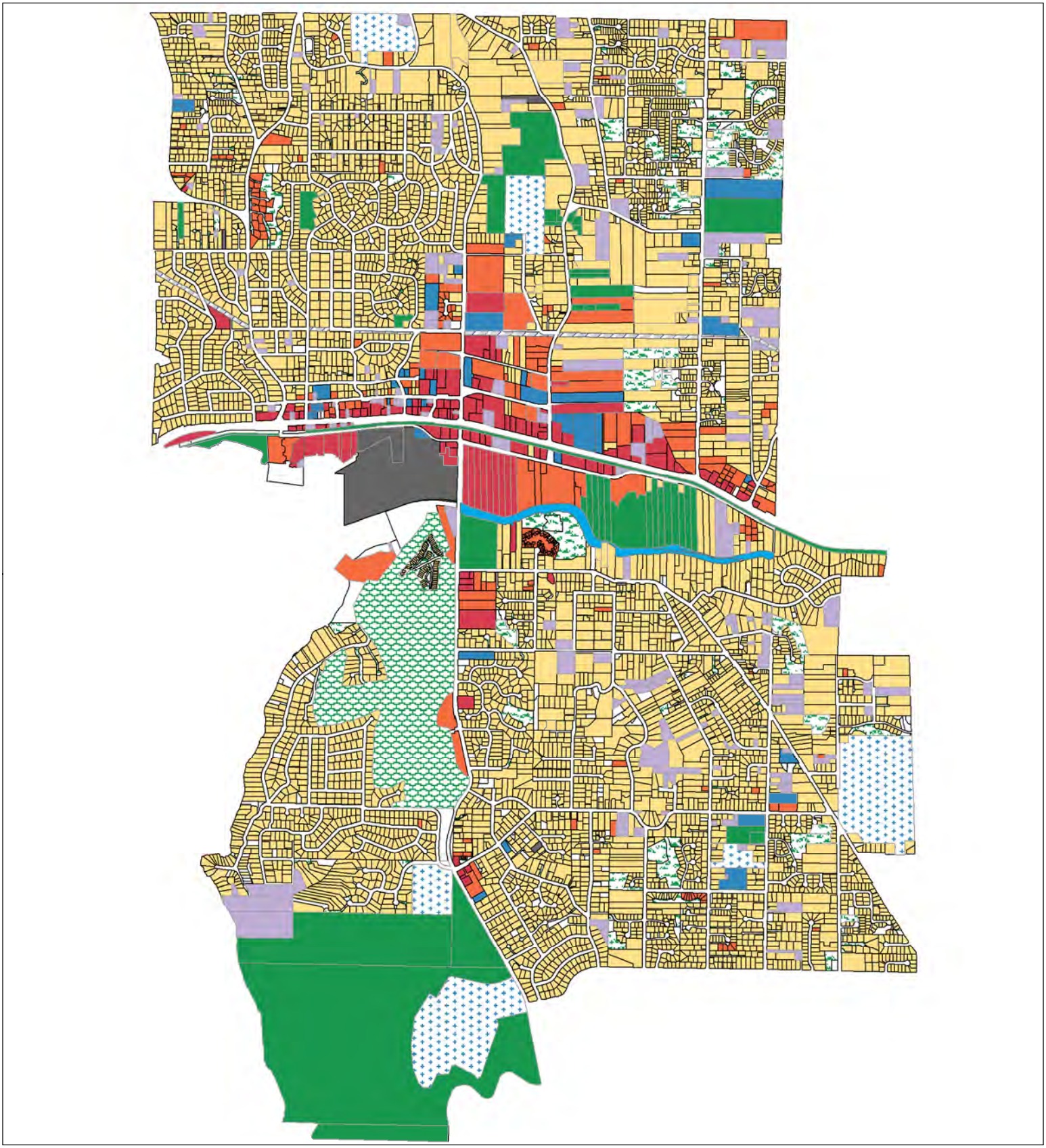
Existing Land Uses

The City of Kenmore boundaries encompass approximately 6.1 square miles of land. The City contains primarily single-family residential land uses, but also includes a variety of other uses as shown in **Table LU-A and Figure LU-2**. Kenmore is largely a built-out community with a limited amount of unconstrained vacant land suitable for development, but significant opportunities for redevelopment.

TABLE LU-A
2015 LAND USE BY PARCELS - CITY OF KENMORE

CATEGORY	ACRES	PERCENT
Single-family	1,944	55.02%
Multi-Family	182	5.14%
Commercial	278	7.87%
Industrial	144	4.07%
Public	27	.77%
Schools	147	4.17%
Utility	10	0.27%
Parks	455	12.88%
Golf Course	135	3.82%
Open Space/ Greenbelt/Tract	42	1.19%
Vacant	166	4.70%
TOTAL	3,530	100%
Note: Acreage figures have been rounded.		

Source: King County Department of Assessments



Existing Land Use

Date: 4/9/2015

Legend

- Single Family
- Multiple Family
- Commercial
- Industrial
- Parks
- Public Services
- Schools
- Golf Course
- Utility
- Tracts & Open Space
- Vacant

N
W E
S

0 0.175 0.35 0.7 1.05 1.4 Miles

Source: King County Assessors Office; City of Kenmore

Figure LU-2

Most of the Kenmore's single-family residential growth will occur on remaining vacant parcels, estimated at 102 acres net available in 2007, or as a result of infill development of partially developed properties. However, most of Kenmore's commercial growth would occur as redevelopment of developed lands.

Kenmore Air Harbor

Founded in 1946, Kenmore Air Harbor is a unique land use in the City. The seaplane base is located on a 5-acre property on the Lake Washington waterfront. The airline provides daily service to downtown Seattle, the San Juan Islands and Canada, and includes customs services for international flights.

The seaplane fleet has an average size of 20 single-engine planes. In 2015, about half of the fleet was made up of de Havilland Otters (the largest planes, accommodating up to 10 passengers). The other half was smaller de Havilland Beavers and two Cessna 180s. Given dock space constraints, the airport estimates that no more than 25 seaplanes will be based at Kenmore Air Harbor in the future, although the mix of planes may change to accommodate more of the larger aircraft. The Air Harbor also provides space for approximately 25 private airplanes.

During the summer season, approximately 110 "operations" per day (single takeoffs or landings) occur at Kenmore Air Harbor. On a typical winter day, 10 operations could be expected. In 2014, approximately 61,000 passengers were served. July and August are the Air Harbor's busiest months.

The seaplanes are able to fly from dawn to dusk, however, the airport has a voluntary curfew in place, restricting operations in Kenmore before 7:30 a.m. on weekdays and before 8:30 a.m. on weekends.

Although all Kenmore Air seaplanes are based and maintained in Kenmore, half of them travel to Kenmore Air's Lake Union passenger terminal before traveling north to Canada and the San Juan Islands. The balance of the fleet travels directly from Kenmore to northern Canada.

Along with passenger services, the Air Harbor does seaplane restoration and maintenance on its property. Annual inspections may involve engine testing or other noise. Kenmore Air has a full parts department for de Havillands and Cessnas. They are, in fact, one of the largest seaplane parts supplier in North America. They also provide parts and technical support for Edo floats, although float manufacturing is done off-site.

During its summer peak, the Air Harbor employs approximately 250 people.

Two runways on Lake Washington are used: Waterway 16-34 is 10,000' long and 1,000' wide; Waterway 18-36 is 3,000' long and 1,000' wide. Most of the time, the seaplanes take off to the southwest. If the north wind is strong, the planes taxi farther down the lake and take off to the north near the Air Harbor.

Landing patterns at Kenmore Air Harbor are determined by wind direction, as aircraft normally land into the prevailing wind. If the wind is from the north, as it is during a typical summer day, aircraft fly northbound up the middle of the lake from the Sand Point area, then land to the north at Kenmore and taxi in to the dock. If the wind is from the south, which is more common during the winter months, aircraft fly a standard left rectangular traffic pattern and land to the south on the lake. The downwind leg of this pattern is flown over the golf course, the base leg just east of 68th Avenue NE, and the final approach leg approximately over the CalPortland property. On an annual basis, approximately 75% of all landings are northbound and 25% southbound.

There is a speed limit to reduce boat speeds in the seaplane waterway area that is monitored by the King County Harbor Patrol.

FUTURE LAND USE

When comparing **Figure LU-2**, Existing Land Use, and **Figure LU-3**, the Kenmore Land Use Plan (provided later in this Chapter), the future development pattern would show:

- **Protection/maintenance of single-family residential areas.** This is a key concept of the Vision Statement to protect single-family areas and concentrate most multi-family in Downtown.

- **Concentration of commercial and business uses locations where they are currently located or in areas targeted for conversion.** New commercial development would primarily occur in the form of redevelopment in Downtown to minimize intrusion into single-family areas and to effectively concentrate these uses where alternative transportation modes are or will be available. The Community Business district provides additional opportunities for mixed use development to support Downtown and the local community.

- **Phasing out of heavy manufacturing and industrial uses in favor of mixed uses (commercial and residential) and clean light manufacturing.** Heavy manufacturing and industrial uses would be phased out over time through market and regulatory forces, and mixed uses and clean light manufacturing would replace them.

- **Creation of a central place in Kenmore.** Creating a Downtown is central to the Vision Statement provisions including a central place for the community, promotion of centrally located multi-family and mixed-use development with access to alternative modes of transportation, and other provisions. The northwest quadrant of the 68th Avenue and SR-522 intersection is identified as an area for a concentration of smaller-scale civic and mixed uses, while the southeast quadrant of the same intersection would be developed with larger-scale private mixed-use master planned developments. Lakepointe would develop as planned in the southwest quadrant of the intersection.

- **Retention of institutional uses including government, schools, and public park properties.** The purpose of this classification is to identify and retain key public and private institutional uses in the City, to promote master planning of facilities, and to prevent conversion of significant properties to other residential or commercial uses without benefit of the rezone process.

Development Capacity

Development capacity considers vacant, underdeveloped and redevelopable property. A relatively small portion (about 5 percent) of the City's land is vacant. Although some land is vacant due to property owner preferences, some is likely vacant due to environmental constraints such as wetlands, flood hazards, or steep slopes.

Partially vacant land, where perhaps one home is located on a large parcel that, according to zoning, could be further subdivided, is considered to be underdeveloped. Much of the City's platting activity is now occurring on such larger, partially developed residential lots.

As evidenced by the Kenmore Village project, redevelopment of developed properties also can occur in the future. However, it is usually difficult to achieve redevelopment of properties, particularly in a downtown context. Often parcels are small and under multiple ownerships. In order to create a viable project in the market, consolidation of properties is needed.

To determine future development capacity, vacant and partially developed lands were reviewed as part of the King County Buildable Lands project. The methodology for the jobs and housing capacity estimates is provided in the King County Buildable Lands Report 2014.

Assuming development in accordance with the Kenmore Land Use Plan and using 2012 as the base year, the City could accommodate an additional 4,503 housing units and an additional 3,945 jobs.

The City's 2012-2031 housing unit growth target established by the King County Countywide Planning Policies is 2,980 housing units. The adopted Land Use Plan would provide enough zoned capacity, and a more than sufficient market cushion, to exceed the 2031 housing unit target.

Jobs capacity also is greater than the City's 3,897 jobs target, although not by much.

PLAN AMENDMENTS

The Growth Management Act recognizes that Comprehensive Plans are dynamic rather than static, and should be evaluated regularly to ensure that they respond to changing needs of the community and respond to new Federal or State law. In accordance with the Growth Management Act, and Policy LU-2.1.5 of this Element, the City will allow for an amendment process to consider changes to the essential components of the Comprehensive Plan, including Goals, Objectives, and Policies.

The City is required to institute a public participation program identifying procedures whereby proposed amendments or revisions of the comprehensive plan are considered by the City Council no more frequently than once every year, except that amendments may be considered more frequently under the following circumstances:

- The initial adoption of a subarea plan that does not modify the comprehensive plan policies and designations applicable to the subarea
- The adoption or amendment of a Shoreline Master Program under the procedures set forth in chapter 90.58 RCW
- The amendment of the Capital Facilities Element that occurs concurrently with the adoption or amendment of the City budget
- Amendments or revisions to the City's comprehensive plan when an emergency exists or to resolve, if appropriate, an appeal of the Comprehensive Plan filed with the Growth Management Hearings Board or with the court.

Aside from the exceptions above, all proposals are to be considered by the City Council concurrently so the cumulative effect of the various proposals can be ascertained.

GOALS, OBJECTIVES, AND POLICIES

Following are the general land use goals, objectives and policies. In some cases, policies are cross-referenced in more than one Element or Sub-Element and this is noted by a policy reference in italics (e.g., *H-26.1.2*).

GOAL 1. ENHANCE KENMORE'S QUALITY OF LIFE AS A PLACE TO LIVE, RAISE CHILDREN, RECREATE, WORK, SHOP, AND SOCIALIZE.

OBJECTIVE 1.1 Provide a community atmosphere that is inclusive and family-friendly, with a small town feeling that fosters a sense of belonging and pride.

Policy LU-1.1.1 Encourage development within Kenmore that creates and supports a healthy and diverse community. Kenmore should contain affordable housing and employment opportunities and should protect the natural environment and significant cultural resources.

Policy LU-1.1.2 Through land use policies and development regulations that are consistent with state and federal laws, limit land uses and activities that may result in harmful secondary effects to the community, such as crime, vandalism, or neighborhood deterioration. Consider spacing requirements, buffers, landscaping, access, signage controls, business license and operating requirements, as well as other mechanisms to control secondary impacts.

Policy LU-1.1.3 Use incentives, regulations and programs to support land use patterns and development standards that encourage physical activity through walking and bicycling.

Policy LU-1.1.4: Encourage businesses to locate in Kenmore so that residents have more opportunities to walk or bicycle to work.

OBJECTIVE 1.2 Endeavor to provide a complete community, compatible in character and design, containing housing, shops, work places, schools, parks, civic facilities, and community services.

Policy LU-1.2.1 Ensure that Kenmore's plans consider all the issues, resources and needs that make a community whole, including land use, civic, cultural, recreation, transit, health, human services, natural environment, and the provision of infrastructure and other services.

Policy LU-1.2.2 Provide adequate land capacity for residential growth, and for a full range of commercial uses in Kenmore. This land capacity should include both redevelopment opportunities as well as opportunities for development on vacant lands.

Policy LU-1.2.3 Integrate non-residential uses such as governmental, utility, religious, social, and other institutional uses, where appropriate, into residential neighborhoods to create quality communities which have a full range of public facilities and services. These uses should be sited, designed, and scaled to be compatible with existing residential character.

OBJECTIVE 1.3 Maintain and enhance the character of existing single-family neighborhoods by allowing compatible housing, improving infrastructure, and establishing appropriate site development standards.

Policy LU-1.3.1 Ensure that zoning regulations emphasize single-family dwellings as the principal use in the City's established single-family neighborhoods.

Policy LU-1.3.2 Provide development standards that create a consistent and compatible pattern of development within residential neighborhoods. Development standards should address housing densities, lot dimensions, building setbacks and height, impervious surface limitations, access, parking, and other standards.

Policy LU-1.3.3 Provide regular and appropriate levels of investment in transportation, surface water and parks maintenance and improvements within residential neighborhoods, consistent with the City's capital improvement priorities. Encourage special districts to provide services and maintain infrastructure within residential neighborhoods consistent with adopted service and capital improvement plans. *(see Policy H-26.1.2)*

OBJECTIVE 1.4 Create a climate that fosters business creation and retention that positively contributes to the City's quality of life.

Policy LU-1.4.1 Provide adequate land for commercial development of a character which enhances the community's goals, augments the tax base, and does not adversely affect the natural environment.

Policy LU-1.4.2 Ensure zoning regulations accommodate a range of allowable business and commercial uses in appropriate locations at the neighborhood, community, and regional levels.

OBJECTIVE 1.5 Identify and prioritize properties for public acquisition and use.

Policy LU-1.5.1 During the 20-year planning period, identify community needs and site the following facilities or uses in accordance with the Downtown Sub-Element and the Parks, Recreation and Open Space Element:

- Town Green and Community Building
- Parkland, particularly on the waterfront or in under-served areas
- Environmentally sensitive areas, where regulatory measures alone are insufficient.

Policy LU-1.5.2 Encourage public and private community service providers, including the City of Kenmore, to share or reuse facilities when appropriate, to reduce costs, conserve land and provide convenience and amenity for the public. Joint siting and shared use of facilities should be encouraged for schools, community centers, health facilities, cultural facilities, libraries, swimming pools, institutional properties, and other social and recreational facilities.

Policy LU-1.5.3 Promote site development which provides utilities and infrastructure that are maintainable, aesthetically pleasing, and have several functions, such as surface water facilities designed as accessible open spaces for a development.

GOAL 1.1. DEVELOP AND MAINTAIN A SUSTAINABILITY ACTION PLAN, OUTLINING STEPS THE COMMUNITY (INCLUDING CITIZENS, BUSINESSES, CITY ADMINISTRATION AND THE CITY COUNCIL) CAN TAKE TO SUPPORT SUSTAINABLE ECONOMIC PROSPERITY, SOCIAL EQUITY AND ENVIRONMENTAL HEALTH IN KENMORE.

OBJECTIVE 1.1.1 Encourage the availability of healthy, affordable, culturally acceptable food for all community residents.

Policy LU-1.1.1.1 Through land use regulations and economic development, encourage locally-based food production, distribution and choice.

Policy LU-1.1.1.2 Where appropriate, encourage the development of community gardens and farmers' markets as a means to encourage community-building, support local agriculture and promote economic development.

GOAL 2. PROVIDE FOR ORDERLY DEVELOPMENT.

OBJECTIVE 2.1 Implement the Comprehensive Plan Land Use Map.

Policy LU-2.1.1 Designate the proposed general distribution, general location and extent of the uses of land, where appropriate, for housing, commerce, recreation, open spaces, public utilities, public facilities, and other land uses. The official Comprehensive Plan Land Use Map is included as **Figure LU-3**.

Policy LU-2.1.2 Implement a range of residential, commercial, and public land use classifications:

a. Table of Districts and Densities. Utilize the following table to establish land use districts and basic and maximum densities allowed in the City.

LAND USE/ZONE DISTRICT	BASE DENSITY/ MAXIMUM DENSITY WITH BONUS[1]
Residential 1 Dwelling Unit Per Acre (R-1)	1 (4)[2]
Residential 4 Dwelling Units Per Acre (R-4)	4 (6)
Residential 6 Dwelling Units Per Acre (R-6)	6 (9)
Residential 8 Dwelling Units Per Acre (R-8)	8 (12)
Residential 12 Dwelling Units Per Acre (R-12)	12 (18)
Residential 18 Dwelling Units Per Acre (R-18)	18 (27)
Residential 24 Dwelling Units Per Acre (R-24)	24 (36)
Manufactured Housing Community (MHC)	12 to 20
Downtown Residential	48 to 72 (72)
Neighborhood Business (NB)	8 (24)
Community Business (CB)	24 (36)
Waterfront Commercial (WC)	48 (72)
Urban Corridor (UC)	48 (72)

[1] Maximum density may be exceeded when a significant public benefit is provided. Examples include transit-oriented development, MHC preservation, or an approved development agreement.

[2] In the R-1 zone, the base density of 1 unit per acre may be transferred onsite to less constrained property. The bonus indicated in parentheses may only be transferred off-site to a density receiving area such as the Downtown. Bonus criteria are subject to requirements of the Kenmore Municipal Code.

LAND USE/ZONE DISTRICT	BASE DENSITY/ MAXIMUM DENSITY WITH BONUS[1]
Regional Business (RB)	48 (72)
Downtown Commercial	48 to 72 (72)
Public and Private Facilities (PPF)	n/a
Special Study Area	Special District

b. District Descriptions. Utilize the following purpose statements to distinguish the land use districts.

- Residential: The purposes of the Residential Districts are to implement Comprehensive Plan policies for housing quality, diversity, and affordability, and to efficiently use land, public services, and energy. In the R-1 district, the primary uses are single detached dwellings clustered as appropriate in relation to environmental constraints. In the R-4 through R-8 districts, Residential District purposes are accomplished by providing for predominantly single detached dwelling units on lot sizes that vary according to district. In the R-12 through R-24 districts, Residential District purposes are accomplished by allowing for a mix of predominantly apartment and townhouse dwelling units with a variety of densities according to district. In the Residential Districts, accessory uses and complementary nonresidential uses that are compatible with residential communities may be allowed.

- Manufactured Housing Community: The Manufactured Housing Community District is intended to ensure consistency with RCW 36.70A.070(2)(c) which requires that sufficient land be available for all types of housing including manufactured housing. The Manufactured Housing Community District promotes residential development that is higher density than single-family, but single-family in character. The land use designation is assigned to existing manufactured housing communities.

- Downtown Residential: The Downtown Residential District provides higher density residential development in support of the Downtown Commercial District. Limited retail and office uses are also allowed as part of mixed-use developments. The District represents an opportunity to provide a range of housing types in the community with attention to appearance and scale. The Downtown Residential land use plan classification is implemented by the Downtown Residential zone.

  Some limited existing uses requiring vehicle storage that continue to contribute to the economic vitality of downtown are permitted to continue their business on existing properties, but are encouraged to transition the use of their properties to those more in keeping with the first paragraph of this intent statement.

- Neighborhood Business: The purposes of the Neighborhood Business District are to provide convenient daily retail and personal services for a limited service area, to minimize the impacts of commercial activities on nearby properties, and to provide for limited residential development.

- Community Business: The purpose of the Community Business District is to provide pedestrian-friendly, mixed-use development that both supports larger mixed-use and commercial areas with its residential development, and provides small-scale retail, educational, and personal service uses, and offices, for the local community. Allowable uses include office uses and mixed-use (housing and retail/service) developments. Commercial uses with extensive outdoor storage and industrial uses would be discouraged in the Community Business District.

- Waterfront Commercial: The purpose of the Waterfront Commercial District is to focus on existing water-dependent uses, but also to allow eating and drinking places, temporary lodging and other uses to support marina and airport development. Compatible light manufacturing would be appropriate. Office and mixed use multifamily development are desirable for the future.

- Urban Corridor: The Urban Corridor District is located along SR-522. The overall vision is to convert the area on the south side of the highway from a commercial strip corridor to an area of primarily office and multifamily development, taking advantage of lake views and proximity to transit.

  On the north side of the highway, west of downtown, the area would continue to be a mix of restaurant, retail and service uses, with additional opportunities for office and mixed use multifamily development.

  East of downtown, portions of the district (nearest the transit center) would be an enterprise zone, allowing for a wide range of commercial uses, including bulk retail, as well as standalone multifamily development. Farther to the east, near the city limits, office and multifamily uses are envisioned.

  New auto-oriented businesses would be prohibited throughout the district.

- Regional Business: The purposes of the Regional Business District include to provide for the broadest mix of retail, office, wholesale, and service uses, with compatible storage and light manufacturing uses, serving regional market areas and offering significant employment opportunities. These purposes are accomplished by supporting existing businesses, while encouraging compact and mixed-use development that is supportive of transit and pedestrian travel for the future. Industrial and heavy manufacturing uses are no longer appropriate in this district.

- Downtown Commercial: The Downtown Commercial District features a mix of private and public uses designed to create a small-town feel, and pedestrian-friendly environment. Public places, sidewalks, extensive landscaping, transit-orientation, shared or structured parking, protection of environmentally sensitive areas, and high quality design and signage are key features. Permitted uses emphasize mixed or multiple use developments, and include high-density housing, civic and governmental, offices, small-scale commercial and retail, and locally oriented professional and personal services.

  Uses not compatible with the Downtown Commercial intent such as those which require vehicle or materials storage, service bays, wide curb cuts, expanses of exterior product display or storage, or produce little customer or visitor activity are discouraged. Park-and-Ride/Transit Centers are promoted along SR-522, particularly in the Northwest Quadrant of the 68th Avenue NE/SR-522 intersection.

  Some limited existing uses that require vehicle storage and continue to contribute to the economic vitality of downtown Kenmore are permitted as existing uses on existing properties, though the use is encouraged to transition use of the property to those more in keeping with the first paragraph of this purpose statement. The Downtown Commercial land use plan classification is implemented by the Downtown Commercial zone.

- Public and Private Facilities: The purpose of the Public and Private Facilities District is to identify and retain public and private lands primarily utilized for parks, recreation, schools, medical facilities (e.g. hospitals, clinics, medical districts etc.), non-profit service uses and organizations, utilities, government buildings, and other administrative or institutional uses. Master plans would be encouraged to determine the type and extent of these primary uses as well as compatible accessory uses. Development regulations include a process to reclassify smaller properties to the zone most prevalent immediately surrounding the site subject to the provision of information by the institution about the need to convert to a different use.

- Special Study Area – Bastyr University: The City has designated the St. Thomas Seminary property, owned by Bastyr University as a Special Study Area recognizing the Bastyr University Master Plan approved in December 2009 that will guide the development of the property. The land use designation for the Campus is Public and Private Facilities and development activities on the Campus will be limited to activities and levels of use as specified in the approved Master Plan and implementing zone of Public and Semi-Public.

  The Bastyr University Campus Master Plan is adopted for the approximately 50-acre property in the City and is illustrated in **Figure LU-3A**. The Bastyr University Master Plan and the applied zoning provide for a coordinated multi-use higher education center meeting

the vision of the University and the City to support diverse and continuing education opportunities, strengthen the City's economic base, and protect natural features. **Figure LU-3A** is considered a conceptual graphic, and minor modifications (KMC 19.23.050.A) to site development consistent with City master plan and zoning regulations are considered consistent with the Comprehensive Plan. The City's long term interest in the property is to have continued use of the site by Bastyr University or a similar institution with public access/use maintained through the use of a purchase of development rights, out-right purchase of portions of the property, off-site density transfers or joint use agreements.

- Special Study Area – Plywood Supply: The City has designated the Plywood Supply property south of NE 175th Street as a Special Study Area while the City works with property owners to complete a master plan that will guide the development of the property. In order to allow the master planning process to proceed, the property will retain its underlying RB designation for comprehensive planning purposes while development of that master plan is proceeding.

- Lakepointe Mixed Use Master Plan: A site development permit and Master Plan are approved for the Lakepointe site specifying permitted uses and development consistent with the Property-Specific (P-suffix) Development Standards. Northshore Comprehensive Plan Policies K-11 and K-12, adopted in Exhibit "C" to Ordinance 98-0027 that was reaffirmed in Ordinance 03-0177, continue to be in effect for this property.

Policy LU-2.1.3 Multi-family classifications should be applied as follows:

a. Primarily located in the Downtown area in mixed-use developments and in neighboring areas already containing multi-family uses;

b. In or next to Regional, Community, or Neighborhood Business Centers; and,

c. Existing or planned transportation capacity should be adequate to accommodate projected travel demand.

Policy LU-2.1.4 Commercial classifications should be:

a. Located along Principal or Minor arterials or on collector streets that intersect with arterials within 1/2 mile. Existing or planned transportation capacity should be adequate to accommodate projected travel demand;

b. Located to provide convenient shopping or other services for nearby neighborhoods;

c. Strategically located to maximize the potential success of the hierarchy of commercial classifications. The priority area for commercial development should be the Downtown;

d. Sized appropriately to accommodate sufficient land to accommodate community business and services needs;

e. Located in areas with current or planned pedestrian access; and

f. Commercial designations should be expanded only when it can be demonstrated that conditions have changed since the original commercial classification boundaries were determined, and there is a demonstrated community need.

Policy LU-2.1.5 Consider proposed Comprehensive Plan Amendments each calendar year concurrently so that the cumulative effect of the proposals can be determined. The City may consider some amendments outside of the normal review cycle such as amendments to the Capital Facilities Element, Shoreline Master Program, adoption of a subarea plan, emergency amendments, or others as authorized in the Growth Management Act. All proposed Comprehensive Plan Amendments should include the following elements:

a. A detailed statement of what is proposed to be changed and why;

b. A statement of anticipated impacts of the change, including geographic area affected and issues presented;

c. A demonstration of why existing Comprehensive Plan guidance should not continue in effect or why existing criteria no longer apply;

d. A statement of how the amendment complies with the Growth Management Act's goals and specific requirements;

e. A statement of how the amendment complies with the Kenmore Vision Statement;

f. A statement of how functional plans and capital improvement programs support the change; and

g. Public review of the recommended change, necessary implementation (including area zoning if appropriate) and alternatives.

Policy LU-2.1.6 Ensure proposed Comprehensive Plan policy amendments are accompanied by any changes to development regulations, modifications to capital improvement programs, subarea, neighborhood, and functional plans required for implementation so that regulations will be consistent with the Plan.

OBJECTIVE 2.2 Prepare clear development regulations consistent with the Comprehensive Plan.

Policy LU-2.2.1 Prepare zoning maps, classifications, and development standards that are consistent with the Comprehensive Plan and functional plans.

Policy LU-2.2.2 To provide flexibility as times and development conditions change, address possible amendments to the P-suffix and special district overlay requirements

through the development agreement process. If development standards are modified or eliminated, offsetting public benefits must be provided.

Policy LU-2.2.3 Kenmore's regulation of land use should:

a. Protect public health, safety, and general welfare;

b. Implement and be consistent with the Comprehensive Plan and other adopted land use goals, policies, and plans;

c. Be expeditious, predictable, clear, straightforward, and internally consistent;

d. Provide clear direction for resolution of regulatory conflict;

e. Be enforceable, efficiently administered, and provide appropriate incentives and penalties;

f. Be consistently and effectively enforced;

g. Create public and private benefits worth their cost;

h. Be coordinated with timely provision of necessary public facilities and services;

i. Be coordinated with special purpose districts and other public agencies to promote compatible development standards in Kenmore;

j. Be responsive, understandable, and accessible to the public;

k. Provide effective public notice and reasonable opportunities for the public (especially those directly affected) to be heard and to influence decisions;

l. Avoid intruding on activities involving constitutionally protected freedoms of speech, petition, expression, assembly, association and economic competition, except when essential to protect public health, safety and welfare (and then the restriction should be no broader than necessary);

m. Treat all members of the public equally and base regulatory decisions wholly on the applicable criteria and code requirements; and,

n. Provide for relief from regulations when they would deprive a property of reasonable use, and when such relief would neither endanger public health and safety nor conflict with adopted use policies.

OBJECTIVE 2.3 Establish a system of densities and development standards that allows for efficient infrastructure and service delivery while protecting environmental resources, and acknowledging neighborhood character.

Policy LU-2.3.1 Through future planning efforts over the next twenty years, seek to achieve an average zoning density of at least seven homes per acre in the City through a mix

of densities and housing types, appropriately located. Higher density classifications should be applied primarily in and around the Downtown. Lower density classifications, generally no less than four dwelling units per acre, should be applied to established single-family neighborhoods. A lower density zone may be used to recognize significant environmentally sensitive areas.

Policy LU-2.3.2 Apply minimum density requirements to residential and mixed-use zones of twelve or more homes per acre when consistent with the vision for a given zone.

Policy LU-2.3.3 Review Uniform Building codes and make amendments to remove barriers to achieving desired densities, such as increased stories of wood frame construction.

Policy LU-2.3.4 Use regulations, incentives, open space acquisition, or, where these measures are not adequate, use low density zoning to protect floodplains, riparian corridors, high value wetlands, and unstable slopes from degradation, and to encourage linking these environmental features into a network of open space, fish and wildlife habitat. In sensitive areas, some density may be transferred onsite to less constrained areas, or density may be transferred off-site to specified receiving areas, such as the Downtown.

Policy LU-2.3.5 Through density incentives, encourage development to provide innovative low-cost housing, or significant open space, public parks and public trails. Where provided, encourage public parks and public trails to be part of a network consistent with the Parks, Recreation, and Open Space Element goals, objectives, and policies. Additionally, in the Downtown, density incentives or other incentives should be provided for shared and structured parking, or consolidation of lots. Consider performance-based measures to achieve this policy. Ensure benefits, for example, significant open space, are in proximity to the development site.

OBJECTIVE 2.4 Coordinate land use, road, and utility planning.

Policy LU-2.4.1 Establish priority areas for public facility and service improvements, especially for transportation. These priority areas should be located where public facility and service improvements would most effectively advance the City of Kenmore's growth, economic development, Downtown revitalization, energy efficiency or affordable housing objectives. Priority areas will shift over time as improvements are installed and adopted service level standards are attained.

Policy LU-2.4.2 Implement an annual monitoring program to assess land use development trends, and service and infrastructure provision. If service deficiencies, such as city, county and state roads, public water supply and wastewater treatment, or communication infrastructure are identified, the City of Kenmore and the affected service providers should adopt Capital Improvement Programs to remedy identified deficiencies in a timely fashion, or the City of Kenmore should reassess the land use plan.

Policy LU-2.4.3 Ensure that infrastructure and facilities are sized appropriately to community needs and are located with attention to the desired neighborhood character.

Policy LU-2.4.4 Consider the effects of improved or new infrastructure such as roads and utilities as potential barriers between neighborhoods or as stimulators of development.

Policy LU-2.4.5 Through zoning and subdivision regulations, require that residential developments, including mobile home parks, whether new developments or substantial redevelopments, provide the following improvements:

a. Paved streets (and alleys if appropriate), curbs and sidewalks, and internal walkways when appropriate;

b. Adequate parking consistent with local transit service levels;

c. Street lighting and street trees;

d. Underground utilities;

e. Stormwater control;

f. Public water supply;

g. Public sewers.

Policy LU-2.4.6 Provide water, sewer, surface water, transportation, and recreational facilities at the time of development.

OBJECTIVE 2.5 Encourage development on properties with existing or planned public services and utilities.

Policy LU-2.5.1 Encourage innovative, quality development and redevelopment through a variety of regulatory, incentive, and program strategies. Possible approaches include:

a. Special development standards for infill or redevelopment sites;

b. Assembly and resale of sites to providers of affordable housing or mixed-use developments;

c. Impact mitigation fee structures that favor infill or redevelopment;

d. Expedited permit processes;

e. Greater regulatory flexibility; and

f. Reduced permit fees and/or delayed fees.

OBJECTIVE 2.6 Require adequate transitions between land uses of differing intensities and between development and environmentally sensitive areas.

Policy LU-2.6.1 Review and amend zoning and subdivision regulations to ensure adequate setbacks, landscaping, and buffering are required where land use conflicts may occur.

Policy LU-2.6.2 Ensure critical area regulations provide sufficient buffer widths consistent with the quality and class of the environmentally sensitive area.

Policy LU-2.6.3 Locate zoning districts and prepare development regulations that result in gradual transitions between different building intensities.

OBJECTIVE 2.7 **Participate in joint planning of services and utilities with special districts, private service providers, neighboring municipalities, King County and Snohomish County, and the State of Washington.**

Policy LU-2.7.1 Plan in partnership with special districts, private service providers, neighboring municipalities, King and Snohomish Counties, and the State of Washington. The City should strive to balance the differing needs identified by planning partners at various geographic levels, and ensure that planning partners honor Kenmore's needs.

Policy LU-2.7.2 Prepare functional plans to identify City facility and service needs and define ways to fund these needs consistent with the land use plans and service and finance strategy. Independent special districts and other public agencies should also prepare functional plans which should be considered by Kenmore. The capital facility plans and capital improvement programs prepared by all other agencies which provide services to Kenmore should be consistent with the Kenmore Comprehensive Plan.

GOAL 3. IDENTIFY, PRESERVE, AND ENHANCE THE CULTURAL RESOURCES OF KENMORE.

OBJECTIVE 3.1 **Promote and support visual, literary, and cultural arts and activities in the community.**

PolicyLU-3.1.1 Encourage King County to continue to provide arts and culturally-based services to the City of Kenmore through its existing programs, and to provide technical assistance for locally-generated programs.

Policy LU-3.1.2 Encourage shared, multipurpose use of regional and community facilities for cultural activities to maximize their efficient use and to expand public access to cultural opportunities.

Policy LU-3.1.3 Develop a public art program that provides art in public facilities, projects and places to enhance community character and quality of life. Priority locations should include Downtown, government facilities, and municipal parks. Maintenance and conservation should be considerations in the development and management of public art.

OBJECTIVE 3.2 **Promote the preservation of significant historic and archaeological sites and structures.**

Policy LU-3.2.1 Establish a partnership between Kenmore, King County, the Kenmore Heritage Society and citizen volunteers in order to comprehensively inventory historic and archaeological resources. Use the inventory to guide decision-making in resource planning, environmental review, and resource management.

Policy LU-3.2.2 Encourage land uses and development that retain and enhance significant historic and archaeological resources and sustain historic community character.

Policy LU-3.2.3 Coordinate with Native American Tribes, the King County Historic Preservation Officer, and the State Office of Archaeology and Historic Preservation, as

appropriate, to review public and private projects to protect and enhance historic and archaeological resources.

Policy LU-3.2.4 Seek funding from King County, the State of Washington, or other agencies to acquire and preserve significant historic resources for use by City and other public agencies.

OBJECTIVE 3.3 Encourage local activities which promote the community's history.

Policy LU-3.3.1 Support the efforts of the Kenmore Heritage Society to document Kenmore's history, and provide educational materials and resources to all ages.

Policy LU-3.3.2 Work in partnership with the Kenmore Heritage Society, other agencies and special districts to identify places or facilities where a museum or display of historic artifacts and information can be accomplished.

Policy LU-3.3.3 When dedicating new civic facilities, consider naming them in honor of historical events or persons of significance to the community.

IMPLEMENTATION STRATEGIES

The Land Use policies would require new, continuing or increased commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations would be needed to address:

- An annual monitoring program for assessing, development trends, services and infrastructure
- Historic resource preservation funding
- Public arts programs
- Partnerships with historic groups and agencies.

A review of existing programs, rules and regulations would be needed to ensure they meet the policies. Types of regulations and rules that should be reviewed include:

- Permitted uses in single-family zones
- Permitted uses in commercial zones
- Development standards addressing neighborhood character and compatibility with surrounding development
- Zoning categories – consistency with Comprehensive Plan
- Density bonuses, density transfer, and minimum density regulations
- Uniform Building Code review
- Infill development standards or incentives
- Permit procedures and fees.

Additional or continuing efforts would need to be made to coordinate with adjacent jurisdictions or participate in regional programs, including:

- Coordination with special districts and County regarding services
- Support of County historic resources programs
- Coordination with County/State agencies regarding historic/cultural resources during development review.

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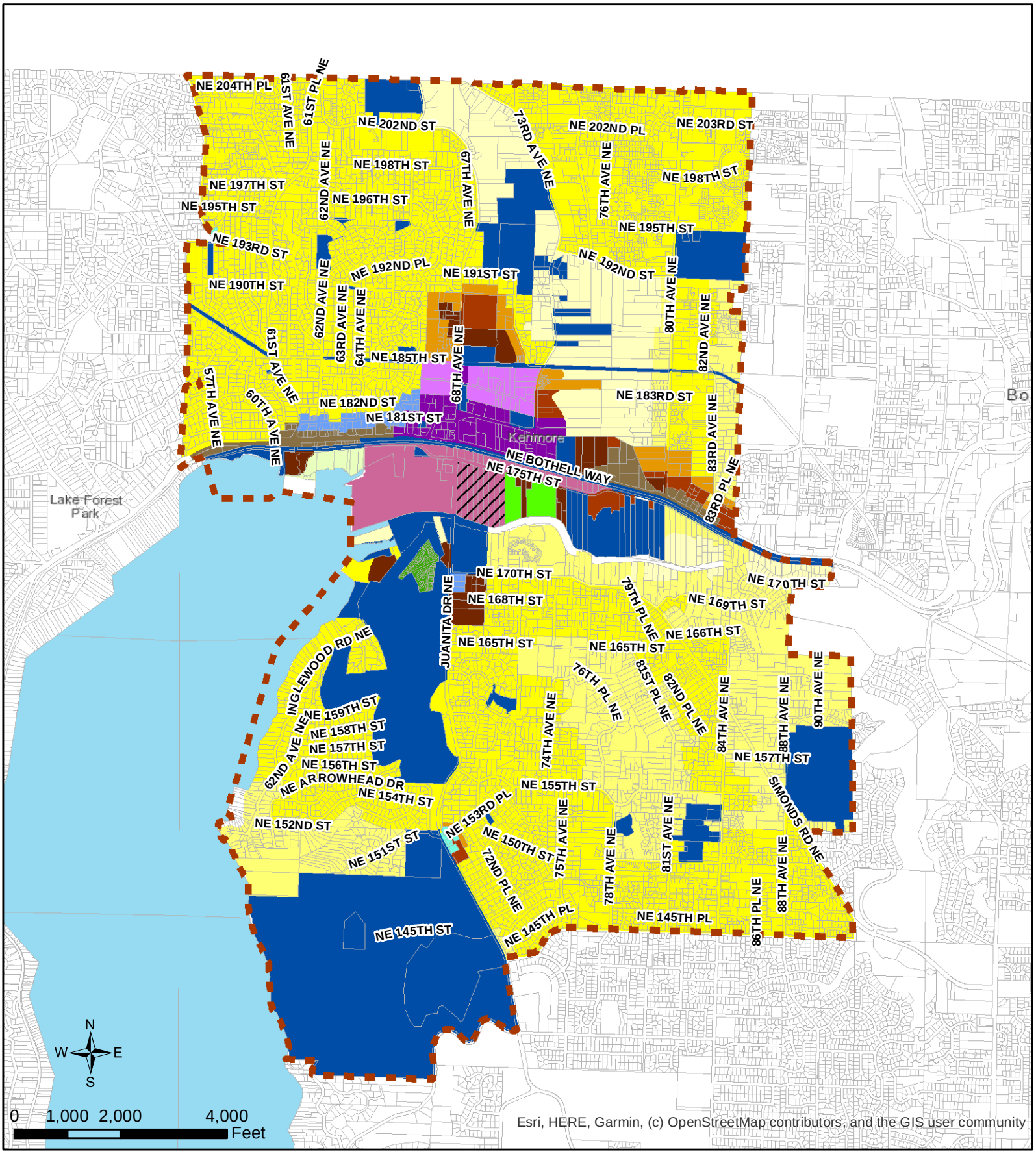

Special Study Area
Community Business
Downtown Commercial
Downtown Residential
Manufactured Housing Community
Neighborhood Business
Public/Private Facilities
Regional Business
Residential 1 Dwelling Per Acre
Residential 12 Dwellings Per Acre
Residential 18 Dwellings Per Acre
Residential 24 Dwellings Per Acre
Residential 4 Dwellings Per Acre
Residential 6 Dwellings Per Acre
Residential 8 Dwellings Per Acre
Urban Corridor
Waterfront Commercial

Kenmore Land Use Plan

Figure LU-3

This map is intended for planning purposes only and is not guaranteed to show accurate measurements.

Date: November 2019

Bastyr University Master Plan

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Bastyr University

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Figure LU-3A Not to Scale December 2009

DOWNTOWN SUB-ELEMENT

INTRODUCTION

The Growth Management Act (GMA) does not require the creation or retention of a downtown area within communities. However, several GMA goals, as well as Countywide Planning Policies, address the containment of sprawl, and the provision of efficient services and utilities, which can be met through development of "centers" such as a downtown. Downtown areas also can function as a community-enhancing central place, particularly in a community like Kenmore dominated by regional traffic flows along SR-522.

The Vision Statement foresees Kenmore as:

- A fun, vibrant waterfront community that has its own sense of place and an identifiable, walkable downtown offering commercial, civic, cultural and park spaces, integrated with multifamily housing.

EXISTING CONDITIONS

Current Development Conditions and Trends

Most of Kenmore's existing commercial development is concentrated along SR-522, including the Kenmore Square and Safeway complexes. Recent construction of City Hall and the Kenmore Library, and the proposed construction of the Kenmore Village mixed use project, the Town Green and the Community Building, are the first steps to creating a walkable Downtown core, surrounding the intersection of 68th Avenue NE and NE 181st Street.

There is recent residential development on the periphery of the core, with redevelopment of single-family sites east of 68th Avenue NE on NE 182nd Street and redevelopment of a former park-and-ride lot into the Spencer 68 apartment project on the west side of 68th Avenue NE near NE 182nd Street.

Existing manufactured housing communities in the Downtown provide higher density, more affordable, single-family housing.

The future Lakepointe development on Lake Washington at the southwest corner of SR-522 and 68th Avenue NE could have a dramatic impact on the City from both a physical and economic point of view. With a current permit for over 650,000 square feet of commercial/office/hotel development and 1,200 housing units in a waterfront setting, the development could represent one of only four or five waterfront mixed-use developments on Lake Washington.

Market Area

The City of Kenmore has the potential to provide retail goods and services for an area beyond its own boundaries. The market area for any commercial district is determined by several factors:

- Distance to surrounding population.
- Natural boundaries and impediments to travel.
- Transportation links.
- Competing development.
- Scope of existing development in the district.

The projected market area for Kenmore lies within an approximate 3 mile radius around the City Center. The area extends west to approximately I-5; south into Lake City; north into Snohomish County; and east to I-405. The existence of regional commercial centers largely determines these boundaries. Kenmore currently loses a significant portion of retail spending by Kenmore residents to businesses outside of Kenmore.

Lakepointe or a similar development on that site has the potential to serve a much wider area. As noted above, it will be one of only a few mixed-use concentrations on Lake Washington. As such, it has the potential to provide a mix of restaurants, shops, office, and lodging, which could attract users from a much wider radius. This is significant because it increases the commercial potential of Lakepointe, as well as targeting a different type of commercial activity from the existing core businesses.

Opportunities for Development

The opportunities for development in Downtown Kenmore can be considered in terms of the relationship to Lakepointe, and the types of uses which are supportable:

Relationship to Lakepointe

As noted above, Lakepointe has the potential to offer a high amenity setting for various specialty retail and other commercial uses, serving a broad market area. Comparable developments include Downtown Kirkland and Carillon Point. Factors affecting its relationship to the Downtown Core are its lakefront site, and the barriers represented by SR-522. While Lakepointe may include a grocery store and other traditional neighborhood scale uses, the existing core should continue to capture the food and miscellaneous retail spending by residents north of SR-522. The role of the core should be enhanced with growth in single-family housing to the north and multi-family development to the east and west.

Demand by Development Type

The types of development likely to be supported within the area are described in a summary fashion below.

- Multi-family residential. Such development is already occurring in the area and reflects the need for increasing density throughout the urbanized area. The area to the east is particularly well suited for such development, located between the commercial core and the public service concentration on 73rd Avenue NE to the east.

- Manufactured housing communities. The existing manufactured housing communities provide affordable, unsubsidized single-family homeownership for seniors and lower-income households.

- Neighborhood commercial development. Additional grocery, drugstore, eating/drinking, miscellaneous retail, personal and business services will be required as the local area and larger market area grow over time. These uses should be increasingly accessible to pedestrians as well as automobiles.

- Mixed-use development (residential with office and retail). Horizontal mixed-use, with residential next to commercial is favorable in the area, and conditions allowing for vertical mixed use developments are likely favorable in the near future.

- Corridor commercial. Such development along SR-522 will continue to be viable given the volume of traffic on SR-522. However, the overall vision is to convert the area from a commercial strip corridor to a mix of non-auto-oriented uses, taking advantage of lake views and proximity to transit.

- Light manufacturing. Small-scale advanced or artisanal manufacturing could offer significant new employment opportunities.

Long Term Opportunities

The large parcels like the Plywood Supply site south of SR-522 and east of 68th Avenue NE provide an important resource for large-scale planned development in the future.

Kenmore Urban Design Inventory and Analysis

The location, frequency and quality of buildings, parking lots, pole signs, sidewalks, crosswalks, landscaping and street trees are elements of urban form that individually and collectively determine visual cohesiveness, comfort, and pedestrian-orientation in urban areas. With regard to the Downtown area, issues impacting design include:

- Many of the buildings are not built to the edge of the street, and are of discontinuous size, location, and shape. These buildings do not form a consistent or recognizable urban form or a continuity of pattern. Typically buildings that are set back from the street or have parking lots separating them from the street, discourage pedestrian activity and are simply less pleasant for walking. Many such buildings are found within the Downtown area. However, new development must comply with adopted site and building design standards that address these issues.

- Pole signs are mostly found on the north side of SR-522 between 61st Avenue NE and 80th Avenue NE, where automobile-oriented retail uses predominate. Frequent use of pole signs can create visual clutter, particularly when competing with other street elements such as billboards, telecommunication towers, utility poles, streetlights, etc.

- The predominance of parking lots in the Downtown area is indicative of the overall auto-oriented nature of the region. The numerous access points to and from the parking lots of establishments along SR-522 create potentially hazardous situations as vehicles enter and exit the traffic flow from SR-522.

- There are few sidewalks in the Downtown area.

- There are little or no street trees along major arterials and along portions of SR-522, with the exception of those separating SR-522 from the Burke-Gilman trail.

- Parks and open space uses include Log Boom Park and the Burke-Gilman Trail. Nearby parks include Rhododendron Park, Squire's Landing Park, and the State Boat Launch facility.

- Several major natural features exist within the Downtown area, including Swamp Creek, the Sammamish River, and Lake Washington. Steep hillsides sloping to the north offer views to the Lake.

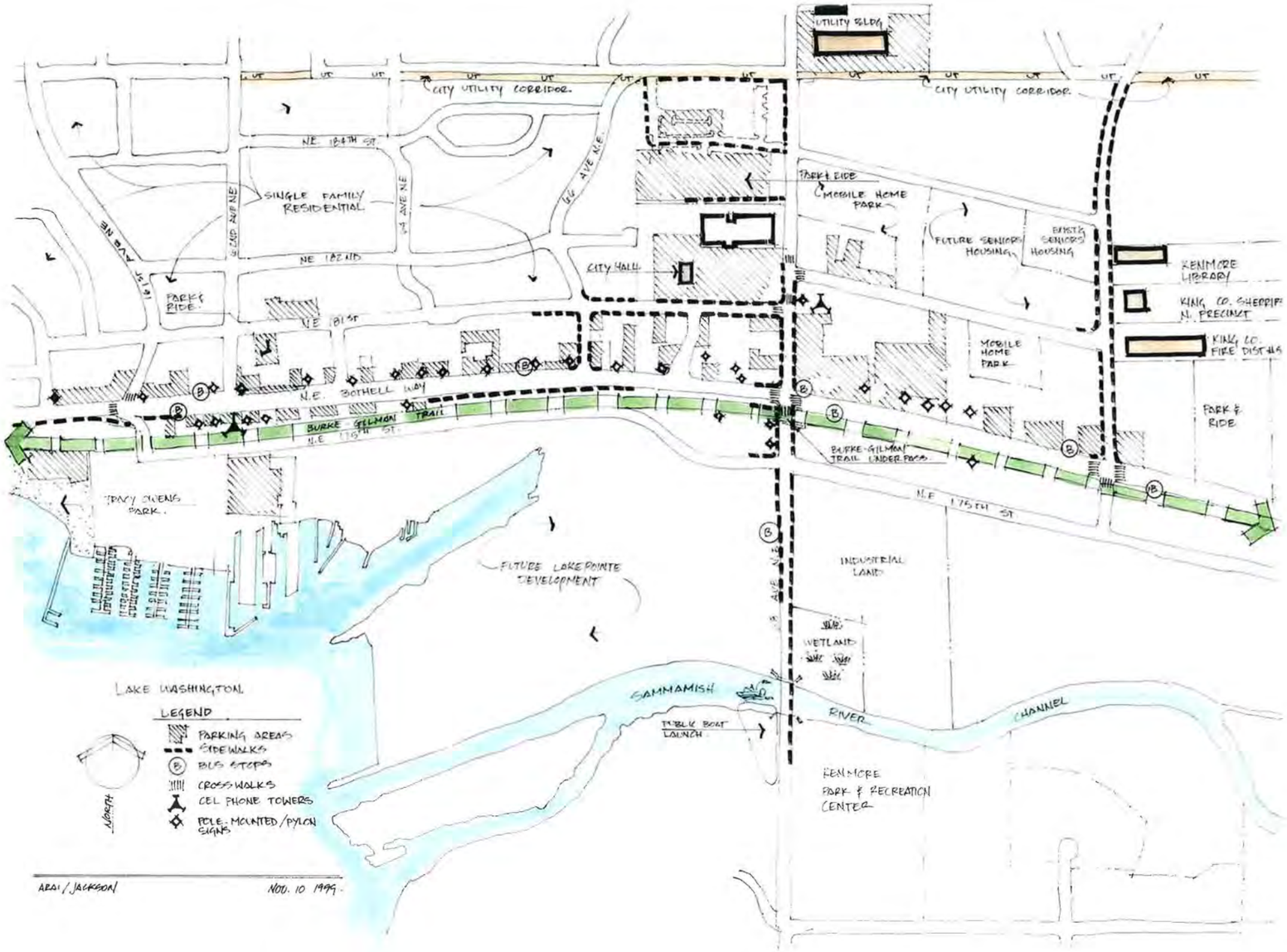
- In Kenmore, pedestrian destinations and generators include bus stops, grocery stores and other retail establishments, City Hall, the Burke-Gilman Trail, Kenmore Library, the Park and Ride lot, Log Boom Park, and Rhododendron Park. Nearby mobile home parks, apartments, and senior housing complexes also function as pedestrian generators. The Lakepointe mixed-use development will be a major pedestrian generator in the future.

- The high speed and volume of traffic, the lack of sidewalks, the width of the roadway, and the lack of other pedestrian amenities in some portions make SR-522 a significant barrier to pedestrian travel in

Kenmore. 68th Avenue NE also functions as a barrier, though less significantly than SR-522. These road corridors essentially "divide" central Kenmore into four quadrants.

- Key pedestrian crossings exist at the intersections of SR-522 and 61st, 68th, 73rd and 80th Avenues NE, with crosswalks and pedestrian signalization in place. Additional pedestrian crossings along Bothell Way could help break up the considerable distance pedestrians must currently travel to cross SR-522.

Figures LU-4 and LU-5 portray the above conclusions.



Downtown Inventory Map

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects & Planners

Not to Scale

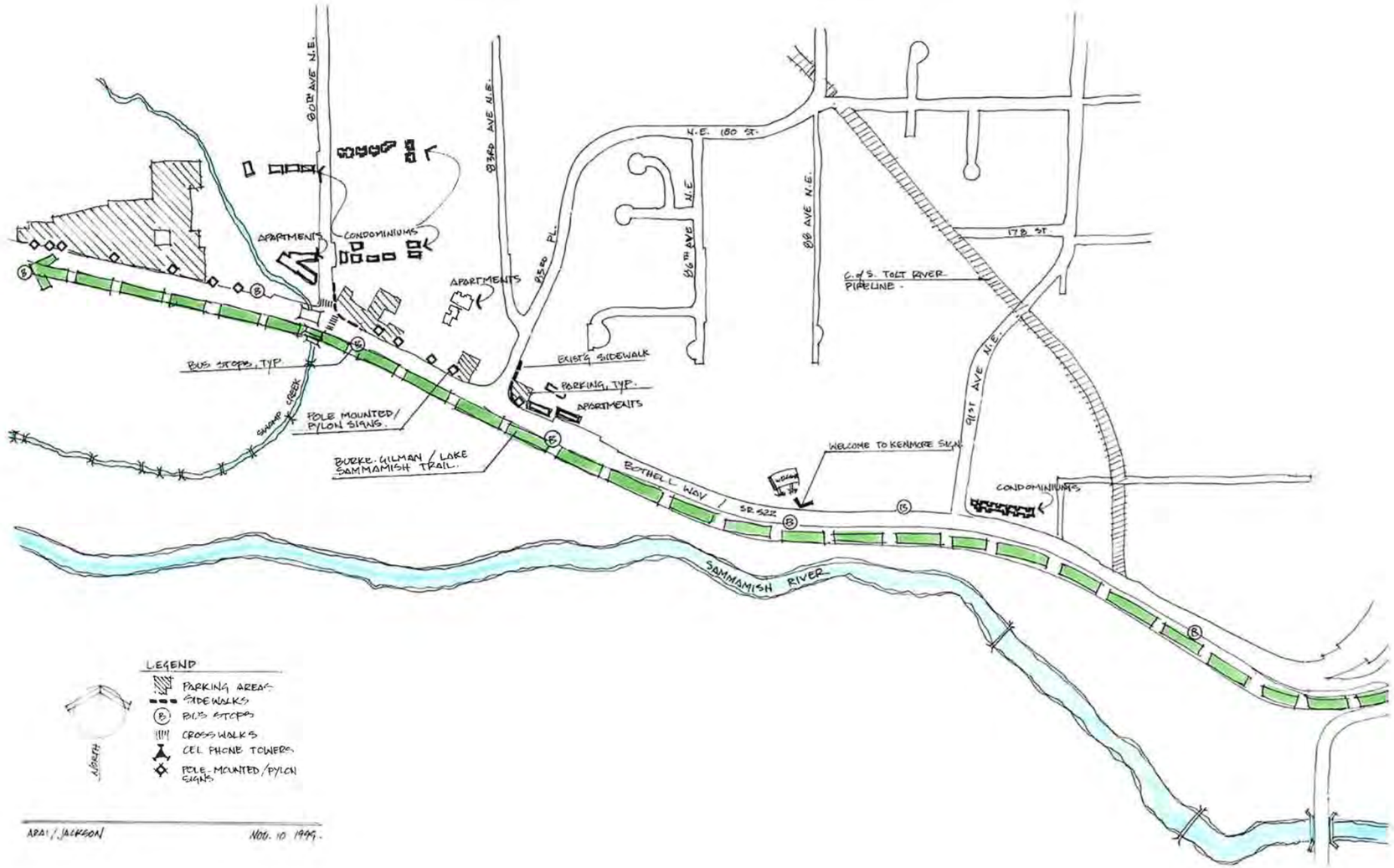
March 2001

ARAI/JACKSON Architects & Planners

KENMORE BY THE LAKE

BUCHER, WILLIS & RATLIFF CORPORATION

Figure LU-4



East Study Area Inventory Map

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects & Planners

Not to Scale

March 2001

ARAI/JACKSON Architects & Planners

KENMORE

BUCHER, WILLIS & RATLIFF CORPORATION

Figure LU-5

DOWNTOWN PLANS

The Kenmore Comprehensive Plan focuses upon the establishment of a Downtown core. During the development of Downtown Strategies, the following guiding principles were considered:

General

- Plan for and implement an attractive, vital, pedestrian-oriented, transit friendly, city center offering commercial, civic, cultural and park spaces, integrated with higher density housing.
- Address the different characteristics of Downtown by encouraging regional serving development south of SR-522 and local serving development north of SR-522.[1]
- Support redevelopment in accordance with the Vision for the Downtown through investment in public infrastructure including transportation, utility, and civic infrastructure.
- Give priority to creating indoor and outdoor public spaces; promote community activities meeting the needs of a range of ages and interests. Outdoor spaces should include plazas, parks, and public green spaces. Encourage the efficient use of space and shared uses where appropriate.
- Give priority consideration to strong linkages between the four Downtown quadrants and the surrounding neighborhoods. Pedestrian crossings, including a grade-separated crossing of SR-522, linking the north and south quadrants, should be readily accessible, functional, visually attractive, safe, and inviting links to key destinations, and should provide a Kenmore identity.
- Create a Downtown circulation system that promotes mobility for all modes of travel, emphasizing a loop road circulation system.
- Create an interconnected system of trails, sidewalks, bikeways, and open spaces in Downtown.
- Promote the revitalization and expansion of business and retail compatible with the character of the Downtown districts. Encourage businesses that draw patrons during both the day and evening. Provide an adequate mix of on-street, surface, and structured parking, and encourage shared parking options.
- Provide high density, high amenity (includes public spaces and private facilities) pedestrian oriented residential neighborhoods meeting the housing needs of a variety of income levels, and developed at densities high enough to support transit and commercial uses. Off-street parking should be encouraged.
- Coordinate public and private investment to achieve optimal leverage of public funds.
- Create an identity for the Downtown and SR-522 by giving priority consideration to improving the appearance of the physical environment through design guidelines, sidewalks, landscaping, street trees, public art and signage.
- The Downtown should acknowledge and create a beneficial and symbiotic relationship with SR-522.

[1] Regional serving development generally refers to mixed-use compact development recognizing Kenmore's position as a regional transportation center and featuring larger scale commercial, office, and multi-family developments, attracting people from a much larger area than just Kenmore. Local serving development generally refers mixed-use developments including high-density housing, civic and governmental, offices, small-scale commercial and retail, and locally oriented professional and personal services, primarily serving the Kenmore community.

- Integrate and manage Downtown development to support sound ecological principles by responding to natural landforms, providing storm water management, improving water quality and retaining and adding green spaces.

- Identify Downtown view corridors of significant off-site features (i.e. Lake Washington, Cascades, and surrounding hillsides), giving priority consideration to provision of public physical and visual access from the Downtown quadrants to the waterfront.

- Locate new Civic Center facilities (including the Town Green and Community Building) in the northwest quadrant to provide the greatest stimulus to redevelopment. If there is a truly unique opportunity in another quadrant of the Downtown that would meet the balance of Civic Center criteria, it should not be ruled out.

- Locate a multi-modal transportation facility Downtown, linked with other public facilities and spaces, functioning as a key node within a larger regional system.

- A large, functional, open, outdoor space should be created to function as a focal point and "public square," providing opportunities for public and private gatherings.

Given these principles, the City has developed a Downtown strategy (Kenmore Downtown Plan, April 2003) with four key components:

DOWNTOWN STRATEGY

Component 1: Land Use Districts
Component 2: Circulation Plan
Component 3: Strategic Civic Investment Area
Component 4: Implementation Strategies

Land Use Districts

Recognizing the different character of the quadrants around the 68th Avenue NE and SR-522 intersection, the City has applied four districts in the Downtown.

- Downtown – Commercial: To promote a community-serving mixed use area, north of SR-522, the Downtown Commercial District features a mix of private and public uses designed to create a small-town feel, and pedestrian-friendly environment. Public places, sidewalks, extensive landscaping, transit-orientation, shared or structured parking, protection of environmentally sensitive areas, and high quality design and signage are key features. Permitted uses emphasize mixed or multiple use developments, and include high-density housing, civic and governmental, offices, small-scale commercial and retail, and locally oriented professional and personal services. Uses not compatible with the Downtown Commercial intent such as those which require vehicle or materials storage, service bays, wide curb cuts, expanses of exterior product display or storage, or produce little customer or visitor activity are discouraged. Park-and-Ride/Transit Centers are promoted along SR-522.

- Downtown – Residential: The Downtown Residential District in the northeast and northwest quadrants provides higher density residential development in support of the Downtown Commercial Zone. Limited retail and office uses are also allowed as part of mixed-use developments. The District represents an opportunity to provide a range of housing types in the community with attention to appearance and scale.

- Manufactured Housing Community: The existing manufactured housing communities in the Downtown provide higher density single-family housing that is more affordable for seniors and lower-income residents. Some of the communities may be appropriate for long-term preservation; others may not be compatible with the future Downtown vision, particularly as high capacity transit comes to the City.

- Regional Business with Mixed-Use Master Plan Requirements: The Regional Business District encompasses the southwest and southeast quadrants of the 68th Avenue NE/SR-522 intersection and includes areas commonly referred to as the Lakepointe (Kenmore Pre-Mix) and the Plywood Supply areas. Property conditions and overlay districts, and in some locations, design standards, not only recognize Kenmore's position as a regional transportation center for larger scale commercial, office, and multi-family developments, but also promote a mixed-use, compact development with coordinated internal circulation, shared or structured parking, compatible design and signage, and direct access to public transportation. Emphasis is placed on public access to the waterfront, protection of environmentally sensitive areas, building modulation and façade treatments that help create a human scale, and land use/design transitions and linkages to neighboring districts.

Circulation Plan

The three Downtown Special Districts would be linked together by a circulation system shown in **Figures LU-6 and LU-7** (provided later in this Chapter), with the following features:

- Loop road system around intersection of 68th Avenue and SR-522
- Walking paths / trail loop around Downtown
- Increased shoreline public access pedestrian links
- Pedestrian bridge(s) or underpass crossing SR-522
- Large blocks broken up with pedestrian walkways
- Existing street pattern remains with revisions of intersections at:
  - 65th Avenue NE and NE 181st Street
  - 68th Avenue NE and NE 181st Street
  - 68th Avenue NE and NE 175th Street
  - NE 181st Street and 73rd Avenue NE
- Sidewalks and street trees added throughout

Strategic Civic Investment Area

Revitalization of Downtown will involve a public/private partnership. The vast majority of property in Downtown is and will remain in private ownership. Private property owners will determine their property investment and development. City plans and regulations will guide and encourage development to meet the community vision. It is anticipated that private development will occur according to market forces in the southwest and southeast quadrants of the 68th Avenue NE and SR-522 intersection, due to the desirability of the Lake Washington and Sammamish River location, and with the spillover effects of the Lakepointe development. It is likely that incentives will be needed to stimulate development in the northwest and northeast quadrants of the intersection, due to the numerous, small, privately owned parcels. To provide a "central place" for the community and to stimulate complementary private investment, the City intends to focus its future civic investment in the northwest quadrant of 68th Avenue NE and SR-522 intersection, as shown on **Figure LU-8** (provided later in this Chapter). Strategic civic investment is planned to include a Town Green and Community Building as part of the Civic Center complex that includes City Hall and the Kenmore Library. Other civic investments proposed include

street and infrastructure improvements such as road realignment, sidewalks, and street trees. These improvements would support existing businesses and be complemented by private investment in commercial, office, and multi-family uses. While the priority location for civic investment is the northwest quadrant, City policies and the implementing Downtown Plan allow for the City to balance multiple City goals and consider unique opportunities in other Downtown locations.

Implementation Strategies

Implementation strategies are an identification of key actions or activities that, if pursued, would further the concepts found in the Comprehensive Plan and implementing plans and regulations, and may be essential to success of the overall strategies. A key implementation guide to this Downtown Element includes the separate Downtown Plan that addresses near-term and long-term activities including, Business Retention, Economic Development, Infrastructure/Services, and Regulations/Permitting. Key regulations that have been developed in response to this Downtown Element and as part of the Downtown Plan include land use/zoning districts described generally above and design standards. Implementation Strategies are summarized further at the conclusion of this Chapter.

GOALS, OBJECTIVES, AND POLICIES

Following are the Downtown goals, objectives and policies. In some cases, policies are cross-referenced in more than one Element or Sub-Element, and this is noted by a policy reference in italics (e.g., *Policy LU-2.5.1*).

GOAL 4. MAKE DOWNTOWN THE FOCAL POINT OF THE COMMUNITY.

OBJECTIVE 4.1 Identify and support Kenmore's Downtown as a center for commercial, civic, cultural, park, and higher density housing uses and activities.

Policy LU-4.1.1 Consistent with the districts identified in Policy LU-2.1.2, encourage a mix of uses in Downtown including several or all of the following:

a. Government, educational, health, human service, and public safety facilities;

b. Retail stores and services;

c. Professional offices;

d. Business/office parks;

e. Multi-family housing, manufactured housing communities and mixed-use developments;

f. Underground, under-building, structured, and/or shared parking; and,

g. Parks and open space.

Policy LU-4.1.2 Identify Downtown Kenmore as a Larger City pursuant to Vision 2040 and the King County Countywide Planning Policies. Larger Cities are locally defined central places providing an array of land uses with sufficient densities and intensities to encourage transit and non-motorized transportation.

Policy LU-4.1.3 Work with other organizations to promote civic and community events which foster community pride and promote the Downtown.

OBJECTIVE 4.2 Define Downtown Land Use District Character.

Policy LU-4.2.1 Provide for land use districts that address the different characteristics of downtown by encouraging regional serving development south of SR-522 and local serving development north of SR-522.

Policy LU-4.2.2 Focus public investment and civic uses, as well as mixed uses, in the northwest quadrant of the 68th Avenue NE and SR-522 intersection as conceptualized in **Figure LU-8**. If there is a truly unique opportunity in another quadrant of the Downtown that would meet multiple City goals and other City evaluation criteria, it should not be ruled out.

OBJECTIVE 4.3 Define varying development intensities and scales within the Downtown.

Policy LU-4.3.1 Create and apply different intensity or density standards that address the different characters of different areas of Downtown. Types of land uses allowed may be more intensive in regional-serving districts than in local-serving districts.

Policy LU-4.3.2 Vary design and development standards by district such as floor area ratios, building heights, ground-level and upper-story setbacks, building modulation, and façade treatments, dependent upon the regional-serving or local-serving nature of the differing areas. Development standards also should consider topography, view corridors, and compatibility with adjacent residential uses surrounding the different areas of the Downtown.

OBJECTIVE 4.4 Identify development and redevelopment incentives and infrastructure phasing in the Downtown.

Policy LU-4.4.1 Invest in transportation, surface water, civic, and park infrastructure and facility improvements in portions of the Downtown where public investment has the most potential to stimulate private reinvestment and redevelopment.

Policy LU-4.4.2 Identify Downtown as a receiving area for density transfers from properties with environmentally sensitive areas or to preserve existing affordable housing.

Policy LU-4.4.3 Give Downtown locations the highest priority when siting City and government facilities which have significant employment or destination potential.

Policy LU-4.4.4 Encourage innovative, quality development and redevelopment through a variety of regulatory, incentive, and program strategies. Possible approaches include:

a. Special development standards for infill or redevelopment sites;

b. Assembly and resale of sites to providers of affordable housing or mixed-use developments;

c. Impact mitigation fee structures that favor infill or redevelopment;

d. Expedited permit processes;

e. Greater regulatory flexibility;

f. Reduced permit fees and/or delayed fees; and

g. Joint public/private loan guarantee pools.

Policy LU-4.4.5 Implement a Downtown plan to facilitate development in the Downtown that meets the community vision. Guide Downtown implementation strategies with input from key Downtown and community stakeholders.

OBJECTIVE 4.5 Beautify Downtown with attractive, functional, and enduring buildings and places.

Policy LU-4.5.1 Focus design review standards and guidelines towards Downtown as well as commercial and multi-family development Citywide. Ensure that provisions allow for creativity and flexibility while meeting common design principles. *(see Policy LU-10.1.2)*

Policy LU-4.5.2 Promote the concept of a "center" through the use of common design themes such as street and landscape materials, and building style and materials.

Policy LU-4.5.3 Enhance the aesthetic quality and compatibility among land uses through landscaping, building orientation and setbacks, traffic control and other measures to reduce potential conflicts. Distinctive or historical local character and natural features should be reflected in development design to provide variety within Downtown.

Policy LU-4.5.4 Identify and encourage the creation of parks, plazas, and public green spaces which enhance the aesthetics and character of Kenmore.

Policy LU-4.5.5 Require screening of unsightly views, such as heavy machinery, storage areas, loading docks, and parking areas to minimize their visibility from adjacent properties and from arterials.

Policy LU-4.5.6 Provide locations for public gatherings in civic and commercial developments where appropriate. *(see Policy LU-12.1.2)*

Policy LU-4.5.7 Regulate signs to contribute to the color and character of Downtown, while reducing glare and other adverse visual impacts on nearby residents. Sign requirements may vary by the nature of regional-serving versus local-serving districts.

GOAL 5. PROMOTE DOWNTOWN AS A VITAL, PEDESTRIAN-FRIENDLY CENTER.

OBJECTIVE 5.1 Increase pedestrian activity in the city center, and encourage pedestrian-oriented uses and designs.

Policy LU-5.1.1 Encourage transit, bicycle, and pedestrian travel through compact development patterns. Multistory construction, structured parking, and other techniques to use land efficiently should be encouraged.

Policy LU-5.1.2 Through zoning regulations, master plan and site plan reviews, or other methods, group compatible uses to reduce conflicts among uses and to increase convenience for businesses, employees, users and pedestrians.

Policy LU-5.1.3 Provide routes for pedestrian, auto, bicycle, transit and truck travel with convenient access to each major destination. Buildings should be close to sidewalks to promote walking and browsing, with parking areas located on the side or rear of buildings.

Policy LU-5.1.4 Off-street parking should not disrupt pedestrian access to commercial uses. Front yard parking should be discouraged and interconnection of parking lots should be required.

Policy LU-5.1.5 Identify the most desirable placement and orientation of new buildings to improve the overall pedestrian activity and improve the aesthetics of the center.

Policy LU-5.1.6 Improve and add sidewalks in the Downtown in accordance with Transportation Element goals, objectives, and policies.

OBJECTIVE 5.2 Create a Downtown circulation system that promotes mobility for all modes of travel to and within Downtown.

Policy LU-5.2.1 Create a loop road circulation system around Downtown providing for automobile and non-motorized travel, as shown in **Figure LU-6**.

Policy LU-5.2.2 Design and implement a sidewalk system in the Downtown. Ensure that crosswalks are identifiable and contribute to the design and intended character of the Downtown.

Policy LU-5.2.3 Provide trail connections to the Burke-Gilman Trail through a pedestrian bridge crossing SR-522 and at signalized intersections.

Policy LU-5.2.4 In cooperation with Metro, Sound Transit, and Community Transit, establish Downtown as an intra-community transit hub allowing for intra-community and regional transportation connections. Structured facilities with ground floor retail should be promoted.

Policy LU-5.2.5 Implement a Transportation Improvement Program that emphasizes improvements facilitating Downtown redevelopment and traffic movement consistent with the Transportation and Capital Facility Elements.

Policy LU-5.2.6 Promote pedestrian-friendly streets with street furniture and trees. Develop street trees and vegetation standards that unify the Downtown, define Downtown streets, and allow for appropriate business visibility. Incorporate street furniture and art into Downtown street standards, including benches, trash and recycling receptacles, tree grates, street lamps, and other amenities.

Policy LU-5.2.7 For safety and aesthetic purposes, promote the use of landscaped buffers between curbs and sidewalks, particularly along arterials. Ensure appropriate levels of illumination. Encourage bus stops to have shelters and benches. Provide crosswalks at key locations in Downtown, as well as on SR-522 near Park and Ride lots and transit stops.

OBJECTIVE 5.3 **Encourage mixed-use development which contains a variety of uses having activity levels at different times of day.**

Policy LU-5.3.1 Adopt land use and zoning regulations that encourage a mix of uses either within the same structures or within an overall site development. Incentives could include density bonuses, reduced parking rates for uses with alternate peak parking utilization, or other mechanisms.

Policy LU-5.3.2 Encourage housing development within and surrounding the Downtown to encourage evening utilization of the Downtown.

Policy LU-5.3.3 Encourage concentrations of housing and commercial and service activities with complementary activity levels such as office and entertainment complexes, housing and office uses, and other combinations.

OBJECTIVE 5.4 **Provide housing and commercial development that supports transit.**

Policy LU-5.4.1 Establish minimum housing densities for Downtown development districts.

Policy LU-5.4.2 Establish minimum floor area ratios or employment levels, and/or implement business retention and expansion activities, for Downtown development districts to support transit.

Policy LU-5.4.3 Allow joint parking facilities in the vicinity of the development they serve.

OBJECTIVE 5.5 **Provide a range of housing opportunities within and surrounding Downtown to support commercial businesses and alternative modes of transportation.**

Policy LU-5.5.1 Designate appropriate locations for multi-family land use and zoning districts accommodating a variety of housing types such as townhomes, apartments and manufactured housing communities.

Policy LU-5.5.2 Encourage multi-family housing as part of mixed-use developments within Downtown.

Policy LU-5.5.3 Allow multi-family housing in stand-alone complexes within Downtown districts subject to locational criteria, such as sites along secondary access points or sites that would not inhibit commercial or mixed-use development in prime locations.

GOAL 6. LINK DOWNTOWN TO THE REST OF THE COMMUNITY.

OBJECTIVE 6.1 **Strengthen the connections between Downtown and the neighborhoods.**

Policy LU-6.1.1 Develop an integrated and hierarchical street tree, signage, and public art program to identify Downtown, government facilities, and parks throughout the community.

Policy LU-6.1.2 Ensure that appropriate development, design, and buffering techniques allow for a graduated transition between the Downtown and adjacent neighborhoods.

OBJECTIVE 6.2 **Provide safe pedestrian, bicycle, and automobile connections across SR-522 and the Sammamish River.**

Policy LU-6.2.1 Consider sidewalk priorities consistent with the Transportation Element, and provide a continuous sidewalk system on 68th Avenue NE and Juanita Drive.

Policy LU-6.2.2 Establish an identifiable and safe bicycle route across SR-522 and the Sammamish River.

Policy LU-6.2.3 Endeavor to reduce traffic volumes through an intra-community transit system and a loop road around Downtown.

Policy LU-6.2.4 Consider capacity improvements cautiously to ensure that the improvements will not attract significantly greater pass-through traffic.

OBJECTIVE 6.3 Connect Downtown to the Lake Washington and Sammamish River waterfronts, and to area parks and open spaces.

Policy LU-6.3.1 Ensure the sidewalk system is improved to allow for connections to the Burke-Gilman trail and to shoreline access areas established through the Shoreline Master Program permit process.

Policy LU-6.3.2 Establish a primary and secondary path network in and around Downtown with connections to the waterfront. The primary network consists of sidewalks along streets and the Burke-Gilman Trail. The secondary network consists of off-street non-motorized paths encircling and bisecting Downtown blocks. The primary and secondary network is shown in **Figure LU-6**. The circulation concept for the northwest quadrant in particular is shown in **FigureLU-7**.

IMPLEMENTATION STRATEGIES

The Kenmore Downtown Plan includes implementation strategies which should be considered. Strategies are included in the areas of:

- Business Retention
- Economic Development
- Infrastructure/Services, and
- Regulations/Permitting.

REFERENCES

Berk & Associates (June 2009). Capitalizing on Kenmore's Potential: An Economic Development Strategy. Prepared for City of Kenmore, Seattle, WA.

Berk (September 2013). City of Kenmore Regional Business Zone Market Analysis. Prepared for City of Kenmore, Seattle, WA.

City of Kenmore (April 2003). Kenmore Downtown Plan, Kenmore, WA.

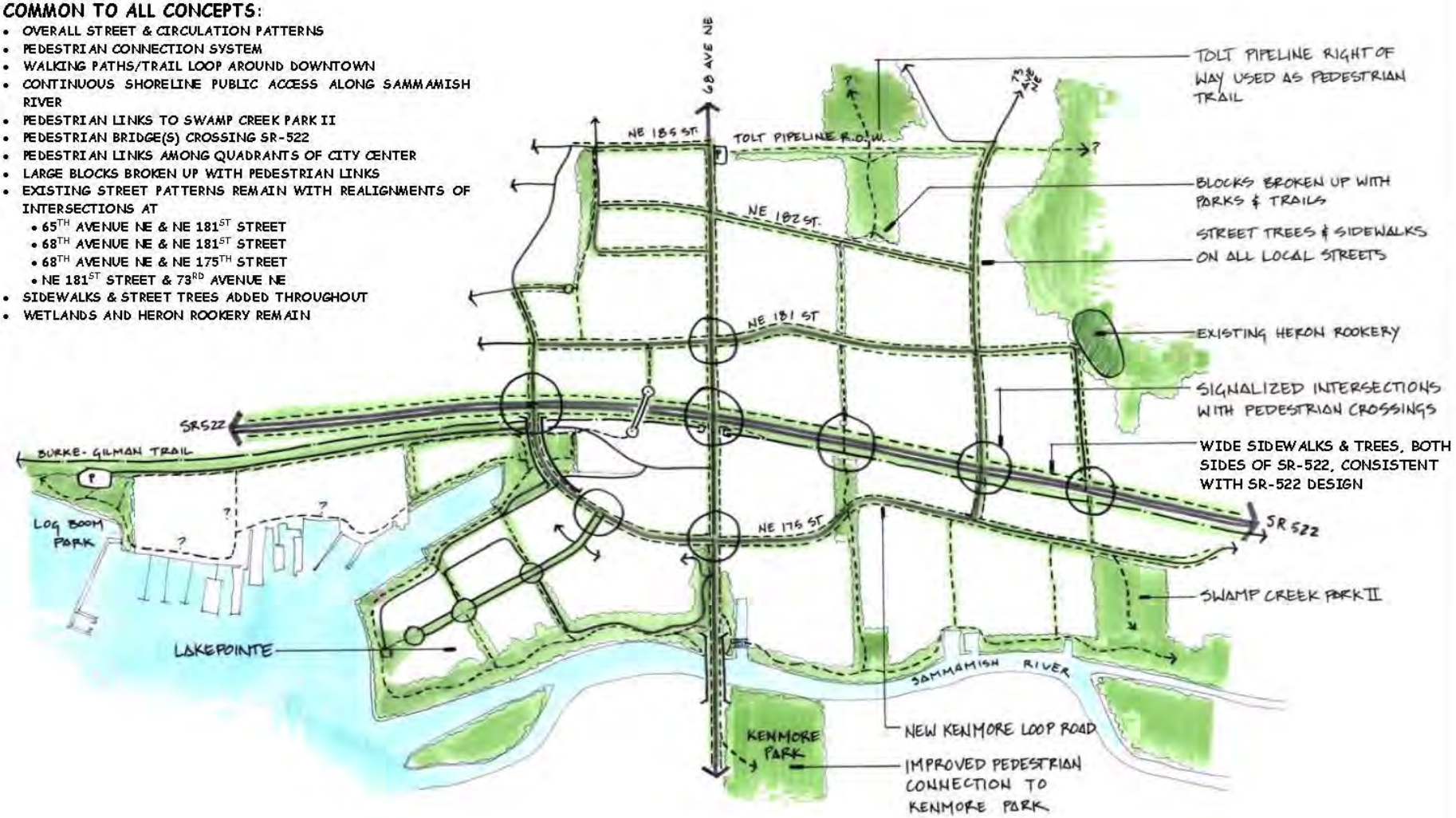
King County Growth Management Planning Council (December 2012). Countywide Planning Policies, Seattle, WA.

Property Counselors (October 2005). Kenmore Downtown Plan Market Study. Prepared for City of Kenmore, Seattle, WA.

Puget Sound Regional Council (December 2009). Vision 2040, Seattle, WA.

COMMON TO ALL CONCEPTS:

- OVERALL STREET & CIRCULATION PATTERNS
- PEDESTRIAN CONNECTION SYSTEM
- WALKING PATHS/TRAIL LOOP AROUND DOWNTOWN
- CONTINUOUS SHORELINE PUBLIC ACCESS ALONG SAMMAMISH RIVER
- PEDESTRIAN LINKS TO SWAMP CREEK PARK II
- PEDESTRIAN BRIDGE(S) CROSSING SR-522
- PEDESTRIAN LINKS AMONG QUADRANTS OF CITY CENTER
- LARGE BLOCKS BROKEN UP WITH PEDESTRIAN LINKS
- EXISTING STREET PATTERNS REMAIN WITH REALIGNMENTS OF INTERSECTIONS AT
  - 65TH AVENUE NE & NE 181ST STREET
  - 68TH AVENUE NE & NE 181ST STREET
  - 68TH AVENUE NE & NE 175TH STREET
  - NE 181ST STREET & 73RD AVENUE NE
- SIDEWALKS & STREET TREES ADDED THROUGHOUT
- WETLANDS AND HERON ROOKERY REMAIN



Downtown Circulation Concept

Legend: A question mark (?) identifies that a potential pedestrian access/connection requires feasibility review.

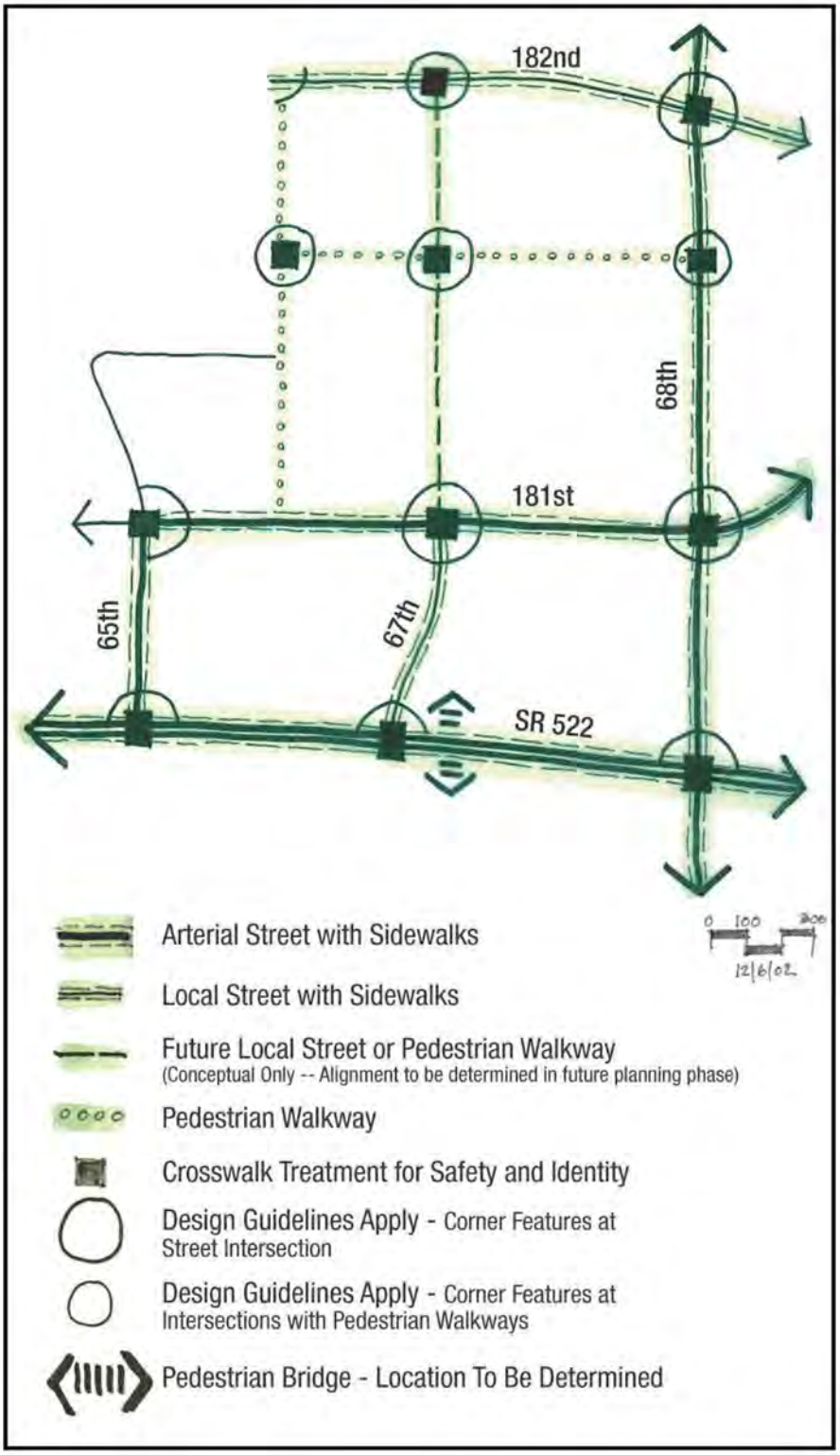
This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects and Planners

Not to Scale

April 2003

ARAI/JACKSON Architects & Planners
BUCHER, WILLIS & RATLIFF CORPORATION

Figure LU-6



Northwest Quadrant Circulation Plan

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Note: Signals at pedestrian crossings will be evaluated on a case-by-case basis.
Source: Arai/Jackson Architects and Planners & Berger/ABAM Engineers

Not to Scale

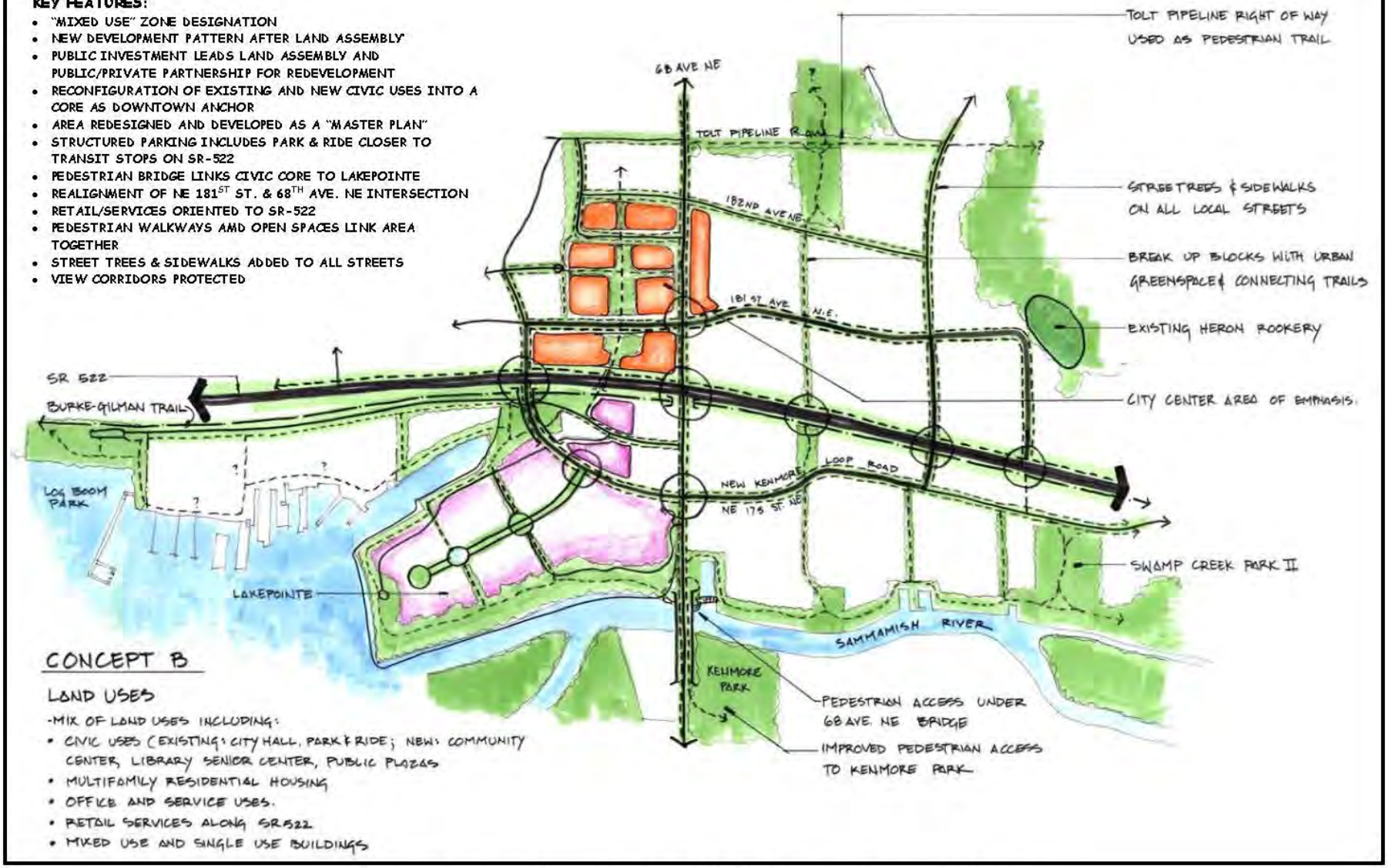
April 2003

Jones & Stokes

Figure LU-7

KEY FEATURES:

- "MIXED USE" ZONE DESIGNATION
- NEW DEVELOPMENT PATTERN AFTER LAND ASSEMBLY
- PUBLIC INVESTMENT LEADS LAND ASSEMBLY AND PUBLIC/PRIVATE PARTNERSHIP FOR REDEVELOPMENT
- RECONFIGURATION OF EXISTING AND NEW CIVIC USES INTO A CORE AS DOWNTOWN ANCHOR
- AREA REDESIGNED AND DEVELOPED AS A "MASTER PLAN"
- STRUCTURED PARKING INCLUDES PARK & RIDE CLOSER TO TRANSIT STOPS ON SR-522
- PEDESTRIAN BRIDGE LINKS CIVIC CORE TO LAKEPOINTE
- REALIGNMENT OF NE 181ST ST. & 68TH AVE. NE INTERSECTION
- RETAIL/SERVICES ORIENTED TO SR-522
- PEDESTRIAN WALKWAYS AMD OPEN SPACES LINK AREA TOGETHER
- STREET TREES & SIDEWALKS ADDED TO ALL STREETS
- VIEW CORRIDORS PROTECTED



Downtown Strategic Civic Investment Area

Legend: A question mark (?) identifies that a potential pedestrian access/connection requires feasibility review.

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects and Planners

ARAI/JACKSON Architects & Planners
BUCHER, WILLIS & RATLIFF CORPORATION

KENMORE BY THE LAKE

Not to Scale

April 2003

Figure LU-8

COMMUNITY DESIGN SUB-ELEMENT

INTRODUCTION

Purpose

The purpose of the Community Design Sub-Element is to guide future development and redevelopment of Kenmore so that it develops as a vibrant waterfront community, protects environmental quality, protects its residential neighborhoods, promotes alternative modes of travel, and enhances the streetscape and landscape on all streets.

Countywide Planning Policies

The King County Countywide Planning Policies require jurisdictions to promote a high quality of design and site planning in both publicly-funded construction (such as civic buildings, parks, bridges, transit stops) and private development.

EXISTING CONDITIONS

SR-522, which dominates Kenmore's Downtown corridor, is highly congested with regional automobile traffic. Included along its length are auto-oriented commercial establishments including gas stations, fast food restaurants, service stations, supermarkets, and other strip retail development. Parking lots and signs on tall poles dominate much of the appearance of the Downtown core area. Many buildings in this area are lacking a continuity of form and are set back from the street, often having parking lots separating them from the street. Publicly funded infrastructure improvements along the SR-522 corridor from the eastern city boundary to approximately 61st Avenue NE include new sidewalks, landscaping, lighting, transit lanes, public art, and intersection improvements. Through strategic public investments, including City Hall, the Kenmore Library, the Northshore Fire Department Headquarters, and the proposed Town Green and Community Building, a Downtown core is being created. The private Spencer68 and Kenmore Village commercial project, built on land purchased from the City, are also key to creating this "central place."

Most of the residential neighborhoods outside the SR-522 corridor were built after the 1970s. These neighborhoods of single-family homes are generally in good condition and are well maintained. Trees are lacking along major arterials and along many residential streets. Most streets lack sidewalks. As of 2014, the City had more than 290 mobile homes in six mobile home parks, as well as many mobile homes on single lots. Also, as of 2014, there were an estimated 2,268 multifamily units in the City, including apartments, condominiums and townhouses.

COMMUNITY DESIGN POLICY

The Vision for Kenmore is multi-faceted, addressing community pride, single-family neighborhood character protection, creation of a central place, enduring and attractive buildings and places, natural environment protection, an interconnected circulation system, and connection to the waterfront, among others. Although these concerns can be divided into separate topics and addressed in other Elements, as they are elsewhere in this Comprehensive Plan, the Community Design Sub-Element goals, objectives, and policies are intended to bring together interrelated issues that affect the community atmosphere and physical presence. To that end, the policies provide design guidance, particularly addressing:

- Downtown Kenmore as a mixed-use activity center with high density and intensity infill development
- Kenmore as a vibrant waterfront community that is connected both visually and physically to its waterfront
- Promotion of alternate modes of travel, and streetscape/landscape improvements
- Site design reflecting natural characteristics
- Compatibility in style and scale between uses of different intensities
- Emphasis on increasing vegetation in the community
- Compatible residential development standards.

To address the large majority of the issues, particularly for larger or higher intensity developments, a key program is the design review process in Downtown Kenmore and high visibility areas.

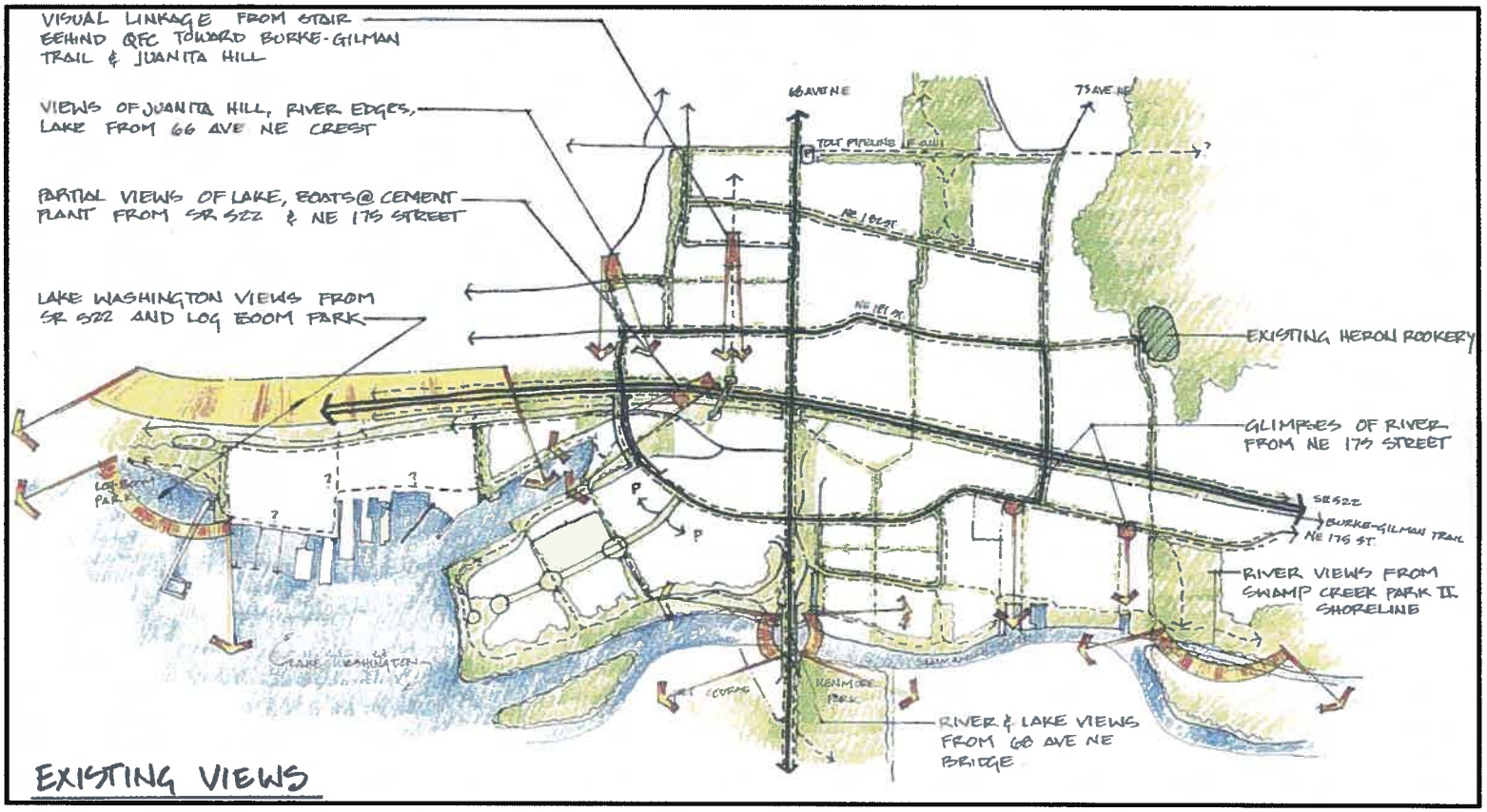
GOALS, OBJECTIVES, AND POLICIES

Following are the community design goals, objectives and policies. In some cases, policies are cross-referenced in more than one Element or Sub-Element, and this is noted by a policy reference in italics (e.g., *Policy LU-4.5.6*).

GOAL 7. INCREASE THE COMMUNITY'S CONNECTION TO THE WATERFRONT.

OBJECTIVE 7.1 Maintain and enhance view corridors to Lake Washington and the Sammamish River.

Policy LU-7.1.1 Identify important public view corridors to Lake Washington and the Sammamish River. Existing views are illustrated on **Figure LU-9**. Methods to retain existing views include, but are not limited to:



Existing Views – Downtown Vicinity

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects & Planners

Legend: A question mark (?) identifies that a potential pedestrian access/connection requires feasibility review.

Not to Scale

March 2001

Figure LU 9

- Retain existing views currently in areas of public ownership, such as on City-owned lands.

- Retain view corridors in existing road rights of way, recreational areas and regional trail corridors such as Log Boom Park, Rhododendron Park, the Burke-Gilman Trail, SR-522, and along 68th Avenue NE, by requiring adjacent new developments to provide visual access.

Policy LU-7.1.2 Evaluate alternative development regulations and tools to maintain and enhance public view corridors to Lake Washington and the Sammamish River. Existing and potential views to be preserved or enhanced are illustrated in **Figure LU-10**. Methods to maintain and enhance view corridors include, but are not limited to:

- Create potential for view corridors by requiring them in the design and permitting of private property development proposals.

- Require future Downtown master plans to exploit potential water views through design and development regulations such as design guidelines. These design and development regulations would address massing of buildings, percent of width, building heights, setbacks, signage, and scale of the built and pedestrian environment.

- Address potential interference in visual access, such as a pedestrian bridge connection over SR-522 in Downtown, through appropriate design.

OBJECTIVE 7.2 Maintain and enhance the public's physical access to the Lake Washington and Sammamish River waterfronts.

Policy LU-7.2.1 Consistent with the Parks, Recreation and Open Space Element, establish and implement plans, development policies, regulations, and incentives to provide increased public access to the waterfront.

GOAL 8. PROVIDE FOR ENVIRONMENTAL QUALITY, OPEN SPACE, AND VEGETATION.

OBJECTIVE 8.1 Protect natural and environmentally sensitive areas, open space, trees, vegetation, natural terrain, and drainage.

Policy LU-8.1.1 Through development standards, protect wetlands, streams and lakes, retaining habitat value and flood control. Ensure development is designed to be responsive to the environment.

Policy LU-8.1.2 Through density and development guidelines, minimize development in environmentally sensitive areas such as landslide, erosion, seismic and flood hazard areas.

Policy LU-8.1.3 During development review, encourage use of natural terrain and drainage, and indigenous landscaping to minimize erosion and promote the efficient use of renewable resources, water and energy.

Policy LU-8.1.4 Promote the adequate provision of peripheral and internal open space and recreation uses in new development, including trails and parks.

OBJECTIVE 8.2 Integrate landscaping into streetscapes and developments, and increase the biomass in the community.

Policy LU 8.2.1 Continue to require tree retention plans for development and redevelopment proposals in Kenmore.

Policy LU-8.2.2 Include requirements in development regulations to increase vegetation such as providing perimeter landscaping, parking stall/tree ratios, maximum impervious surface ratios, and other techniques. Consider incentives, such as density bonuses, to provide additional usable landscaped areas.

Policy LU-8.2.3 Require development to retain substantial trees and include substantial landscape materials to achieve noticeable biomass.

OBJECTIVE 8.3 Encourage cluster residential development along with open space for efficient service delivery and greater environmental protection.

Policy LU-8.3.1 In development regulations consider allowing lot size averaging, lot clustering, flexible setback requirements, and other techniques to protect environmentally sensitive areas or to achieve greater neighborhood compatibility. Requirements should include that when these techniques are used, the development should be consistent with development surrounding the site.

GOAL 9. PROMOTE THE EFFICIENT MOVEMENT OF PEOPLE AND GOODS AND LESSEN THE RELIANCE ON THE AUTOMOBILE.

OBJECTIVE 9.1 Create a safe, comfortable, expedient, accessible and attractive circulation system considering vehicles, emergency access, pedestrians, and bicycles where possible.

Policy LU-9.1.1 Adopt street design and construction standards that, in addition to facilitating vehicular access, also:

a. Allow emergency vehicle access 24 hours a day;

b. Allow for the development of a comprehensive pedestrian and bicycle network;

c. Encourage transit and non-single occupant vehicle travel; and,

d. Address aesthetic and environmental characteristics as well as function and safety.

OBJECTIVE 9.2 Promote development which encourages non-single occupant vehicle travel and alternate modes of transportation.

Policy LU-9.2.1 Promote mixed-use development to reduce vehicle travel between land uses, particularly in the Downtown districts.

Policy LU-9.2.2 Through development review, promote the appropriate location of parking areas to facilitate non-automobile travel.

Policy LU-9.2.3 Require new development and redevelopment proposals to provide pedestrian and bicycle connections to existing trails, community facilities and services, transit, schools and the surrounding neighborhood.

Policy LU-9.2.4 Ensure zoning and subdivision regulations facilitate the creation of useable open space, community facilities and nonmotorized access. Pedestrian mobility should be prioritized and the impact of automobiles on the character of the neighborhood reduced.

OBJECTIVE 9.3 In addition to signage, create a system of visual cues on major streets, transit routes, sidewalks, and trails that help lead users to destinations.

Policy LU-9.3.1 Identify key local and regional destinations as follows:

a. State, County, and City parks and open spaces;

b. Neighborhood, Community, Regional, and Downtown commercial districts;

c. Public and Private educational facilities;

d. Transit centers; and

e. Government facilities including City Hall, Northshore Utility District Headquarters, Fire Stations, Police Stations, Library, Community Centers, and others

Policy LU-9.3.2 Create a hierarchy of tree and vegetation standards, signs, light standards, public art, kiosks, or other features to direct users to key destinations. Apply these visual cues to the arterials, off-street trail network, and key local and regional destinations.

GOAL 10. CREATE ATTRACTIVE, FUNCTIONAL, AND ENDURING BUILDINGS AND PLACES.

OBJECTIVE 10.1 Create a sense of place and identity for Kenmore while allowing for diversity.

Policy LU-10.1.1 Through development quality, signage standards, landscape treatments, and public investment visible at community gateways and in a central Downtown, create a sense of identity and place for Kenmore.

Policy LU-10.1.2 Focus design review standards and guidelines towards Downtown as well as commercial and multi-family development Citywide. Ensure that provisions allow for creativity and flexibility while meeting common design principles. *(see Policy LU-4.5.1)*

Policy LU-10.1.3 Based upon input from citizens and the business community, periodically update sign regulations to achieve the following:

a. Create hierarchy of signage sizes and types addressing regionally-oriented mixed-use and commercial districts and locally-oriented mixed-use and commercial districts;

b. Minimize sign clutter in business and mixed-use districts;

c. Encourage signs which orient to non-motorists as well as motorists;

d. Reduce the prevalence of billboards; and,

e. Allow for sufficient visibility to support businesses.

Policy LU-10.1.4 Require screening of unsightly views, such as heavy machinery, storage areas, loading docks, and parking areas to minimize their visibility from adjacent properties, particularly residential districts, and from arterials. *(see Policy LU-4.5.5)*

OBJECTIVE 10.2 Use design standards that promote pedestrian-scale development with human-scale details and an orientation to the street.

Policy LU-10.2.1 Encourage commercial, high density, and mixed-use developments to incorporate features that are oriented to a human-scale such as upper story setbacks, façade modulation, variety in building materials, benches, street trees, plazas, projecting signs, canopies, street lamps, hanging baskets, or other features.

Policy LU-10.2.2 In commercial, multi-family, and mixed-use districts, encourage building, parking and site design treatments that accommodate pedestrians and bicyclists as well as automobiles.

Policy LU-10.2.3 Through design guidelines or standards, encourage appropriate levels of parking in commercial and mixed-use areas, as follows:

a. Encourage shared and structured parking in the Downtown through requirements and incentives such as density bonuses or deferred fees;

b. Require minimum parking levels, and discourage excessive parking standards through shared parking, demand studies, and other incentives or requirements where appropriate to avoid underutilized expanses of parking and encourage transit and alternate modes of transportation;

c. Allow for parking to be visible, but not dominate the street view.

OBJECTIVE 10.3 Encourage pedestrian-oriented street design.

Policy LU-10.3.1 In coordination with the sidewalk priority system established in the Transportation Element, promote sidewalks along arterials and local streets, and sidewalk and path connections, where appropriate, to the off-street non-motorized trail network. For safety and aesthetic purposes, promote the use of landscaped buffers between curbs and sidewalks, particularly along arterials.

Ensure appropriate levels of illumination. Encourage bus stops to have shelters and benches.

OBJECTIVE 10.4 Encourage design and development that promotes public safety.

Policy LU-10.4.1 Include "Crime Prevention through Environmental Design" components in site design guidelines for new development. Where appropriate, techniques may include promoting mixed-use development, visibility of activity areas from surrounding residences and uses, increased pedestrian-level lighting, use of low fences, see-through landscaping, visible building entrances, and other techniques.

Policy LU-10.4.2 Provide street, access, and signage standards that allow for quick emergency vehicle responses.

OBJECTIVE 10.5 Encourage sustainable design and development.

Policy LU-10.5.1 Support green building.

OBJECTIVE 10.6 Support existing neighborhoods.

Policy LU-10.6.1 Consider establishing a matching grant fund for improvement projects proposed by neighborhood or business groups.

Policy LU-10.6.2 Allow for neighborhood entry markers in sign regulations.

GOAL 11. PROMOTE COMPATIBLE DEVELOPMENT IN RESIDENTIAL NEIGHBORHOODS.

OBJECTIVE 11.1 Prepare and implement development standards and regulations that acknowledge neighborhood character.

Policy LU-11.1.1 Consider amendments to permitted uses, lot and building dimensional standards, street allowances, and other requirements to achieve compatible development in single-family, multi-family, and mixed-use districts.

Policy LU-11.1.2 Provide a variety of options such as driveways and joint-use driveways in a manner that allows for integration of new development into existing neighborhoods. Match improvement standards to the number of lots to be served. Encourage the interconnection of the local street pattern.

OBJECTIVE 11.2 Ensure that new housing is compatible with surrounding development in scale and/or design, and provides adequate on-site parking.

Policy LU-11.2.1 Ensure single-family dwellings are designed in accordance with zoning code requirements applied to achieve compatible housing patterns yet allow for individuality, as well as improvement over time.

Policy LU-11.2.2 Develop and apply multi-family design guidelines and standards to achieve quality development and compatibility with surrounding uses. Variation in facades, roof lines, and other building design features should be used to give a residential scale and identity to multi-family developments at the development edge. Require

multi-family residential development to provide both common and private open space.

Policy LU-11.2.3 In design guidelines and standards, ensure the provision of common facilities in multi-family developments, such as open space, internal walkways, roads, parking, laundry rooms, solid waste and recycling areas, and mailboxes.

Policy LU-11.2.4 Ensure multi-family parking standards address sufficient off-street parking to accommodate residents and visitors.

GOAL 12. PRESERVE AND ENHANCE KENMORE'S SMALL-TOWN FEELING.

OBJECTIVE 12.1 Provide a community atmosphere that is inclusive and family-friendly, and that fosters a sense of belonging and pride.

Policy LU-12.1.1 Support and develop community events that foster pride in the community such as fairs, parades, community forums, or other events celebrating Kenmore citizens, institutions, history, or other community features.

Policy LU-12.1.2 Provide locations for public gatherings in civic and commercial developments where appropriate. *(see Policy LU-4.5.6)*

Policy LU-12.1.3 Encourage private reinvestment in residential and commercial areas by:

a. Developing and implementing capital facility plans for transportation, surface water and parks facilities maintenance and improvements;

b. Supporting housing rehabilitation assistance programs offered by King County or other agencies;

c. Supporting weatherization programs offered by King County or utilities;

d. Investigating mechanisms that support historic residential and commercial sites or neighborhoods;

e. Encouraging liberal refuse pick-up, including large items;

f. Supporting the formation of business improvement districts; and

g. Considering funding matches, loans or similar programs for owners rehabilitating commercial buildings and sites.

Policy LU-12.1.4 Provide appropriate resources towards enforcing nuisance ordinances addressing junk cars, noxious weeds, and other blighting influences.

Policy LU-12.1.5 Provide appropriate resources towards building and zoning code enforcement to help ensure sufficient structure and site quality and maintenance.

OBJECTIVE 12.2 Maintain smaller-scale development in residential neighborhoods.

Policy LU-12.2.1 Achieve compatibility in residential neighborhoods through the application of development standards addressing building size. Standards may address building

height, roof pitch, lot coverage, floor area ratios, setbacks, maximum impervious surfaces, and other aspects that affect building size.

Policy LU-12.2.2 Non-residential uses such as governmental, utility, religious, social, and other institutional uses should consider surrounding neighborhood character when siting such facilities in residential neighborhoods. Design should consider appropriate building form, location of activities on the site, transitions and buffers as appropriate to achieve compatibility.

OBJECTIVE 12.3 Seek to integrate large-scale development that protects environmental quality, and enhances the community's quality of life.

Policy LU-12.3.1 Encourage the consolidation of land to achieve development that is functional, attractive, and offers community amenities.

Policy LU-12.3.2 Require master plans for properties in the Public and Private Facilities land use district, and for developments exceeding a size threshold in the Downtown zones.

Policy LU-12.3.3 Ensure that large-scale developments protect environmentally sensitive areas and develop design solutions that recognize natural features and cultural resources (historic or archaeological) as site and community amenities.

GOAL 12.1 WELCOME TRAVELERS AND RESIDENTS TO THE COMMUNITY

OBJECTIVE 12.1.1 Promote the development of primary entrances to the City as gateways to the community through development quality, design and landscape standards, land use regulations, and street standards.

Policy LU-12.1.1.1 Define the primary entrances to the City as follows:

a. The vicinity of the western city limits along Bothell Way;

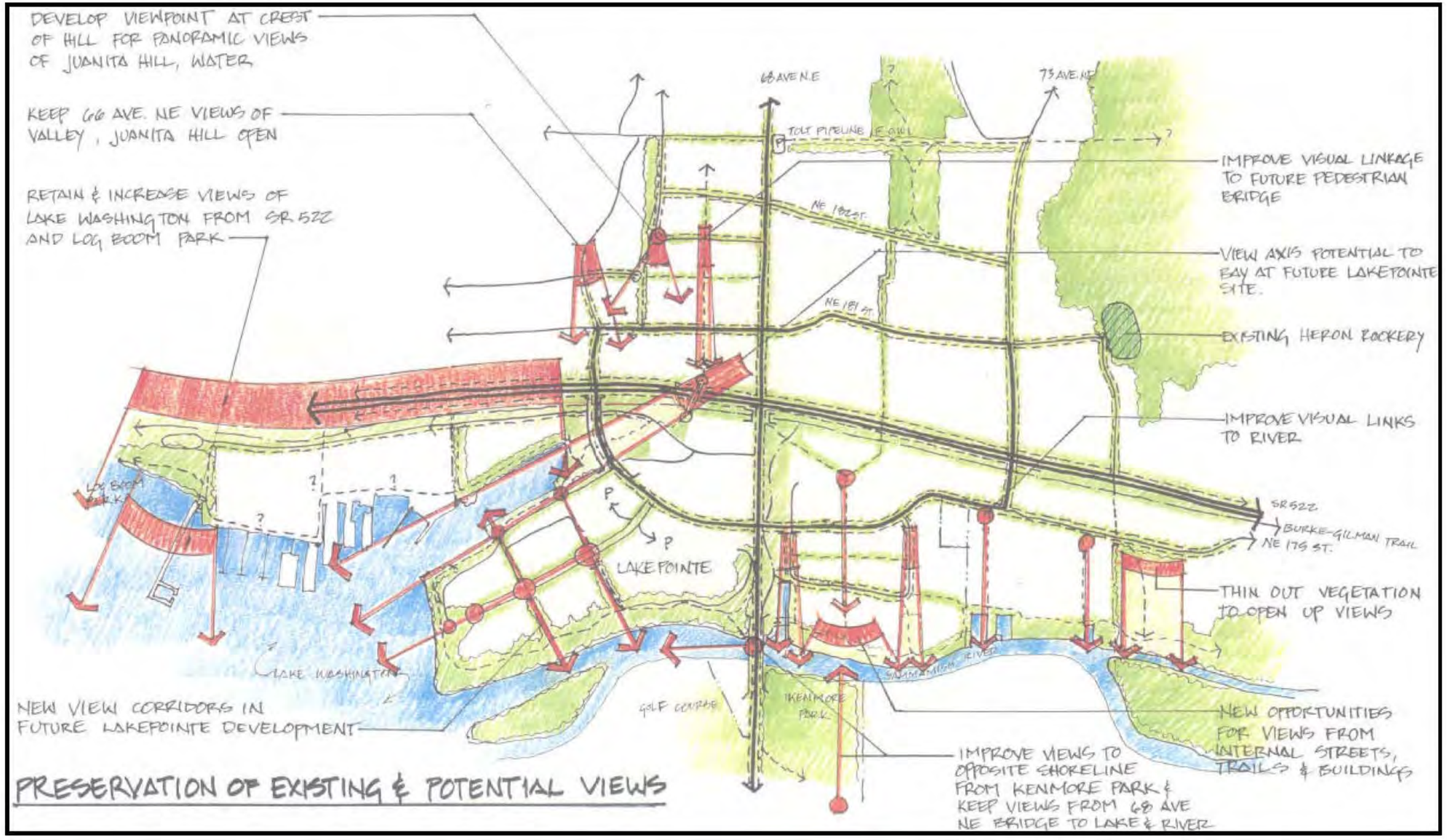
b. The vicinity of the eastern city limits along Bothell Way;

c. The vicinity of the southern city limits along Juanita Drive;

d. The vicinity of the southeastern city limits along Simonds Road; and,

e. The future Downtown transit hub.

Policy LU-12.1.1.2 Address secondary entrances to the City along arterials not listed in Policy LU-12.1.1.1, as well as entrances from Lake Washington.



Preservation of Existing and Potential Views – Downtown Vicinity

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.
Source: Arai/Jackson Architects & Planners

Legend: A question mark (?) identifies that a potential pedestrian access/connection requires feasibility review.

ARAI/JACKSON Architects & Planners

KENMORE BY THE LAKE

BUCHER, WILLIS & RATLIFF CORPORATION

Not to Scale

March 2001

Figure LU-10

Policy LU-12.1.1.3 Define gateway entrances through coordinated streetscape improvements such as gateway markers, landscaping, or other methods.

Policy LU-12.1.1.4 Through land use and development regulations as well as strategic investment, ensure quality development and infrastructure define Kenmore.

OBJECTIVE 12.1.2 Promote quality urban design and vegetated boulevard treatments along SR-522.

Policy LU-12.1.2.1 Implement the City-sponsored SR-522 Design Report prepared in conjunction with WSDOT. The plan includes sidewalk improvements, a median, and landscape standards.

Policy LU-12.1.2.2 Apply design and signage regulations to commercial and mixed-use developments along SR-522 addressing building size, orientation, access points, linked parking areas, and other measures to ensure noticeable, attractive visual appeal. Recognize the need for view corridors to business signs

IMPLEMENTATION STRATEGIES

The Community Design policies would require new or increased commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations would be needed to address:

- Strategies to promote housing reinvestment
- Downtown redevelopment incentives
- Matching grant funds for community projects
- Community gateway standards
- Master plan requirements for the Public and Private Facilities district.

A review of existing programs, rules and regulations would be needed to ensure they meet the policies. Rules, regulations and programs that should be reviewed include:

- Community events sponsorships
- Capital infrastructure plans
- Nuisance/violation regulations and enforcement
- Development standards addressing neighborhood character and compatibility with surrounding development
- Sign regulations
- Sidewalk standards
- Landscape standards
- Street standards
- Tree retention requirements
- Cluster development regulations.

Additional or continuing efforts would need to be made to coordinate with adjacent jurisdictions or to participate in regional programs, including:

- Coordination with WSDOT regarding improvements and access along SR-522.

REFERENCES

King County Growth Management Planning Council (December 2012). Countywide Planning Policies, Seattle, WA.

NATURAL ENVIRONMENT SUB-ELEMENT

INTRODUCTION

Natural systems play an important part in defining the character of the City of Kenmore. The different waterways provide recreational opportunities as well as visual amenities for the community. Some of the smaller, unnamed creeks perform an important role in surface water management by channeling runoff from impervious surfaces to the Sammamish River and/or Lake Washington. Streams and wetlands provide habitat for fish and wildlife and the tree-covered hillsides protect the slopes from erosional processes while also providing habitat. Future development will impact the natural systems and should be carefully reviewed to prevent undue adverse impacts that would lead to degradation of critical areas and to property damage.

Purpose

The purpose of the Natural Environment Sub-Element is to clarify the relationship between the natural environment and the built environment and to secure a balanced approach to future development. Sensitive areas such as wetlands, open spaces, and fish and wildlife habitat contain much of the natural wealth valued by City residents. Other sensitive areas, such as land prone to flooding and geologically hazardous areas are important because of the risk to lives and property posed by developing them.

Federal and State Requirements

Under the Growth Management Act (GMA) all jurisdictions are required to protect and enhance the natural ecosystems through comprehensive plans and policies, and to develop regulations that reflect natural constraints and protect sensitive features. Land use and development is to be regulated in a manner that respects fish and wildlife habitat in conjunction with natural features and functions, including air and water quality. Natural resources and the built environment are to be managed to protect, improve and sustain environmental quality.

Additionally, under the federal Clean Water Act, administered by the Washington Department of Ecology, local waterways are to be managed for multiple beneficial uses, including flood and erosion hazard reduction, fish and wildlife habitat, agriculture, open space, water supply, and hydropower. Use of water resources for one purpose should, to the fullest extent possible, preserve and promote opportunities for other uses.

Countywide Planning Policies

The King County Countywide Planning Policies (CPP) seek to restore the quality of the natural environment and to protect it for future generations. The policies require all jurisdictions to manage natural drainage systems to improve water quality and habitat functions, minimize erosion and sedimentation, protect public health, reduce flood risks, and moderate peak storm water runoff rates. Jurisdictions in shared basins are to coordinate approaches and standards. Jurisdictions also are directed to encourage low impact development approaches and to plan for land use patterns and transportation systems that minimize air pollution and greenhouse gas emissions.

All jurisdictions are to collaborate with the Puget Sound Partnership to implement the Puget Sound Action Agenda for the benefit of Puget Sound and its watersheds.

EXISTING CONDITIONS

Geology

Much of the City of Kenmore is comprised of undulating uplands formed as a result of different glacial depositional processes. Stream erosion, subsequent to glaciation, carved gullies and ravines in the uplands. Drift plains and alternating valleys create a north-south trending "ridge and valley" regional topography, with one major east-west lowland bisecting Kenmore – the Sammamish River Valley where the river empties into Lake Washington. The general topography of Kenmore is varied, ranging from hills up to 500 feet in elevation to the Lake Washington shoreline at 20 feet above sea level.

The Vashon glaciation left a layer of till and recessional sand and gravel deposits that mantle the upland plateaus north and east of Lake Washington. The till and recessional deposits overlie Vashon outwash sand and gravel, and older glacial and nonglacial deposits that overlie bedrock at great depths.

The Vashon and older deposits in the Kenmore area form a sequence of sand and gravel layers separated by finer grained layers of clay and silt or tight, well-graded soils, which are exposed in places along the steep slopes that lie between the upland plateaus and the lowland drainages. The Vashon and older deposits comprise several aquifers and aquitards within the subsurface, which control subsurface water movement from the upland to the lowland as well as to the locations of streams and creeks that occupy former outwash channels.

Lodgment till from the Vashon glaciation mantles much of the upland area but is generally absent from the steeper slopes at the edge of uplands and in the lowland. Lodgment till is an unsorted mixture of sand, gravel, silt, and clay deposited at the base of a glacier that has been compacted to a very dense state by the great weight of the overriding ice. This type of till has very low permeability and typically acts as an aquitard, restricting the downward flow of groundwater and reducing recharge of deeper aquifers. Till occurs at or very near the ground surface in the higher elevations of the watershed where north-south ridges and swales left by the passage of glacial ice cross the upland surface.

The ground surface along the upland margins and within former large outwash channels is underlain by a veneer of recessional outwash and ice contact deposits. Ice contact deposits were deposited during stagnation and melting of the ice sheet. These deposits consist of sand and gravel, similar to recessional outwash, but are more variable and often contain lenses of very silty material, till, and lacustrine silt and clay, which impede infiltration and groundwater flow.

Recent, unconsolidated deposits of alluvium, organic-rich deposits, and fill overlie the Vashon glacial soils. Recent alluvium, consisting of sand and gravel with interbeds of organic silt, peat and silty clay, exists within the floodplains of the Sammamish River and Swamp Creek. In general, the recent alluvium is poorly drained and associated with hydric soil conditions.

Geologic Hazards

Geologic hazard areas in Kenmore include lands with erosion, landslide, and seismic hazards. Erosion hazard areas, identified on the City's Geologic Hazard Areas map, occur along the northwest City limits, along 61st Avenue NE, land south of NE 170th Street, and along the shoreline in the Inglewood neighborhood and St. Edward State Park.

The identification of areas susceptible to landsliding is necessary in the assessment of grading, building, foundation design, housing density, and other land development regulations. Steeply sloping unconsolidated glacial deposits are highly susceptible to landslides. Landslide hazard areas are found

along 61st Avenue NE, the area south of NE 170th Street, and the Inglewood/St. Edward State Park area along Lake Washington.

Seismic hazard areas are those areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction. The City's Geologic Hazard Areas map identifies the region of Swamp Creek, the Sammamish River basin and the northern end of Lake Washington north of NE 166th Place as a seismic hazard area primarily due to the potential of soil liquefaction during times of seismic activity. Refer to **Figure LU-11** for the map indicating geologic hazard areas in Kenmore.

Air Quality

Air quality is generally assessed in terms of concentrations of air-borne pollutants being higher or lower than ambient air quality standards set to protect human health and welfare. To measure existing air quality, the Washington State Department of Ecology and the Puget Sound Clean Air Agency (PSCAA) maintain a network of monitoring stations throughout the Puget Sound region. Based on monitoring information collected over time, state (Ecology) and federal (U.S. Environmental Protection Agency) agencies designate regions as being "attainment" or "nonattainment" areas for particulate air pollutants. Attainment is a measure of whether National Ambient Air Quality Standards (NAAQS) are being met.

King County was designated as a nonattainment area in 1989. This designation brought about maintenance measures to bring the area back into attainment. The county now meets air quality standards and has a long-term plan for continuing to meet and maintain these standards and other requirements of the Clean Air Act. The county presently is designated as a "maintenance area."

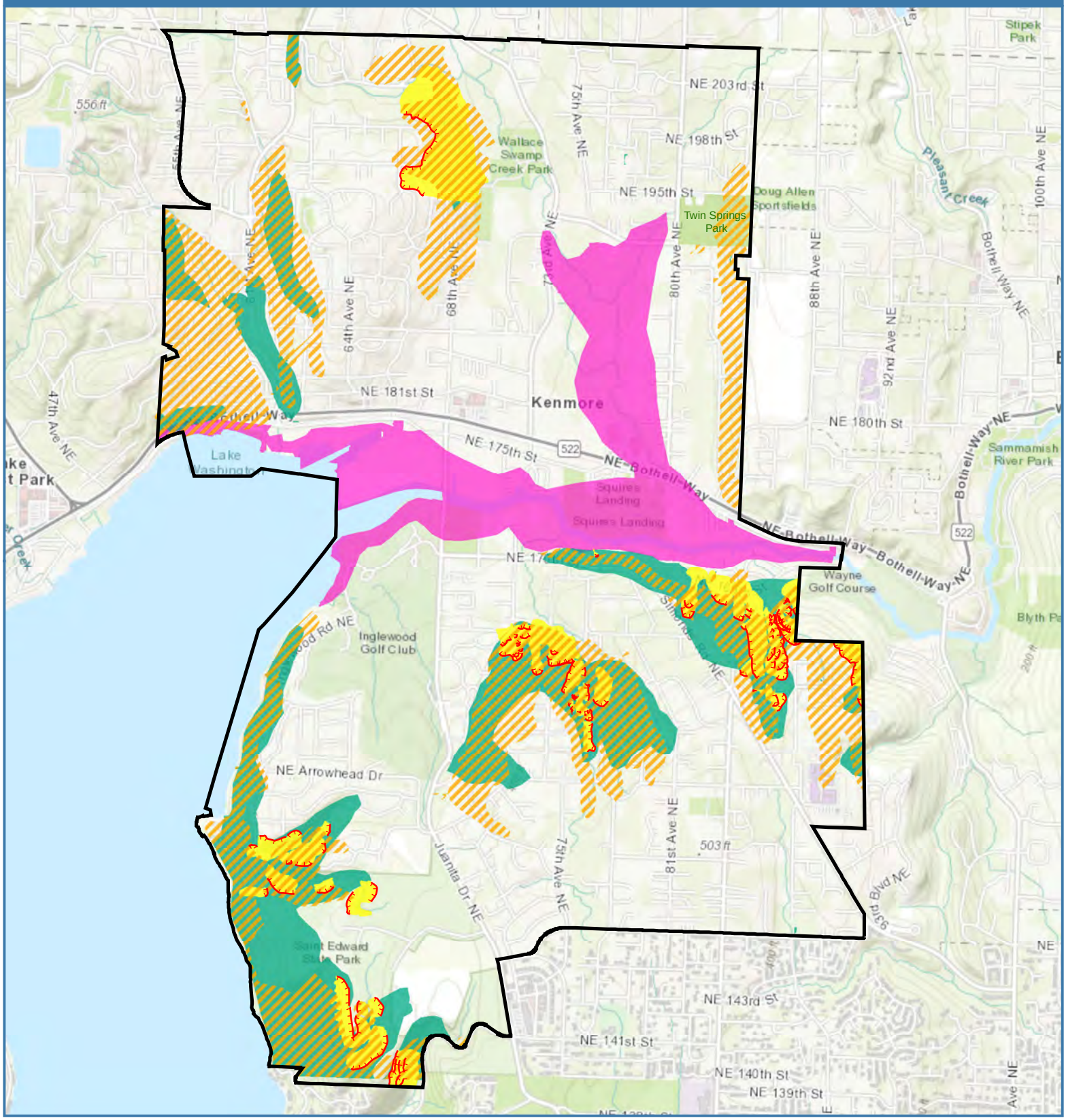
Future Conditions

Air quality in Kenmore is predicted to remain much as it is today or to improve slightly. This is based on continuation of the State vehicle emissions inspection and monitoring program and decreased dependence on wood as a primary heating source as newer houses replace older ones.

Additionally, implementation of zoning responsive to air quality concerns can result in air pollution benefits Countywide and regionally. Decreased air pollution can be expected from zoning and development patterns that result in a reduction in vehicle miles traveled. Concentrated development and higher density development allows transit to serve people more efficiently and generally reduces the number of cars on the road. Although regional or Countywide emissions can be reduced with efficient land use patterns, air pollutant emissions would still occur in more populated areas and may affect more people.

Figure LU-11

Interim Geological Hazard Areas



Kenmore City Boundary

WA DNR - Scarps

Erosion Hazard Areas

Seismic Hazard Areas

Landslide Hazard Areas

High Hazard

Moderate Hazard

N

0 0.25 0.5

Miles

Sources: City of Kenmore, 2018.

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Map Date: November 2018

Water and Wetlands

Predominant water features in the City include Swamp Creek as well as its tributaries and associated wetlands, the Sammamish River, and Lake Washington. In addition to these major water bodies, numerous small unnamed streams drain to these features.

Numerous wetlands also are located in the City—many within public open spaces such as Wallace Swamp Creek Park, Squire's Landing Park, and Inglewood Wetlands. Wetlands are transitional areas between aquatic and upland habitats and are identified based upon three parameters: hydrology, soils and vegetation. Wetlands are formally identified and delineated in accordance with the approved federal wetland delineation manual and applicable regional supplements. Under normal circumstances, wetlands include the following three components:

- Presence of water (hydrology) or an indication of at least the seasonal presence of water on the surface or in the soils;

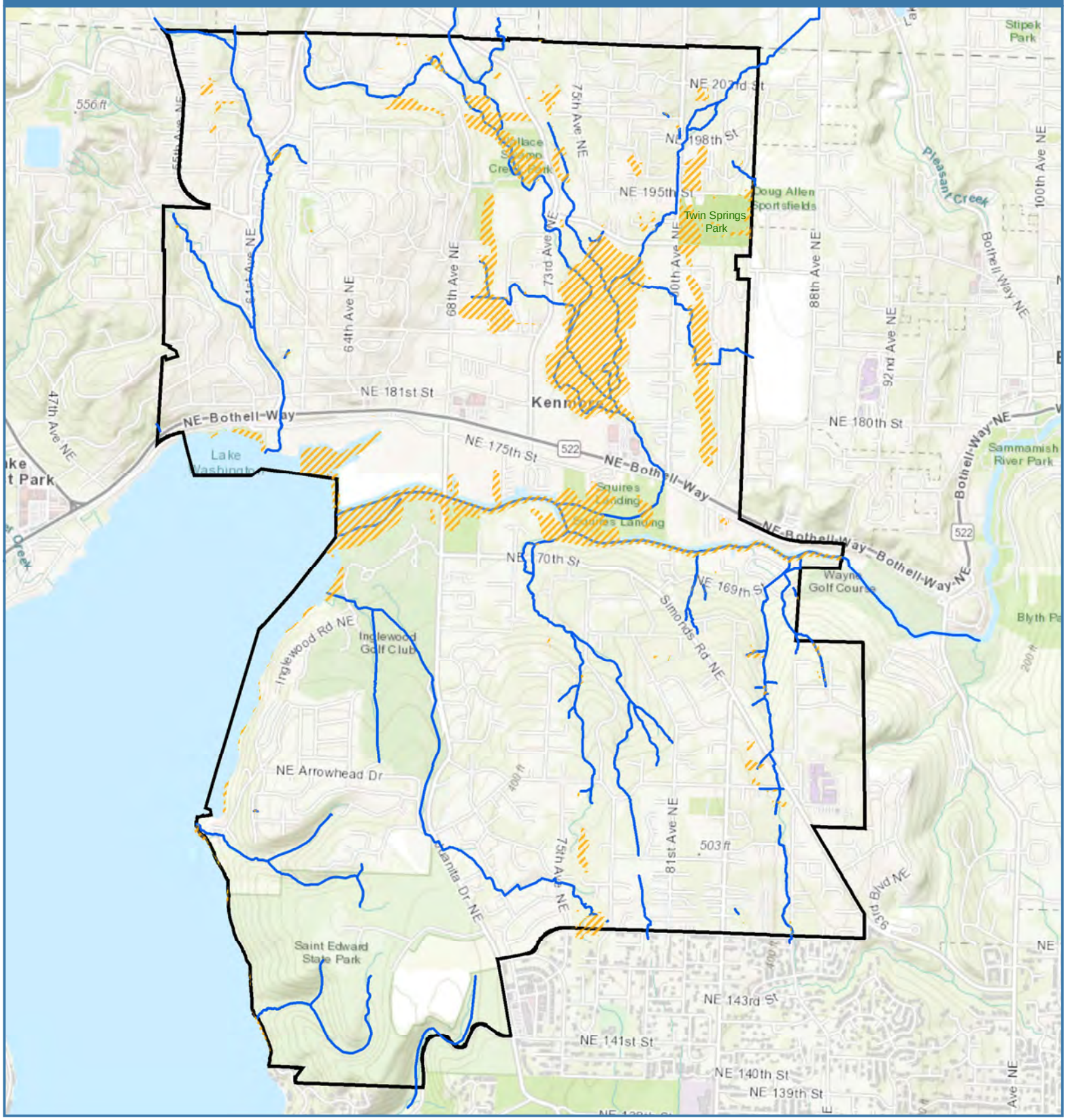
- Unique soils (hydric soils) that differ from upland soils due to anaerobic conditions resulting from prolonged or frequent saturation or flooding; and

- A dominance of plants adapted to growing in wet conditions (hydrophytic vegetation).

Wetlands provide habitat for a variety of aquatic and terrestrial plant and animal species. The extent to which a wetland will provide wildlife habitat will depend upon several features including the condition of the site, its size, presence of habitat features (e.g. open water, snags, islands or perches), the variety and complexity of the different habitat types within the wetland, and the surrounding habitat in the immediate vicinity. The ability of a wetland to provide habitat can also be linked to the degree it has been fragmented by urbanization and the level of disruption of the hydrology and vegetative continuity with other wetland systems. See **Figure LU-11a** for a map of streams and wetlands in Kenmore.

Figure LU-11a

Streams and Wetlands



Kenmore City Boundary

Wetlands

Streams

N

0 0.25 0.5

Miles

Sources: City of Kenmore, 2018.

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Map Date: November 2018

Swamp Creek

The main stem of Swamp Creek is approximately 14.6 miles long, extending from headwaters wetlands in south Everett, through portions of Everett, Lynnwood, Brier, Mountlake Terrace, Bothell, unincorporated Snohomish County, and Kenmore to the Sammamish River. Within the city of Kenmore, there are 2.5 miles of shoreline along the stream.

Swamp Creek is typical of Puget Sound lowland streams. It originates in upland areas with gently sloping hillsides and eventually flows through a broad valley to the mouth. Topography along the stream course varies from 450 feet above sea level at the headwaters to 20 feet above sea level at the mouth of the creek. The stream has a low to moderate gradient of 1 to 6 percent. Site and vegetation clearing and grading, increased impervious surfaces, inadequate storm detention and other factors, particularly with development in the watershed upstream from Kenmore, have increased flood frequencies and severity. Despite these changes, the Swamp Creek floodplain contains some of the largest and highest quality wetlands and wildlife habitat in the City. Swamp Creek has actively migrated within its floodplain.

Little Swamp Creek and Muck Creek join with Swamp Creek in Kenmore, along with a third, unnamed tributary.

Water quality issues include sedimentation and pollutants associated with stormwater runoff. Temperature and dissolved oxygen exceed the water quality standards for most of the summer and early fall. There also are frequent exceedances of the fecal coliform bacteria standard. Swamp Creek has been rated over time as either “moderate concern” or “high concern” since King County began monitoring water quality parameters in 2000.

To capture gravels and sediments, an in-stream sediment pond was created and is maintained in Wallace Swamp Creek Park.

Fish Habitat

Swamp Creek supports several salmonid fish species including coho salmon (federal species of concern), Chinook salmon (federally listed, threatened), coastal cutthroat trout (sea-run and resident), sockeye salmon, and steelhead trout (federally listed, threatened). Resident cutthroat trout are the dominant salmon species that spawn in the Swamp Creek basin. Swamp Creek also supports coho spawning and Little Swamp Creek is documented to support coho rearing. There is no designated critical habitat for any salmonid species in Swamp Creek or its tributaries.

Wildlife Habitat

Wildlife species are concentrated in small forested and wetland areas of the Swamp Creek watershed. The Swamp Creek wetland complex provides excellent forage and nesting habitat for birds and good forage and shelter habitat for amphibians, reptiles and small mammals. Ponded areas in the wetland provide resting sites for waterfowl. Of particular interest is the great blue heron rookery, described further below.

Sammamish River

The Sammamish River begins at the outlet of Lake Sammamish and ends at its confluence with Lake Washington. The total length of the river mainstem is approximately 14 miles. Within the City limits, the shoreline extends approximately 1.8 miles. The river has a low gradient (approximately 0.02%), dropping only 14' in elevation over its length. The volume and rate of surface water discharge from Lake Sammamish is moderated by a weir at Marymoor Park.

The River has been altered over time to control flooding. The natural Sammamish River floodplain historically covered a very large area as the river meandered extensively across the valley floor. Prior to channelization, land use in the valley was predominately agricultural and spring flooding regularly caused extensive damage to seed crops. To reduce this damage and to help regulate the level of Lake Sammamish, the U.S. Army Corps of Engineers, with King County as a local sponsor, dredged a deeper and straighter channel in the 1960s, filling in the former meanders. Levees were typically placed on the riverbanks to maximize the flood protection area. Miles of streambank were lined with rip-rap and are devoid of vegetation. In the 1980s and 1990s, dredging at the mouth of the river was undertaken for navigational purposes.

Consequences of the flood control projects include reduced frequency of overbank flooding, reduced riparian habitat, and elimination of extensive wetland areas. In Kenmore, approximately 35.3 acres of wetlands are mapped on the Sammamish River shoreline. The City has undertaken community restoration efforts to control invasive plants and replant native species in portions of the Rhododendron Park wetlands, portions of Squire's Landing Park wetlands, and in wetlands near the Wildcliffe Shores community.

The water quality of the Sammamish River is largely influenced by the slow-moving nature of this lowland system and by the backwater effect from Lake Washington. The slow movement, while enhancing sediment deposition, also allows for development of dense stands of aquatic plants and higher algal productivity. The backwater affect means that warmer lake water with lower dissolved oxygen concentrations is significantly influencing the conditions in the lower reach of the river, especially during summer months; both of these conditions are limiting for salmon. A 2015 study prepared for King County reported that "Elevated water temperatures may also adversely affect the fitness of adult Chinook salmon, delay their arrival at spawning grounds, or increase their susceptibility to disease/parasites," and have even resulted in mortality prior to spawning. Swamp Creek's cooler temperatures create an important thermal refuge for fish where the creek joins the river. Fecal coliform bacteria and various pollutants are additional water quality issues. Temperature, dissolved oxygen, and fecal coliform are water quality parameters that currently are listed by the Washington Department of Ecology as Category 5, a level of impairment that requires development of a Total Maximum Daily Load (TMDL) or water quality improvement plan. Ecology has been conducting studies in support of temperature and dissolved oxygen TMDL development since 2014.

The King County Water Quality Index rated the river at the Kenmore monitoring station as either of high or moderate concern with respect to water quality between 2000 and 2008.

Fish Habitat

The Sammamish River remains a major migratory pathway for salmon. The mouth of the River provides salmon rearing habitat and it is believed that outmigrating juvenile salmon may hold in the shallow beach area near the river mouth before moving into the lake. The basin supports rainbow trout, coho salmon (federal species of concern), Chinook salmon (federally listed, threatened), coastal cutthroat trout, kokanee salmon, sockeye salmon, and steelhead trout (federally listed, threatened).

Wildlife Habitat

Historically, the Sammamish River with its broad, shallow channels and numerous backwater sloughs and meanders provided prime habitat for a wide variety of animal species. This diversity of wildlife has been reduced and birds are the most visible form of wildlife along the river. Bald eagles, other raptors and cormorants have been observed flying along the River and great blue herons feed there.

Lake Washington

Lake Washington has a surface area of approximately 35 square miles. Kenmore's shoreline along the north end of Lake Washington is approximately 3.5 miles in length. The shoreline has little natural vegetation or habitat left due to urbanization. An exception is the waterfront along St. Edward State Park, which is roughly 3,000 feet in length and the longest undeveloped stretch of Lake Washington shoreline.

Construction of the Ship Canal in 1916 created the connection between Lake Washington and Puget Sound, causing the lake water surface elevation to drop approximately 9 feet. Currently the U.S. Army Corps of Engineers maintains the water level in the lake within a 2-foot range between 20 and 22 feet. The minimum water elevation is maintained during winter to allow for annual maintenance of docks and other structures, minimize damage during winter storms, and provide flood storage volume.

Water quality in Lake Washington has improved tremendously in the last 50 years. However, a continued concern is localized areas of eutrophication, wherein nutrients (particularly phosphorus) and bacteria from the watershed are transported to the lake, resulting in excessive plant growth including floating and attached algae and nuisance plants. Water quality concerns around increased water temperature, fecal coliform bacteria and chemical contaminants also are present.

Fish Habitat

Lake Washington supports over 30 fish species of which 12 are non-native and introduced to the lake. Native species of salmonids use the lake for migratory passage, rearing of juveniles, and foraging. No salmonid spawning typically occurs in Lake Washington. Salmonid species include Chinook (federally listed, threatened), coho (federal species of concern), sockeye salmon, steelhead trout (federally listed, threatened), resident rainbow trout, cutthroat trout, Dolly Varden/bull trout (federally listed, threatened) and kokanee salmon.

Wildlife Habitat

Mapped bald eagle nest sites are located on the east shore of Lake Washington and documented perch trees, including large black cottonwoods, are located along the lakeshore. Pileated woodpecker breeding (state candidate species) occurs in the forests of St. Edward State Park and extending onto forested portions of adjacent private and public properties. Other priority habitats associated with the lake include wetlands and biodiversity areas and corridors.

Endangered, Threatened, Sensitive Species

Federally Listed Species

Several federally listed species are known to occur or could potentially occur within the City's shorelines. Federally listed species that have been documented include Chinook salmon, designated by National Oceanic and Atmospheric National Marine Fisheries Division (NOAA Fisheries) as Threatened in 1999

and re-confirmed in 2005; bull trout, designated by U.S. Fish and Wildlife Service as Threatened in 1999; and steelhead trout, designated by NOAA Fisheries as Threatened in 2007 and re-confirmed in 2014.

As defined in the Endangered Species Act, critical habitat is "specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection." In 2005, NOAA Fisheries designated "critical habitat" for Chinook salmon, including Kenmore's Lake Washington shoreline and the lower portion of the Sammamish River.

In 2004, the U.S. Fish and Wildlife Service designated "critical habitat" for the Puget Sound Distinct Population Segment (DPS) of bull trout, including Kenmore's Lake Washington shoreline.

In 2016, NOAA Fisheries designated "critical habitat" for the Puget Sound DPS steelhead which excludes all waters in the Lake Washington watershed, including in Kenmore.

State Priority Habitat and Species Program

The State of Washington Department of Fish and Wildlife has a Priority Habitat and Species (PHS) program which includes a catalog of habitats and species considered to be priorities for both conservation and management. Priority habitats are "habitat types or elements with unique or significant value to a diverse assemblage of species." In Kenmore priority habitats include wetlands, biodiversity areas and corridors, and freshwater ponds.

The State lists designate *Endangered*, *Threatened*, *Sensitive,* and *Candidate* species. Priority species include those designations, as well as "animal aggregations (e.g. heron colonies, bat colonies) considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable." Priority species documented in Kenmore include Chinook salmon, bull trout, coho salmon, sockeye salmon, kokanee salmon, steelhead trout, coastal cutthroat trout, pileated woodpecker, purple martin, and great blue heron. Recent information indicates that the purple martin is no longer nesting in Kenmore.

The bald eagle's population status has improved to levels that resulted in the removal of the eagle from both federal and state listing. However, the eagle is still protected by the federal Golden and Bald Eagle Protection Act.

Due to the importance and size of Kenmore's great blue heron colony, the great blue heron is addressed below.

Great Blue Heron

Great blue herons are a permanent resident in all of Washington except the higher Cascade and Olympic ranges. They are highly vulnerable to human disturbance, predation, and competition for nesting habitat.

More productive colonies tend to form near large areas of high quality foraging habitat. Most colonies are within 1.9 miles of key foraging grounds, although herons can nest anywhere within 6.2 miles of where they are foraging.

Ideal nesting habitat consists of mature forest. Although most colonies are found in forests free of human disturbance, some nesting occurs in areas of persistent human activity. The birds are less tolerant of disturbance in the pre-courtship and courtship periods between mid-February and mid-April.

Bald eagles are the heron's primary predator (Azerrad, 2012).

A heron rookery has been established near the north end of the Kenmore Park and Ride, within Swamp Creek wetlands. It housed approximately 40 nesting pairs in 2009.

The colony established itself after the Kenmore Park and Ride lot was developed. There is a water barrier between the lot and the colony which may create a sense of safety. Other than encroaching development, factors which may cause the birds to move in the future include bald eagle intrusion, damage to nesting trees (trees can be damaged by the nesting as well as by flooding), reduction in foraging areas, and other factors (Norman 1999).

The birds are colonial during the breeding season but are noncolonial in the winter when they stay in the immediate area but separate into smaller groups. The winter roosting areas have not been identified. In winter, the birds will switch from foraging in wetland areas to upland areas where they will feed, for example, on rodents (Norman 1999).

Colonies usually exist at the same location for many years, and productivity (the number of fledglings/nesting herons) may be positively related to the number of years colonies have been in use. The herons may relocate their colonies in response to increased predation on eggs and young by mammals and birds such as eagles, declines in food availability, or human disturbance (State of Washington Department of Fish and Wildlife 1999).

The City of Kenmore's critical area regulations should require a year-round buffer around an active rookery, where unusually loud activities should be prohibited (Azerrad, 2012). Between February 1 and August 31, no clearing or grading or land disturbing activity should be allowed within the buffer unless approved by the Washington State Department of Fish and Wildlife (the SR-522 right of way is exempt from the buffer). Permits for activities within the heron rookery buffer require approval of a habitat management plan by the State and City.

Shoreline Master Program

The Shoreline Master Program applies to "shorelines of the State." In Kenmore, these include Lake Washington, the Sammamish River, and the main stem of Swamp Creek. In addition, wetlands considered "associated" with State Shorelines, such as Swamp Creek No. 3, also are regulated by the Shoreline Master Program. The Shoreline Master Program regulations include Environment designations of Downtown Waterfront, Shoreline Residential, Urban Conservancy, Natural, and Aquatic. The Downtown Waterfront environment is more permissive in terms of uses and development standards than the other designations. The most restrictive environment designation is the Natural environment. The Shoreline Sub-Element of the Land Use Element addresses shoreline goals, objectives and policies.

GOALS, OBJECTIVES, AND POLICIES

Following are the natural environment goals, objectives and policies. In some cases, policies are cross-referenced in more than one Element or Sub-Element, and this is noted by a policy reference in italics (e.g., *Policy SW-42.3.1*).

GOAL 13. PRACTICE ENVIRONMENTAL STEWARDSHIP BY PROTECTING, ENHANCING, AND PROMOTING THE NATURAL ENVIRONMENT IN AND AROUND THE CITY OF KENMORE.

OBJECTIVE 13.1 Cooperate regionally and strive locally to improve air quality.

Policy LU-13.1.1 Protect air quality from adverse impacts through the following measures:

a. Encourage alternative modes of transportation to reduce reliance on the automobile as the primary method of transportation.

b. Promote mixed-use and compact development forms, particularly in the Downtown, to help reduce the need for automobile use.

c. Require air quality impact analysis for major new developments, which could adversely impact the air quality levels in the vicinity.

d. Work with other agencies to educate the public about air quality impacts due to vehicular travel and due to improper use of woodstoves and fireplaces.

e. Work with other agencies to monitor air quality within the planning area.

Policy LU-13.1.2 Through development standards, reduce air pollution emissions from construction and land clearing activities.

OBJECTIVE 13.2 Encourage a reduction in overall noise levels throughout the community.

Policy LU-13.2.1 Require new developments which could generate substantial levels of noise or could expose people to substantial levels of noise from existing noise generators to submit an analysis of potential noise impacts and propose mitigation.

Policy LU-13.2.2 Implement noise and nuisance ordinances to address various noise sources and require cessation or mitigation of noise.

Policy LU-13.2.3 Encourage residential or other noise-sensitive development proposed for location in noise-impacted areas to be oriented away from noise source, or to be constructed with materials that will maximize noise reductions, or to incorporate fencing, landscaping, or other noise-reducing features, appropriate to the situation. Noise impacted areas may include the vicinity of SR-522, or the vicinity of the Air Harbor, or other areas that may be determined through environmental review.

OBJECTIVE 13.3 Encourage a reduction in light and glare impacts throughout the community.

Policy LU-13.3.1 Through design standards or educational opportunities, discourage the use of building materials or signage materials that cause glare impacts to substantial numbers of motorists or surrounding neighborhoods.

Policy LU-13.3.2 Require appropriate illumination levels and light shields for lighting standards along streets and in public open spaces and parks.

Policy LU-13.3.3 Encourage residents to provide exterior lighting for security purposes which does not unduly impact their neighbors.

Policy LU-13.3.4 Restrict lights pointing up, affecting the view of the night sky.

OBJECTIVE 13.4 Cooperate regionally and strive locally to protect surface and ground water quality and quantity from degradation.

Policy LU-13.4.1 Actively work with communities upstream from Kenmore to develop and implement appropriate surface water regulations to adequately retain and detain surface water so as to minimize the adverse effects upon the environment in Kenmore.

Policy LU-13.4.2 Use incentives, regulations and programs to manage Kenmore's water resources (rivers, streams, lakes, wetlands and ground water) and to protect and enhance their multiple beneficial uses including fish and wildlife habitat, flood and erosion control, water supply, energy production, transportation, recreational opportunities and scenic beauty. Use of water resources for one purpose should, to the fullest extent practicable, preserve opportunities for other uses.

Policy LU-13.4.3 Allow development that supports continued ecological and hydrologic functioning of water resources. Development should not have a significant adverse impact on water quality or water quantity.

Policy LU-13.4.4 Participate in the development of watershed plans integrating surface water, ground water, drinking water and wastewater planning to provide efficient water resource management.

Policy LU-13.4.5 Actively encourage the use of environmentally safe methods of vegetation control.

OBJECTIVE 13.5 **Adopt an urban forestry strategy to encourage the preservation and planting of trees on public and private property.**

Policy LU-13.5.1 Adopt an urban forestry strategy which encourages the preservation and protection of trees on public and private properties.

Policy LU-13.5.2 Through urban forestry, street design standards and parks programs, encourage the planting of street trees throughout the City.

OBJECTIVE 13.6 **Protect the natural, environmental, ecological, public access, aesthetic, and economic aspects of Lake Washington, the Sammamish River, and Swamp Creek.**

Policy LU-13.6.1 In the City's Shoreline Sub-Element and Shoreline Master Program, balance the need to provide for shoreline protection, and public access, with the need to allow for water-oriented uses and economic development.

Policy LU-13.6.2 Allow development within the shoreline jurisdiction that preserves the resources and ecology of the water and shorelines; avoids natural hazards; promotes visual and physical access to the water; and preserves archeological resources, traditional cultural resources, and navigation rights. Protection of critical areas should be balanced with visual values and physical access as long as there is no net adverse impact to regulated shoreline ecological processes and functions.

Policy LU-13.6.3 Balance private property rights with the need for public physical and visual access to shorelines.

GOAL 14. PROTECT LIFE AND PROPERTY IN AREAS OF NATURAL HAZARDS.

OBJECTIVE 14.1 **Strive to protect lives and public and private property from flooding.**

Policy LU-14.1.1 Implement the Surface Water Element goals, objectives and policies to minimize flood hazards in the community.

Policy LU-14.1.2 Recognize the Swamp Creek basin as an environmentally sensitive area that has sustained repeated flooding impacts. Densities and services should reflect the environmental sensitivity of the Swamp Creek basin.

OBJECTIVE 14.2 **Strive to protect slopes from erosion and sliding.**

Policy LU-14.2.1 Require land uses permitted in mapped Erosion Hazard Areas to minimize soil disturbance and maximize retention and replacement of native vegetative cover.

Policy LU-14.2.2 Require new development to protect natural vegetation coverage at levels sufficient to moderate surface water runoff and erosion and to protect the integrity of stream channels. When revegetation is required, appropriate native vegetation should be used.

Policy LU-14.2.3 Require grading and construction activities to be conducted with erosion control Best Management Practices and other development controls as necessary to minimize sediment discharge from construction sites.

Policy LU-14.2.4 Require increased surface water management in areas draining over steep and erosive slopes.

Policy LU-14.2.5 Limit development on slopes with a grade of 40 percent or more unless the risks and adverse impacts associated with such development can be reduced to a non-significant level.

Policy LU-14.2.6 Limit development in Landslide Hazard Areas unless the risks and adverse impacts associated with such development can be reduced to a non-significant level.

OBJECTIVE 14.3 Minimize the potential for damage due to liquefaction and seismic hazards.

Policy LU-14.3.1 In areas with severe seismic hazards, apply Uniform Building Code, and any other necessary special building design and construction measures to minimize the risk of structural damage, fire and injury to occupants and to prevent post-seismic collapse.

GOAL 15. PROTECT AND ENHANCE UNIQUE, VALUABLE, AND CRITICAL PLANTS AND WILDLIFE.

OBJECTIVE 15.1 Protect wetlands from encroachment and degradation, and encourage wetland restoration.

Policy LU-15.1.1 Determine wetland boundaries in accordance with the approved federal wetland delineation manual and applicable regional supplements.

Policy LU-15.1.2 Utilize a wetland classification system that is based on best available science.

Policy LU-15.1.3 Strive to achieve no-net-loss of wetland functions or values within each drainage basin. Acquisition, enhancement, regulations, and incentive programs may be used independently or in combination with one another to protect and enhance wetlands functions.

Policy LU-15.1.4 Require development adjacent to wetlands to be sited such that wetland functions are protected, an adequate buffer around the wetlands is provided, and significant adverse impacts to wetlands are prevented.

Policy LU-15.1.5 Protect areas of native vegetation that connect wetland systems. Whenever effective, incentive programs such as buffer averaging, density credit transfers, or appropriate non-regulatory mechanisms should be used.

Policy LU-15.1.6 Protect the unique hydrologic cycles, soil and water chemistries, and vegetation communities of bogs, fens and other legislatively designated unique wetland ecosystems through the use of Best Management Practices to control and/or treat stormwater within the wetland basin.

Policy LU-15.1.7 Allow public access to wetlands for scientific, recreational use, and traditional cultural use where public access trails are carefully sited, sensitive habitats and species are protected, and hydrologic continuity is maintained.

Policy LU-15.1.8 Allow enhancement or restoration of degraded wetlands to maintain or improve wetland functions, provided that all wetland functions are evaluated in a wetland management plan, and adequate monitoring, code enforcement and evaluation is provided and assured by responsible parties. Restoration or enhancement must result in a net improvement to the functions of the wetland system. Technical assistance to small property owners should be considered.

Policy LU-15.1.9 Alterations to wetlands may be allowed, only after all wetland functions are evaluated, the least harmful and reasonable alternatives are identified, and affected significant functions are appropriately mitigated, in order to:

a. Accomplish a public agency or utility development;

b. Provide necessary utility and road crossings;

c. Enhance an ecological function; or,

d. Avoid a denial of all reasonable use of the property.

Policy LU-15.1.10 Approve wetland mitigation proposals if they would result in improved overall wetland functions within a drainage basin. All wetland functions should be considered. Ensure mitigation sites replace or augment the functions that would be lost as a result of the project proposal. Further, mitigation sites should be located strategically to alleviate habitat fragmentation.

Policy LU-15.1.11 Promote mitigation projects that contribute to an existing wetland system or restore an area that was historically a wetland. The goal for these mitigation projects is no net loss of wetland functions per drainage basin.

Policy LU-15.1.12 Preserve land used for wetland mitigation in perpetuity. Monitoring and maintenance should be provided until the success of the site is established.

Policy LU-15.1.13 Support a cooperative multi-jurisdictional effort to develop a plan for the establishment and utilization of a wetland mitigation banking program or in lieu fee program.

Policy LU-15.1.14 Apply appropriate penalties for current as well as previous wetland alteration violations, such as requiring wetland restoration, through code enforcement and stricter standards for development on sites where wetlands have been illegally filled.

OBJECTIVE 15.2 Protect streams from encroachment and degradation, and encourage stream restoration.

Policy LU-15.2.1 River and stream channels should be preserved, protected and enhanced for their hydraulic, ecological and aesthetic functions.

Policy LU-15.2.2 In partnership with other jurisdictions and interested parties, continue restoring stream and river channels and surrounding riparian areas to enhance water quality and fish and wildlife habitat and to mitigate flooding and erosion. Of particular interest is retention of forest communities along stream and river channels that provide shade and a source of woody debris to the aquatic habitat.

OBJECTIVE 15.3 Maintain and promote a diversity of native species and habitat within the City.

Policy LU-15.3.1 Protect native plant communities by encouraging management and control of non-native invasive plants, including aquatic plants. Environmentally sound methods of vegetation control, including appropriate use of approved herbicides, should be used to control noxious weeds.

Policy LU-15.3.2 Recognize that aquatic weeds and toxic algae are a regional issue. Lobby King County to take the lead on a solution to control aquatic weeds and algae on the Sammamish River, Swamp Creek and Lake Washington. At the same time, facilitate the use of local resources, including volunteers, to reduce aquatic weeds.

Policy LU-15.3.3 Encourage the use of native plants in landscaping requirements, erosion control projects, and in the restoration of stream banks, lakes, shorelines, and wetlands. Provide incentives for using native plants, mature plantings, and higher densities of biomass.

Policy LU-15.3.4 Maintain fish and wildlife through conservation and enhancement of terrestrial, air, and aquatic habitats.

Policy LU-15.3.5 Preserve habitats for species which have been identified as endangered, threatened, or sensitive by the state or federal government.

Policy LU-15.3.6 Designate and protect Fish and Wildlife Habitats of Importance, including:

a. Habitat for federal or state listed endangered or threatened species;

b. Habitat for state sensitive, and candidate species; animal aggregations considered vulnerable; and those species of recreational, commercial, or tribal importance that are vulnerable as identified and mapped by the State Priority Habitats and Species program.

c. Habitat for great blue herons;

d. Habitat for bald eagles;

e. Biodiversity areas and corridors designated and mapped in the Priority Habitats and Species program by the State Department of Fish and Wildlife; and,

f. Riparian corridors.

Policy LU-15.3.8 Provide a mechanism for nomination and consideration of additional Fish and Wildlife Habitats of Importance.

Policy LU-15.3.9 Identify species which need protection during the development review process.

Policy LU-15.3.10 Stream and wetland buffer requirements may be increased to protect Fish and Wildlife Habitats of Importance. Whenever possible, density transfers and/or buffer averaging should be allowed.

Policy LU-15.3.11 Protect salmonid habitats by ensuring that land use and facility plans (transportation, water, sewer, electricity, gas) include riparian and stream habitat conservation measures developed by the County, cities, tribes, service providers, and/or state and federal agencies. Development within basins that contain fish enhancement facilities should consider significant adverse impacts to those facilities.

Policy LU-15.3.12 Work with adjacent jurisdictions, state and federal governments and tribes during land use plan development and site development review to identify and protect habitat networks at jurisdictional boundaries.

Policy LU-15.3.13 Integrate fish and wildlife habitats into capital improvement projects whenever feasible.

Policy LU-15.3.14 Promote voluntary fish and wildlife habitat enhancement projects by private individuals and businesses through educational and incentive programs.

Policy LU-15.3.15 Actively participate in the Watershed Resource Inventory Area (WRIA) 8 Council to ensure that the City's planning, implementation, and enforcement efforts regarding surface and groundwater, environmentally sensitive areas, and development regulations are consistent with regional efforts. A central purpose of the watershed planning and implementation should be the recovery of endangered, threatened, or sensitive species such as Chinook salmon, steelhead trout and bull trout.

Policy LU-15.3.16 Regularly review the City's capital projects, and planning and regulatory efforts to ensure consistency with the Federal 4(d) rule.

IMPLEMENTATION STRATEGIES

The Natural Environment Sub-Element policies would require new, continuing or increased commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations would be needed to address:

- Air quality and noise analyses for major new developments
- Urban forestry strategies
- Habitat enhancement educational, volunteer and incentive programs
- Aquatic weed and algae control.

A review of existing programs, rules and regulations would be needed to ensure they meet the policies, including:

- Control of air emissions from construction and land clearing activities
- Erosion control Best Management Practices
- Increased surface water management requirements on steep and erosive slopes

- Sufficiency of wetland, stream, fish and wildlife habitat, flood hazard, seismic hazard, landslide hazard, and erosion hazard regulations
- Sufficiency of design standards for building materials, critical area signage and lighting
- Sufficiency of noise standards
- Sufficiency of native vegetation requirements and tree management and protection requirements
- Sufficiency of aquatic weed prevention and invasive plant prevention
- Sufficiency of protection against pollutants, including fertilizer, entering streams, the river and the lake.

Additional or continuing efforts would need to be made to coordinate with adjacent jurisdictions or participate in regional programs, including:

- Working with adjacent, upstream communities on water quality and flooding issues
- Participating in the development of watershed plans
- Working with King County and the Sammamish River cities to control aquatic weeds and algae on the Sammamish River and Lake Washington
- Establishing a wetland mitigation banking program or in lieu fee program
- Restoring stream channels.

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SHORELINE SUB-ELEMENT

SHORELINE PURPOSE, INTENT AND PRINCIPLES

INTRODUCTION

Washington's Shoreline Management Act (SMA) was passed by the State Legislature in 1971 and created in response to a growing concern among residents of the state that serious and permanent damage was being done to shorelines by unplanned and uncoordinated development. The goal of the SMA was "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." While protecting shoreline resources by regulating development, the SMA is also intended to provide for appropriate shoreline use by encouraging land uses that enhance and conserve shoreline functions and values.

The primary responsibility for administering the SMA is assigned to local governments through local shoreline master programs (SMPs), adopted under guidelines established by Ecology. The guidelines (WAC 173-26) establish goals and policies that provide a framework for development standards and use regulations in the shoreline. The State legislature established new guidelines in 2003 requiring all cities and counties to update shoreline policies and regulations. The new shoreline guidelines set a higher level of environmental protection for shorelines in the state and a goal of "no net loss" of shoreline function. Local SMPs are to be based on these State guidelines and tailored to the specific conditions and needs of individual communities. The SMP is also meant to be a comprehensive vision of how the shoreline area will be managed over time.

Kenmore adopted King County's original 1978 SMP when the City incorporated in 1998. The 2012 Shoreline Master Program update was drafted to meet State guidelines and develop a program more tailored to the City's current shoreline conditions and land use plans. In 2019, the City's SMP was updated as required by State law.

EXISTING CONDITIONS

The existing conditions of Kenmore's shorelines were evaluated in the Shoreline Inventory and Analysis (2008). That evaluation included a description of ecosystem and watershed processes, the physical environment and water quality of each water body, biological resources, cultural resources, land use and public access.

SHORELINE MANAGEMENT PURPOSE AND INTENT

These policies briefly define the overall purpose and intent of Kenmore's Shoreline Master Program and reference the City's regulatory authority to manage shorelines of the state. The language in this section is entirely based on WAC 173-26 and RCW 90.58.020.

Authority

Authority for enactment and administration of this Program is the Shoreline Management Act of 1971, Chapter 90.58, Revised Code of Washington (RCW), also referred to herein as "the Act."

Purpose and Intent

The purpose of this Program is: (A) to promote the public health, safety, and general welfare of the community by providing long range, comprehensive policies and effective, reasonable regulations for development and use of City of Kenmore shorelines; (B) to manage shorelines in a positive, effective, and equitable manner; and (C) to further assume and carry out the responsibilities established by the Act for the City of Kenmore, and to adopt and foster the following policy contained in RCW 90.58.020 for shorelines of the State:

> It is the policy of the State to provide for the management of the shorelines of the State by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the State and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto.
>
> In the implementation of this policy the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the State shall be preserved to the greatest extent feasible consistent with the overall best interest of the State and the people generally. To this end uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment or are unique to or dependent upon use of the State's shoreline. Alterations of the natural condition of the shorelines of the State, in those limited instances when authorized, shall be given priority for single family residences and their appurtenant structures, ports, shoreline recreational uses including, but not limited to, parks, marinas, piers, and other improvements facilitating public access to shorelines of the State, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the State and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the State.
>
> Alterations of the natural condition of the shorelines and shorelands of the state shall be recognized by the department. Shorelines and shorelands of the state shall be appropriately classified and these classifications shall be revised when circumstances warrant regardless of whether the change in circumstances occurs through man-made causes or natural causes. Any areas resulting from alterations of the natural condition of the shorelines and shorelands of the state no longer meeting the definition of "shorelines of the state" shall not be subject to the provisions of chapter 90.58 RCW.
>
> Permitted uses in the shorelines of the State shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water.

Governing Principles

The following principles along with the policy statements of RCW 90.58.020 establish basic concepts that underpin the goals, policies and regulations of this Shoreline Master Program.

A. Any inconsistencies between this Program and the Act must be resolved in accordance with the Act.

B. The policies of this Program may be achieved by diverse means, one of which is regulation. Other means, authorized by the Act, include but are not limited to: acquisition of lands and/or easements by

purchase or gift, incentive programs, and implementation of capital facility and/or non-structural programs.

C. Protecting the shoreline environment is an essential statewide policy goal, consistent with other policy goals. Permitted and/or exempt development; actions taken prior to the Act's adoption; and/or unregulated activities can impair shoreline ecological processes and functions. This Program protects shoreline ecology from such impairments in the following ways:

   1. By using a process that identifies, inventories, and ensures meaningful understanding of current and potential ecological functions provided by shorelines.

   2. By including policies and regulations that require mitigation of adverse impacts in a manner that ensures no net loss of shoreline ecological functions. The required mitigation shall include avoidance, minimization, and compensation of impacts in accordance with the policies and regulations for mitigation sequencing in KMC 18.55.210. This Program and any future amendment hereto shall ensure no net loss of shoreline ecological functions and processes on a programmatic basis in accordance with the baseline functions present as of the date of adoption of this Program.

   3. By including policies and regulations to address cumulative impacts, including ensuring that the cumulative effect of exempt development will not cause a net loss of shoreline ecological functions, and by fairly allocating the burden of addressing such impacts among development opportunities.

   4. By including regulations and regulatory incentives designed to protect shoreline ecological functions, and restore impaired ecological functions where such opportunities have been identified, consistent with the City of Kenmore Shoreline Restoration Plan.

D. Regulation of private property – to implement Program goals such as public access and protection of ecological functions and processes – must be consistent with all relevant constitutional and other legal limitations. These include, but are not limited to, civil rights guaranteed by the U.S. and State constitutions, recent federal and state case law, and state statutes.

E. Regulatory or administrative actions contained herein must be implemented consistent with the Public Trust Doctrine and other applicable legal principles as appropriate and must not unconstitutionally infringe on private property rights or result in an unconstitutional taking of private property.

F. The regulatory provisions of this Program are limited to shorelines of the state, whereas the Shoreline Restoration Plan may extend beyond the designated shoreline boundaries.

G. The policies and regulations established by the Program must be integrated and coordinated with those policies and rules of the City of Kenmore Comprehensive Plan and development regulations adopted under the Growth Management Act (GMA).

H. Consistent with the policy and use preferences of RCW 90.58.020, the City of Kenmore should balance the various policy goals of this Program giving consideration to other relevant local, state, and federal regulatory and non-regulatory programs.

SHORELINE JURISDICTION

This section provides an overview of Kenmore's shoreline jurisdiction, the area where the Shoreline Management Act applies. "Shorelines" means lakes greater than 20 acres and rivers and streams with a minimum of twenty cubic feet per second mean annual flow, including the entire water body waterward from the ordinary high-water mark (OHWM) from its centerline or point, all water below the surface, and associated shorelands (RCW 90.58.030(2)(d)). Under the SMA, the shoreline jurisdiction includes areas that are 200 feet landward of the OHWM of shorelines and their adjacent shorelands, defined in Kenmore as the upland area within 200 feet of the OHWM, as well as any associated wetlands and floodplains. Three waterbodies in Kenmore (Lake Washington, the Sammamish River, and Swamp Creek) are regulated under the SMA and the City's Shoreline Master Program (SMP). Lake Washington is the only shoreline designated as a "shoreline of statewide significance" under the SMA [RCW 90.58.030(2)e].

The Kenmore shoreline jurisdiction is shown on the Shoreline Environment Designations Map, **Figure LU-12**.

SHORELINES OF STATEWIDE SIGNIFICANCE

This section includes principles and policies for managing shorelines of statewide significance. In the City of Kenmore, shorelines of statewide significance include only the Lake Washington shoreline, as it is a lake with a surface acreage over 1,000 acres. The Shoreline Management Act sets specific use priorities for these shorelines and calls for a higher level of effort in implementing policy goals. The state legislature declared that the public interest shall be paramount in the management of shorelines of statewide significance.

Policy LU-16.1.1 The public interest in the use and enjoyment of shorelines of statewide significance in the City of Kenmore shall be paramount.

Management goals for shorelines of statewide significance were ranked in order of preference by the State (i.e., the first goal must be given priority over all subsequent goals), as listed in the following policy.

Policy LU-16.1.2 In developing and implementing its Shoreline Master Program for Lake Washington, the City of Kenmore shall give preference, in the following order, to uses that:

1. Recognize and protect the statewide interest over local interest;
2. Preserve the natural character of the shoreline;
3. Result in long-term over short-term benefit;
4. Protect the resources and ecology of the shoreline;
5. Increase public access to publicly owned areas of the shorelines;
6. Increase recreational opportunities for the public in the shoreline; and
7. Provide for any other element as defined in RCW 90.58.100.

SHORELINE ENVIRONMENT DESIGNATIONS

The Kenmore shoreline environment designations are shown on the Shoreline Environment Designations Map, **Figure LU-12**.

GOAL 17. IMPLEMENT THE OBJECTIVES, PURPOSE, DESIGNATION CRITERIA AND POLICIES FOR EACH SHORELINE ENVIRONMENT.

17.1 Downtown Waterfront Environment

Purpose: The purpose of the Downtown Waterfront Environment is to provide for mixed urban water-oriented uses, public access and recreation while protecting existing ecological functions.

Designation Criteria: The shoreline along the contiguous downtown waterfront that is zoned regional business and waterfront commercial in KMC Title 18 and does not meet the requirement for other designations is to be assigned the Downtown Waterfront Environment designation.

Management Policies

Policy LU-17.1.1 Emphasis should be given to developing visual and physical public access to the shoreline in the Downtown Waterfront Environment.

Policy LU-17.1.2 Multiple uses of the shoreline should be encouraged.

Policy LU-17.1.3 Redevelopment and renewal should be encouraged in order to accommodate future users and capitalize on the shoreline resource.

Policy LU-17.1.4 Aesthetic improvement should be actively promoted by means of sign control regulations, architectural design standards, appropriate development siting, landscaping requirements (such as encouraging shoreline revegetation), and other development standards.

Policy LU-17.1.5 Development should not cause adverse impacts to existing ecological functions. Any adverse impacts shall be mitigated. Where applicable, new development shall include environmental cleanup of the shoreline in accordance with relevant state and federal laws.

Policy LU-17.1.6 Water-dependent, water-related and water-enjoyment uses should be a priority over other uses in this Environment. Non-water-oriented uses should not be allowed except as part of mixed-use developments that include water-dependent and water-related uses. A non-water-oriented development can be considered water-oriented if public access for a significant number of persons is provided.

Policy LU-17.1.7 Encourage redevelopment of industrial sites into mixed urban uses, including public access, recreation, residential, and commercial uses.

Policy LU-17.1.8 Identify strategic shoreline public access points and pursue linkages between public spaces along the waterfront. The Downtown Sub-Element, Transportation Element and the Parks, Recreation and Open Space Plan

provide guidance for strategic shoreline public access points and linkages and should be used in regulating the location of public access improvements.

17.2 Swamp Creek Commercial Environment

Purpose: The purpose of the Swamp Creek Commercial Environment is to recognize existing and planned high-intensity commercial and high-density residential uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.

Designation criteria: A Swamp Creek Commercial Environment designation should be assigned to shoreline areas adjacent to Swamp Creek if any of the following characteristics apply:

(A) The shoreline currently supports high-intensity commercial or high-density residential uses, and is designated in the Comprehensive Plan and zoned to remain high-intensity, and

(B) The shoreline does not meet the requirement for Urban Conservancy Environment or Shoreline Residential Environment designations.

Management Policies

Policy LU-17.2.1 In regulating uses in the "Swamp Creek Commercial" environment, water-oriented uses are a priority over non-water-oriented uses.

Policy LU-17.2.2 Non-water-oriented uses should be allowed in the following circumstances:
A. As part of mixed use developments with water-dependent, water-related, or water-enjoyment uses;
B. When they provide substantial improvements to the degraded buffer along Swamp Creek;
C. When they do not conflict with or limit opportunities for water-oriented uses; or
D. Where there is no direct access to the shoreline.

Policy LU-17.2.3 Development proposals should be designed or mitigated to assure no net loss of shoreline ecological functions.

Policy LU-17.2.4 Full utilization of the Swamp Creek Commercial designated land should be achieved before further expansion of intensive development is allowed.

Policy LU-17.2.5 Where applicable, new development should include environmental cleanup of the shoreline, with restoration of the shoreline, in accordance with relevant state and federal laws governing sites that are contaminated by hazardous substances.

Policy LU-17.2.6 Where feasible, visual and physical public access should be required consistent with the policies in Section 19, Public Access, Recreation and Views and Aesthetics, and SMP regulations.

Policy LU-17.2.7 Development in the Swamp Creek Commercial designation should conform to sign control regulations, site plan requirements, landscaping standards, and commercial and multifamily design standards.

Policy LU-17.2.8 Development should meet shoreline buffer standards and maintain natural vegetation.

17.3 Shoreline Residential Environment

Purpose: The purpose of the Shoreline Residential Environment is to accommodate residential development and appurtenant structures that are consistent with the Shoreline Sub-Element. An additional purpose is to provide appropriate public access and recreational uses within new multifamily developments or on public property.

Designation Criteria: The Shoreline Residential Environment designation should be assigned to shoreline areas if they are predominantly developed with single-family or multifamily residential development or are planned and platted for residential development, and the shoreline areas do not meet the criteria for other designations.

Management Policies

Policy LU-17.3.1 Standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be set considering the environmental limitations and sensitivity of the shoreline area and the level of infrastructure and services available.

Policy LU-17.3.2 Multifamily and multi-lot residential and recreational developments should provide public access and community recreational facilities.

Policy LU-17.3.3 Access, utilities, and public services should be available and adequate to serve existing needs and planned future development.

17.4 Urban Conservancy Environment

Purpose: The purpose of the Urban Conservancy Environment is to protect and restore ecological functions of open space, streams, wetlands, and floodplains where they exist in urban and developed settings, including areas below the ordinary high-water mark in Swamp Creek, while allowing a variety of compatible uses.

Designation Criteria: An Urban Conservancy Environment designation is assigned to shoreline areas appropriate and planned for development that is compatible with maintaining or restoring ecological functions of the area. This designation should be applied when:

(A) The shoreline is suitable for water-related or water-enjoyment uses and public access and recreation-related water-dependent uses;

(B) The shoreline includes open space, floodplain or other sensitive areas that should not be more intensively developed;

(C) The shoreline has been altered but retains important ecological functions;

(D) The shoreline has potential for ecological restoration or is a restoration priority; or

(E) The shoreline has potential for development that is compatible with ecological restoration.

Management Policies

Policy LU-17.4.1 Uses that preserve the natural character of the area or promote preservation of open space, floodplain or critical areas either directly or over the long term should be the primary allowed uses in the Urban Conservancy Environment. Uses that result in the restoration of ecological functions are allowed if the use is otherwise compatible with the purpose of the Environment.

Policy LU-17.4.2 New development should be restricted to those which are compatible with the natural and biophysical limitations of the land and water.

Policy LU-17.4.3 Commercial and industrial uses are generally discouraged, but commercial uses consistent with underlying zoning may be allowed if accompanied by ecological restoration and public access enhancement.

Policy LU-17.4.4 Diverse public access and recreational activities which are compatible with the Urban Conservancy Environment should be encouraged when adverse ecological impacts can be mitigated.

Policy LU-17.4.5 Development which would be a hazard to public health and safety or would materially interfere with existing ecological processes and functions should not be allowed.

Policy LU-17.4.6 Water-oriented uses should be given priority over non-water-oriented uses. For shoreline areas in the Urban Conservancy Environment adjacent to Lake Washington and the Sammamish River, water-dependent uses should be given highest priority.

Policy LU-17.4.7 Standards for residential density and development shall be set considering the environmental limitations and sensitivity of the shoreline area and the level of infrastructure and services available.

Policy LU-17.4.8 New structural flood control devices should be strongly discouraged in the Urban Conservancy Environment.

Policy LU-17.4.9 Developments should not be allowed unless connected to a sewer line.

Policy LU-17.4.10 Developments should be regulated so as to minimize the following: erosion or sedimentation, the adverse impact on aquatic habitats and substantial degradation of the existing character of the Urban Conservancy Environment.

Policy LU-17.4.11 Standards should be established for shoreline stabilization measures, vegetation conservation, water quality and shoreline modifications within the Urban Conservancy Environment.

Policy LU-17.4.12 The protection and restoration of stream 0056 where it flows into Lake Washington should be prioritized.

17.5 Natural Environment

Purpose: The purpose of the Natural Environment is to protect public shoreline areas that include ecologically intact or minimally altered shorelines. Only low intensity uses are to be allowed in this Environment to maintain existing ecological processes and functions.

Designation Criteria: A Natural Environment designation is assigned to shoreline areas if any of the following characteristics apply:

(A) A relatively large, contiguous area of the shoreline is in public ownership and ecologically intact or minimally altered;

(B) The shoreline represents ecological processes or functions that provide educational or scientific opportunities; or

(C) The shoreline is unable to support active uses or development without adverse impacts to ecological functions.

Management Policies

Policy LU-17.5.1 The Natural Environment should remain free from development or uses that would degrade the ecological functions or adversely affect their natural character.

Policy LU-17.5.2 The intensity and type of uses permitted should be restricted in the Natural Environment to maintain the natural systems and resources in their natural condition. The following new uses should not be allowed in the Natural Environment: commercial uses, industrial uses, non-water-oriented recreation, and roads, utility corridors, and parking areas that can be located outside of the Natural Environment.

Policy LU-17.5.3 Limited access should be allowed to areas in the Natural Environment.

Policy LU-17.5.4 Uses that are consumptive of the physical and biological resources or that may degrade the actual or potential value of the Natural Environment should be prohibited.

Policy LU-17.5.5 Uses and activities in locations adjacent to the Natural Environment should be strictly regulated to ensure that the integrity of the shoreline ecology is not compromised.

Policy LU-17.5.6 Scientific, historical, cultural and educational research uses and low-intensity water-oriented recreational access uses may be allowed provided that no adverse impact on the area will result.

Policy LU-17.5.7 New development or significant vegetation removal that would reduce the capability of vegetation to perform normal ecological functions should not be allowed. The subdivision of property in a configuration that, to achieve its intended purpose, will require significant vegetation removal or shoreline modification that adversely affects ecological functions should not be allowed.

17.6 Aquatic Environment

Purpose: The purpose of the Aquatic Environment is to protect, restore, and manage the unique characteristics and resources of navigable areas waterward of the ordinary high-water mark on the Sammamish River and Lake Washington.

Designation Criteria: Lake Washington and the Sammamish River below (waterward of) the ordinary high-water mark are to be designated as Aquatic Environment. In Lake Washington, the Aquatic Environment extends to the centerline of the lake.

Management Policies

Policy LU-17.6.1 New over-water structures should be limited, with priority given to water-dependent uses, public access and ecological restoration.

Policy LU-17.6.2 The size of new over-water structures should be limited to the minimum necessary to support the structure's intended use.

Policy LU-17.6.3 To reduce the adverse impacts of shoreline development and increase effective use of water resources, multi-purpose use of over-water facilities should be encouraged.

Policy LU-17.6.4 All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation, to consider any adverse impacts to public views, and to allow for the safe unobstructed passage of fish and wildlife, particularly those species dependent on migration.

Policy LU-17.6.5 Uses that adversely affect the ecological functions of critical freshwater habitats should not be allowed except where necessary to achieve the objectives of RCW 90.58.020 and impacts shall be mitigated.

Policy LU-17.6.6 Shoreline uses and modifications should be designed and managed to prevent degradation of water quality and alteration of natural hydrologic conditions.

GENERAL SHORELINE MANAGEMENT POLICIES

General shoreline management policies apply regardless of environment designation unless specifically stated within the policy, and are intended to provide general guidance in the management of shorelines. These general policies are organized by shoreline element.

18. Economic Development

GOAL 18.1. SHORELINE DEPENDENT DEVELOPMENT SHOULD PROVIDE LONG RANGE ECONOMIC BENEFITS WHILE ENSURING COMPATIBILITY WITH ENVIRONMENTAL AND LAND USE GOALS.

Policy LU-18.1.1 Kenmore should plan for the location and design of transportation facilities, tourist facilities, commerce and other developments that are particularly dependent on their location on or use of the shorelines of the state.

Policy LU-18.1.2 New economic development in the shoreline should be encouraged to locate in the Downtown Waterfront Environment.

Policy LU-18.1.3 Economic development should be designed to minimize actual shoreline space occupied.

Policy LU-18.1.4 Economic development in the shoreline involving high-intensity commercial land use should be confined to the Downtown Waterfront.

Policy LU-18.1.5 Cooperative use of docks, parking and storage facilities should be encouraged among commercial uses along the shoreline.

GOAL 18.2. SHORELINE ECONOMIC DEVELOPMENT SHOULD PROVIDE PUBLIC PHYSICAL AND VISUAL AVAILABILITY TO THE WATER, CONSISTENT WITH PUBLIC HEALTH AND SAFETY.

Policy LU-18.2.1 Overlook points, historic areas and points of public access to the shoreline should be considered in commercial site planning.

Policy LU-18.2.2 Economic development in the shoreline that utilizes public land should be designed to include public viewpoints, waterfront restaurants, and similar public facilities.

Policy LU-18.2.3 Structures placed in the water for economic purposes should be designed to prevent adverse impacts to shoreline ecological processes and functions.

Policy LU-18.2.4 Economic development in the shoreline should be prohibited in identified environmentally critical areas.

GOAL 18.3. WHENEVER FEASIBLE, WATERFRONT ECONOMIC DEVELOPMENT SITES SHOULD BE LOCATED IN AREAS THAT ARE ALREADY DEVELOPED WITH SIMILAR USES AND PLANNED SO AS TO PROVIDE MULTIPLE USES OF THE SHORELINES OF THE STATE.

Policy LU-18.3.1 Consistent with public safety, waterfront developments should be encouraged to provide public access and water-oriented recreation.

Policy LU-18.3.2 In siting economic development in the shoreline, water-dependent uses should be given priority over water-oriented uses.

Policy LU-18.3.4 To support the long-range economic base in Kenmore, shoreline economic development should include mixed urban uses, and shoreline public access and recreation should be encouraged.

GOAL 18.4. PRIORITY SHOULD BE GIVEN TO THOSE SHORELINE ECONOMIC DEVELOPMENTS WHICH MAINTAIN OPTIONS FOR FUTURE USERS OF THE WATER.

Policy LU-18.4.1 Development of commercial and recreational fisheries should be encouraged through measures to protect and restore fish habitat and provision for boating facilities.

Policy LU-18.4.2 Mining, dredging, channelizing or filling of shoreline should be discouraged.

Policy LU-18.4.3 Priority should be given shoreline economic development of renewable over non-renewable resources.

Policy LU-18.4.4 In order to ensure that treaty rights are respected, public notice of application should be provided to affected tribes on all projects requiring general public notice.

19. Public Access, Recreation and Views and Aesthetics

Public Access

GOAL 19.1. INCREASE THE ABILITY OF THE GENERAL PUBLIC TO REACH, TOUCH AND ENJOY THE WATER'S EDGE, TO TRAVEL ON THE WATERS OF THE STATE, AND TO VIEW THE WATER AND THE SHORELINE FROM ADJACENT LOCATIONS, PROVIDED THAT PRIVATE PROPERTY RIGHTS, PUBLIC SAFETY AND SHORELINE ECOLOGICAL PROCESSES AND FUNCTIONS ARE PROTECTED CONSISTENT WITH THE U.S. AND STATE CONSTITUTIONS, STATE CASE LAW, AND STATE STATUTES.

Policy LU-19.1.1 Development for the purpose of public access should respect and protect the enjoyment of private property rights along shorelines.

Policy LU-19.1.2 Shoreline public access areas should be planned to provide for ancillary facilities such as parking and sanitation when appropriate.

Policy LU-19.1.3 Shoreline public access and ancillary facilities should be designed and developed to provide adequate protection for adjacent private properties.

Policy LU-19.1.4 Appropriate signs should be used to designate publicly–owned shorelines and designated public access on public shorelines.

Policy LU-19.1.5 Public access to and along the water's edge should be available in publicly owned shorelines that are tolerant of human activity.

GOAL 19.2. PUBLIC ACCESS AND RECREATION SITES AND FACILITIES SHOULD BE WELL-MAINTAINED AND OPERATED.

Policy LU-19.2.1 Public access should be policed and improved consistent with the planned intensity of recreational use.

Policy LU-19.2.2 Shoreline public access should be limited to low-intensity, passive recreation in the Natural and Urban Conservancy Environments.

GOAL 19.3. PRIORITY FOR ACCESS ACQUISITION SHOULD CONSIDER RESOURCE DESIRABILITY, AVAILABILITY AND PROXIMITY OF POPULATION.

Policy LU-19.3.1 Where appropriate, improve, pursue or develop shoreline access, including, but not limited to, open space, boat launches, fishing facilities, trails, and streetscaping on publicly owned shorelands consistent with the Parks, Recreation and Open Space Plan, Downtown Sub-Element and Transportation Element.

GOAL 19.4. PHYSICAL OR VISUAL ACCESS TO SHORELINES SHOULD BE REQUIRED AS A CONDITION OF APPROVAL FOR SHORELINE DEVELOPMENT ACTIVITIES COMMENSURATE WITH THE ADVERSE IMPACTS OF NEW MULTI-FAMILY AND COMMERCIAL SHORELINE DEVELOPMENT AND THE CORRESPONDING BENEFIT TO THE PUBLIC OF SUCH DEVELOPMENT, CONSISTENT WITH CONSTITUTIONAL LIMITATIONS.

Policy LU-19.4.1 The City should provide incentives to encourage multi-family and commercial private property owners to provide public shoreline access.

Policy LU-19.4.2 Public pedestrian easements should be required in future shoreline land use actions whenever shoreline features are appropriate for public use.

Policy LU-19.4.3 Shorelines of the state that include but are not limited to any of the following conditions should be considered for pedestrian easements:

a. Where a proposed trail in the Parks, Recreation and Open Space Plan, Downtown Sub-Element or Transportation Element is planned along the shoreline.

b. Areas presently being legally used or historically having been legally used by the public along the shoreline for access.

Policy LU-19.4.4 Public access opportunities identified in the Shoreline Inventory and Characterization should be pursued as feasible over time to increase and improve public access to the shoreline.

GOAL 19.5. PUBLIC ACCESS TO SHORELINES OF THE STATE SHOULD BE DEVELOPED IN A WIDE RANGE OF LOCATIONS AND SHOULD BE OPEN TO ALL PEOPLE.

Policy LU-19.5.1 Viewpoints, lookouts, and vistas of shorelines of the state and wetlands should be publicly accessible.

Policy LU-19.5.2 Where appropriate, utility and transportation rights-of-way on the shoreline should be made available for public access and use.

Policy LU-19.5.3 Publicly-owned street ends that abut the shoreline should be retained or reclaimed for public access.

Policy LU-19.5.4 Shoreline recreational facilities and other public access points should be connected by trails, bicycle pathways and other access links where appropriate, as consistent with the Parks, Recreation and Open Space Plan, Downtown Sub-Element and Transportation Element.

Policy LU-19.5.5 Public access points should be of a nature and scale that would be compatible with adjacent land uses, water-dependent uses, navigation and protection of natural features, including aquatic habitat.

Policy LU-19.5.6 Public access should respect and protect ecological processes and functions and aesthetic values in the shorelines of the state.

Policy LU-19.5.7 Environmentally critical areas in shoreline areas should be retained as open space. Public access and use should be allowed where there is no net loss of shoreline ecological processes and functions.

GOAL 19.6. PROVIDE FOR THE PRESERVATION AND EXPANSION OF SHORELINE-DEPENDENT AND WATER-ORIENTED RECREATION OPPORTUNITIES THAT FACILITATE THE PUBLIC'S ABILITY TO ENJOY THE PHYSICAL AND AESTHETIC QUALITIES OF THE SHORELINE THROUGH PARKS, PUBLIC ACCESS TO BEACHES, BICYCLE AND PEDESTRIAN TRAILS, VIEWPOINTS, AND OTHER RECREATIONAL AMENITIES.

GOAL 19.7. AREAS CONTAINING SPECIAL SHORELINE RECREATION QUALITIES NOT EASILY DUPLICATED SHOULD BE AVAILABLE FOR PUBLIC USE AND ENJOYMENT.

Policy LU-19.7.1 Opportunities should be provided for the public to understand natural shoreline processes and experience natural resource features in diverse forms of water-oriented recreation.

Recreation

GOAL 19.8. SHORELINE RECREATIONAL MANAGEMENT AND DEVELOPMENT SHOULD PROTECT SHORELINE ECOLOGICAL PROCESSES AND FUNCTIONS.

Policy LU-19.8.1 Low-intensity recreational uses should be allowed along intact shorelines; service facilities such as parking lots and adequate sanitary facilities should only be allowed where appropriate.

Policy LU-19.8.2 Already popular beaches and other predominantly undeveloped shorelines should be available and designated as medium-intensity recreational use areas to be free from expansive development; intensity of use should be consistent with the protection of shoreline ecological processes and functions.

Policy LU-19.8.3 Small or linear portions of the shoreline in public ownership that are suitable for recreational purposes should be made available for variable intensities of use, which may include vista points, pedestrian walkways, water entry points, street-ends, and shoreline areas adjacent to waterfront roads.

Policy LU-19.8.4 Overall design and development in shoreline recreational areas should be responsive to the site characteristics of those areas and be consistent with the level of use in the area concerned.

Policy LU-19.8.5 Non-water-oriented recreational facility development should be located inland away from the water's edge except where appropriate in the Downtown Waterfront Environment.

GOAL 19.9. THE PROVISION OF ADEQUATE PUBLIC SHORELINE RECREATION LANDS SHOULD BE BASED ON AN ACQUISITION PLAN WITH CLEAR PUBLIC INTENT.

GOAL 19.10. A BALANCED VARIETY OF RECREATIONAL OPPORTUNITIES SHOULD BE PROVIDED REGIONALLY FOR PEOPLE OF DIFFERENT AGES, HEALTH, FAMILY STATUS, AND FINANCIAL ABILITY.

Policy LU-19.10.1 Appropriate specialized recreation facilities should be provided for those with disabilities or others who might need them.

Policy LU-19.10.2 Shoreline recreation areas should provide opportunities for different use intensities ranging from low (solitude) to high (many people).

Policy LU-19.10.3 Opportunities for shoreline recreational experiences should include a wide range of accessibility and duration of use.

Policy LU-19.10.3.5 Shoreline recreational experiences should include a wide range of different areas from remote-outdoor undeveloped areas to highly developed indoor-outdoor areas.

Policy LU-19.10.4 Recreational development should meet the demands of population growth consistent with the protection of shoreline ecological processes and functions.

Policy LU-19.10.5 Encourage private and public investment in recreation facilities.

Policy LU-19.10.6 Locate, design, and operate recreational development in a manner that minimizes adverse effects on adjacent properties as well as other social, recreational, or economic activities.

Views and Aesthetics

GOAL 19.11. SCENIC, AESTHETIC AND ECOLOGICAL QUALITIES OF NATURAL AND DEVELOPED SHORELINES SHOULD BE PRESERVED AS VALUABLE RESOURCES.

Policy LU-19.11.1 In shoreline areas, the natural topography should not be substantially altered.

Policy LU-19.11.2 Setbacks should be established for new development and redevelopment in the shoreline jurisdiction to minimize adverse impacts to views of the water by the public and adjacent uses and to protect the visual quality of views of the shoreline.

Policy LU-19.11.3 Shoreline structures should be sited and designed to minimize view obstruction and should be visually compatible with the shoreline character.

Policy LU-19.11.4 Public viewing and interpretation should be encouraged at or near commercial and governmental shoreline development when consistent with security and public safety.

20. Circulation

GOAL 20.1. CIRCULATION SYSTEMS IN SHORELINE AREAS SHOULD BE LIMITED TO THOSE THAT ARE SHORELINE DEPENDENT, THOSE THAT WOULD SERVE SHORELINE-DEPENDENT USES, AND THOSE THAT WOULD PROTECT SHORELINE ECOLOGICAL PROCESSES AND FUNCTIONS.

GOAL 20.2 NEW SURFACE TRANSPORTATION DEVELOPMENT SHOULD BE DESIGNED TO PROVIDE THE BEST POSSIBLE SERVICE WITH THE LEAST POSSIBLE INFRINGEMENT UPON THE SHORELINE ENVIRONMENT. ANY ADVERSE IMPACTS TO SHORELINE ECOLOGICAL PROCESSES AND FUNCTIONS SHOULD BE MINIMIZED AND MITIGATED.

Policy LU- 20.2.1 New transportation facilities and improvements to existing facilities that substantially increase levels of air, noise, odor, visual or water pollution should be discouraged.

Policy LU- 20.2.2 Transportation corridors should be designed to harmonize with the topography and other natural characteristics of the shoreline though which they traverse.

Policy LU- 20.2.3 Surface transportation facilities in shoreline areas should be set back from the ordinary high-water mark far enough to make unnecessary such protective measures as bank stabilization, landfill, bulkheads, groins, jetties or substantial site regrade.

Policy LU- 20.2.4 New transportation developments in shoreline areas should provide turnout areas for scenic stops and off-road rest areas where the topography, view and natural features warrant.

Policy LU- 20.2.5 Shoreline roadway corridors with historic significance or great aesthetic quality should be retained and maintained for those characteristics.

Policy LU- 20.2.6 The City should encourage new transportation facilities crossing lakes, streams, rivers or wetlands to locate in existing corridors except where any adverse impact can be minimized by selecting an alternate corridor.

GOAL 20.3. SHORELINE CIRCULATION SYSTEMS SHOULD ENCOURAGE ALTERNATIVE ROUTES AND MODES OF TRAVEL.

Policy LU- 20.3.1 Future development and maintenance of ferry services on Lake Washington should be encouraged in the Downtown Waterfront Environment, and integrated with the overall transportation system.

Policy LU- 20.3.2 Circulation routes should provide for non-motorized means of travel.

Policy LU- 20.3.3 The City should develop a public trail system along the north shore of the Sammamish River and through the Downtown Waterfront Environment on Lake Washington, as consistent with the Downtown Sub-Element, the Transportation Element and the Parks, Recreation and Open Space Plan.

GOAL 20.4. CIRCULATION SYSTEMS SHOULD BE LOCATED AND ATTRACTIVELY DESIGNED SO AS NOT TO UNNECESSARILY OR UNREASONABLY REDUCE THE BENEFITS DERIVED FROM PRIVATE PROPERTY.

Policy LU- 20.4.1 Motorized vehicular traffic on beaches and other natural shoreline areas should be prohibited.

Policy LU- 20.4.2 Transportation facilities providing access to shoreline development should be planned and designated in scale and character with the use proposed and should consider the future economic and social needs of the community consistent with the policies of the Kenmore SMP.

GOAL 20.5. CIRCULATION SYSTEMS DISRUPTIVE TO PUBLIC SHORELINE ACCESS AND OTHER SHORELINE USES SHOULD BE RELOCATED WHERE FEASIBLE.

Policy LU- 20.5.1 Transportation elements disruptive to the shoreline character that cannot feasibly be relocated should be conditioned or landscaped to minimize visual and noise pollution.

Policy LU- 20.5.2 Kenmore should promote and encourage modes of transportation that consume the least amount of energy and produce the least pollution while providing the best efficiency.

21. Conservation and Protection

GOAL 21.1. PRESERVE OR DEVELOP SHORELINES, ADJACENT UPLANDS, AND ADJACENT WATER AREAS IN A MANNER THAT ENSURES NO NET LOSS OF SHORELINE ECOLOGICAL PROCESSES AND FUNCTIONS.

Policy LU-21.1.1 Kenmore should support efforts to improve stream conditions and fish habitat, including re-establishing access to spawning and rearing areas.

Policy LU-21.1.2 Buffers or setbacks should be established for new development and redevelopment in the shoreline jurisdiction to protect existing shoreline ecological processes and functions and to provide space for shoreline vegetation preservation and enhancement.

Policy LU-21.1.3 Where appropriate, land and water uses should be located so that they do not interfere with the restoration or enhancement of shoreline ecological processes and functions.

Policy LU-21.1.4 Environmentally critical areas in the shoreline, including critical freshwater habitats, should be protected from uses or activities that will have adverse effects.

Policy LU-21.1.5 Kenmore should seek and use any available monitoring data on shoreline conditions in regulating development and making decisions that affect shoreline use, including, but not limited to, water quality monitoring by King County and the Department of Ecology, and monitoring data from hazardous material cleanup sites. The most recent data regarding a cleanup site should be obtained prior to issuing any permits for development on such sites.

GOAL 21.2. ENSURE PRESERVATION OF UNIQUE AND NON-RENEWABLE NATURAL RESOURCES AND ENSURE CONSERVATION OF RENEWABLE NATURAL RESOURCES FOR THE BENEFIT OF EXISTING AND FUTURE GENERATIONS AND THE PUBLIC INTEREST.

Policy LU-21.2.1 Shorelines and shorelands that are of unique or valuable natural character should be acquired and preserved wherever feasible.

Policy LU-21.2.2 Kenmore should encourage the conservation of fish, wildlife, and other renewable resources.

Policy LU-21.2.3 All future shoreline development should be designed and sited to prevent adverse impacts on the natural shoreline environment. Adverse impacts shall be mitigated to ensure no net loss of shoreline ecological functions.

Policy LU-21.2.4 Shoreline activities, and developments should be planned, constructed and operated to maintain or enhance the quality of air, soil, and water on the shorelines.

Policy LU-21.2.5 Any structure or activity in or near the water should be constructed in such a way that it will prevent adverse physical or chemical effects on water quality, vegetation, fish, or wildlife.

Policy LU-21.2.6 Uses or activities that degrade the natural resources of the shoreline should not be allowed.

Policy LU-21.2.7 Some uses or activities may be allowed only when compensatory habitat enhancement is provided as mitigation. When considering compensatory habitat enhancement as mitigation for impacts from new structures, such as when a reduced buffer or a non-water-dependent use is requested, the enhancement should be proportional to the degree of impact of the new structure, and take into account the degree to which the existing buffer has already been compromised. Enhancement should focus on restoring shoreline ecological functions that are most critical and that have been most diminished in the Kenmore shoreline.

Critical Areas

GOAL 21.3. THE KENMORE SHORELINE MASTER PROGRAM AND IMPLEMENTING REGULATIONS SHALL PROVIDE A LEVEL OF PROTECTION FOR CRITICAL AREAS AT LEAST EQUAL TO THAT PROVIDED BY KENMORE'S CRITICAL AREA POLICIES AND IMPLEMENTING REGULATIONS.

Policy LU-21.3.1 Kenmore shall protect shorelines and, where possible, should restore degraded habitat and critical area functions and values as consistent with the Comprehensive Plan Natural Environment Sub-Element.

Policy LU-21.3.2 Kenmore shall apply the following sequence of steps listed in order of priority in evaluating and mitigating the adverse impacts of development and redevelopment on critical areas within the shoreline jurisdiction, as consistent with WAC 173-26-201(2)(e):

1. Avoid the impacts altogether;
2. Minimize impacts;
3. Rectify impacts by repairing, rehabilitating or restoring the affected environment;
4. Reduce or eliminate the impacts over time;

5. Compensate for impacts by replacing, enhancing or providing substitute resources; and

6. Monitor the impact and take appropriate corrective measures.

Wetlands

GOAL 21.4. KENMORE SHOULD ALLOW ALTERATIONS TO WETLANDS ONLY IF THERE IS NO NET LOSS OF WETLAND FUNCTIONS AND VALUES.

Policy LU-21.4.1 Kenmore regulations for wetlands in shorelines shall address the following uses to achieve, at a minimum, no net loss of wetland area and functions:

1. Removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;

2. Dumping, discharging, or filling with any material, including discharges of stormwater and domestic, commercial, or industrial wastewater;

3. Draining, flooding, or disturbing of the open water level, duration of inundation, or groundwater table;

4. Driving of pilings;

5. Placing of obstructions;

6. Construction, reconstruction, demolition, or expansion of any structure;

7. Significant vegetation removal;

8. Other uses or development that results in an adverse ecological impact to the physical, chemical or biological characteristics of wetlands; and

9. Activities reducing the functions of buffers.

Policy LU-21.4.2 Kenmore shall delineate buffers around wetlands to protect and maintain wetland functions. Buffer widths shall be based on ecological function, characteristics and setting, any potential conflicts with adjacent land use, and other relevant factors.

Policy LU-21.4.3 Kenmore may allow compensatory mitigation only after a mitigation sequence is applied consistent with Policy LU-21.3.2. Lower priority mitigation measures shall be applied only where higher priority measures are determined to be infeasible or inapplicable.

Critical Freshwater Habitat

GOAL 21.5 KENMORE SHALL ENSURE PROTECTION OF CRITICAL FRESHWATER HABITAT CONSISTENT WITH KENMORE CRITICAL

AREA REGULATIONS FOR FISH AND WILDLIFE HABITAT OF IMPORTANCE (KMC 18.55.520 AND 18.55.530).

Policy LU-21.5.1 Kenmore should establish priorities for protection and restoration, where appropriate, along river corridors and lake shorelines.

Policy LU-21.5.2 Uses and development within and along stream channels, associated channel migration zones, wetlands, lake shorelines, and floodplains within the shoreline jurisdiction should be regulated to ensure that no net loss of ecological processes and functions results from new development near freshwaters of the state, including associated hyporheic zones.

Policy LU-21.5.3 Kenmore shall protect ecological functions associated with critical freshwater habitat as necessary to ensure no net loss from shoreline activities and associated changes.

Policy LU-21.5.4 Kenmore should facilitate appropriate restoration projects.

Flood Hazard Areas

GOAL 21.6. THE KENMORE SHORELINE MASTER PROGRAM SHALL UTILIZE THE POLICIES AND PROGRAMS ESTABLISHED IN THE KENMORE FLOOD HAZARD AREA REGULATIONS TO MEET THE REQUIREMENTS OF THE SHORELINE MANAGEMENT ACT AND THE DEPARTMENT OF ECOLOGY'S GUIDELINES FOR FLOOD HAZARD REDUCTION.

Water Quality, Stormwater and Nonpoint Pollution

GOAL 21.7. PREVENT ADVERSE IMPACTS TO WATER QUALITY AND STORM WATER QUANTITY THAT WOULD RESULT IN A NET LOSS OF SHORELINE ECOLOGICAL FUNCTIONS OR ADVERSE IMPACTS TO AESTHETIC QUALITIES OR RECREATIONAL OPPORTUNITIES.

Policy LU- 21.7.1 Ensure consistency between shoreline management provisions and other regulations that address water quality and stormwater quantity. The regulations that are most protective of ecological functions and public safety shall apply.

Geologically Hazardous Areas

GOAL 21.8. PREVENT ADVERSE IMPACTS TO THE SHORELINE AND PUBLIC SAFETY AS A RESULT OF INAPPROPRIATE DEVELOPMENT IN GEOLOGICALLY HAZARDOUS AREAS, INCLUDING AREAS SUSCEPTIBLE TO EROSION, LANDSLIDING, EARTHQUAKE, OR OTHER GEOLOGIC EVENTS.

Policy LU- 21.8.1 Ensure consistency between shoreline management provisions and other regulations that address geologically hazardous areas by incorporating Kenmore critical areas regulations into the SMP.

Policy LU- 21.8.2 Prohibit development or the creation of new lots that would cause foreseeable risk to people or improvements due to geologic conditions, or would require structural stabilization of the shoreline to protect the development, over the life of the development.

Policy LU- 21.8.3 If shoreline stabilization is required to protect existing development from geologic hazards, it shall be developed consistent with Section 24.2 of these policies.

22. Archaeological, Historic and Cultural Resources

GOAL 22.1. HISTORIC PROPERTIES IN THE SHORELINE JURISDICTION SHOULD BE PROTECTED TO PREVENT THE DESTRUCTION OF, OR DAMAGE TO, ANY SITE HAVING ARCHAEOLOGICAL, HISTORIC, CULTURAL, OR SCIENTIFIC VALUE THROUGH COORDINATION AND CONSULTATION WITH THE APPROPRIATE LOCAL, STATE AND FEDERAL AUTHORITIES, INCLUDING AFFECTED TRIBES.

1. Sites should be protected in collaboration with appropriate tribal, state, federal, and other local governments. Cooperation among public and private parties is to be encouraged in the identification, protection, and management of cultural resources.

2. Where appropriate, access to such sites should be made available to parties of interest. Access to such sites must be designed and managed in a manner that gives maximum protection to the resource.

3. Opportunities for education related to archaeological, historical and cultural features should be provided where appropriate and incorporated into public and private programs and development.

Policy LU-22.1.1 Kenmore should work with tribal, state, federal and local governments as appropriate to maintain an inventory of all known historic properties within the City in observance of applicable state and federal laws protecting such information from public disclosure. As appropriate, such sites should be preserved and/or restored for study, education and/or public enjoyment.

Policy LU-22.1.2 Provisions for historic property preservation, restoration and education should be incorporated with open space or recreation areas in site development plans whenever compatible and feasible.

Policy LU-22.1.3 Cooperation among involved private and public parties should be encouraged to achieve these historic, cultural, scientific and educational objectives.

Policy LU-22.1.4 Private and public owners of historic properties should be encouraged to provide public access and educational opportunities at levels consistent with long-term protection of both historic values and shoreline ecological processes and functions. Site-specific conditions may require public site access to be restricted at times, but educational means should be provided whenever possible.

Policy LU- 22.1.5 Historic property development should be planned and carried out so as to prevent adverse impacts to the resource. Adverse impacts to neighboring properties and other shoreline uses should be limited to temporary or reasonable levels.

Policy LU- 22.1.6 Owners of historic properties are encouraged to make substantial development plans known well in advance of application so that appropriate agencies, such as the Washington State Department of Archaeology and Historic Preservation, Tribes and others may have ample time to assess the site and make arrangements to preserve historic, cultural, scientific and educational values as applicable.

Policy LU- 22.1.7 If development is proposed adjacent to an historic property, then the proposed development should be designed and operated so as to be compatible with continued protection of the historic, cultural or archaeological site.

SHORELINE USE AND MODIFICATION POLICIES

23. Shoreline Use

General Use Policies

GOAL 23.1. DEVELOPMENT WITHIN THE SHORELINE JURISDICTION SHALL PROTECT THE PUBLIC'S HEALTH AND SAFETY, AND PRIVATE PROPERTY RIGHTS, WHILE IMPLEMENTING THE POLICIES OF THE SHORELINE MANAGEMENT ACT.

GOAL 23.2 PRESERVE OR DEVELOP SHORELINES, ADJACENT UPLANDS AND ADJACENT WATER AREAS IN A MANNER THAT ENSURES AN ORDERLY BALANCE OF SHORELINE USES.

Policy LU-23.2.1 Where there is a conflict between the uses permitted by zoning and the Shoreline Master Program, preference shall be given first to water-dependent uses, then to water-related uses, and finally to water-enjoyment uses.

Policy LU-23.2.2 Kenmore shall adopt use policies and development regulations to achieve consistency between shorelands and adjacent lands as directed in RCW 90.58.340.

Policy LU-23.2.3 Shoreline land and water areas particularly suited for specific and appropriate uses should be designated and reserved for such uses.

Policy LU-23.2.4 Like or compatible shoreline uses should be clustered or distributed in a rational manner rather than be allowed to develop haphazardly.

Policy LU-23.2.5 Multiple uses of the shoreline should be encouraged where location and integration of compatible uses are feasible.

Policy LU-23.2.6 The City shall consider the goals and policies within the Shoreline Master Program in all land use management actions regarding the use or development

of adjacent uplands or the water areas, adjacent uplands and associated wetlands or streams with less than 20 cubic feet per second mean annual flow within its jurisdiction where such use or development will have an adverse effect on designated shorelines.

Policy LU-23.2.7 Adverse impacts associated with new development in the shoreline should be minimized and mitigated such that there is no net adverse impact to shoreline ecological processes and functions.

Policy LU-23.2.8 Incentives should be provided to substantially reduce the impacts of existing nonconforming uses on ecological functions. Nonconforming uses should be allowed to expand or be reconfigured if it is demonstrated that the expanded or reconfigured use would reduce the impacts of the existing use on ecological functions.

23.3 Aquaculture

Policy LU-23.3.1 Aquaculture activities should be designed, located and operated in a manner that supports long-term beneficial use of the shoreline and protects and maintains shoreline ecological processes and functions. Aquaculture should not be permitted where it would result in a net loss of shoreline ecological functions; adversely affect the quality or extent of habitat for native species; adversely impact other habitat conservation areas; or interfere with navigation or other water-dependent uses.

Policy LU-23.3.2 Aquaculture facilities should be designed, operated and located so as not to cause harm to humans, spread disease to native aquatic life, or establish new non-native species. Aquaculture facilities shall not cause adverse impacts to shoreline ecological processes and functions, aesthetic qualities or public access.

Policy LU-23.3.3 Preference should be given to those forms of aquaculture that involve the least adverse environmental, visual and native plant and animal species impacts. In general, submerged aquaculture structures are preferred over those that involve substantial floating structures. Projects involving little or no substrate modification are preferred over those that involve substantial modification, recognizing that in some circumstances that importing sand or gravel on rocky or cobble substrates may result in more diverse habitat. Projects involving little or no supplemental food sources, pesticides, herbicides or antibiotic application are preferred over those that involve such practices.

Policy LU-23.3.4 Aquaculture that involves significant risk of cumulative adverse effects on water quality, sediment quality, benthic organisms, and/or wild fish populations through potential contribution of antibiotic resistant bacteria, or escapement of non-native species, or other adverse effects on native species or threatened or endangered species and their habitats should not be permitted.

Policy LU-23.3.5 Consideration should be given to both the potential beneficial impacts and potential adverse impacts that aquaculture development might have on the

physical environment; on other existing and approved land and water uses, including navigation; or on the aesthetic qualities of a project area.

Policy LU-23.3.6 Legally established aquaculture uses, including authorized experimental projects, should be protected from incompatible uses that may seek to locate nearby. Uses or developments that have a high probability of damaging or destroying a legally established existing aquaculture use may be denied.

Policy LU-23.3.7 Community restoration projects associated with aquaculture should be reviewed and permitted in a timely manner.

Policy LU-23.3.8 Experimental aquaculture projects in water bodies should be limited in scale and should be approved for a limited period of time. Experimental aquaculture means an aquaculture activity that uses methods or technologies that are unprecedented or unproven in the State of Washington.

Policy LU-23.3.9 Kenmore should actively seek substantive comment on any shoreline permit application for aquaculture from all appropriate Federal, State and local agencies; the Muckleshoot Tribe, the Tulalip Tribes and other tribes with treaty fishing rights; and the general public regarding potential adverse impacts. Comments of nearby residents or property owners directly affected by an aquaculture proposal should be considered and evaluated, especially in regard to use compatibility and aesthetics.

Policy LU-23.3.10 The rights of treaty tribes to aquatic resources within their usual and accustomed areas should be addressed during the permit review process. Direct and early coordination between the applicant or proponent and the affected tribe should be encouraged.

Policy LU-23.3.11 Kenmore support should be given to Washington Department of Fish and Wildlife to improve stream conditions, open new spawning areas, and establish new fish runs.

23.4 Boating facilities

Policy LU-23.4.1 Boating facilities shall be located only at sites with suitable environmental conditions, shoreline configuration, access, and neighboring uses, and:

1. Meet health, safety and welfare requirements;
2. Mitigate adverse aesthetic impacts;
3. Provide public access in new marinas, unless there is a safety or security concern;
4. Limit adverse impacts to shoreline resources from boaters living in their vessels;
5. Ensure no net loss of shoreline ecological processes and functions or other adverse impacts; and

6. Protect the rights of navigation.

Policy LU-23.4.2 The need for additional marinas should be balanced against other shoreline-dependent uses.

Policy LU-23.4.3 Local governments should coordinate in the planning and development of regional marina facilities for multi-jurisdictional use.

Policy LU-23.4.4 Marinas should be located only within the Downtown Waterfront and adjacent Aquatic Environment designations.

Policy LU-23.4.5 Marina development and ancillary facilities should be designed to use minimal shoreline.

Policy LU-23.4.6 Parking areas that serve marinas shall conform to the parking regulations of the Kenmore Comprehensive Plan Transportation Element and Shoreline Master Program transportation and parking policies.

Policy LU-23.4.7 Marinas should be planned to minimize traffic congestion and pedestrian/vehicle conflicts.

Policy LU-23.4.8 Dry storage of boats should be encouraged in order to retain shoreline for other shoreline dependent uses or so that the greatest number of boats per foot of shoreline frontage can be accommodated.

Policy LU-23.4.9 Viewpoints, walkways, picnic facilities, benches, telephones, restrooms, drinking fountains and other public use facilities should be encouraged at marinas.

Policy LU-23.4.10 Covered moorage should be discouraged except for vessel repair or construction activity.

Policy LU-23.4.11 Setbacks should be established for upland boating facilities to protect shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, minimize adverse impacts to views of the water by the public and adjacent residents, and protect the visual quality of views of the shoreline.

Policy LU-23.4.12 Marinas should be allowed to have live-aboard tenants provided they are limited to 10 percent of the boat slips in the marina, are occupied by single-family tenants, and the marina has adequate on-land and pump-out facilities.

23.5 Commercial

Preference should be given to water-dependent commercial uses over non-water-dependent commercial uses, then water-related and water-enjoyment commercial uses over non-water-oriented commercial uses. Some commercial uses within the shoreline jurisdiction may be required to incorporate appropriate design and operational elements to qualify as water-related or water-enjoyment.

Policy LU-23.5.1 Kenmore shall require all commercial development on public land to provide public access, unless the use is incompatible or there are public safety concerns.

Policy LU-23.5.2 Kenmore shall prohibit non-water-oriented commercial uses in the shoreline jurisdiction unless they meet the following criteria:

1. The use is part of a mixed-use project that includes water-dependent uses and provides a significant public benefit with respect to the Shoreline Management Act's objectives such as providing public access and/or ecological restoration; or

2. Navigability is severely limited at the proposed site and the commercial use provides a significant public benefit with respect to the Shoreline Management Act's objectives, such as providing public access and/or ecological restoration.

Policy LU-23.5.3 Kenmore may allow non-water-oriented commercial development in the shoreline jurisdiction if the site is physically separated from the shoreline by another property or public right-of-way, provided that a property should not be allowed to be subdivided in a manner that would thwart the purposes of this policy.

Policy LU-23.5.4 Kenmore shall allow over-water non-water-dependent commercial uses only in existing structures or if the use is auxiliary to and necessary to support a water-dependent use. The area of any over-water structure shall be the minimum possible.

Policy LU-23.5.5 Kenmore shall prohibit commercial development that will have adverse impacts on other shoreline uses, resources and values such as navigation, recreation and public access, and views. Kenmore shall require mitigation for all commercial development to ensure that it does not cause a net loss of ecological processes and functions.

Policy LU-23.5.6 Setbacks should be established for commercial development in the shoreline jurisdiction to protect shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, minimize adverse impacts to views of the water by the public and adjacent uses, protect the visual quality of views of the shoreline, and allow for public access.

Policy LU-23.5.7 Boat moorage, launching facilities and other services should be located where existing vehicular access and parking are available or can be made available.

Policy LU-23.5.8 The use of porous materials should be encouraged for paved areas to allow water to infiltrate into the soil. Use of holding systems should be encouraged to control the runoff rate from parking lots and roof tops where the runoff would flow to Swamp Creek or any stream that is prone to flooding.

23.6 Heavy manufacturing

Kenmore has not identified any shoreline areas where heavy manufacturing or industrial uses would be appropriate.

Policy LU-23.6.1 Kenmore shall prohibit new heavy manufacturing or industrial uses in the shoreline jurisdiction.

Policy LU-23.6.2 Kenmore should encourage public access on existing industrial sites in the shoreline jurisdiction, unless Kenmore determines that public access is infeasible or inappropriate.

Policy LU-23.6.3 Kenmore should encourage redevelopment, environmental clean up and shoreline restoration on existing industrial sites.

23.7. In-Water Structures

In-water structure means a structure placed by humans within a stream, river, or lake waterward of the ordinary high-water mark that either causes or has the potential to cause water impoundment or the diversion, obstruction, or modification of water flow. In-water structures may include those for hydroelectric generation, irrigation, water supply, flood control, transportation, utility service transmission, fish collection, or other purposes.

Policy LU-23.7.1 In-water structures shall provide for the protection and preservation of shoreline ecological processes and functions, and cultural resources including, but not limited to, fish and fish passage, wildlife and water resources, critical areas, hydro-geological processes, and natural scenic vistas.

Policy LU-23.7.2 Planning for in-water structures shall give due consideration to the full range of public interests and ecological processes and functions, with special emphasis on protecting and restoring habitat for threatened or endangered species.

23.8. Mining

Kenmore has not identified any shoreline areas where mining would be appropriate.

Policy LU-23.8.1 Mining shall be prohibited in the shoreline jurisdiction.

23.9. Recreation

Recreational development includes commercial and public facilities designed and used to provide recreational opportunities to the public. Recreational development should be given priority and is to be primarily related to access to and enjoyment and use of the water and shorelines of the state.

Policy LU-23.9.1 Recreational development is allowed in the shoreline jurisdiction and must be consistent with the purposes of the shoreline environment designation in which the property is located.

Policy LU-23.9.2 Kenmore shall plan to provide public recreational uses on city-owned shoreline, consistent with the goals of this chapter.

Policy LU-23.9.3 Recreational improvements and new facilities should be constructed so that they preserve the natural character of the shoreline.

Policy LU-23.9.4 All recreational developments should be sited to enhance and protect existing shoreline ecological processes and functions.

Policy LU-23.9.5 The use of conventional fertilizers and pesticides in public recreation areas should be minimized or replaced with ecologically friendly landscape management methods.

Policy LU-23.9.6 Public recreational shoreline areas should serve as emergency refuge areas for boaters.

Policy LU-23.9.7 Visual access to the water should be pursued on steep slopes, at view points from bluffs and stream valleys, and in general where it is consistent with public safety and where extensive flood or erosion protection would not be necessary.

Policy LU-23.9.8 The acquisition of public easements to the shoreline should be encouraged.

Policy LU-23.9.9 Setbacks should be established for recreational development in the shoreline jurisdiction to protect existing shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, minimize adverse impacts to views of the water by the public and adjacent uses, and protect the visual quality of views of the shoreline.

Policy LU-23.9.11 Where possible during park master plan development or redevelopment, Kenmore should restore shoreline ecological function, including by revegetating the shoreline, re-siting roads and parking areas further away from the shoreline, and removing stream channelization and shoreline protection devices.

Policy LU-23.9.10 Prime fishing areas should be given priority and protected for recreational use.

Policy LU-23.9.11 Boating activities that increase shore erosion should be discouraged.

Policy LU-23.9.12 Effective interpretation should be provided to raise the quality of visitor experiences and to provide an understanding of the resource.

23.10. Residential

The term “residential development” includes single-family detached dwellings, attached and multifamily dwelling units, and subdivision of shoreline land into new residential lots. The Shoreline Management Act recognizes single-family residential development as a priority use within shorelines of the state.

Policy LU-23.10.1 Single-family residential development is a priority use in the shoreline jurisdiction in Kenmore.

Policy LU-23.10.2 Setbacks should be established for residential development in the shoreline jurisdiction to protect existing shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, minimize adverse impacts to views of the water by the public and adjacent residents, and protect the visual quality of views of the shoreline.

Policy LU-23.10.3 New shoreline residential development, including accessory structures and uses, should be sufficiently set back from steep slopes and shorelines vulnerable to erosion so that shoreline stabilization is not required to protect these structures and uses.

Policy LU-23.10.4 New over-water residences, including floating homes, are prohibited in the shoreline jurisdiction.

Policy LU-23.10.5 Kenmore should require multi-family residential development and subdivisions within the shoreline jurisdiction to provide community or public access.

Policy LU-23.10.6 Kenmore shall require subdivisions to:

1. Be designed, configured and developed in a manner that ensures no net loss of ecological processes and functions at full build-out of all lots;

2. Be designed, configured and developed in a manner that prevents the need for new shoreline stabilization or flood risk reduction measures; and

3. Be consistent with the provisions and policies for shoreline environment designations and the general policy goals of this Plan.

Policy LU-23.10.7 In residential developments, the water's edge should be kept free of fences.

Policy LU-23.10.8 Every reasonable effort should be made to ensure the retention of native shoreline vegetation and other natural features of the landscape during site development and construction.

Policy LU-23.10.9 Residential developments should be designed to enhance the appearance of the shoreline and not substantially interfere with the public's view and access to the water.

Policy LU-23.10.10 Residential developments should be permitted only where there are adequate provisions for utilities, circulation, access, site layout and building design.

Policy LU-23.10.11 Residential development plans submitted for approval should contain provisions for protection of groundwater, erosion control, water quality, aesthetic characteristics and landscaping.

Policy LU-23.10.12 Subdivisions should provide public pedestrian access to the shorelines within the development in accordance with this Master Program.

Policy LU-23.10.13 Streets, roadways and roadway easements, whether publicly or privately owned, within the boundaries of any waterfront parcel, should not be used to

compute lot area, lot dimensions, yards, open space or other required conditions of land subdivision or development.

23.11. Transportation and Parking

Transportation and parking facilities may be necessary to support shoreline uses, to support the regional economy, and for access to privately owned property in the shoreline. Transportation planning in shorelines should not be focused only on automobiles, but should consider a wide range of options, including buses, light rail, commuter rail, bicycle, passenger-only ferries, and pedestrian facilities. Transportation planning can be a tool for finding opportunities to provide public access to the shorelines.

Policy LU-23.11.1 Kenmore shall require transportation and parking plans and projects to be consistent with the public access policies in this Plan, the Comprehensive Plan Transportation Element, and shoreline and critical area protection provisions.

Policy LU-23.11.2 Circulation planning and projects should support existing and proposed shoreline uses that are consistent with the Kenmore Shoreline Master Program. Where appropriate, circulation system planning should include systems for pedestrian, bicycle and public transportation and combining transportation uses to minimize the footprint of transportation facilities.

Policy LU-23.11.3 Transportation and parking facilities shall be planned, located and designed to have the least possible adverse impact on environmentally critical areas in the shoreline, not result in a net loss of shoreline ecological processes and functions or adversely affect existing or planned water-dependent uses. Where other options are available and feasible, new transportation facilities or transportation facility expansions should not be constructed within the shoreline jurisdiction.

Policy LU-23.11.4 Parking facilities shall be prohibited in the Aquatic Environment.

Policy LU-23.11.5 Setbacks should be established for new transportation and parking facilities in the shoreline jurisdiction to protect shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, and protect the visual quality of views of the shoreline. New parking facilities shall not impede the provision of new shoreline public access facilities and opportunities.

Policy LU-23.11.6 Shoreline transportation facilities should be designed, located and maintained to fit the topography, minimize cuts and fills, and minimize erosion.

Policy LU-23.11.7 Transportation and utility facilities should be encouraged to coordinate joint use of rights-of-way and to consolidate crossings of water bodies when adverse impacts to the shoreline can be minimized by doing so.

Policy LU-23.11.8 Shoreline roadways should have a high priority for arterial beautification funds.

Policy LU-23.11.9 Transportation facilities crossing 100-year floodplains should not function as dikes or levees to flood waters.

Policy LU-23.11.10 Passenger only ferry facilities should be encouraged.

Policy LU-23.11.11 Abandoned road or railroad rights-of-way that contain unique shoreline amenities should be acquired for public benefit.

Policy LU-23.11.12 Kenmore should extend its pedestrian and bicycle trail system along the Sammamish River shoreline.

23.12 Utilities

Utilities include services and facilities that produce, convey, store, or process power, gas, water, sewage, stormwater, communications, oil, or waste. Utilities that are classified as on-site utilities serving only one primary use are considered "accessory utilities" and are considered part of the primary use.

Policy LU-23.12.1 Utility facilities shall be designed and located to ensure no net loss of shoreline ecological processes and functions, preserve the natural landscape, and minimize conflicts with present and planned land and shoreline uses, while meeting the needs of the projected future population in Kenmore.

Policy LU-23.12.2 Kenmore shall allow modification of existing utility facilities and the location of new water-oriented portions of utility facilities in the shoreline jurisdiction provided that a mitigation sequence is applied per KMC 18.55.210 and there is no net loss of ecological processes and functions. As feasible, those parts of utility production and processing facilities that are not water-oriented, such as power plants and sewage treatment plants, shall be located outside of the shoreline jurisdiction.

Policy LU-23.12.3 Transmission facilities for the conveyance of services, such as power lines, cables, and pipelines, shall be located outside of the shoreline jurisdiction where feasible. Transmission facilities located within the shoreline jurisdiction shall ensure no net loss of shoreline ecological processes and functions.

Policy LU-23.12.4 Utilities should be located in existing developed rights-of-way and corridors whenever possible.

Policy LU-23.12.5 Unless no other feasible alternative location exists, Kenmore should discourage the development of facilities that may require periodic maintenance that adversely affects shoreline ecological processes and functions.

Policy LU-23.12.6 Setbacks should be established for new utility facilities in the shoreline jurisdiction to protect shoreline ecological processes and functions, provide space for shoreline vegetation preservation and enhancement, minimize adverse impacts to views of the water by the public and adjacent uses, and protect the visual quality of views of the shoreline.

Policy LU-23.12.7 Utilities located in wetlands and floodplains inappropriate for development should not make service available to those areas.

Policy LU-23.12.8 Public access consistent with public safety and security should be encouraged where rights-of-way for utility facilities are located in shorelines of the state.

Policy LU-23.12.9 New utility routes should be designed to minimize adverse impacts on views from the water and adjacent uplands.

Policy LU-23.12.10 Water reclamation plants, power plants, and sewage treatment facilities should be located where they are compatible with adjacent uses and do not interfere with recreational, residential, or other public uses of the shoreline.

23.13 Outdoor Advertising Signs and Billboards

Policy LU-23.13.1 Vistas and viewpoints should be free from unnecessary signs.

Policy LU-23.13.2 Signs, when permitted, should be placed so as not to impair views of the water or impair views upland from the water except where hazardous shoreline conditions require warning signs.

Policy LU-23.13.3 Warning signs should be installed by Kenmore or by other appropriate entities where hazardous shoreline conditions may exist.

Policy LU-23.13.4 Advertising signs, when permitted, should be limited to shoreline areas of high-intensity use.

Policy LU-23.13.5 Signs in shoreline areas should be maintained in a state of security, safety and repair.

Policy LU-23.13.6 Any new sign codes for Kenmore should recognize the unique aesthetic character and ecological qualities of shoreline areas.

23.14 Conditional Uses

For the purposes of the Kenmore Shoreline Master Program, a shoreline conditional use may be appropriate in order to:

1. Effectively address unanticipated uses that are not classified in the Shoreline Master Program;

2. Address cumulative impacts; or

3. Provide the opportunity to require specially tailored environmental analysis or design criteria for types of use or development that may otherwise be inconsistent with a specific designation within the Shoreline Master Program or with the Shoreline Management Act policies.

Policy LU-23.14.1 The following types of uses and development should require a shoreline conditional use permit:

1. Uses and development that may significantly impair or alter the public's use of the water areas of the state; and

2. Uses and development which, by their intrinsic nature, may have an adverse impact on shoreline ecological processes and functions depending on location, design, and site conditions.

24. Shoreline Modification

General Modification Policies

Policy LU-24.1.1 Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.

Policy LU-24.1.2 Reduce the effects of shoreline modifications and, as much as possible, limit shoreline modifications in number and extent.

Policy LU-24.1.3 Allow only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed.

Policy LU-24.1.4 Ensure that shoreline modifications individually and cumulatively do not result in a net loss of ecological processes or functions.

Policy LU-24.1.5 Shoreline modifications that have the least adverse impact on ecological processes and functions should be prioritized and mitigation should be required for any impacts resulting from shoreline modifications.

Policy LU-24.1.6 Incentives should be provided to substantially reduce the impacts of existing nonconforming structures on ecological functions. Nonconforming docks should be allowed to expand or be reconfigured only when the structure would reduce the impacts on critical fish habitat. Nonconforming bulkheads should be allowed to be reconstructed if they provide a pocket cove or beach and substantially reduce impacts on ecological functions.

24.2. Shoreline Stabilization

Shoreline stabilization includes actions taken to address adverse erosion impacts to property and dwellings, businesses or structures caused by natural processes, such as current, flood, wind or wave action. Shoreline stabilization includes structural and nonstructural methods. Nonstructural methods include building setbacks, relocation of structures to be protected, groundwater management, planning and regulatory measures to avoid the need for structural stabilization. When structural stabilization is needed, “soft” methods can be used instead of “hard” methods (such as bulkheads, rip rap and groins) in some cases. Soft methods of shoreline stabilization include, but are not limited to, vegetation enhancement; upland drainage control; biotechnical measures; beach enhancement; and anchor trees.

Policy LU-24.2.1 Kenmore shall require shoreline stabilization to be consistent with WAC 173-26-221(5) for vegetation retention and WAC 173-26-221(2) for protection of critical areas.

Policy LU-24.2.2 Kenmore shall adopt standards to first avoid then mitigate adverse impacts to shoreline ecological processes and functions when alteration of the shoreline is allowed for the construction of single detached dwelling units and accessory structures. These standards shall address the design and type of protective measures and devices that are allowed.

Policy LU-24.2.3 Kenmore shall require new development on steep slopes to be set back sufficiently to ensure that the need for shoreline stabilization is unlikely during the life of the structure, as demonstrated by a geotechnical analysis.

Policy LU-24.2.4 Shoreline stabilization decisions should consider available scientific information and current shoreline conditions.

Policy LU-24.2.5 Avoid and reduce adverse impacts from shoreline stabilization according to the mitigation sequence in General Shoreline Management Policies for Conservation – Critical Areas (Policy LU-21.3.2) and WAC 173-26-201(2)(e). Shoreline planning should consider off-site erosion, accretion or flood damage that might occur as a result of shoreline stabilization structures or activities.

Policy LU-24.2.6 Shoreline stabilization on Lake Washington, the Sammamish River or Swamp Creek shorelines should not be used as the reason for creating new or newly usable land.

Policy LU-24.2.7 Shoreline stabilization structures should allow passage of ground and surface waters into shorelines of the state.

Policy LU-24.2.8 Shoreline stabilization should not reduce the volume and storage capacity of the Sammamish River, Swamp Creek, and adjacent wetlands or floodplains.

Policy LU-24.2.9 Sammamish River and Swamp Creek shoreline stabilization should be planned, designed, and constructed to allow for channel relocation or stream meander whenever possible.

Policy LU-24.2.10 Appropriate soft shore armoring methods, as determined by a qualified professional, should be used for shoreline stabilization when necessary to protect existing property or, when for new development, no options exist to locate in such a manner as to avoid shoreline stabilization.

Policy LU-24.2.11 Kenmore shall allow new hard structural stabilization measures only as follows:

1. The proposal is the minimum necessary to protect existing legally established primary structures, new non-water-dependent development, and existing or proposed water-dependent development and structures, and:

    a. The erosion is not the result of upland conditions, such as the loss of vegetation and drainage;

    b. Nonstructural measures, such as locating the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient;

c. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report submitted by a qualified specialist. The damage must be caused by natural processes; and

d. Mitigation is provided such that the erosion control structure will not result in a net loss of shoreline ecological processes and functions.

2. The proposal would protect shoreline restoration projects or hazardous substance remediation projects, and:

a. Nonstructural measures, planting vegetation, or installing on-site drainage improvements are not feasible or not sufficient; and

b. The erosion control structure will not result in a net loss of shoreline ecological processes and functions.

Policy LU-24.2.12 The burden of proof for the need for shoreline stabilization to protect existing or proposed developments rests on the applicant(s).

Policy LU-24.2.13 Shoreline stabilization activities which may necessitate new or increased shoreline stabilization on the same or other affected properties where there has been no previous need for protection, should be discouraged.

Policy LU-24.2.14 New development should be located and designed to avoid the need for future shoreline stabilization.

Policy LU-24.2.15 Areas of significance in the spawning, nesting, rearing or residency of aquatic and terrestrial biota should be given special consideration when reviewing shoreline stabilization actions.

Policy LU-24.2.16 Multiple use of shoreline stabilization structures or non-structural solutions should be encouraged.

Policy LU-24.2.17 An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents or waves.

Policy LU-24.2.18 Kenmore shall require replacement of shoreline stabilization structures to be designed, located, sized, and constructed to ensure no net loss of ecological processes and functions or, if infeasible to provide such protection, to use the approach with the least adverse impacts and provide mitigation for unavoidable impacts.

Policy LU-24.2.19 When shoreline stabilization is proposed, Kenmore shall require a geotechnical report to address the need to prevent potential damage to a primary structure.

Policy LU-24.2.20 If structural shoreline stabilization measures are demonstrated to be necessary, Kenmore shall limit the size of stabilization measures to the minimum necessary.

Policy LU-24.2.21 Kenmore shall ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline, except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological processes and functions. Where feasible, Kenmore shall require ecological restoration and public access improvements to be incorporated into the project.

Policy LU-24.2.22 Adverse impacts of erosion and mass wasting should be mitigated through protection of geologically hazardous areas.

24.3 Water Access Structures

Policy LU-24.3.1 Kenmore shall allow new water access structures only for water-dependent uses or public access. If it is designed and intended solely as a facility for access to watercraft, a dock or pier associated with a single-family residence is considered a water-dependent use.

Policy LU-24.3.2 Kenmore shall require water access structure construction to be limited to the minimum size necessary to meet the needs of the proposed water-dependent use.

Policy LU-24.3.3 Kenmore may allow water-related and water-enjoyment uses as part of mixed-use development on over-water structures where they are clearly auxiliary to and in support of water-dependent uses, provided the structure is the minimum size required to serve the water-dependent use.

Policy LU-24.3.4 Kenmore shall allow new water access structures only when the applicant has demonstrated that a specific need exists to support the intended water-dependent uses. Applicants for new piers and docks accessory to single-family residences are not required to demonstrate need.

Policy LU-24.3.5 Kenmore shall require new residential development of two or more dwelling units to provide community pier or dock facilities, when feasible, rather than individual piers or docks for each dwelling unit. Kenmore shall allow only one pier or dock associated with residential development on a parcel.

Policy LU-24.3.6 Kenmore shall require water access structures, including those accessory to single-family residences, to be designed and constructed to avoid and then minimize and mitigate the adverse impacts to ecological processes and functions. Water access structures should be constructed of non-toxic materials. Where toxic materials, such as treated wood, are proposed, the proponent must show that no non-toxic alternative exists.

Policy LU-24.3.7 Open pile pier construction should be preferred on Lake Washington where scenic values will not be impaired and where there will be no net loss of ecological processes and functions.

Policy LU-24.3.8 Dock construction should be preferred in those areas where scenic values are high and on the Sammamish River.

Policy LU-24.3.9 Water access structures should be discouraged where conflicts with recreational boaters and other recreational water activities would be created by water access structure construction.

Policy LU-24.3.10 Preference should be given to shared use of water access structures in all shoreline areas.

Policy LU-24.3.11 Temporary moorages should be permitted for vessels used in the construction of shoreline facilities. The design and construction of such moorages shall be such that upon termination of the project the aquatic life can be returned to their original condition within one year at no cost to the environment or the public.

Policy LU-24.3.12 Shoreline structures that are abandoned or structurally unsafe should be abated.

Policy LU-24.3.13 Substantial additions or alterations, including, but not limited to, substantial developments, should be in conformance with the policies and regulations set forth in the Shoreline Master Program.

Policy LU-24.3.14 Water access structures should not interfere with navigation.

24.4 Fill

Fill means the addition of soil, sand, rock, gravel, sediment, earth retaining structures, or other material to an area waterward of the OHWM, in wetlands, or on shorelands in a manner that raises the elevation or creates dry land. Fill can adversely affect ecological processes and functions, including channel relocation or stream meander.

Policy LU-24.4.1 Kenmore shall require fill to be located, designed, and constructed to protect shoreline ecological processes and functions and ecosystem-wide processes, including channel migration, stream meander and side channels. Mitigation shall be required consistent with Policy LU 21.3.2.

Policy LU-24.4.2 Kenmore shall allow fill waterward of the ordinary high-water mark allowed only when necessary to support:

1. Water-dependent use;
2. Public access;
3. Cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan;
4. Disposal of dredged material considered suitable under, and conducted in accordance with, the dredged material management program of the Washington Department of Natural Resources;
5. Expansion or alteration of SR 522 in the shoreline and then only upon a demonstration that alternatives to fill are not feasible; or

6. Mitigation actions, environmental restoration, beach nourishment, enhancement projects and flood risk reduction projects.

Policy LU-24.4.3 Kenmore shall require a shoreline conditional use permit for fill waterward of the ordinary high-water mark for any use except ecological restoration and maintenance, repair and replacement of flood protection facilities.

Policy LU-24.4.4 Fill should be deposited so as to minimize disruption of normal surface and ground water passage.

Policy LU-24.4.5 Fill should allow surface water penetration into the ground water supply where such conditions existed prior to fill.

Policy LU-24.4.6 Fill within the 100-year floodplain should not reduce the river channel or floodplain water storage capacity, reduce the channel migration zone, or in any way increase flood hazard so as to endanger public safety.

Policy LU-24.4.7 Land should be filled only after some ultimate use of the property is approved by Kenmore in accordance with the Comprehensive Plan and this Shoreline Master Program.

Policy LU-24.4.8 Fill should be done at such time as to minimize damage to ecological processes and functions.

Policy LU-24.4.9 Beach nourishment areas may be established by Kenmore on Lake Washington.

24.5 Breakwaters, Groins and Weirs

Breakwaters, groins, and weirs are all structural elements that are constructed to absorb or deflect wave action or to control excess sediment. A breakwater is an off-shore structure, either floating or not, which may or may not be connected to the shore and is designed to absorb and reflect back into the water body the energy of the waves. A groin is a barrier-type structure extending from the backshore into the water across the beach, which is constructed to interrupt sediment movement along the shore. A weir is a small dam in a stream or river to control the flow of water. These structural elements should be allowed only under limited circumstances as they can have adverse effects on ecological processes and functions.

Policy LU-24.5.1 Kenmore shall allow breakwaters and weirs located waterward of the ordinary high-water mark only where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purposes.

Policy LU-24.5.2 Groins are prohibited except as a component of a publicly-sponsored project to protect or restore shoreline ecological processes and functions.

Policy LU-24.5.3 Kenmore shall require a shoreline conditional use permit for the construction of breakwaters, groins, weirs, and similar structures, except for those structures installed to protect or restore ecological processes and functions, such as woody debris installed in streams.

Policy LU-24.5.4 Breakwaters, groins, and weirs shall be designed to protect critical areas and shall provide for mitigation according to the sequence defined in General

Shoreline Management Policies for Conservation – Critical Areas (Policy LU-21.3.2) and WAC 173-26-201(2)(e).

Policy LU-24.5.5 Reduction of the opportunity to use surface water area which may result from breakwater construction should be weighed against the benefits of reduced wave action.

Policy LU-24.5.6 Applicants for breakwaters, groins or weirs should consider structural alternatives and the related effects on ecological processes and functions.

Policy LU-24.5.7 Breakwater, groin and weir design should include provisions for compatible public access or recreational uses when consistent with navigation and when public safety can be ensured.

Policy LU-24.5.8 Care should be exercised in location, design, construction and expansion of breakwaters, groins and weirs relative to the shoreline environments and other shoreline dependent uses.

Policy LU-24.5.9 Beach nourishment should be considered where breakwaters or groins affect shorelines.

24.6 Dredging

Dredging is the removal, displacement, or disposal of unconsolidated earth material such as sand, silt, gravel, or other submerged materials, from the bottom of water bodies, ditches, or natural wetlands. Long-term maintenance and support activities are also considered dredging. Dredging can cause significant ecological damage. Mitigation measures should be required to ensure no net loss of ecological processes and functions.

Policy LU-24.6.1 Kenmore shall require that new development should be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging.

Policy LU-24.6.2 Kenmore shall allow dredging for the purpose of establishing, expanding, or relocating or reconfiguring navigation channels and basins when necessary to ensure safe and efficient accommodation of existing navigational uses. Adverse ecological impacts shall be minimized and mitigation shall be provided such that there is no net loss of ecological processes and functions. Maintenance dredging of established navigation channels and basins should be restricted to maintaining previously dredged or existing authorized location, depth, and width.

Policy LU-24.6.3 Kenmore shall not allow disposal of dredge material on shorelands, in wetlands or in side channels within a channel relocation or stream meander area.

Policy LU-24.6.4 Dredging and excavation in environmentally critical areas within the shoreline should not be allowed.

Policy LU-24.6.5 Dredging operations should be scheduled so as to not materially interfere with the migration of native fish.

Policy LU-24.6.6 When dredged spoil has suitable organic and physical properties, dredging operators should be encouraged to recycle dredged material for reuse.

Policy LU-24.6.7 Dredging should be allowed only in the Aquatic Environment and to support water dependent uses.

Policy LU-24.6.8 Disposal of dredge and excavation spoils within shorelines should be prohibited except when the material is necessary for the restoration of ecological processes and functions.

24.7 Restoration and Enhancement

Shoreline habitat and natural systems enhancement projects should be supported and coordinated with other plans and regulations, such as salmon conservation plans, the King County Flood Hazard Reduction Plan and Flood Control Zone District, and flood hazard management policies in the Kenmore Comprehensive Plan Natural Environment Sub-Element and Surface Water Element.

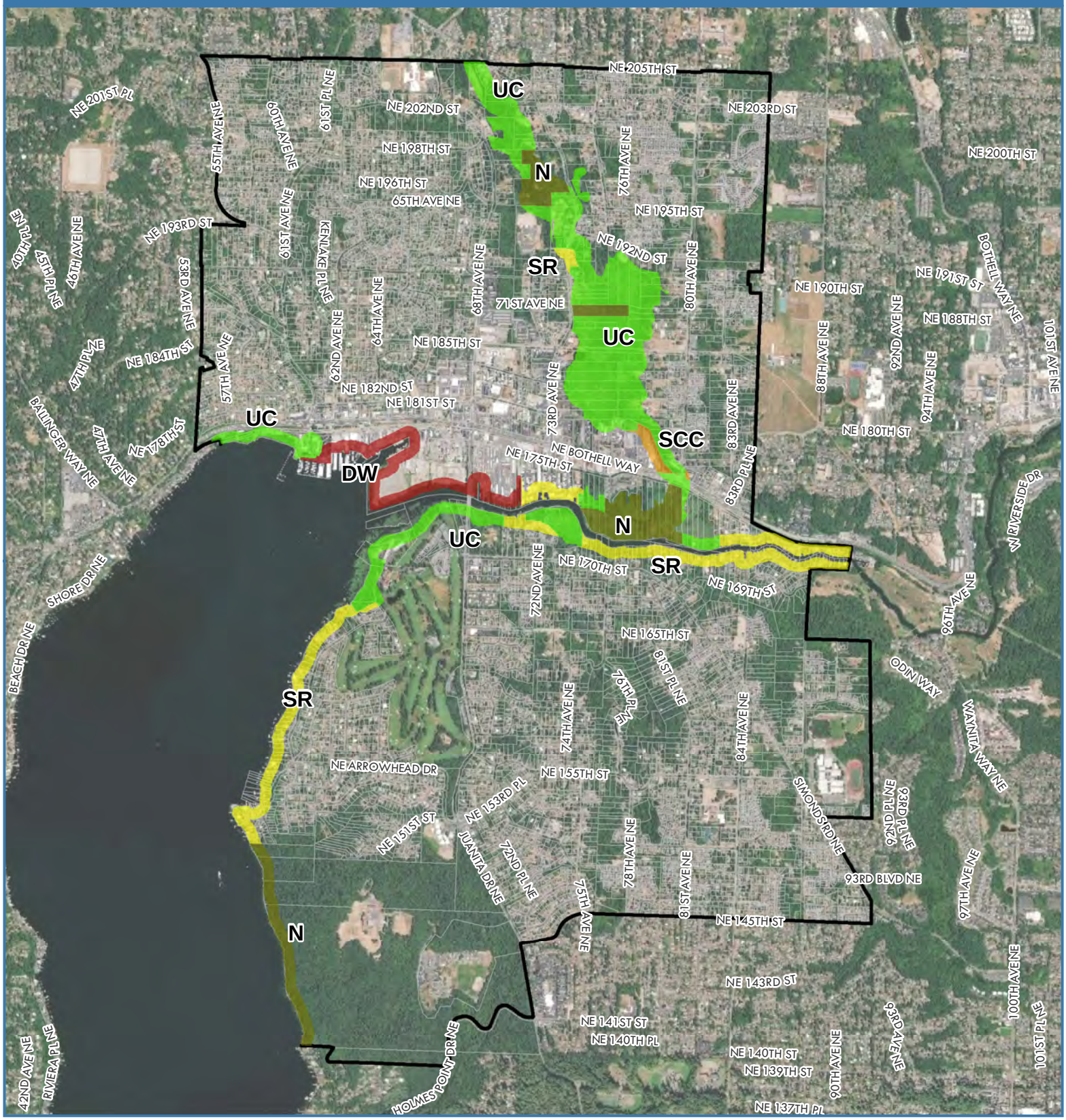
Policy LU-24.7.1 Kenmore should allow for habitat and natural systems enhancement projects that include, but are not limited to:

1. Modification of vegetation;
2. Removal of non-native or invasive plants;
3. Shoreline stabilization using soft or non-structural techniques; and
4. Dredging, and filling, provided that the primary purpose of such actions is clearly restoration of the natural character and ecological processes and functions of the shoreline.

Policy LU-24.7.2 Habitat and natural systems enhancement projects should ensure that the projects address legitimate restoration needs and priorities and facilitate implementation of Kenmore's Shoreline Restoration Plan.

Figure LU-12

Shoreline Master Program Environment Designations



SMP Environment Designations

- Downtown Waterfront (DW)
- Swamp Creek Commercial (SCC)
- Natural (N)
- Shoreline Residential (SR)
- Urban Conservancy (UC)

- Kenmore City Boundary
- Kenmore Parcels

*All areas waterward of the Ordinary High Water Mark on the Sammamish River and Lake Washington have an Aquatic environment designation.

N

0 0.25 0.5

Miles

Sources: City of Kenmore, 2018.

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

Map Date: March 2019

ECONOMIC DEVELOPMENT SUB-ELEMENT

INTRODUCTION

Purpose

The purpose of this Element is to provide economic development policies for the City of Kenmore, as the community's economic base changes over time in response to market forces and in response to the vision of the Kenmore community.

Growth Management Act

The Growth Management Act (GMA) includes a specific goal regarding economic development:

- Economic development – Encourage economic development throughout the state that is consistent with adopted comprehensive plans, promote economic opportunity for all citizens of this state, especially for unemployed and for disadvantaged persons, promote the retention and expansion of existing businesses and recruitment of new businesses, recognize regional differences impacting economic development opportunities, and encourage growth in areas experiencing insufficient economic growth, all within the capacities of the state's natural resources, public services, and public facilities.

The Economic Development Element is to establish local goals, policies, objectives, and provisions for economic growth and vitality and a high quality of life, and is to include a summary of the local economy, including strengths and weaknesses.

Countywide Planning Policies

The Countywide Planning Policies include many related to economic development. Policy *concepts* are summarized below:

- Jurisdictions shall make local investments to maintain and expand infrastructure and public services, promote education and protect the environment in a way that contributes to the economic sustainability of the County.
- Jurisdictions shall coordinate local economic policies and strategies with Vision 2040 and the Regional Economic Strategy.
- Jurisdictions shall support economic growth that accommodates employment growth targets.

Topics that should be addressed include:

- Strengthen, expand and diversify the economy
- Support the regional food economy
- Environmental protection as an economic value
- Human resources - economically disadvantaged citizens and neighborhoods, cultural diversity, job training and education
- Direct governmental actions - land supply, infrastructure and permitting
- Private/public partnerships

These concepts have been considered during the formulation of the Kenmore Comprehensive Plan.

EXISTING CONDITIONS

Introduction

The Existing Conditions information below is based on the "Kenmore Downtown Plan Market Study," 2005, prepared by Property Counselors, in association with, Mizrahi And Associates / CB Richard Ellis and the Berk studies completed in 2009 and 2013. While the studies focused on Downtown and the Regional Business, Urban Corridor and Waterfront Commercial areas, they created a context for the analysis using citywide information. The information in the studies built on prior studies and information noted in Chapter 3, Demographics and Economics, and Chapter 4-B Downtown Sub-Element.

Economic and Demographic

The City of Kenmore has an estimated population of 21,370 (as of April 1, 2014), an increase of 2,692, or approximately 14 percent, since 2000. The City of Kenmore is projected to grow by an additional 7,103 persons by 2035, to a total of 28,473 persons. This translates to a population increase of more than 33% over the 21 years between 2014 and 2035.

There were approximately 3,606 jobs in Kenmore in 2013, fewer than before the Great Recession of 2009. Approximately 650 Kenmore businesses are registered with the City, and an additional 1,300 to 1,500 businesses may be operating in the city without formal registration. Regardless, only about 3 percent of working Kenmore residents are employed inside the City. Kenmore still serves largely as a bedroom community for surrounding employment centers.

The Kenmore area has a median household income level estimated to be $82,334 in 2013, compared to approximately $71,811 for the County as a whole. Educational levels in Kenmore are high, with approximately 79% of residents either having attended college, or attained an associate's degree, a bachelor's degree or a graduate or professional degree. This compares with King County, where 75% of residents have this level of education.

Refer to **Section 3, Demographics and Economics,** for more detailed information about Kenmore's existing demographics and economy. To summarize, however, the following describes the number of current jobs and the community's largest employers:

- Based upon all employees "covered" under the State's unemployment insurance act, approximately 3,606 jobs were located in the City in 2013.
- Most of these jobs are service oriented. The manufacturing sector has the fewest jobs and decreased the most between 2001 and 2011.
- As of 2015, Kenmore's largest private employers include Bastyr University, Kenmore Air Harbor and Safeway. In 2000, results were similar in that Bastyr University and Kenmore Air Harbor were the larger private employers.

FUTURE TRENDS

Kenmore, particularly in the four quadrants of Downtown, is expected to capture additional economic growth. As a designated "Larger City" with good access to the regional transportation network, Kenmore is targeted for both residential and employment growth as part of the Regional Growth Strategy. As a Larger City, Kenmore is viewed as an important subregional job, service, cultural, and housing center. The Downtown area will capture a share of City-wide development based on several key characteristics:

- Central location, convenient to job centers and job growth in northeast King County.
- Location on major highways/arterials. Travelers can get to or from Kenmore without traveling on a toll road.
- Location on Lake Washington and the Sammamish River.
- Variety of existing commercial development types and the potential for redevelopment.
- Presence of Bastyr University, a leader in natural health sciences.

Retail Demand

Taxable retail sales have grown steadily in Kenmore since 2000, with a dip in 2009 due to the Great Recession. Restaurants, groceries, and autos and parts make up the largest share of retail spending. The fastest growth since 2000 has been in general merchandise and sports/books/music. Kenmore retail largely serves a local market area. Even within this area, the city retail captures only a small share of resident expenditures. While it is not unusual for a small community to experience leakage in categories such as general merchandise and apparel, Kenmore businesses only recently captured resident expenditures for groceries.

The retail inventory in the City consists of a mix of shopping centers, shopping districts (a concentration of individual buildings), highway oriented development and some stand-alone facilities. The largest concentrations are Kenmore Square and surrounding development, Safeway and surrounding development, and Kenmore Village and surrounding development. With the exception of the Safeway and Kenmore Square concentrations, many of the existing retail facilities are dated in terms of configuration, appearance, and performance. Recent new investment in the Downtown core (Kenmore Camera, Speedy Reedy, Cooley Smiles) has focused on rehabilitation rather than redevelopment.

The City of Kenmore has the potential to provide retail goods and services for an area beyond its own boundaries. The projected market area for Kenmore lies within an approximate 3 mile radius around the City Center, and the boundaries are further described in the Downtown Sub-Element.

A project of the scale proposed at Lakepointe could create demand for specialty retail in a destination setting.

Office Demand

The Kenmore office market is quite small in comparison to the region. As of 2013, there was a total of 182,000 square feet of office space, with an average size of 4,054 square feet per space.

Kenmore's ability to capture regional and national serving office users depends on its competitive position. Office concentrations in Bothell, Lynnwood, and Kirkland are all located on major interstate highways. Kenmore does not offer that level of highway access and visibility. Kenmore does have an opportunity to capitalize on its waterfront setting, as is the case at Carillon Point in Kirkland. The space in that project commands some of the highest rents in the region. However, that opportunity is specific to Lakepointe, or a development of comparable scale.

Since about 60% of Kenmore businesses with a Kenmore Business Registration are home-based businesses, there may be an upcoming need and demand for smaller-scale office development as these businesses mature. The Berk and Associates Report (2009) noted that the source of demand for office

space is most likely to come from local entrepreneurs or local residents moving their business closer to home.

Clean Light Manufacturing Demand

Clean light manufacturing generally includes advanced manufacturing (including information technology) and urban and/or artisanal manufacturing (including breweries and specialty food manufacturers, for example). Both types of light manufacturing, particularly small growing businesses and start-ups, do not need large spaces and are looking for inexpensive rent. Kenmore has a few properties that fit this description and is a lower cost location than other options, regionally. As an emerging and broadly defined business type, however, there is little market data or trends to assess the potential in Kenmore.

Projected Employees

Assuming development in accordance with the adopted Kenmore Land Use Plan, the City would achieve greater employment. Refer to **Table LU-B**. Most of the employment is due to the development of Lakepointe, and a concentrated Downtown core. City economic development efforts with Bastyr University and the Economic Development Council of Seattle/King County may enhance future employment in Kenmore as part of a natural health hub. **Refer to Sections 4A and 4B**, Land Use Element and Downtown Sub-Element for additional descriptions.

TABLE LU-B
EXISTING AND FUTURE COMMERCIAL DEVELOPMENT

	2014 Estimated	**Net Increase 2014-2035**	**Total 2035**
Employment	3,606	3,098	6,704

Table LU-B shows a net increase in employment of 3,098 by the year 2035. This meets the City's 2031 employment target in the Countywide Planning Policies.

ECONOMIC DEVELOPMENT STRATEGY

In 2009, the City adopted a strategic plan, "Capitalizing on Kenmore's Potential: An Economic Development Strategy," to identify strategies to enhance the City's image and identity to increase economic vitality and business growth in the long run. Four goals were identified:

- Establish Kenmore's image by promoting its high quality of life and many assets
- Support existing businesses and pursue opportunities to expand employment
- Create a multi-use, vibrant and walkable Downtown
- Advance the community's connection to the waterfront.

GOALS, OBJECTIVES, AND POLICIES

Following are the economic development goals, objectives and policies.

GOAL 25. ESTABLISH AN ECONOMIC BASE THAT PROVIDES FOR THE NEEDS OF CITIZENS AND A RANGE OF EMPLOYMENT OPPORTUNITIES.

OBJECTIVE 25.1 Strengthen the economy in a manner that creates job opportunities for all citizens, protects environmental quality, and utilizes public/private partnerships.

Policy LU-25.1.1 Classify an adequate amount of land for commercial and business use.

Policy LU-25.1.2 Recognize the environment as a key economic value in the community that must be protected.

Policy LU-25.1.3 Through cooperative planning efforts with other agencies, support community-based actions to involve minorities, women and economically disadvantaged individuals in improving their economic future.

Policy LU-25.1.4 Develop and maintain accurate and up-to-date capital facility plans for transportation, surface water, and parks.

Policy LU-25.1.5 Foster the development and use of private/public partnerships to implement economic development policies, programs, and projects.

OBJECTIVE 25.2 Create a climate that fosters business creation and retention, positively contributing to the City's quality of life.

Policy LU-25.2.1 Actively support the retention and expansion of the local and regional economic base.

Policy LU-25.2.2 Work with economic development groups, such as the Economic Development Council of Seattle/King County, State Department of Commerce and various trade organizations, to coordinate recruitment and marketing of business opportunities.

Policy LU-25.2.3 Work with the Greater Bothell Chamber of Commerce and Kenmore Business Alliance to connect businesses and obtain input on City policies and activities.

Policy LU-25.2.4 Use zoning, strategic infrastructure investment, and public facilities to stimulate business revitalization, retention, and creation.

Policy LU-25.2.5 Allow for home occupations within residential zones consistent with the residential character.

Policy LU-25.2.6 Encourage adequate child care and adult care facilities to support a diverse work force.

OBJECTIVE 25.3 Encourage the retention and provision of commercial services that support residents and local businesses.

Policy LU-25.3.1 Support private reinvestment in local-serving shopping centers and businesses through business improvement districts, loan or grant matching, or other mechanisms to revitalize commercial centers.

Policy LU-25.3.2 Reinforce private reinvestment through regular maintenance and improvement of the City's streets, sidewalks, surface water facilities, and parks.

Policy LU-25.3.3 Encourage mixed-use areas where small-scale commercial development can occur.

OBJECTIVE 25.4 Improve the visual appearance of new and existing commercial development in terms of design, signage, landscaping and maintenance.

Policy LU-25.4.1 Improve the visual appearance of Downtown, SR-522, and other commercial districts through public and private measures for beautification, façade improvements, and maintenance.

Policy LU-25.4.2 Improve the appearance of parking areas with landscaping and maintenance.

Policy LU-25.4.3 Implement sign standards that create a distinct image for the Downtown, SR-522, and other commercial nodes, and which orient to pedestrians as well as drivers.

OBJECTIVE 25.5 Identify and support Kenmore's Downtown as a focal point for commercial and economic revitalization and growth.

Policy LU-25.5.1 Promote a diversity of uses within the Downtown which support the activity base by providing employment, civic, cultural, recreational, residential, and a variety of commercial activities.

Policy LU-25.5.2 Use zoning and infrastructure incentives to achieve redevelopment and infill in the Downtown.

Policy LU-25.5.3 Create zoning districts, regulations, incentives and strategic investment that, in conjunction with market forces, result in an inviting and vital central core that is self-supporting.

OBJECTIVE 25.6 Support regional economic development strategies consistent with the Kenmore vision.

Policy LU-25.6.1 Cooperate in efforts to establish regional economic diversification and development goals, strategies, and actions. Participation should be encouraged by other jurisdictions, labor, education, environment, and business interests.

Policy LU-25.6.2 Continue to cooperate on a countywide and regional basis with other counties, cities, other governmental agencies and the private sector to inventory, plan for and monitor the land capacity for commercial, institutional, resource, critical area, open space and residential uses, estimated for six- and 20-year time periods.

IMPLEMENTATION STRATEGIES

The Economic Development Sub-Element policies would require continued or increased commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations would be needed to address:

- Incentives to stimulate business revitalization, retention, and creation

A review of existing programs, rules and regulations would be needed to ensure they meet the policies, including:

- Review of home occupation standards
- Periodic review of development standards that relate to commercial or business development
- Review of design, landscape, and signage standards.

Continuing coordination efforts would be needed with adjacent jurisdictions or agencies, including:

- Cooperative efforts with other agencies to support economic development activities for the disadvantaged
- Coordination with economic development and business groups, such as the Economic Development Council of Seattle/King County, the State Department of Commerce, various trade organizations, the Greater Bothell Chamber of Commerce and the Kenmore Business Alliance
- Cooperation on a regional basis towards economic diversification and land capacity monitoring.

A periodic review of the five–year action plan in the Economic Development Strategy also is recommended to keep the strategy plan current. The City continues to pursue the following efforts to further the goals of the Economic Development Strategy:

- Supporting a community marketing campaign to promote Kenmore's image and support business development
- Leveraging and partnering with the area's educational institutions, such as Bastyr University
- Supporting the development of a natural health-related cluster
- Creating a landmark gateway to Kenmore and improving wayfinding signage and streetscape and business area appearance
- Providing leadership and facilitation in opening up the waterfront as a key amenity
- Funding space and promoting a local business incubator, creating opportunities for new start-up businesses
- Providing free educational seminars for local businesses
- Supporting the City's business registration program
- Supporting activities of the Kenmore Business Alliance
- Supporting the development of office space or other opportunities for employment.

REFERENCES

Berk & Associates (June 2009). Capitalizing on Kenmore's Potential: An Economic Development Strategy. Prepared for City of Kenmore, Seattle, WA.

Berk (September 2013). City of Kenmore Regional Business Zone Market Analysis. Prepared for City of Kenmore, Seattle, WA.

King County Office of Management and Budget (2008). The 2008 Annual Growth Report. Seattle, WA.

Property Counselors (October 2005). Kenmore Downtown Plan Market Study. Prepared for City of Kenmore, Seattle, WA.

HOUSING ELEMENT

INTRODUCTION

Purpose

This Housing Element is intended to promote and maintain residential neighborhoods, ensure a range of densities and housing types for all incomes, address special needs housing, and protect the quality of the residential environment. When the community was first incorporated, community visioning efforts showed some trends in housing preferences, including a preference for adding single-family dwellings at about the same lot size as surrounding lots, and acceptance of accessory dwelling units. Also indicated was a desire to control the location of attached housing by placing it in Central Kenmore, and not dispersing small-scale attached dwellings in neighborhoods.

Growth Management Act Requirements

The Growth Management Act (GMA) states that Comprehensive Plans are 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. Housing elements are to make an inventory and analysis of existing and projected housing needs; include a statement of goals, policies, and objectives for the preservation, improvement, and development of housing; identify sufficient land for housing, including low income, special needs, and multiple housing types; and make adequate provision for existing and projected housing needs of all economic segments of the community.

Countywide Planning Policies

The county-wide population growth forecast has been established by the Washington State Office of Financial Management (OFM), as required by the GMA. Each jurisdiction in King County agreed to a housing target (population allocations converted into households) for the years 2006-2031, in Countywide Planning Policies (CPPs). The household target for Kenmore is 3,500. The city is committed to ensuring there is capacity in the Comprehensive Plan and implementing regulations to meet this target. Actual growth would occur based upon market forces.

The CPPs identified the countywide housing needs of moderate-, low-, and very-low-income households, which are equal to 16 percent, 12 percent and 12 percent, respectively, of all housing. The CPPs also state that each city shall address the housing needs of all economic segments and strive to provide housing affordability to accommodate a proportionate amount of the countywide needs.

Beyond ensuring capacity for growth and support for affordable housing, the CPPs focus local government housing elements toward other objectives, such as:

- New housing accessible to employment, shopping, and transit.
- Neighborhoods that promote healthy human activity.
- Fair housing.
- Regional collaboration on inter-jurisdictional housing issues.

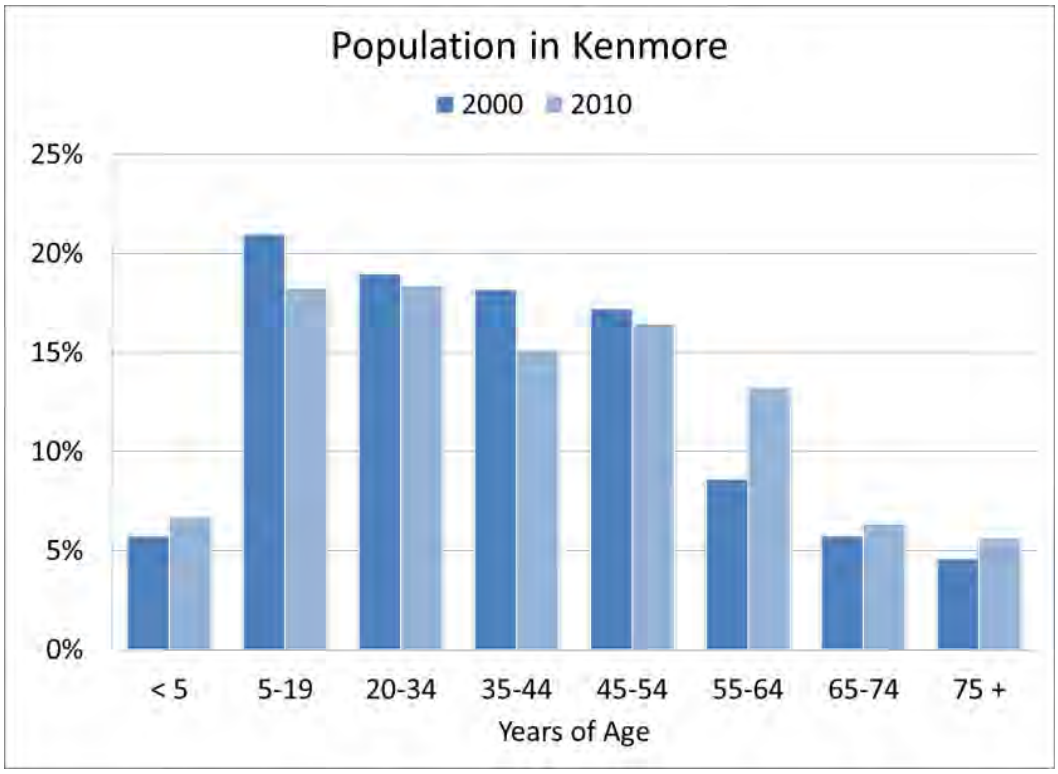
EXISTING CONDITIONS

The following discussion draws from the East King County Housing Analysis, produced for all member cities of A Regional Coalition for Housing (ARCH) and made a part of this Comprehensive Plan update.

Population and Households

Kenmore's population grew ten (10) percent in the 2000s, from 18,678 to 20,460. Population declined, however, among school-age children and adults 35 to 44 years old (Housing Analysis, Exhibit D-1; and Figure H-1, below). The city's proportion of senior citizens (65 years and older) is similar to countywide figures. As in other cities, the seniors' segment has not increased significantly as of 2010, but Baby Boomers (age 55 – 65) will increase that figure over the next decade.

FIGURE H-1



Kenmore had roughly 700 (14 percent) more households in 2011 than in 2000, but the types of households remained virtually unchanged (Housing Analysis, Exhibit B). The city has a greater percentage of married-couple families (56 percent) than King County overall (Figures H-2 and H-3, below), but is typical for east King County in that respect. ("East King County," or EKC, refers here to member cities of ARCH.) The city also maintains a somewhat lower proportion of one- and two-person households than the rest of east King County (58 percent; Housing Analysis, Exhibit C-2).

FIGURE H-2

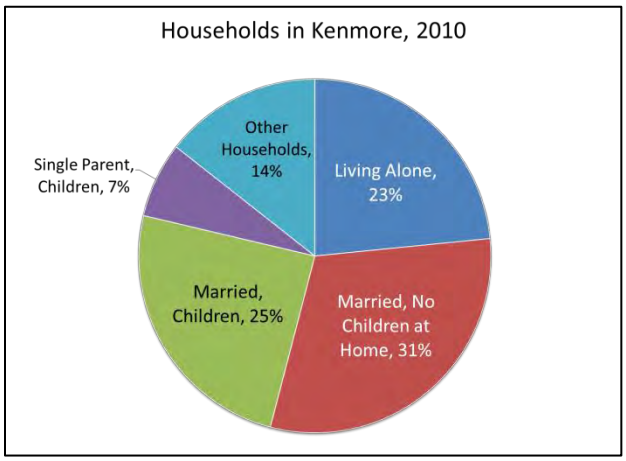
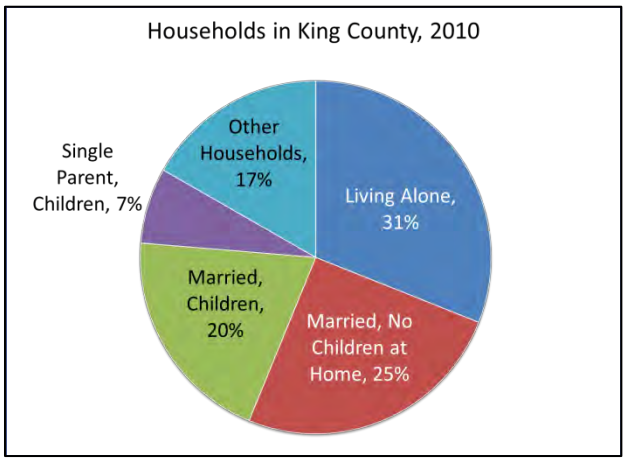


FIGURE H-3

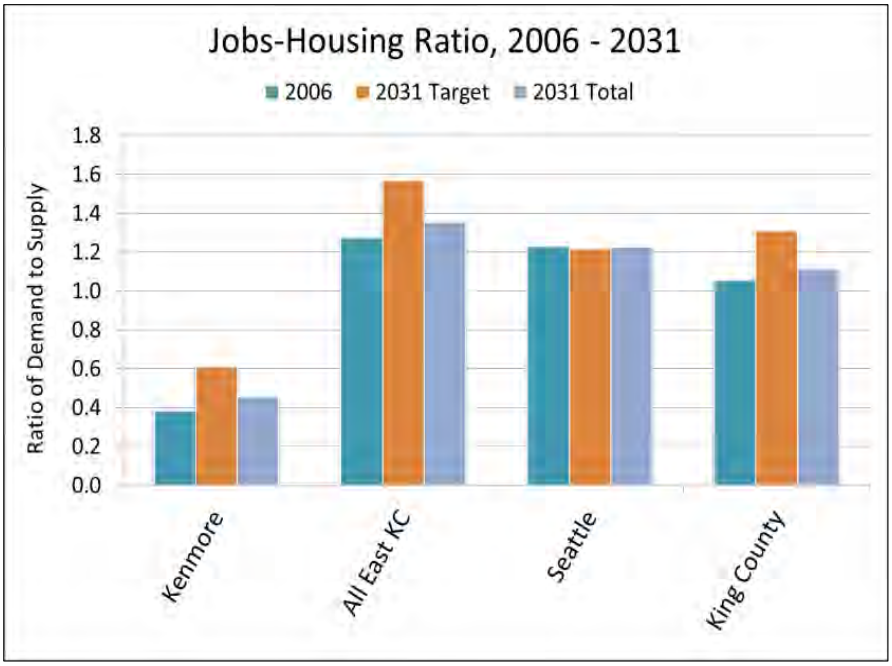


Source: 2010 Census (U.S. Census Bureau)

Kenmore Jobs and Wages

Employment can be an important contributor to housing demand within a community, both in terms of the amount and affordability of housing. Although Kenmore's employment growth during the 1990s was relatively high (24 percent), this was mostly offset by lost jobs (26 percent) between 2000 and 2010. The Jobs-Housing Ratio is a way to measure demand for housing from local employment relative to the local housing supply (a ratio less than 1.0 means less demand for housing from the local workforce than is available in the city). As of 2006, the city's jobs-housing ratio was just under 0.4 and based on growth projections would increase to just over 0.4 by 2031 (see Figure H-4). This is much lower than the countywide ratio and the ratio of most other cities in east King County. This means that most Kenmore residents work in other cities, compared to other areas, and the housing demand from existing jobs is relatively low.

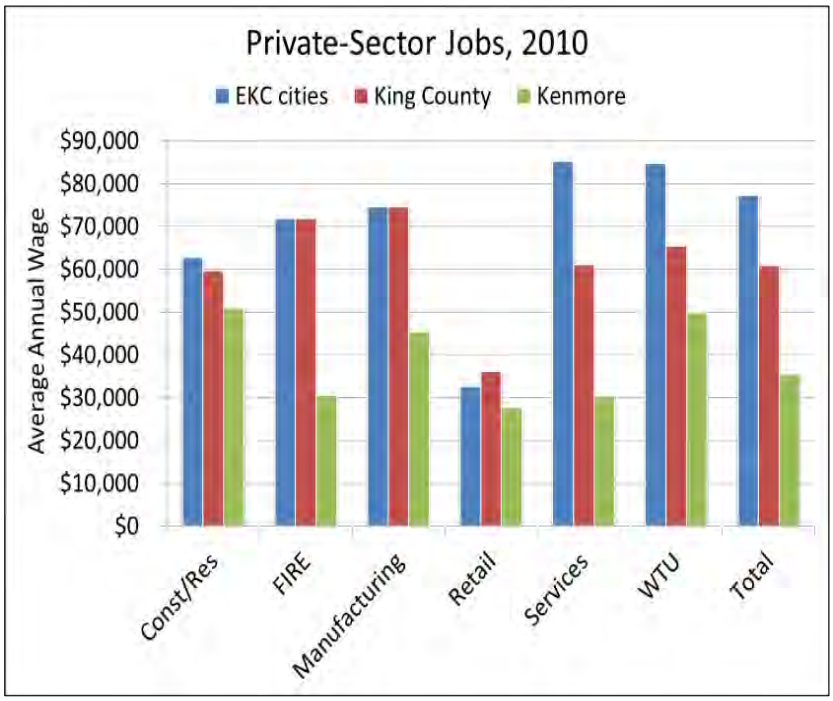
FIGURE H-4



Source: A Regional Coalition for Housing (ARCH).

While the demand for housing from local employment is lower than other nearby communities, jobs in Kenmore tend to pay less than jobs countywide in the same sector (Figure H-5, below), which implies a demand for relatively affordable housing from the local workforce.

FIGURE H-5
AVERAGE WAGES BY INDUSTRY SECTOR



Source: Puget Sound Regional Council.

Household Incomes

Approximately 20 percent of the households in Kenmore fall within the standards defined as very low- or low-income. This is slightly lower than countywide figures, but higher than east King County (Figure H-6). The rental market is the primary source of housing for these populations.

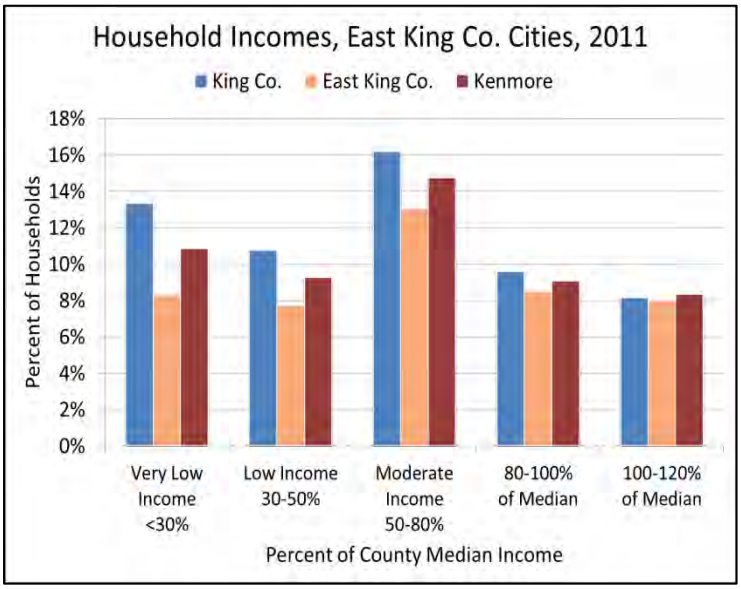
TABLE H-A
HOUSEHOLDS BY INCOME CATEGORY

HOUSEHOLD INCOME CATEGORY		PERCENT OF TOTAL HOUSEHOLDS			
		KENMORE			KING CO.
		1990*	2000	2011	2011
< 30% of median:	Very Low-Income		8%	11%	12%
30% to 50% of median:	Low-Income	17%	8%	9%	12%
50% to 80% of median:	Moderate-Income		16%	15%	16%
> 80% of median:	Middle- and Higher-Income	83%	69%	65%	60%

"Median" refers to the (King County) Area Median Income.
* "Kenmore Census Designated Place." The city was not incorporated until 1998, and the Kenmore CDP is a slightly different geographic area but the closest with available data. Income category break-outs not available for 1990.

Source: 1990 and 2000 Census (U.S. Census Bureau) and 2006-2010 CHAS (Comprehensive Housing Affordability Strategy; U.S. Housing and Urban Development).

FIGURE H-6



Source: 2011 American Community Survey, 5-year Estimates (U.S. Census Bureau).

Northshore School District records show that 18 percent of the students qualify, based on income, for free or reduced lunches at school (Northshore website). Almost nine (9) percent of the students live in a household with an income below the poverty level (Housing Analysis, Exhibit G-3).

Number and Types of Housing Units

Kenmore added 12 percent more housing units during the 2000s—somewhat slower than the growth of the 1990s, but in line with projections in the 2005 Comprehensive Plan. Kenmore also grew a bit more slowly than King County and the rest of the Eastside. (See Exhibits A and L-1 of the East King County Housing Analysis.) The city's mix of housing types changed very little during that time (Table H-B, below).

TABLE H-B
NUMBER AND TYPE OF HOUSING UNITS, KENMORE

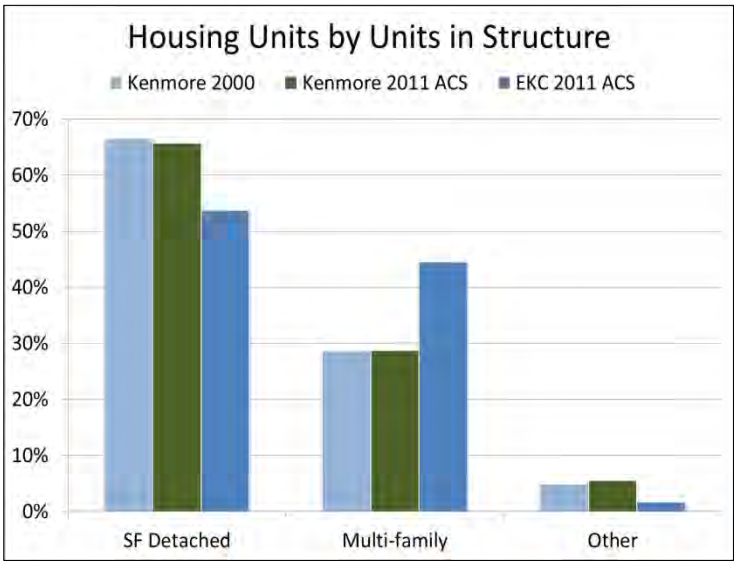
TYPE OF HOUSING	2000		2014	
	UNITS	% OF TOTAL	UNITS	% OF TOTAL
Single-family Detached	5,235	70%	6,276	71%
Multi-family	1,892	25%	2,268	26%
Mobile Homes	361	5%	291	3%
Total Units	7,488	100%	8,835	100%

Source: U.S. Census Bureau, 2000 Census, and
Washington State Office of Financial Management (OFM), 2014.

Compared to King County and most of east King County, Kenmore has a relatively low percentage of multi-family housing. Less than 30 percent of Kenmore's housing is multi-family (Figure H-7, below; Housing Analysis, Exhibit L-1). Approximately 25 percent of the multi-family units are condominiums.

Approximately 350 multi-family units have been built or begun construction since 2006, about 25 percent of overall housing growth in this period (2014 Buildable Lands Report; not all reflected in Figure H-7). About 40 percent of these newer units are condominiums.

FIGURE H-7



Source: 2000 Census and 2011 American Community Survey, 5-Year Estimates (U.S. Census Bureau).

Kenmore is one of the few communities in east King County with any significant number of manufactured homes (close to 300; Washington State OFM). Most of Kenmore's manufactured homes are located in six parks with a small number located on individual lots. Units are primarily owner occupied, sited on rental pads. The manufactured housing communities are an important housing resource for many Kenmore residents. More than half of the households living in manufactured homes are low-income. Two of the manufactured housing communities are reserved for seniors. In many cases, manufactured housing communities provide the opportunity of unsubsidized home ownership to households that cannot afford to purchase other types of housing. Homes are in a wide range of physical condition, including some units that are getting past their useful life. Other concerns include long-term park maintenance and replacement of aging infrastructure. Overall availability of manufactured housing has been decreasing in King County as parks are redeveloped with other uses. Of concern is that manufactured housing has offered a relatively affordable form of housing and when parks are closed and replaced with more expensive housing, homeowners lose most of their investment. Future redevelopment of the mobile home parks to higher densities could provide additional housing units with affordability requirements.

Several multi-family housing projects are in the planning or construction stages. The largest proposed multi-family development is Lakepointe, which would provide 1,200 new housing units; the exact mix of owner-occupied and rental units in the project is yet to been determined.

Another project, which has been approved, is the first major residential redevelopment project in the Downtown district. Located on a former Metro park-and-ride site, the property will have up to 325 apartments within walking distance of shopping and transit. Pursuant to local zoning requirements, twenty-five (25) percent of the units will be affordable to moderate-income households. The first phase of 138 apartments started construction in 2014.

Kenmore has permitted 31 accessory dwelling units as of 2011, or about one for every 167 detached single-family homes—almost exactly the same as the average for all of east King County (Housing Analysis, Exhibit Q-1). (This compares to a rate of one for every 32 detached homes in Mercer Island, the city with the highest ratio of ADUs.)

Prices of Market Rate Housing

Homeownership

Kenmore has a homeownership rate of 74 percent, which is at the upper end of ownership rates for cities in east King County, and greater than the countywide average. Kenmore has also had a relatively significant increase in the rate of homeownership since the early 1990s, while most cities have seen homeownership rates stable or decreased in that period.

The average home sale price in the first quarter of 2014 in Kenmore was $413,000 (Central Puget Sound Real Estate Research Committee). This is lower than the average prices in nearby communities and in King County overall ($474,000). On average, Kenmore's home prices fell 14 percent during the recent recession, less than east King County in general (21 percent); but as seen across most of the Eastside, prices have more than recovered.

Condominium units provide a relatively affordable homeownership alternative for Kenmore residents. The average sale price for condominiums in early 2014 was $169,000—similar to condo prices in Bothell and Woodinville, and low compared to the averages across east King County and King County overall (Central Puget Sound Real Estate Research Committee).

Rental Housing

Rental housing makes up about 25 percent of housing supply in Kenmore, a significantly smaller portion of overall housing than east King County as a whole and King County. Average rents are slightly higher in the Kenmore/Bothell market than in the Shoreline market (Table H-C, below), but low compared to the rest of east King County and the county overall.

TABLE H-C
AVERAGE RENTS, 2014 (SPRING)
PROPERTIES WITH 20 OR MORE APARTMENTS

	SIZE OF UNIT (BEDROOMS/BATHROOMS)					AVERAGE
LOCATION	**0/1**	**1/1**	**2/1**	**2/2**	**3/2**	**All Units**
Bothell/Kenmore	$724	$1,036	$1,145	$1,227	$1,693	$1,163
Shoreline/Lake Forest Park	$815	$946	$1,084	$1,230	$1,562	$1,070
Eastside	$1,139	$1,281	$1,366	$1,656	$1,877	$1,474

Source: The Apartment Vacancy Report (Dupre+Scott Apartment Advisors).

Rental vacancy data indicate that Kenmore has relatively few apartments available (Housing Analysis, Exhibit P-2; Table H-D, below).

TABLE H-D

APARTMENT VACANCY RATES
PROPERTIES WITH 20 OR MORE APARTMENTS

LOCATION	PERCENT OF TOTAL UNITS	
	Spring, 2013	Spring, 2014
Kenmore/Bothell	5.0%	3.6%
Shoreline/Lake Forest Park	2.3%	1.9%
Eastside	3.3%	3.7%
King County	3.3%	4.3%

Source: The Apartment Vacancy Report (Dupre+Scott Apartment Advisors).

Age of Housing

Kenmore's housing stock is somewhat older than the rest of east King County, but a bit younger than that of King County overall. Fifteen (15) percent of all homes in the community are less than 10 years old (similar to the rest of east King County), and 45 percent have been built since 1980 compared to 55 percent for the rest of east King County (Housing Analysis, Exhibit O).

Rental Housing for People Needing Supportive Services

Kenmore has a range of housing for people who need supportive services, particularly for the elderly and those individuals with physical disabilities. The housing includes adult family homes, assisted living facilities, boarding homes, group living, and nearby nursing homes.

An estimated six (6) percent of the people in Kenmore are over the age of 75 years (Housing Analysis, Exhibit D-1). Supplemental Security Income supports people with disabilities in over 200 (3 percent) Kenmore households (Housing Analysis, Exhibit K-1).

Kenmore has two licensed assisted living facilities (boarding homes) with 106 beds and 21 licensed adult family homes with 117 beds (Housing Analysis, Exhibit Q-2). Adult family home residents include elderly people, individuals with limited mobility (use of wheelchair), developmental disabilities, mental illness, diabetes, terminal illnesses, brain injury, and those recovering from strokes. The number of persons living in supported living situations (i.e., group quarters) has increased almost 50% since 2000 (Housing Analysis, Exhibit K-2).The closest nursing home to Kenmore is in Bothell. The North Creek Health and Rehab Center (10909 NE 185th) nursing home has 112 beds.

Assisted Rental Housing

A variety of publicly assisted rental housing is available in Kenmore, including the Greenleaf family housing and Northwood senior housing operated by the King County Housing Authority (KCHA), Heron Run family and Heron Landing senior housing operated by DASH, Copper Lantern (rental and ownership housing) operated by LIHI and Shadrack family shelter operated by Hopelink. In addition, the Housing Authority operates a voucher program for the rental of privately held units. This federal program currently assists approximately 20 Kenmore households with rental subsidies. (Lower income tenants in the City of Kenmore may also apply for emergency funding from King County in the event they are faced with eviction due to nonpayment of rent. This assistance is available through the Multi-Service Center of Northeast King County.)

Housing Affordability

According to policies established by the U.S. Department of Housing and Urban Development, a household should spend no more than 30 percent of its income on housing, including utilities. If they pay more than that, they are considered "housing cost burdened." Table H-E shows incomes and affordable housing costs for various income levels.

TABLE H-E
AFFORDABLE HOUSING COSTS BASED ON KING COUNTY MEDIAN INCOME, 2014.

	VERY LOW INCOME		LOW INCOME		MODERATE INCOME	
	30% of Area Median		50% of Area Median		80% of Area Median	
Household Size	Annual Income	Affordable Monthly Cost	Annual Income	Affordable Monthly Cost	Annual Income	Affordable Monthly Cost
1	$18,522	$463	$30,870	$772	$49,392	$1,235
2	$21,168	$529	$35,280	$882	$56,448	$1,411
3	$23,814	$595	$39,690	$992	$63,504	$1,588
4	$26,460	$662	$44,100	$1,103	$70,560	$1,764
5	$28,577	$714	$47,628	$1,191	$76,205	$1,905

Source (income figures): U.S. Department of Housing and Urban Development.

Using the federal affordability definition, 13% of Kenmore's housing is affordable to very low and low income households and 15% to moderate income households (Housing Analysis, Exhibit M-2). The amount of housing affordable to low- and very low-income families is similar to Bothell and slightly below King County, but higher than other cities in east King County. The amount of housing affordable at the moderate-income level is similar to the rest of east King County, but lower than Bothell and Countywide figures. Table H-G compares the housing affordability of Kenmore, east King County, and King County overall against countywide housing needs.

Most of Kenmore's housing affordable to lower incomes is rental housing. Thirty-five (35) percent of the rental units in Kenmore were affordable to very low and low-income families in 2014. This is similar to countywide figures, but a much higher rate of affordability in rental housing than other cities in east King County.

About seven (7) percent of the single-family owner-occupied housing units in Kenmore are affordable to families earning up to 80 percent of median income, and an additional 4 percent affordable to families earning 80 to 100 percent of median income (Housing Analysis, Exhibit M-2, and Table H-F, below). These figures are similar to east King County, but somewhat lower than King County. Note that Kenmore has a relatively high percentage of homes affordable to low income households, which may be partially attributable to the city's relatively high number of manufactured homes.

TABLE H-F
AFFORDABLE HOUSING AND COUNTYWIDE HOUSING NEEDS, 2010

HOUSEHOLD INCOME LEVEL		PCT OF TOTAL HOUSING UNITS AFFORDABLE AT INCOME LEVEL			COUNTYWIDE HOUSING NEED
		Kenmore	East King Co.	King County	
< 30% of median:	Very Low-Income	3%	2%	4%	12%
30% to 50% of median:	Low-Income	10%	5%	11%	12%
50% to 80% of median:	Moderate-Income	15%	17%	20%	16%
80% to 100% of median:	Middle-Income	7%	18%	15%	10%
> 100% of median:	Higher-Income	65%	59%	50%	50%

Source: 2006-2010 CHAS (Comprehensive Housing Affordability Strategy; U.S. Housing and Urban Development).

Cost-Burdened Households

Despite the relative affordability of Kenmore, 38 percent of the city's households, and 42 percent of the renting households, are housing cost-burdened (Housing Analysis, Exhibit H-1). Both figures are similar to countywide figures, but high for east King County. Moreover, of cities in east King County, Kenmore has the highest percentage of severely cost-burdened households (paying more than half their incomes on housing) at 17 percent.

HOUSING TARGETS AND CAPACITY

The city's 2006–2031 growth target established by the King County Countywide Planning Policies is 3,500 households. Subtracting actual development, the remaining growth target (2012–2031) is 2,980 households. On an annualized basis, this means the city should expect and plan for 149 additional units each year. The Kenmore Land Use Plan provides enough zoned capacity to exceed the 2031 household target, as shown in Table H-G. Mixed-use areas provide more than half of the city's present capacity for new housing.

TABLE H-G
EXISTING HOUSING UNITS, CAPACITY, AND TARGETS, KENMORE

Housing Type	2012 Existing		Remaining Capacity		Total if Built to Capacity	
	Units	Pct	Units	Pct	Units	Pct
Single-family Dwellings	6,471	74%	1,352	30%	7,823	59%
Multi-family Dwellings, total	2,264		3,151		5,415	
In residential-only zones	2,264	26%	742	16%	3,006	23%
In mixed-use zones	0	0%	2,409	53%	2,409	18%
Total	8,735		4,503		13,238	

Source: 2014 Buildable Lands Report (King County).

SUMMARY OF LOCAL HOUSING STRATEGIES

Since incorporation, the city has taken action in several areas to address local housing needs. These include:

- Updates to the Downtown area plan have increased opportunities for creating new housing in the Downtown. This has allowed the city to have sufficient capacity to meet its 2006–2013 housing growth targets.
- The city rezoned the old Park and Ride site to allow housing development, with a requirement that 25 percent address local affordable housing needs. The first phase of development of this property began in 2014. To help enhance affordability on the property, the city approved a twelve-year property tax exemption on residential improvements.
- The city adopted regulations to allow Accessory Dwelling Units, with over 30 ADUs permitted to date.
- The city has waived a portion of impact fees for a project that incorporated housing affordable to low-income households.
- The city has been an ongoing member of ARCH. Through the ARCH Trust Fund process, the city has regularly committed local funds for affordable housing projects in Kenmore and throughout the region, assisting over 170 units affordable to lower-income households.
- Through participation in the countywide CDBG Consortium, 25 local homeowners have received Housing Repair loans since 2005.
- The city, in 2017, approved a Housing Strategy Plan identifying potential strategies to address affordable housing needs and prioritizing them for future consideration.

GOALS, OBJECTIVES, AND POLICIES

RESIDENTIAL NEIGHBORHOODS SUB-ELEMENT

GOAL H-1. PROMOTE AND MAINTAIN STRONG RESIDENTIAL NEIGHBORHOODS.

OBJECTIVE H-1.1 Encourage repair and maintenance of existing housing.

Policy H-1.1.1 Encourage private reinvestment in residential neighborhoods and private rehabilitation of housing by providing information, technical assistance, and referrals to appropriate agencies and organizations.

Policy H-1.1.2 Provide regular and appropriate levels of investment in transportation, surface water, and parks maintenance and improvements within residential neighborhoods, consistent with the City's capital improvement priorities. Encourage special districts to provide services and maintain infrastructure within residential neighborhoods consistent with adopted service and capital improvement plans.

Policy H-1.1.3 In cooperation with King County, Puget Sound Energy, or other agencies, promote the use of weatherization programs in existing housing.

Objective H-1.2 Promote safe, physically accessible, well maintained, and well designed residential environments with associated open spaces.

Policy H-1.2.1 Encourage housing design and development that promotes public safety including "Crime Prevention through Environmental Design" components as described in the Land Use Element.

Policy H-1.2.2 Ensure development regulations address accessible housing and transportation services. Residential structures as well as physical improvements, such as parking, streets, and sidewalks, should allow for mobility and accessibility by all residents, including the elderly and persons with disabilities, consistent with the Transportation Element. Promote awareness of Universal Design improvements that increase housing accessibility.

Policy H-1.2.3 Prepare and implement development and design standards that acknowledge neighborhood character and address compatibility with surrounding development consistent with Land Use and Community Design Element goals and policies.

Policy H-1.2.4 Encourage energy and water efficiency in existing and new housing developments, as addressed in the Utilities Element.

Policy H-1.2.5 Ensure adequate setbacks, landscaping, and buffering are required between housing developments of significantly differing densities and between housing and commercial areas.

Policy H-1.2.6 Ensure critical area regulations provide sufficient buffer widths consistent with the quality and class of the environmentally sensitive area. Restrict intrusion into sensitive areas by nearby residents and visitors.

Policy H-1.2.7 Encourage cluster residential development along with open space, consistent with the Land Use Element.

Policy H-1.2.8 Encourage property consolidation in the Downtown, through density bonuses or other incentives, to create mixed-use and multi-family developments that offer a range of site and community benefits such as private and public open spaces and plazas, structured parking, and other amenities.

Policy H-1.2.9 Plan for residential neighborhoods that promote the health and well-being of residents by supporting active living and by reducing exposure to harmful environments.

OBJECTIVE H-1.3 Plan appropriate land use designations and zoning categories to accommodate projected household growth.

Policy H-1.3.1 Plan for an adequate supply of land to accommodate projected growth, including but not limited to, affordable housing, multifamily housing, and special needs housing.

Policy H-1.3.2 Ensure zoning regulations accommodate a range of housing styles and types in appropriate locations, such as single-family detached dwellings, townhouses, apartments, accessory dwellings, manufactured homes, and other types. Consider neighborhood character as well as housing needs when applying zones, land use, and development standards.

OBJECTIVE H-1.4 Identify and support Kenmore's Downtown as a center for commercial, civic, cultural, park, and higher density housing uses and activities.

Policy H-1.4.1 Develop mixed-use, higher density districts in Downtown Kenmore, meeting community goals to develop community identity, vital business and service opportunities, concentration of higher density housing, and multi-modal transportation services.

Policy H-1.4.2 Offer density bonuses and density transfers to achieve a compact, vital Downtown, as well as meet environmental and affordable housing goals.

GOAL H-2. PROVIDE HOUSING OPPORTUNITIES IN KENMORE FOR PEOPLE WITH SPECIAL NEEDS.

OBJECTIVE H-2.1 Provide opportunities for the development of short-term and permanent housing for people with special needs.

Policy H-2.1.1 Allow opportunities for assisted housing, for people with special needs, by:

a. Permitting group living situations, including those where residents receive such supportive services as counseling, foster care or medical supervision in accordance with state and federal laws; and,
b. Encouraging developers and owners of assisted housing units to undertake activities to establish and maintain positive relationships with neighbors.

Policy H-2.1.2 Ensure that group home providers have received appropriate licenses from federal or state agencies where appropriate.

Policy H-2.1.3	Support housing options and services that enable seniors to stay in their homes or neighborhoods.

OBJECTIVE H-2.2	**Support and promote community facilities and programs that are important to the safety, health, and social needs of families, children and persons with special needs.**
Policy H-2.2.1	Increase coordination among providers of social, health, counseling, and other services to families, children, and persons with special needs including seniors citizens, persons with physical or mental disabilities, persons with terminal illness, or other special needs.
Policy H-2.2.2	Work with transit and transportation providers to increase access between special needs housing and community facilities and programs in Kenmore or the Northshore area.
Policy H-2.2.3	Support the location of social, recreational, health, safety and other services in Kenmore to serve people with special needs.
Policy H-2.2.4	Support a range of housing options and services to help homeless persons and families move to long-term financial independence.
Policy H-2.2.5	Work with other jurisdictions and health and social service organizations to develop a coordinated, regional approach to homelessness.

HOUSING AFFORDABILITY SUB-ELEMENT

GOAL H-3. MAKE ADEQUATE PROVISIONS FOR A PROPORTIONATE AMOUNT OF THE EXISTING AND PROJECTED COUNTYWIDE NEED FOR HOUSING AT ALL INCOME LEVELS.

OBJECTIVE H-3.1 Encourage retention of the existing housing stock in Kenmore as a source of affordable housing.

Policy H-3.1.1 Promote the use of housing rehabilitation assistance (from King County, for example) to lower-income homeowners and to landlords who rent to lower-income people.

Policy H-3.1.2 Consider measures to preserve and maintain existing manufactured housing communities.

Policy H-3.1.3 When displacement is unavoidable, encourage relocation assistance and replacement housing to be developed, where feasible, to help very low- and low-income households. For mobile home parks in particular, consider a funding pool to assist low and moderate income residents in deteriorating and obsolete mobile homes to find alternative housing in the community, or help to establish preferences in nearby housing for persons giving up their homes.

OBJECTIVE H-3.2 Adopt programs and regulations that support housing affordable to very low, low, and moderate-income households, comparable to the countywide need.[1]

Policy H-3.2.1 Support efforts of private developers, both for-profit and not-for-profit, to preserve or develop affordable housing, including housing with on site services, for very low-, low- and moderate-income families. Consider the following roles for the City's active participation:

a. Whenever possible, integrate affordable housing plans into proposals for development of publicly-owned properties.
b. Play a partnership role with nonprofit housing project sponsors by supporting applications for CDBG, HOME, and other Federal, State or local funding sources for the projects.
c. Enter into a long-term partnership with one or more nonprofit housing developers to identify sites and decide on the timing of applications for public funding.
d. Actively support affordable housing projects by expediting the permitting process, reducing development fees, or similar measures.

Policy H-3.2.2 Participate in A Regional Coalition for Housing (ARCH) to help develop and preserve affordable housing in the community and region.

Policy H-3.2.3 Identify and catalogue real property owned by the City that is no longer required for its purposes and is suitable for the development of affordable housing for very-low to moderate income households.

[1] See Countywide Planning Policies

Policy H-3.2.4	Use density bonuses, inclusionary programs, and other methods with mixed-use and multi-family developments to provide housing affordable to low- and moderate-income households.
Policy H-3.2.5	Use local resources, as available, to leverage other public and private funding for the creation or preservation of affordable housing.
Policy H-3.2.6	Ensure that affordable housing achieved through public incentives or assistance remains affordable for the longest possible term.
Policy H-3.2.7	Collaborate with other local governments directly and through membership associations (e.g. Puget Sound Regional Council) on regional housing strategies, especially related to providing low- and very-low income housing.
Policy H-3.2.8	Support legislation and funding at the county, state, and federal levels that would promote the city's housing goals and policies.
OBJECTIVE H-3.3	**Provide zoning and development standards that integrate affordable housing compatibly into the community.**
Policy H-3.3.1	Allow designated manufactured homes built to state standards on single-family lots.
Policy H-3.3.2	Allow and accommodate accessory dwelling units in single-family districts.
Policy H-3.3.3	Pursue land use policies and regulations that: a. Result in lower development costs without loss of adequate public review, environmental quality or public safety; and, b. Do not reduce design quality, inhibit infrastructure financing strategies, or increase maintenance costs for public facilities.
Policy H-3.3.4	Promote fair housing for all persons and ensure that no city policies, programs, regulations or decisions result in housing discrimination.

IMPLEMENTATION STRATEGIES

To organize and carry out these goals, objectives and policies, as well as to prepare the City for the next Comprehensive Plan update, the City will undertake the following:

- Work with neighborhoods when new policies, plans or programs are proposed to ensure that their unique issues are considered.
- Continue to review the action steps and priorities from the Housing Strategy Plan.
- Implement the Strategy Plan in coordination with ARCH.
- Maintain communications with, or participation in, regional agencies and projects.

- Monitor housing needs and supply over time, especially data that indicate progress toward meeting a proportionate share of the countywide needs for affordable housing.

- Evaluate and report results of the Strategy Plan and how the goals, objectives, and policies of this Housing Element have been achieved.

- Revise the Strategy Plan as needed to achieve more of the Housing Element's goals, objectives, and policies.

REFERENCES

A Regional Coalition for Housing (2014). East King County Housing Analysis, Redmond, WA.

TRANSPORTATION ELEMENT

EXECUTIVE SUMMARY

Since incorporating in 1998, the City of Kenmore has made strides toward becoming a vibrant community in which to live, work, and play. The new City Hall, Library, Fire Station, and the businesses and streetscape investments around them contribute toward a vibrant downtown that the City intends to strengthen. This Transportation Element aims to support travel by walking, biking, and riding transit, in addition to supporting adequate mobility when traveling by car in Kenmore through 2035.

The overall vision for Kenmore's Transportation Element is to provide a safe, balanced, and efficient multi-modal transportation system that is consistent with the City's overall vision and adequately serves anticipated growth. Guidance from City staff, the Planning Commission, the Pedestrian & Bicycle Safety Ad Hoc Citizen Committee, stakeholders, and citizens helped identify several priorities:

- Improve safety for all road users in Kenmore through street designs that accommodate all modes
- Provide connectivity to support local travel in Kenmore while allowing through trips to occur in a timely fashion
- Encourage placemaking and the creation of a vibrant, walkable identity for Kenmore's downtown

The Transportation Element sets a framework for understanding, prioritizing, measuring, and creating a transportation network to help Kenmore achieve its vision. This document includes six chapters:

- **Chapter 1 – Introduction:**
  Describes the purpose of the Transportation Element and the planning requirements it need to address. Also provides an overview of Kenmore's position in the region and the outreach activities that occurred as a part of this plan.
- **Chapter 2 – Conditions and Trends:**
  Describes conditions for all travel modes in the existing transportation system. This chapter also identifies current challenges and trends that will affect Kenmore's transportation network in the future.
- **Chapter 3 – Transportation Vision and Goals:**
  Explains Kenmore's vision for transportation and the goals that serve as the basis for the Transportation Element.
- **Chapter 4 – Future Transportation Vision:**
  Introduces a layered network concept that forms the foundation of this plan to accommodate all modes of travel and create a complete transportation network in Kenmore. This section also details how to accommodate each travel mode and establishes the City's level of service standards.

- **Chapter 5 – Near Term and Long Term Capital Plans:**
  Provides near-term and long-range project lists based on the community values expressed in the transportation goals and layered network.
- **Chapter 6 – Implementing the Transportation Element:**
  Evaluates Kenmore's financial conditions over the next 20 years and provides guidance on plan implementation.

To serve as a useful document for community, including both City staff and the general public, this Transportation Element focuses on the City's vision and the projects and programs intended to meet that vision. Technical and supporting information are available in technical appendices.

CHAPTER 1: INTRODUCTION

Since incorporating in 1998, the City of Kenmore has made strides toward becoming a vibrant community in which to live, work, and play. The new City Hall, Library, Fire Station, and the businesses and streetscape investments around them contribute toward a vibrant downtown that the City intends to strengthen. This Transportation Element aims to support travel by walking, biking, and riding transit, in addition to supporting adequate mobility when traveling by car in Kenmore through 2035.

PURPOSE

The overall vision for Kenmore's Transportation Element is to provide a safe, balanced, and efficient multi-modal transportation system that is consistent with the City's overall vision and adequately serves anticipated growth. Guidance from City staff, the Planning Commission, the Pedestrian & Bicycle Safety Ad Hoc Citizen Committee, stakeholders, and citizens helped identify several priorities:

- Improve safety for all road users in Kenmore through street designs that accommodate all modes
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The Transportation Element sets a framework for understanding, prioritizing, measuring, and creating a transportation network to help Kenmore achieve its vision.

PLANNING REQUIREMENTS

Kenmore's regional setting is important. Nestled on the north shore of Lake Washington, the City forms the northern edge of King County and is bisected by State Route 522 (SR 522), a Highway of Statewide Significance. Given this strategic location, transportation conditions in the City are strongly influenced by pass-through traffic connecting between Seattle and east side cities, as well as growth in Snohomish County. The Kenmore Air Harbor provides connections to additional regional destinations, such as the Olympic Peninsula, the San Juan Islands, and British Columbia. The City must coordinate its transportation planning with a variety of jurisdictions,

including King County, the Puget Sound Regional Council (PSRC), and the State of Washington. **Figure 1** shows the location of Kenmore in this regional setting.

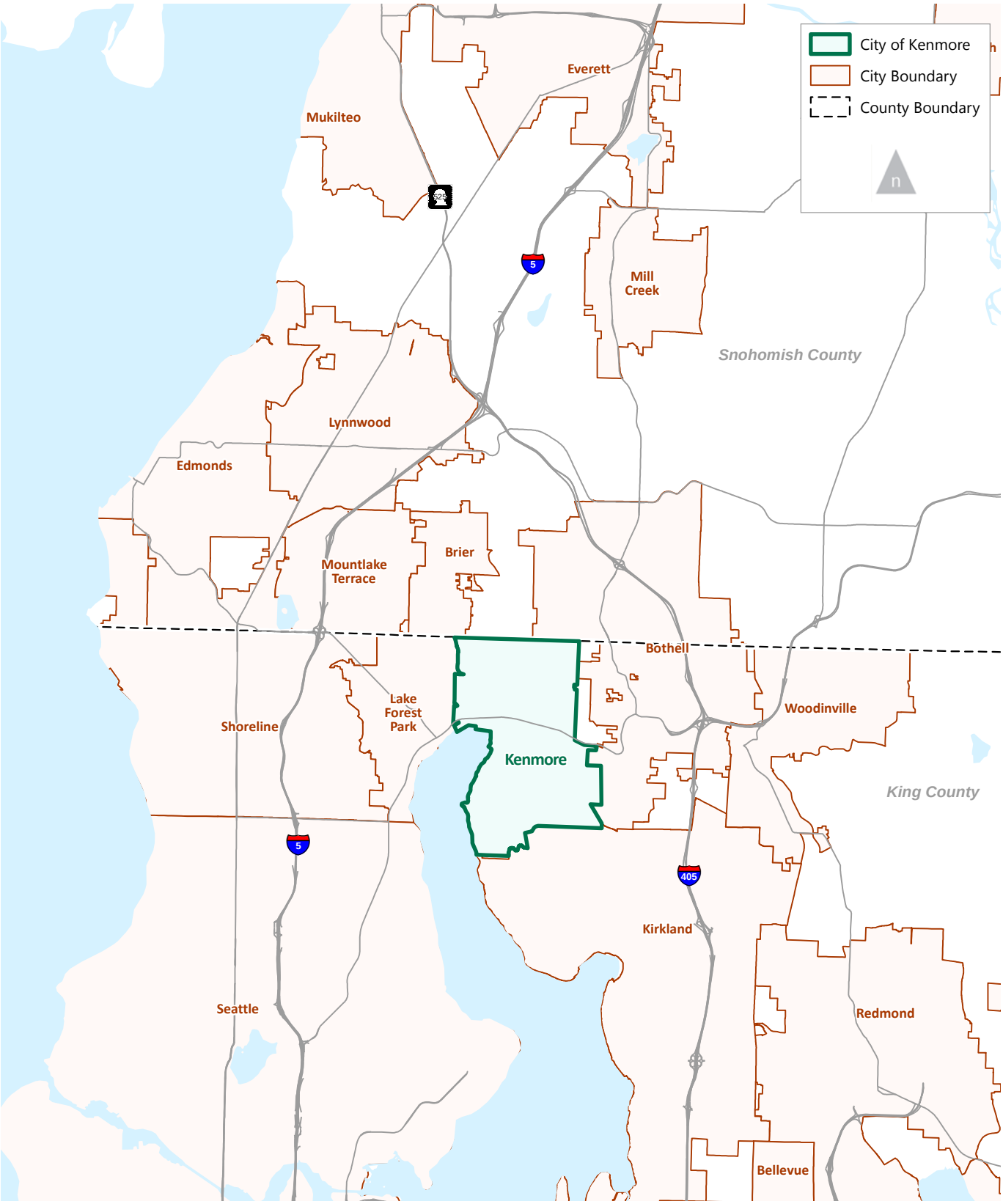

Figure 1.

The City of Kenmore and Surrounding Area

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GMA

The State's Growth Management Act of 1990 requires communities to prepare a transportation plan that ties directly to the City's land use decisions and financial planning. This Transportation Element Update fulfills the mandate.

In addition to this state act, the Washington State Department of Transportation (WSDOT) controls SR 522, which runs east-west through Kenmore. As such, this plan aims to coordinate with WSDOT and other neighboring communities to ensure that SR 522 and all of Kenmore's streets serve local as well as regional travel needs.

Other plans

The Puget Sound Regional Council (PSRC) is the region's metropolitan planning organization made up of cities, towns, counties, ports, tribes, transit agencies, and major employers. PSRC has set policy for King, Pierce, Snohomish, and Kitsap Counties through Vision 2040, which lays out the long term goals for growth management, economic, and transportation issues.

Vision 2040 identifies several key goals for transportation in the region:

- **Maintenance, Management, and Safety** – Maintain, preserve, and operate the existing transportation system in a safe and usable state.
- **Support the Growth Strategy** – Support the regional growth strategy by focusing on connecting centers with a highly efficient multimodal transportation network.
- **Greater Options, Mobility, and Access** – Invest in transportation systems that offer greater options, mobility, and access in support of the regional growth strategy.

This Transportation Element is consistent with the Vision 2040 priorities.

ROLE OF THE TRANSPORTATION ELEMENT

The Transportation Element serves both as a functional plan to guide the City's transportation investments and as the overarching framework for transportation in Kenmore's Comprehensive Plan. The document also ensures coordination with the City's Land Use Element and other major planning efforts, including improvements along Juanita Drive and SR 522.
In essence, the Transportation Element informs the development of the Capital Improvement Program by identifying the types of projects the City should undertake to support future travel trends. The plan also evaluates how these projects coincide with the community's values and financial resources.

PUBLIC OUTREACH

This plan included public outreach through workshops and committee meetings. The City held an open public workshop in May, 2014 to gain insight on how Kenmore citizens would like to prioritize transportation for the next 20 years. City staff and the consultant team met with City Council, the Planning Commission, and the Pedestrian & Bicycle Safety Ad Hoc Citizen Committee throughout the course of the planning effort.

REGIONAL COORDINATION

As part of the planning process the City reached out to other agencies and government bodies that have an interest in or influence on transportation in Kenmore. Groups that the City has met with include:

- Neighboring cities and counties
- Transit providers in the region
- Schools and senior centers

The City is also coordinating relevant planning efforts with Bothell and Kirkland to ensure a smooth transition on facilities that cross jurisdictional boundaries.

PLAN ORGANIZATION

This Transportation Element includes five chapters in addition to the Introduction **(Chapter 1)**:

- **Chapter 2 – Conditions and Trends:**
  Describes conditions for all travel modes in the existing transportation system. This chapter also identifies current challenges and trends that will affect Kenmore's transportation network in the future.
- **Chapter 3 – Transportation Vision and Goals:**
  Explains Kenmore's vision for transportation and the goals that serve as the basis for the Transportation Element.
- **Chapter 4 – Future Transportation Vision:**
  Introduces a layered network concept that forms the foundation of this plan to accommodate all modes of travel and create a complete transportation network in Kenmore. This section also details how to accommodate each travel mode and establishes the City's level of service standards.
- **Chapter 5 – Near Term and Long Term Capital Plans:**
  Provides near-term and long-range project lists based on the community values expressed in the transportation goals and layered network.
- **Chapter 6 – Implementing the Transportation Element:**
  Evaluates Kenmore's financial conditions over the next 20 years and provides guidance on plan implementation.

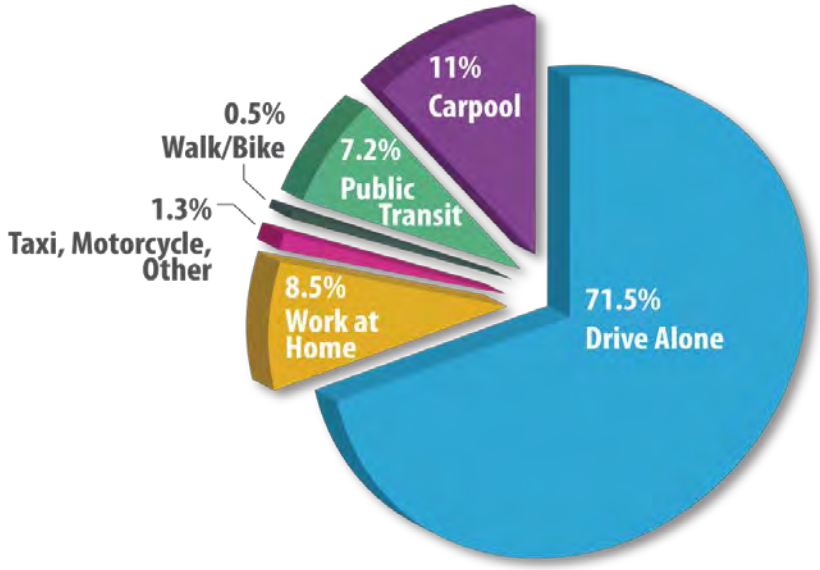
CHAPTER 2: CONDITIONS AND TRENDS

EXISTING CONDITIONS

Transportation Network Overview

Kenmore's transportation network accommodates many modes of travel, including walking, bicycling, public transit, driving, and flying. Vehicular travel is still the primary choice for many travelers in and around Kenmore, as shown in the Census journey-to-work data (see **Figure 2**). City streets form the backbone of the transportation framework with roadways shaping how residents and visitors experience Kenmore.

Figure 2: Commute Mode to Work



The City of Kenmore currently classifies its roadways into principal arterials, minor arterials, collectors, and local streets, as shown in **Table 1** and displayed in **Figure 3**. Examples of each roadway type and the intended uses served are described below.

Table 1: Functional Classification of Roadways

Roadway Type	Description / Purpose	Example
Principal Arterial	A roadway that serves through trips and connects Kenmore with the rest of the area.	SR 522 Simonds Road NE
Minor Arterial	Minor arterial streets provide inter-neighborhood connections and serve both local and through trips.	73rd Avenue NE Juanita Drive NE
Collectors	Collectors distribute trips between local streets and arterials and serve as transition roadways to or from residential areas.	84th Avenue NE NE 153rd Place
Local	Local streets provide circulation and access within residential neighborhoods.	64th Avenue NE NE 150th Street

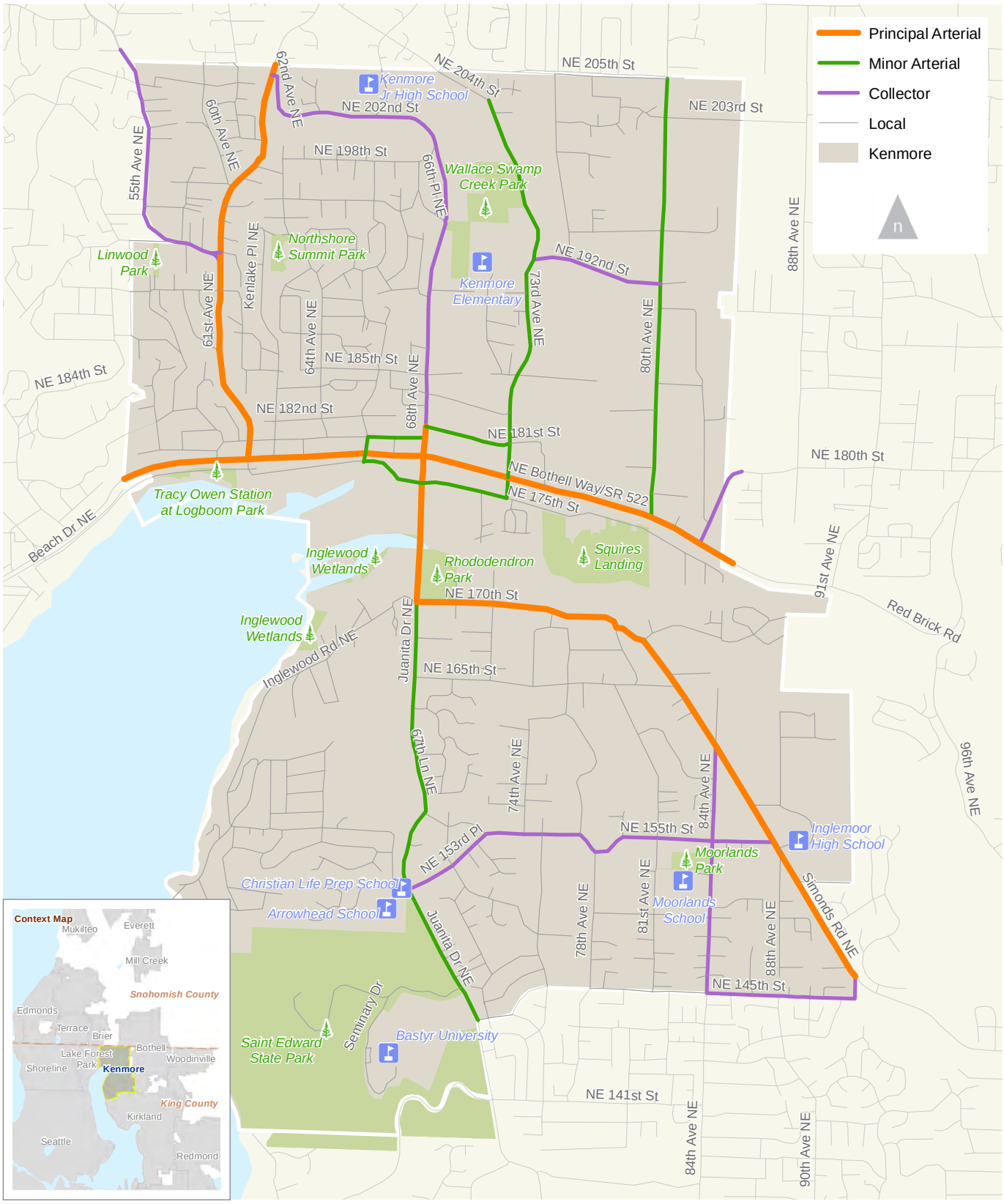


Figure 3.

Existing Roadway Functional Classification

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Approximately 15 linear miles of sidewalk and enhanced crosswalks have been installed since incorporation from King County, but sidewalks are still absent from many streets. On quiet residential streets, sidewalks may not be necessary; however, Kenmore has a number of arterials connecting residents from their homes to commercial areas, employment centers, schools, and transit stops that lack adequate pedestrian facilities.

Figure 4 displays different types of existing pedestrian infrastructure in Kenmore and **Figure 5** shows where these facility types are located spatially as well as the number of pedestrians that were observed on each facility in the fall of 2013.

Figure 4: Existing Sidewalks, Shoulders, and Pedestrian Crossings

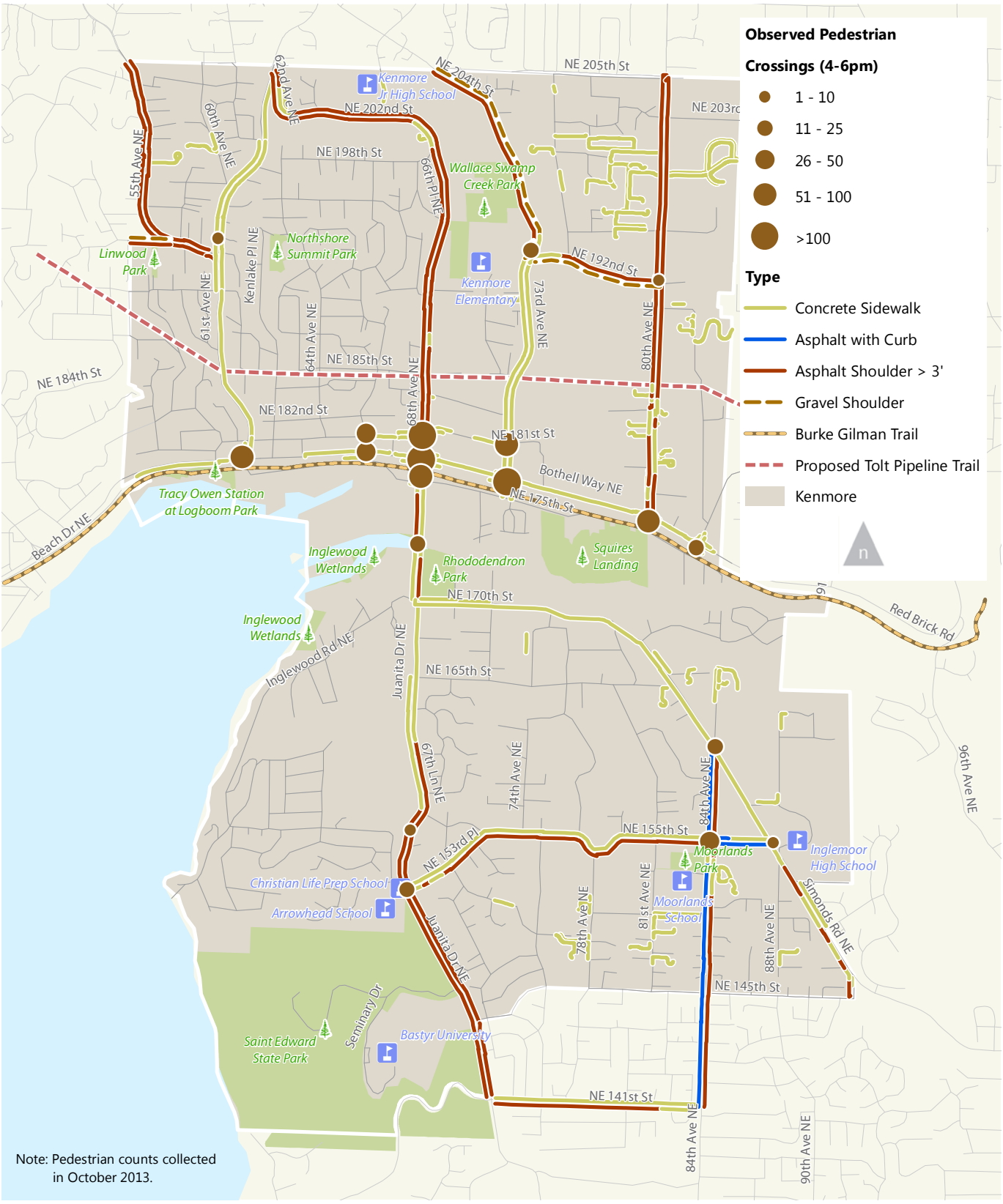

Figure 5.

Existing Sidewalks, Shoulders, and Pedestrian Crossings

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Kenmore hosts a section of the Burke-Gilman Trail, a regional multi-use trail that connects residents to Seattle and other area cities. However, for many Kenmore residents, connecting from home to the Burke-Gilman Trail or other non-motorized facilities can be challenging due to the topography and curvilinear streets in parts of the city. State Route 522 and 68th Avenue NE / Juanita Drive NE create additional barriers to bicycling in Kenmore due to their high traffic volumes and difficult crossings. **Figure 6** presents Kenmore's existing bicycle network as identified in the 2008 Transportation Element, as well as the number of cyclists counted at key locations in fall 2013.

© Vladimir Menkov

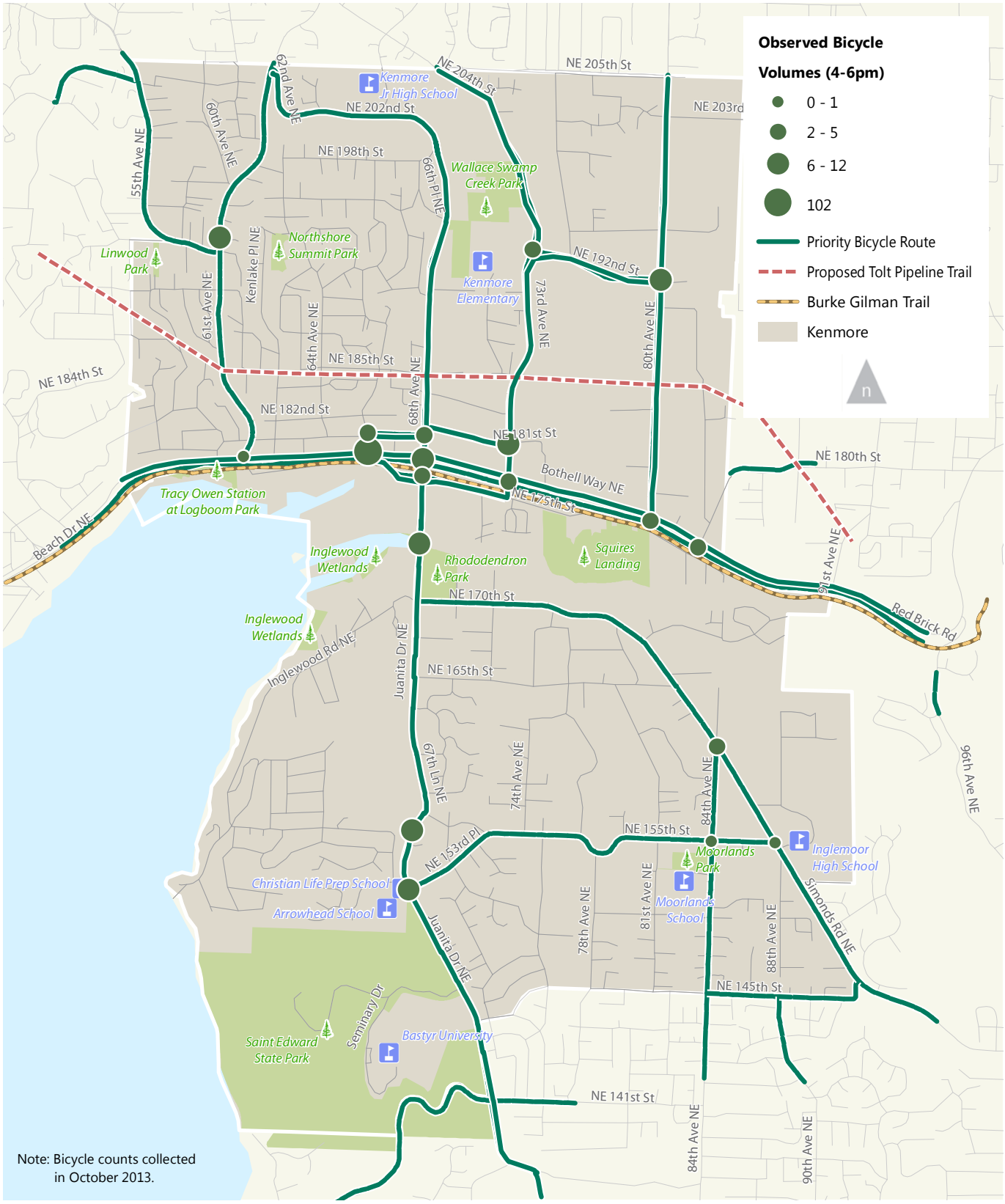

Figure 6.

Priority Bicycle Routes and Volumes

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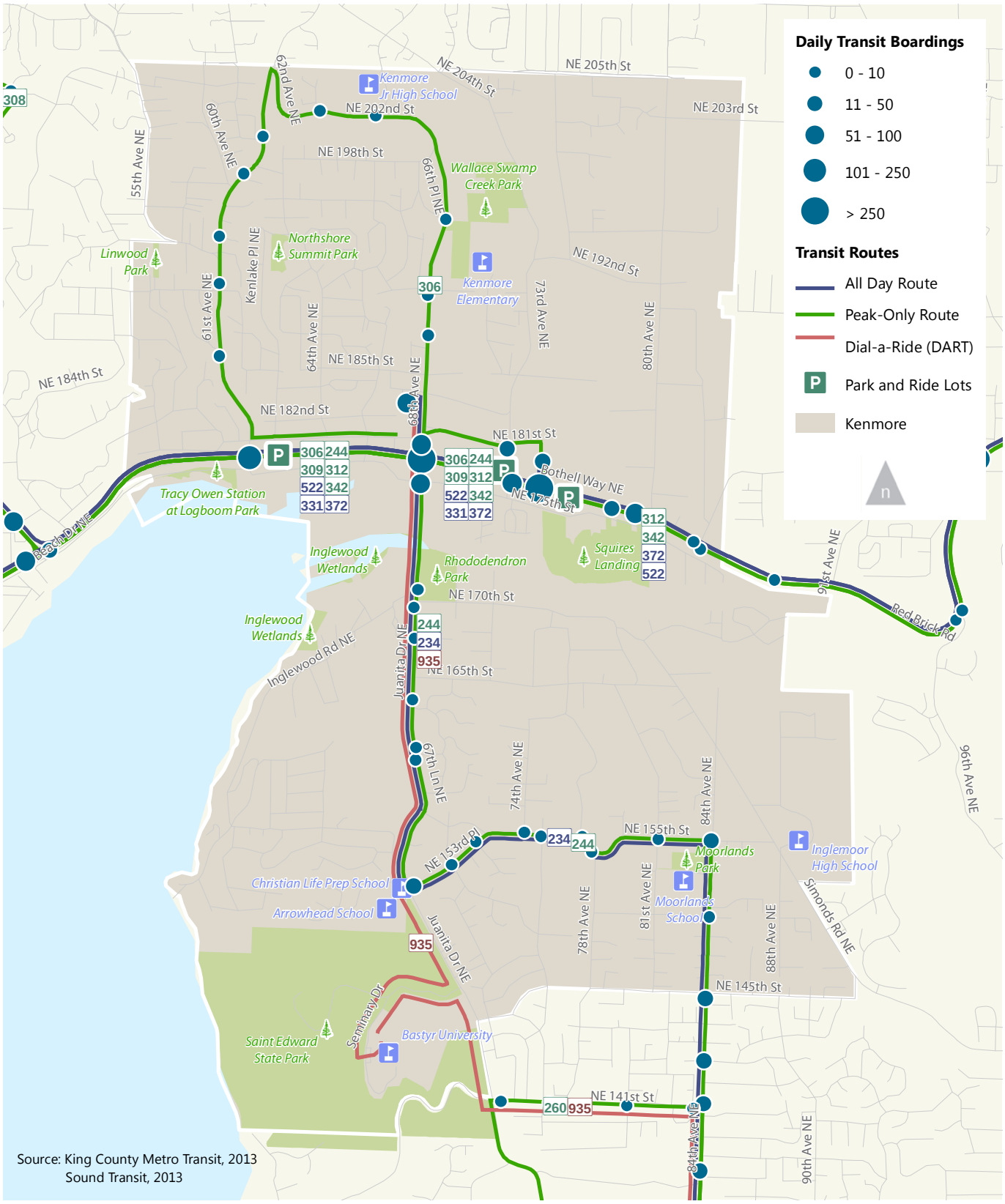
Many Kenmore residents and employees use public transit for trips around and outside of the City. Public transit in Kenmore consists of fixed-route and dial-a-ride bus service provided by King County Metro and Sound Transit. The Northshore Senior Center also provides door-to-door shuttle service to many of its patrons. The potential King County Metro service cuts are a particular concern to the Kenmore community, as these will likely affect the level of public transit service provided in the City. **Figure 7** provides further information about the twelve transit routes serving Kenmore including where these routes are located as well as boardings and alightings at key stop locations.



Source: King County Metro Transit, 2013
Sound Transit, 2013

Figure 7.

Existing Transit Facilities and Ridership

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Goods movement in Kenmore runs predominantly along the City's primary arterials of 68th Avenue, NE 170th Street, Simonds Road NE, and SR 522, as shown in **Figure 8**. Because 68th Avenue provides the only Sammamish River crossing option in Kenmore, this roadway plays a particularly important role in facilitating commerce. Beyond these primary routes, delivery vehicles use many other streets to reach their final destination. For example, NE 175th Street sees a fair amount of freight traffic due to the nature of the surrounding land uses it serves.

Source: WSDOT Freight and Goods Transportation System (FGTS), 2011

Figure 8.

Truck Routes

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Most Kenmore residents (about 80%) choose motor vehicles as their primary mode of transportation to work. Moreover, many more non-resident travelers pass through the City on SR 522 / 68th Avenue / Juanita Drive / Simonds Road. Severe congestion during peak hours illustrates this issue with many intersections experiencing long delays (see **Figure 9)**.

Analysis of Kenmore's congestion for motorists is based on the traffic counts collected in October 2013. To understand the level of congestion experienced during the evening commute, 19 intersections were evaluated based on their ability to accommodate PM peak hour demand in their existing configuration (number of lanes, traffic control, etc). Based on this analysis, intersections were scored into one of six level of service (LOS) categories that describe their operations in terms of vehicle delay. **Table 2** describes the Level of Service definitions laid out in Chapter 16 of the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000), which is the methodology currently applied to Kenmore's transportation network.

Table 2: Level of Service Definitions

Level of Service	Description
A	Free-flowing conditions.
B	Stable operating conditions.
C	Stable operating conditions, but individual motorists are affected by the interaction with other motorists.
D	High density of motorists, but stable flow.
E	Near-capacity operations, with speeds reduced to a low but uniform speed.
F	Over capacity, with delays.

The City's existing level of service policy sets the following standards for its roadways:

- Primary Arterials – LOS E or better
- Minor Arterials – LOS D or better
- Collectors – LOS C or better

It should be noted that as a highway of statewide significance, SR 522 is exempted from LOS standards.

Figure 9 shows weekday traffic volumes and **Figure 10** shows the calculated LOS at each of the 19 intersections. As the figures show, Kenmore's primary arterials see high traffic volumes and corresponding low levels of service. The traffic spillback that occurs at the intersection of SR 522 and Juanita Drive / 68th Avenue over the course of several signal cycles creates worse congestion than displayed in isolated intersection results. Field observation found nearly all intersections on SR 522 and some on 68th Avenue operating at LOS E or F. Detailed reports of LOS are available in **Appendix D-1**.

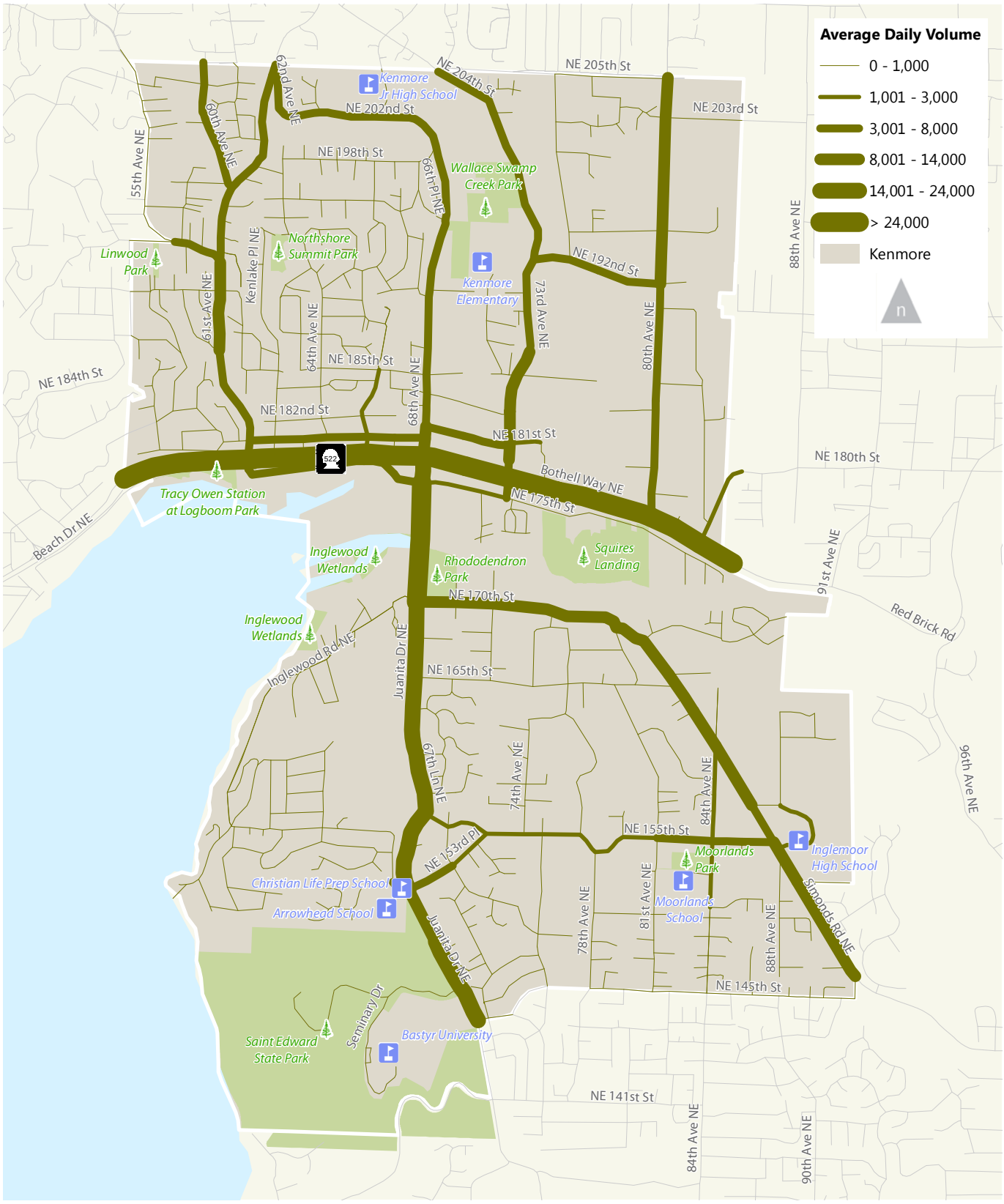

Figure 9.

Auto Average Daily Volumes

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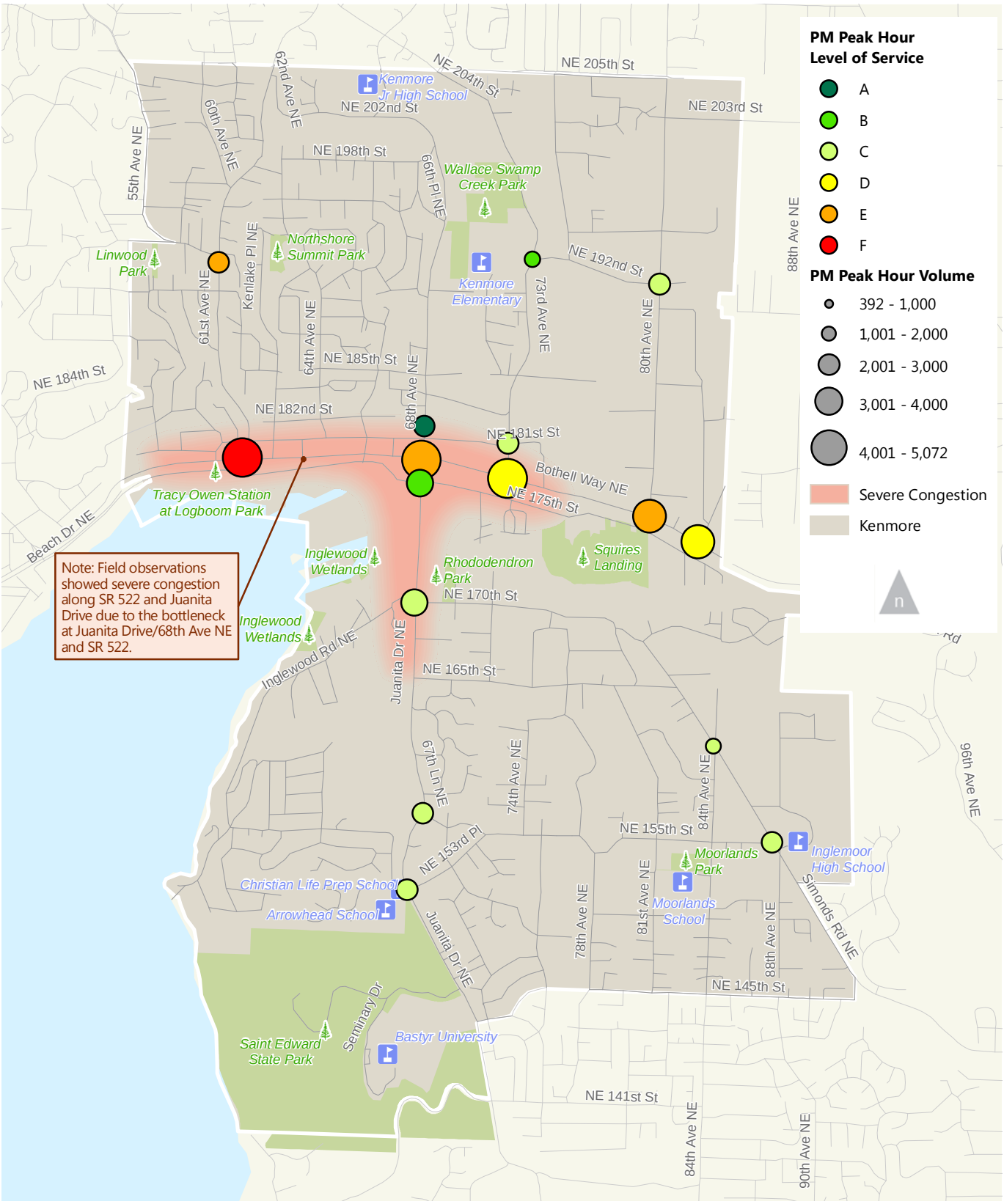

Figure 10.

Auto Level of Service and Volumes

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CURRENT CHALLENGES AND OBSERVATIONS

The City of Kenmore has several important challenges to face as it prepares for future growth and the development of its downtown core. Motor vehicle travel dominates the City's transportation framework currently and many travelers view Kenmore as a "pass-through town." Kenmore is working to create a more vibrant downtown and addressing these transportation challenges will be a key to the City's success:

- Safety, especially for pedestrians and bicyclists
- Transit availability
- Limited north-south connectivity

Safe Routes for All, especially Pedestrians and Bicycles

Since 2008, Kenmore has experienced nearly 200 traffic collisions per year. Of the 1,125 collisions in Kenmore from January 2008 to September 2013, 445 occurred on SR 522 and 206 occurred on the 68th Avenue / Juanita Drive corridor – 58 percent of the total city-wide.

Highlighting this issue, the period from fall 2013 to spring 2014 saw several deaths in crashes involving vehicles hitting pedestrians and bicyclists. **Figure 11** displays traffic crashes around the City over a five-year period spanning 2008-2013.

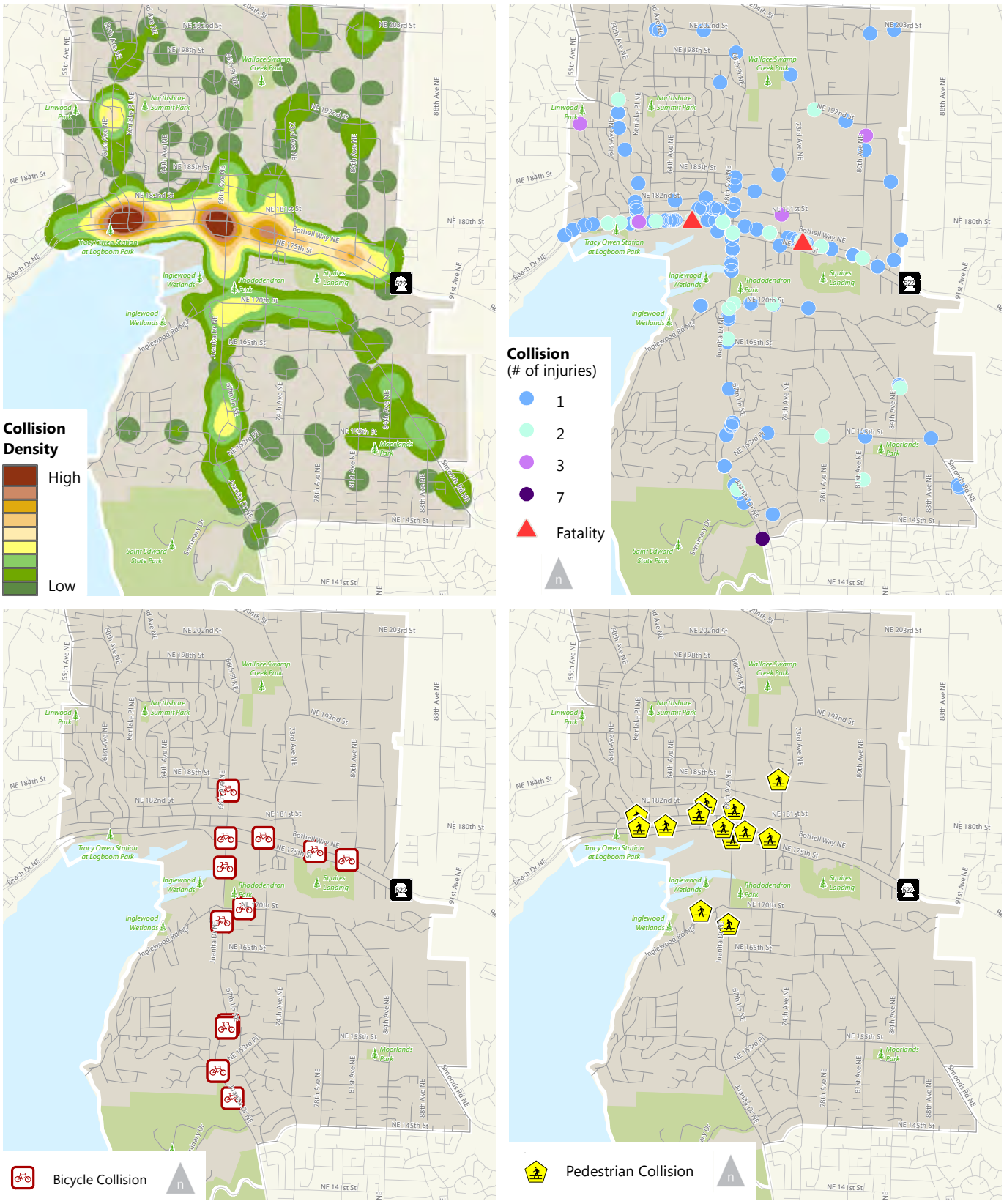

Figure 11.

Collision Density and Type

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Kenmore has made many pedestrian improvements in recent years as the City strives for a walkable downtown core. Sidewalk and crosswalk improvements along SR 522 have created a better environment for pedestrians moving around the City's commercial areas and connecting with public transit services or the Burke Gilman Trail. In 2014, the City has installed rectangular rapid flashing beacons (RRFBs) along Juanita Drive, 61st Avenue NE, as well as at other citywide arterial crossing locations.

The Burke-Gilman Trail provides a major bicycle route through Kenmore and is a major asset to the community for both transportation and recreational purposes. Creating safer and more attractive connections from neighborhoods to the trail will encourage residents to make more walking and biking trips and visitors to patronize local businesses near the trail. In July 2014, the City removed a travel lane on 61st Avenue and installed bike lanes to support north-south bicycle mobility and reduce conflicts with motor vehicles.

Transit Availability

Many people use public transit in Kenmore, as evidenced by ridership and park-and-ride occupancy levels. The potential King County Metro service cuts may hurt public transit as an attractive travel mode so the City should closely monitor these developments and advocate for its desire to maintain quality service. While Kenmore cannot control transit service levels, the City can strive to create a welcoming environment for transit.

Limited North-South connectivity

The 68th Avenue Bridge over the Sammamish River currently acts as one of Kenmore's biggest congested points for all roadway users. The narrow right of way limits motor vehicle throughput and the congestion levels make walking and bicycling unattractive options on the corridor. The intersection with SR 522 frequently backs up traffic for long stretches during peak hours.

Similarly, SR 522 serves as another major barrier to north-south connectivity. Its wide cross-section and limited number of signalized crossings affects all modes of travel, and pedestrians, in particular.

TRENDS

Aside from existing conditions and challenges, there are other factors that will affect Kenmore's transportation system. Growth in downtown Kenmore and throughout the region generally plays a role in how the City will plan the improvements to its transportation network for the future.

Downtown Development

The City is reshaping its downtown area to become more vibrant and walkable. Future redevelopment will add mixed use projects to provide housing, dining, shopping, and other services in the downtown. These land uses will generate additional travel in the downtown area

and, while many people will be able to walk or use public transit for these trips, the transportation network must be able to support this concentrated growth.

Regional Growth

Regional development outside of the City itself is the other major aspect of growth affecting Kenmore by 2035. South Snohomish County, Bothell, and Woodinville are all expected to add substantial residents and jobs during this time period and many of them travel through Kenmore en route to other regional destinations. The toll on the SR 520 bridge and potential tolling on I-90 may also cause further congestion along SR 522 if drivers opt for the route around Lake Washington to avoid the toll.

KENMORE TRAVEL DEMAND FORECASTING

The Growth Management Act (GMA) requires that the Transportation Element supports the land uses envisioned in the Comprehensive Plan. Thus, an important component of the work was forecasting how the future land uses envisioned in the City, as well as regional growth, would influence demand on Kenmore's transportation network. A description of the travel demand modeling process is provided below with more detail about land use assumptions in **Appendix D-2**.

- **The Tool.** As a part of the 2008 update, the City created a travel model with the Visum software package. This model forecasted traffic volumes during the evening commute hour (5-6pm) along many of Kenmore's key streets and intersections. This tool provides a reasonable foundation developing year 2035 forecasts, as the underlying land use assumptions have been updated to match the land use forecasts for the current Comprehensive Plan.

- **Estimate Land Use Growth in the City.** As a part of the Comprehensive Plan update, the City is planning for expected growth in housing units and employment over the next 20 years through 2035. Based on growth estimates from the Puget Sound Regional Council (PSRC) and review by City staff, Kenmore is preparing for 3,682 new housing units and 3,217 new workers by 2035. The City then allocates the growth throughout Kenmore based on adopted zoning, observed development patterns, and other city policies.

- **Capture Regional Growth Patterns.** Other communities throughout the region are going through this very same process, based on direction from PSRC. Since travel does not stop at a jurisdiction's borders, it is important to capture how regional growth could influence travel patterns on Kenmore's streets.

- **Translating Land Uses into Trips.** The next step is evaluating how the City and regional growth assumptions described above translate into walking, biking, transit, and auto trips. The travel model represents the number of housing units and employees in spatial units called traffic analysis zones (TAZs). TAZs can be as small as a few street blocks to as large as an entire neighborhood. They provide a simplified means to

represent trip making rather than modeling individual parcels. The travel model estimates trips generated from each TAZ (both inside and outside of the City) using established relationships between different land use types with trip making. These trips are then assigned onto the roadway network to estimate how much traffic would be on each street during the evening commute hour.

- **Model Refinements.** The final step is refining the forecasts based on reality checks that the travel model may not capture. In this case, forecasts were refined to reflect the more walkable, urban characteristic planned for Kenmore's downtown, by recognizing that some short trips could be made by walking and biking, rather than driving. Moreover, travel patterns were refined to reflect existing driver preferences, including recognizing the relative attractiveness of the Simonds Road / 170th Corridor over Juanita Drive.

CHAPTER 3: TRANSPORTATION GOALS, OBJECTIVES, AND POLICIES

Kenmore has established six goals to accomplish its overall vision for transportation in the future. The goals establish overarching priorities that serve the vision of this Transportation Element while objectives and policies lay out specific actions. The consolidated set of goals, objectives, and policies is included in this chapter.

- **Goal T-1**: Provide a complete transportation network that serves local and regional circulation needs and safely accommodates all users.

The City recognizes the importance of people being able to reach local destinations conveniently as well as travel to other parts of the region by walking, bicycling, riding transit, and driving. Safety of all road users is the highest priority for the transportation network and the City will evaluate safety for all modes when considering roadway projects that are part of the planned future transportation system.

- **Goal T-2**: Coordinate with local, regional, state, and federal agencies as well as non-governmental entities to develop and operate the transportation system.

The City of Kenmore is not the only body that has a stake in the future transportation system. Neighboring cities, King and Snohomish Counties, the State of Washington, and other agencies and organizations play a role in getting around Kenmore. The City of Kirkland has plans to improve safety along Juanita Drive and Kenmore is actively coordinating with Kirkland to support continuity along the corridor. Around the region, Kenmore is working with King County Metro and Sound Transit to support transit operations in the City. SR 522, Kenmore's primary east-west corridor, is operated by WSDOT and the City works with the department consistently to maintain travel conditions along the route. The City also works with local schools, advocacy groups, senior centers, and other organizations that have interests in transportation.

- **Goal T-3**: Promote a transportation system that is sustainable from both fiscal and environmental perspectives with participation from both the public and private sectors. Kenmore values and supports its environment through taking both monetary and environmental cost into account when considering improvements to the transportation network. The City leads the way by establishing plans and policies that support sustainability

and expects other bodies from the public and private sectors to follow suit in pursuing these same interests.

- **Goal T-4**: Encourage public transportation, non-motorized travel, and other transportation strategies that reduce the need for automobile travel, especially by single-occupant vehicles (SOV).

While many Kenmore residents choose to travel by car for nearby trips and to go elsewhere, the City supports providing options for people to get around by more active transportation modes. By creating a safe and welcoming transportation system for all users, the City can support a vibrant downtown core that is accessible in several ways. Kenmore's geographic size makes walking, bicycling, and transit attractive options for getting around with proper facilities in place.

- **Goal T-5**: Maintain the availability of safe air travel services in Kenmore.

The Kenmore Air Harbor is an important employer and provider of regional transportation services. Any future improvements to the City's transportation network will recognize the role of the Air Harbor and be planned accordingly.

- **Goal T-6**: Provide a transportation system that facilitates freight mobility and economic prosperity.

In addition to moving people around Kenmore, the City also recognizes the importance of moving goods to support the local and regional economy. Stores need items to stock their shelves while manufacturers must get their products to customers outside of the City and all of these needs rely on freight and delivery trucks. While not all streets in Kenmore need to support these large vehicles, there are important routes that the City prioritizes to support goods movement and economic activity.

GOAL T-1. PROVIDE A COMPLETE TRANSPORTATION NETWORK THAT SERVES LOCAL AND REGIONAL CIRCULATION NEEDS AND SAFELY ACCOMMODATES ALL USERS.

Objective T-1.1: Develop and maintain a Layered Network that provides connectivity and recognizes that not all streets provide the same quality of travel experience. Classify streets as State Highways, Boulevards, Urban Avenues, Neighborhood Connections, and Local Streets.

Policy T-1.1.1: Ensure that the Layered Network continues to provide for all varieties of street uses including: regional mobility and cross-town trips, commuting, shopping, and recreational travel, property and business access, and parking, regardless of mode.

Policy T-1.1.2: Guide the development of new streets and maintenance of existing streets to form a well-connected network that provides for safe, direct, and convenient access to the existing roadway network for automobiles, bicycles, and pedestrians. Transportation investments downtown that

reinforce the City's vision of developing a compact, pedestrian and transit-oriented center shall be the City's investment priority.

Policy T-1.1.3: New residential development should be consistent with the Future Roadway Network and new streets or extensions should be publicly owned. Cul-de-sac construction should require the approval of the City engineer.

Policy T-1.1.4: Develop a Street Planning Toolkit that recognizes and balances the competing needs of mobility and safety in residential neighborhoods.

Policy T-1.1.5: Coordinate with park-and-ride and transit service providers to pursue improvement projects that are consistent with the Layered Network and which benefit transit users in Kenmore.

Policy T-1.1.6: Continue to enhance the City's Layered Network by using the following methods:

a. Require dedication of rights-of-way as a condition for development when the need for such rights-of-way is linked to the development or where shown on the *Future Roadway Network*;
b. Request donations of rights-of-way to the public;
c. Purchase rights-of-way in accordance with State laws and procedures; and
d. Acquire development rights and easements from property owners.

Policy T-1.1.7: Maintain criteria to consider street vacations. Criteria should address:

a. State laws regarding street vacations;
b. Consistency with the *Layered Network*, including the effects of the street vacation on existing and future circulation;
c. Ability to utilize excess right-of-way for other public purposes such as parks, recreation, waterfront access, view points, or affordable housing;
d. Public benefit of the street vacation; and
e. Fair compensation.

Objective T-1.2: Design and maintain streets consistent with the community vision.

Policy T-1.2.1: Consider the environmental consequences of street design standards and maintenance practices. When preparing City-sponsored street or driveway design projects or reviewing development proposals the City should follow steps outlined in the *Street Planning Toolkit.*

Policy T-1.2.2: Require new development to minimize and consolidate access points along all principal and minor arterials, but especially along SR 522 and

any new arterials that may be developed. Coordinate this effort with local businesses, property owners, and WSDOT.

Policy T-1.2.3: Protect rights-of-way from encroachment by structures, fences, retaining walls, substantial landscaping, or other obstruction to preserve the public's use of the right-of-way, safety, and mobility. Protection methods may include minimum setback requirements for property improvements allowing future roadway expansion, street use agreements, and development of specific guidelines regarding installation and maintenance of landscaping within the public right-of-way.

Policy T-1.2.4: Maintain a right-of-way use permit application process and criteria to ensure that temporary development and utility construction activities do not create adverse safety, environmental, or traffic impacts.

Figure 12: Street Planning Toolkit

When planning for new streets or redesigning existing ones, the City should select uniform designs and maintenance methods that create a safe, effective, environmentally sensitive, and welcoming transportation system for all users in line with other Comprehensive Plan policies. Throughout this process, the City must consider the various financial and non-financial costs of development and operation of the transportation system in addition to the concerns of interested parties.

- Align and locate transportation facilities away from environmentally sensitive areas, consistent with other Comprehensive Plan policies;
- Mitigate significant environmental impacts whenever possible;
- Whenever possible, incorporate the use of native grasses, shrubs, and trees, drought-resistant species, and pervious pavement in the design of streets, landscape strips, and medians.
- Enhance the safety of pedestrians, bicyclists, and motorists through sidewalk and on-street facility location, design, and maintenance, lighting requirements, signs, lane widths and geometrics, and access to properties using the Layered Network as a guide.
- Consider the conflicts between different users in the design of multi-purpose paths, including the use of separate paths, striping different lanes for pedestrians and cyclists, speed limits, and increased use of protected bicycle facilities on streets to provide additional options for cyclists.
- Establish parking standards that discourage excessive parking through shared parking, demand studies, and other incentives or requirements to reduce underutilized parking lots and encourage alternate modes of travel.

Objective T-1.3: Improve street safety and function with a particular emphasis on the "Target Zero" goal (adopted City Resolution 14-235) -- by 2025 to have no pedestrian or bicycle deaths or serious injuries as the result of a collision with a motorized vehicle.

Policy T-1.3.1: Continue to collect data on traffic counts and collisions to support studies, operational changes, and designs; enhance efforts when possible.

Policy T-1.3.2: Concentrate collision analysis at the most critical locations through identifying areas with a high number of incidents.

Policy T-1.3.3: Include emergency service providers in review of roadway designs to ensure emergency vehicle passage. Design considerations include dead-end street lengths, turn-arounds, travel lane widths, maximum road grades, and parking location.

Policy T-1.3.4: Develop a strategy that addresses education and enforcement measures to improve safety conditions for pedestrians and bicyclists on Kenmore's streets.

Objective T-1.4: Develop a transportation system that achieves the following level of service (LOS) metrics:

Vehicular LOS: boulevards should exhibit LOS E or better, urban avenues and neighborhood connections LOS D or better, and local streets LOS C or better. LOS along SR 522 and 68th Avenue / Juanita Drive will be measured as average delay at the corridor level rather than the intersection level.

Objective T-1.5: Perform periodic review and monitoring (every 2-4 years) of the transportation system to ensure it adequately serves existing and future land uses.

Policy T-1.5.1: Forecast travel to identify needed transportation improvements. The forecasts should:

a. Account for expected changes in personal travel behavior and feasibility of mode choices;
b. Use current data and policies;
c. Be compatible with other jurisdictions; and
d. Reflect the Vision Statement and land use policies.

Policy T-1.5.2: Identify the improvements and strategies needed to fully implement the City's *Layered Network* and meet the level-of-service requirements for transportation.

Policy T-1.5.3: Monitor growth in population and employment in relation to the land use and growth assumptions of the Transportation Element. Reassess the Land

Use and Transportation Elements as needed to ensure that planned improvements will address the potential impacts of growth.

Policy T-1.5.4: Require construction of necessary transportation improvements from the private or public sector at the time of development or within six years of development.

PEDESTRIAN LOS – SIDEWALK REQUIREMENTS

LOS	Within Pedestrian Priority Network
🟢	Pedestrian facility* where indicated in Pedestrian Priority Network, with a buffer
🟡	Pedestrian facility* provided on one side of the street
🔴	No pedestrian facility

*Pedestrian facility includes sidewalks and shoulders protected by a raised curb.

BICYCLE LOS – FACILITY REQUIREMENTS

LOS	Within Bicycle Priority Network
🟢	Provides recommended treatment* recommendation, as shown within Bicycle Priority Network
🟡	Provides a lower-level facility* than recommended in the Bicycle Priority Network
🔴	No Facility

*Bicycle facilities – lowest-level to highest-level of treatment: shared; bike lanes; buffered bike facility; separated trail.

TRANSIT PRIORITY CORRIDOR LEVEL OF SERVICE

LOS	Transit Stop Amenities	Pedestrian Access	Frequency of Service
🟢	High level	Sidewalks and marked crosswalks serving stops	All day service. Peak service 15 minutes or less, midday 30 minutes or less
🟡	Some amenities	Sidewalks and marked crosswalks serving some stops	All day service. Peak services 30 minutes or less, midday service 60 minutes or less
🔴	Little or no amenities	General lack of sidewalks and marked crosswalks	Low level of service

GOAL T-2. COORDINATE WITH LOCAL, REGIONAL, STATE, AND FEDERAL AGENCIES AS WELL AS NON-GOVERNMENTAL ENTITIES TO DEVELOP AND OPERATE THE TRANSPORTATION SYSTEM.

Objective T-2.1: Support and complement the transportation functions of the State of Washington, transit agencies, and other entities responsible for transportation facilities and services to meet Kenmore's needs.

Policy T-2.1.1: Coordinate planning, construction, and operation of transportation facilities and programs with the State, Counties, neighboring cities, Puget Sound Regional Council, Metro, Sound Transit, and other entities. This coordination will be achieved by:

a. Participating in the transportation-related activities of King County and advisory committees;
b. Working with other jurisdictions to plan, fund, and implement multi-jurisdictional projects necessary to meet shared transportation needs; and
c. Making transportation decisions consistent with the transportation plan and with the State, Puget Sound Regional Council, transit agencies, King County, Snohomish County, and neighboring jurisdictions.

Policy T-2.1.2: Support increased transit service for the Kenmore Downtown area based upon existing and future population and employment densities.

Policy T-2.1.3: Work with private property owners to create a loop road circulation system around the Downtown area providing for automobile and non-motorized travel to achieve community identity, housing, community linkages, and economic development goals.

Policy T-2.1.4: Coordinate planning, construction, and operation of transportation facilities and programs with the State, Counties, neighboring cities, Puget Sound Regional Council, Metro, Sound Transit, and other entities to ensure critical infrastructure is in place to respond to both natural and human-caused disasters.

Objective T-2.2: Cooperate with neighboring cities, King and Snohomish Counties, transit agencies, Puget Sound Regional Council, and the Washington State Department of Transportation to address regional transportation issues.

Policy T-2.2.1: In partnership with State, regional and local agencies, address regional transportation issues. These include:

a. Regional air, rail, and water transportation facilities and services;
b. Operation of and improvements to the State highway network, including SR 522;
c. Improvements to roadways connecting Kenmore to the surrounding region, including SR 522;
d. Improvements to major roadways bordering, yet having an influence upon internal traffic flows within Kenmore, including those located in Snohomish County;
e. Improved access to I-5 and I-405 corridors and other employment corridors;
f. Regional pedestrian and bicycle facility needs; and
g. Transit connections to the region's urban centers.

Policy T-2.2.2: Work with neighboring jurisdictions to ensure that new development outside of Kenmore does not unreasonably affect transportation systems, levels of service, and the quality of life in Kenmore. Utilize the following approaches:

a. Promote thoughtful planning by neighboring jurisdictions consistent with comprehensive plans; and
b. Support the establishment of a regional traffic planning and mitigation payment system.

Policy T-2.2.3: Coordinate transit levels of service with King County Metro, Sound Transit, and private transit operators.

Objective T-2.3: Ensure regional transportation improvements and services are compatible with the Comprehensive Plan and the City's *Layered Network*.

Policy T-2.3.1: Continue to take a lead role in the planning, design, and implementation of SR 522 improvements within Kenmore. Encourage multi-agency cooperation (such as WSDOT and Sound Transit) and ensure that improvements in Kenmore are coordinated with adjacent communities, such as Lake Forest Park and Bothell.

Policy T-2.3.2: Work with the City of Kirkland to coordinate planned improvements along Juanita Drive.

Policy T-2.3.3: In conjunction with WSDOT, study potential improvements along SR 522, including at 68th Avenue and potential future Sammamish River crossings, to address better north-south travel in the community.

Policy T-2.3.4: Work with WSDOT to identify and mitigate the impact that reconstruction and toll projects have on Kenmore; particularly on SR 522.

Objective T-2.4: Work with business leaders, private owners, and other local organizations to support transportation efforts in reaching mutual goals.

Policy T-2.4.1: Attract and retain business enterprises to Kenmore by managing traffic growth through multi-modal improvements including: local and regional transit improvements, carpool and vanpool programs, pedestrian and bicycle improvements, transportation demand management measures, and roadway efficiency improvements.

Policy T-2.4.2: Ensure that regulations require appropriate parking for business customers.

Objective T-2.5: Position Kenmore to respond to technological innovations, such as electric vehicles and driverless cars.

Policy T-2.5.1: Coordinate with PSRC and other regional entities to understand regional plans for electric vehicle charging and accommodation of other alternative fuel sources.

Policy T-2.5.2: Review vehicle regulations periodically to ensure accordance with current technologies that can support Kenmore's transportation system.

GOAL T-3. PROMOTE A TRANSPORTATION SYSTEM THAT IS SUSTAINABLE FROM BOTH FISCAL AND ENVIRONMENTAL PERSPECTIVES WITH PARTICIPATION FROM BOTH THE PUBLIC AND PRIVATE SECTORS.

Objective T-3.1: Emphasize priorities of the community when reviewing circulation system improvements needed to fully implement the City's *Layered Network*, including addressing safety, maintenance, congestion relief, multi-modal projects, transit, and growth.

Objective T-3.2: Regularly prepare and adopt a Six-Year Transportation Improvement Program to implement the Transportation Element.

Policy T-3.2.1: In preparation of specific planning and implementation documents, including the Six-Year Transportation Improvement Program, the City will involve the public, interested agencies, and other jurisdictions through a clearly stated process that provides opportunities for review and comments regarding the City's priorities and recommendations.

Policy T-3.2.2: Ensure that plans consider the best available lifecycle cost of an improvement, including operation and maintenance costs; environmental, economic, and social impacts; and any replacement or closure costs.

Objective T-3.3: Leverage City resources and secure adequate funding sources for transportation improvements and services through a variety of mechanisms, including those required as a result of development.

Policy T-3.3.1: Seek to secure adequate funding sources for transportation through a variety of methods. These methods may include:

a. Seeking federal and state funds;
b. Encouraging public/private partnerships for financing transportation projects that remedy existing transportation problems or foster economic growth in Kenmore;
c. Encouraging the use of Local Improvement Districts (LIDs) by property owners to upgrade roads to meet City road standards; and
d. Requiring impact fees for new development.

Policy T-3.3.2: Ensure shared responsibility of mitigating development impacts between the public and private sector. Require that developers contribute their fair share toward transportation improvements needed to accommodate development. Impact mitigation efforts may include:

a. Requiring developers to assist in providing additional transportation facilities and services in proportion to the impacts and needs generated by the development;
b. Encouraging developers to design projects that generate less traffic; and
c. Requiring impact fees for new development.

Objective T-3.4: Ensure improvements to the transportation network occur concurrently with development.

Policy T-3.4.1: Allow development only when those proposals are concurrent with specific documentation or plans showing how the transportation system can adequately support existing and proposed development needs.

Objective T-3.5: Cooperate regionally and strive locally to improve air quality and surface water quality.

Policy T-3.5.1: Support ongoing efforts for improving air quality throughout the Kenmore area and develop a transportation system compatible with the goals of the Federal and State Clean Air Acts. The City will:
a. Support vehicle emissions testing and cleaner burning fuels;
b. Coordinate with King County Metro, Sound Transit, and other jurisdictions on Commute Trip Reduction programs for major employers in Kenmore; and
c. Promote Transportation Demand Management programs.

Policy T-3.5.2: Design roadway improvements to be consistent with the City's Surface Water Management Plan and stormwater regulations. Install permeable pavements and biofiltration swales where possible to reduce runoff.

Policy T-3.5.3: Support travel modes that minimize air pollutants and greenhouse gas emissions.

GOAL T-4. ENCOURAGE PUBLIC TRANSPORTATION, NON-MOTORIZED TRAVEL, AND OTHER TRANSPORTATION STRATEGIES THAT REDUCE THE NEED FOR AUTOMOBILE TRAVEL, ESPECIALLY BY SINGLE-OCCUPANT VEHICLES (SOV).

Objective T-4.1: Support expansion of local and regional transit service within Kenmore that provides linkages to regional destinations.

Policy T-4.1.1: Examine the opportunities for increasing transit service with Metro and Sound Transit with priorities tailored to meet the needs of the community by:
a. Supporting additional routes or connections to surrounding communities and employment centers;
b. Requiring transit facilities as mitigation where appropriate for new developments;

c. Identifying and developing locations that are accessible to public transportation for use as park-and-pool or park-and-ride lots;
d. Requiring adequate right-of-way, sidewalk, and roadway improvements where transit stops are located; and
e. Adopting design standards that promote safety and aesthetics in accordance with the *Street Planning Toolkit*.

Policy T-4.1.2: Work with Metro and other transit providers to establish a local circulator transit service that provides intra-community transit service, connecting north and south Kenmore. The local circulator service would provide connections to the Downtown, major commercial and mixed centers in Kenmore, park-and-ride lots, and other key destinations.

Policy T-4.1.3: Maintain HOV lanes on SR 522 for use by transit and business access only to encourage transit usage and improvements, and to preserve its use for transit over the long term.

Policy T-4.1.4: Support high capacity transit service, preferably light rail, on or along SR-522, along with a light rail station in Kenmore.

Policy T-4.1.5: Encourage development and maintenance of passenger ferry or other water-based transportation services on Lake Washington to connect Kenmore to other regional destinations.

Objective T-4.2: Work with King County and transit agencies to provide appropriate locations and encourage maximum usage of park-and-ride facilities.

Policy T-4.2.1: Design structured parking facilities with ground floor retail to encourage transit-oriented development, improve transit access to support the downtown plan, and improve and encourage non-motorized travel to and from park-and-ride lots.

Policy T-4.2.2: Explore the potential for joint use of park-and-ride lots with the public and private sectors for commercial and residential use.

Objective T-4.3: Create a sidewalk and pedestrian trail network linking neighborhoods, the Downtown, and key community destinations consistent with that laid out in the *Pedestrian Priority Network*.

Policy T-4.3.1: Focus early sidewalk improvements on the *Pedestrian Priority Network*. The first priority should be completing the sidewalk system on *Urban Avenues*.

Policy T-4.3.2: Prioritize future pedestrian facility improvements that increase pedestrian safety, link to key destinations, promote multi-modal trips, improve conditions for the elderly and persons with disabilities, maintain safe condition of existing sidewalks, and meet other priorities for pedestrians in Kenmore.

Policy T-4.3.3: Require development to provide additional sidewalks along both sides of streets or on one side of the roadway in return for contribution to a sidewalk fund to complete missing links, increase pedestrian safety, and provide linkages to key destinations in accordance with the *Pedestrian Priority Network*.

Policy T-4.3.4: Based upon the City's sidewalk inventory, denote some neighborhoods and the streets within them as "sidewalk free", considering the criteria laid out in the *Pedestrian Priority Network*. Also establish a mitigation fee system applicable to new development in "sidewalk free" areas to complete critical sidewalk links along adjoining streets or desirable trails.

Policy T-4.3.5: As part of the *Pedestrian Priority Network*, provide crosswalks at key locations such as in the Downtown, on SR 522 near park-and-ride lots and transit stops, near schools, and at other locations with significant pedestrian volumes.

Objective T-4.4: Create a comprehensive *Bicycle Priority Network* in Kenmore.

Policy T-4.4.1: Require roadway development along the *Bicycle Priority Network* to include bicycle facilities.

Policy T-4.4.2: Prioritize future bicycle facility improvements that increase safety for bicyclists, link to key destinations, promote multi-modal trips, complete gaps in the existing bicycle system, provide linkages to the Burke-Gilman Trail and other key off-road facilities, and meet other priorities for bicyclists in Kenmore.

Policy T-4.4.3: Encourage off-road non-motorized vehicle facilities on designated trails. Promote the on-going maintenance and use of the Burke-Gilman Trail.

Policy T-4.4.4: Promote non-motorized vehicle trails in utility corridors such as the Tolt Pipeline where consistent with environmental constraints.

Policy T-4.4.5: Allow for a secondary pedestrian and bicycle loop around the downtown area with waterfront connections.

Policy T-4.4.6: Accommodate bicycles and non-motorized vehicles in the design and management of the City's *Layered Network* in accordance with the *Bicycle Priority Network*.

Objective T-4.5: Implement programs and regulations that help reduce the use of single occupant vehicles (SOV).

Policy T-4.5.1: Create and implement development standards that:

a. Encourage continuous, direct, convenient non-motorized linkages;

b. Provide sufficient illumination in parking lots and along travel routes to increase visibility and security for non-motorists;
c. Minimize front yard parking along commercial street fronts, particularly in the Downtown;
d. Establish parking standards that discourage excessive parking through shared parking, demand studies, and other incentives or requirements, to reduce underutilized parking lots and encourage alternate modes of travel;
e. Promote mixed-use development in the Downtown; and
f. Require minimum densities through floor area ratios, employment levels, and / or business retention and expansion activities in the Downtown and major commercial areas to support transit.

Policy T-4.5.2: Prepare a Commute Trip Reduction Ordinance applicable to large employers in accordance with State laws.

Policy T-4.5.3: Support the goals of the Puget Sound Regional Council's Regional TDM Action Strategy to manage travel behavior and reduce vehicle trips.

GOAL T-5. MAINTAIN THE AVAILABILITY OF SAFE AIR TRAVEL SERVICES IN KENMORE.

Objective T-5.1: Support the continued operation of the Air Harbor to provide private air transportation services to the region and community.

Policy T-5.1.1: Recognize the Kenmore Air Harbor as a business that is economically and historically significant to the community.

Objective T-5.2: Plan for appropriate uses and activities in the vicinity to minimize impacts to and from the Air Harbor.

Policy T-5.2.1: In consultation with the State and the Air Harbor operator, comply with State laws requiring plans and regulations that discourage the siting of incompatible uses adjacent to the Air Harbor.

Policy T-5.2.2: Ensure plans and regulations address the Air Harbor as an allowed use and, where appropriate, acknowledge compatibility issues including height hazards, safety, and noise that can affect the long-term viability of the Air Harbor. Consider WSDOT guidelines addressing airports and compatible land use as well as guidance from the Puget Sound Regional Council Airport Compatible Land Use Program. Allow compatible uses, buildings, or land or water activities in the vicinity that do not present safety problems to normal Air Harbor operations, or that would not be sensitive to noise from the Air Harbor operations.

Objective T-5.3: Work with the Air Harbor to ensure compliance with appropriate noise and safety standards.

Policy T-5.3.1: Work in partnership with the Air Harbor to address noise management and compliance with Federal, State and local noise ordinances. Consider a special overlay or property title process that identifies the noise-related impacts of the Air Harbor.

Policy T-5.3.2: Work in partnership with the Air Harbor to ensure safe operations in compliance with Federal and State aeronautic safety requirements.

GOAL T-6. ***PROVIDE A TRANSPORTATION SYSTEM THAT FACILITATES FREIGHT MOBILITY AND ECONOMIC PROSPERITY.***

Objective 6.1: Support the efficient movement of goods in Kenmore's commercial areas to support the local economy.

Policy T-6.1.1: Consider the needs for delivery and collection of goods at local businesses by truck and ensure future transportation improvements address the needs of large trucks on the *Freight Priority Network*.

Policy T-6.1.2: Monitor commercial truck traffic to ensure use of appropriate corridors to support efficient movement of goods and safety of local streets. Utilize the WSDOT classification system to determine freight and goods movement routes.

Objective 6.2: Accommodate local deliveries and other goods movement that is necessary to serve Kenmore residents.

Policy 6.2.1: Work with local industries and freight companies to understand their needs for adequately moving goods.

Policy 6.2.2: Ensure roadway improvements do not unnecessarily impede delivery vans and other small freight trucks.

CHAPTER 4: FUTURE TRANSPORTATION VISION

Kenmore envisions a future transportation system that serves all users and modes of travel by offering a safe and robust network of walkways, bicycle facilities, intersections, and roadways. This chapter describes Kenmore's vision for its future transportation network and the infrastructure improvements that will get the City there.

As identified in this plan, most of the improvements are focused on the development of a 'layered' transportation network, which focuses less on providing vehicular capacity and more on accommodating all modes of travel. While some of the roadway improvements are needed to meet the City's vehicular level of service (LOS) standard, most of the future improvements focus on providing safer and more complete facilities for walking, bicycling, and riding transit in order to improve access and mobility for all road users.

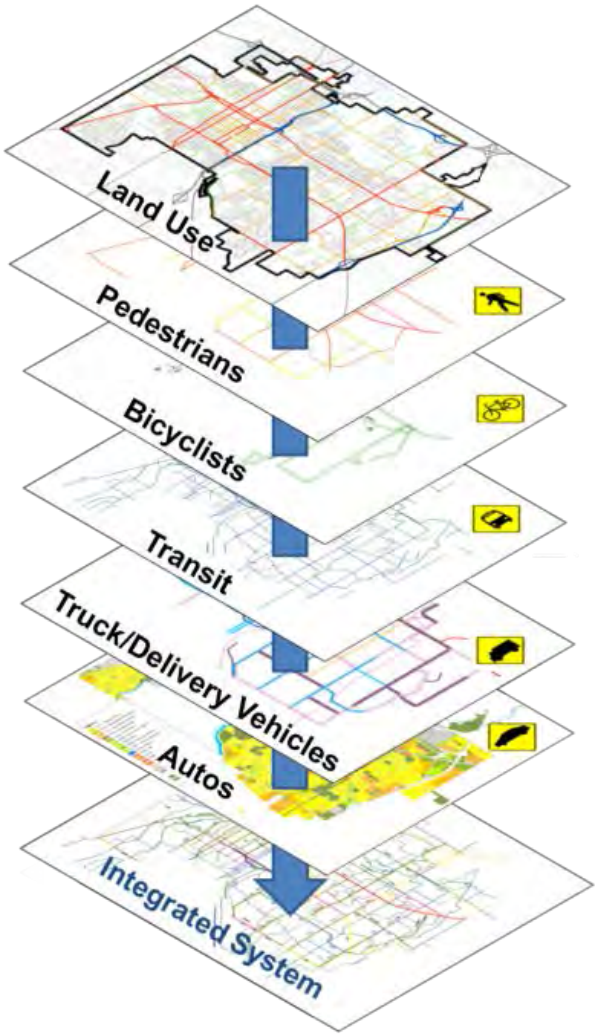
INTRODUCTION TO THE LAYERED NETWORK

It can be a challenge for a single roadway to meet the demands and expectations of all modes at any given time. This is also generally not desirable from a user or a planning perspective.

In response to this challenge, the City of Kenmore has adopted a layered network approach that focuses on how the City's transportation network can function as a system to meet the needs of all users. In such a system, individual travel modes are prioritized on different facilities throughout the overall network. **Figure 13** illustrates the concept of a layered network.

The City will implement this layered network through a system of roadway typologies that define each street's user priorities and associated infrastructure needs.

Figure 13: Layered Network Concept



ROADWAY TYPOLOGIES

The following street typologies dictate the form and intended functions of roadways in Kenmore. While some roadways are intended to serve regional travel and vehicle circulation, other facilities provide safe options for a more multimodal user base. A description of each roadway type follows and detailed fact sheets are available in **Appendix D-3**.

The roadway types are as follows and are summarized in **Figure 14**:

- Boulevard – Most conducive for crosstown trips and focus on transit, freight, and auto mobility.
- Urban Avenue – Signals the entry into a higher-density commercial or residential zone. Emphasizes multimodal interactions and travel experience.
- Neighborhood Connection – Provides a safe and enjoyable travel experience for bicycles and pedestrians.
- Local Street – Prioritizes local access (driveways, on-street parking) and pedestrian travel. Bicycles share the roadway.

MODAL NETWORKS

As the roadway descriptions specify, each type focuses on and prioritizes a different balance of users, both in terms of trip purpose and travel mode. Determining how the entire transportation network fits together in Kenmore requires identifying desirable streets for each mode, combining them to locate overlaps, and then assigning priority to certain modes. The following sections review the priority networks for each mode and establish their level of service standards.

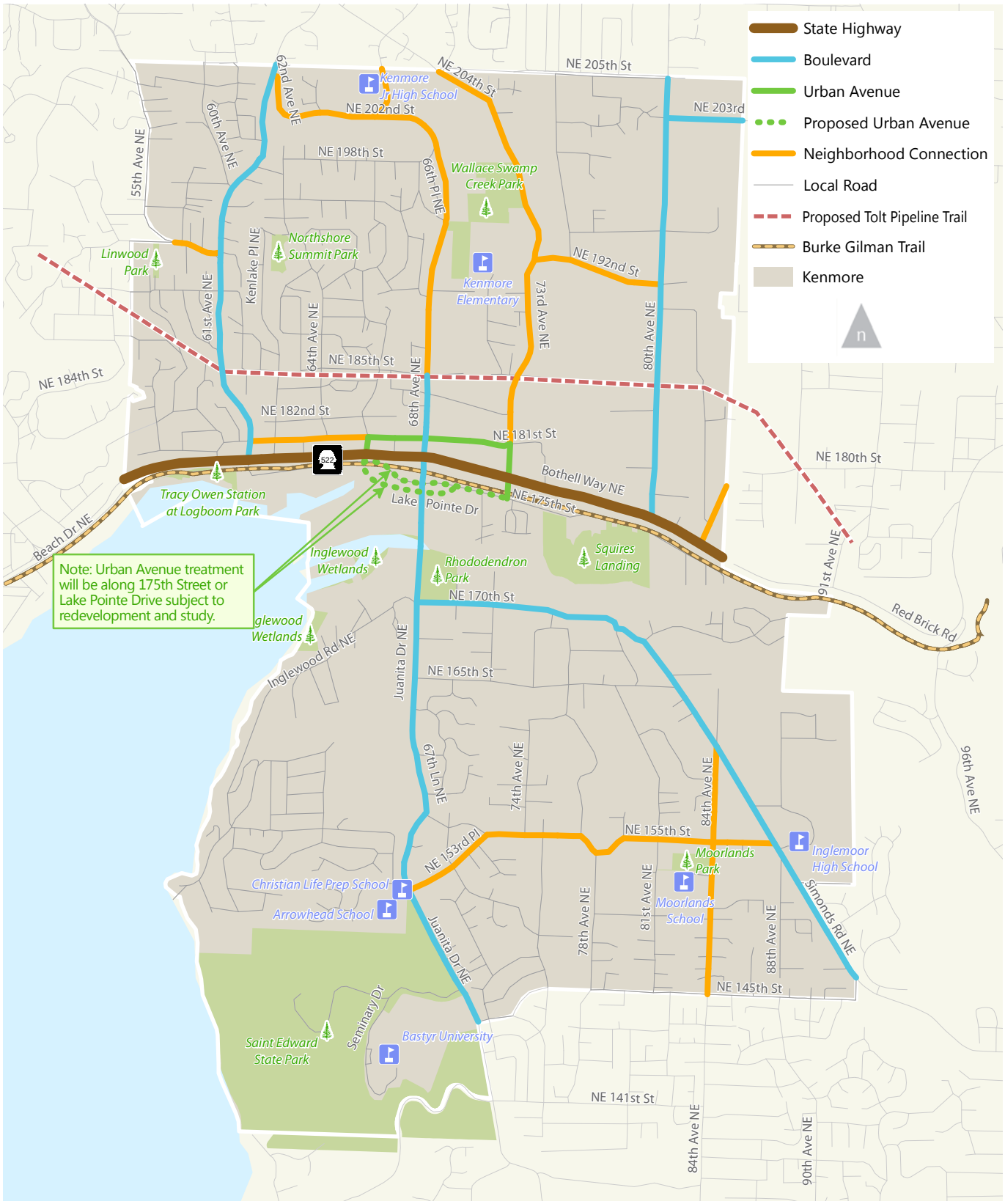


Figure 14.

City's Layered Network

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Walking

While Kenmore's local streets tend not to need fully separate sidewalks or paths due to their low traffic volumes and slow speeds, the City's boulevards, urban avenues, and neighborhood connections do warrant pedestrian infrastructure. Dense areas with commercial land uses and streets that serve schools are particularly important for safe walking, as they support more pedestrians and may have a larger portion of vulnerable users than other streets. **Figure 15** highlights the *Pedestrian Priority Network*, including examples of walking facilities that Kenmore should include on these streets, as well as whether pedestrian infrastructure should be provided on both sides or one side of the street.

Building on the *Pedestrian Priority Network* above, **Table 3** establishes the level of service standard for pedestrian facilities around the City. The best level of service for walking, indicated in the green row, would provide walkways with buffers exactly as shown in the *Pedestrian Priority Network*. The yellow level of service, which meets the basic needs for safe walking around the City, requires sidewalks or shoulders protected by raised curbs on one side of all the streets called out in the *Pedestrian Priority Network*. Incomplete or missing pedestrian facilities would fall into the red category and not satisfy the City's LOS for walking.

In addition to the presence of pedestrian facilities along a corridor, the City also emphasizes the importance of safe pedestrian crossings. Particularly downtown and within ½ mile of schools, the City is looking to provide enhanced crossings at regular intervals

Table 3: Pedestrian LOS – Sidewalk Requirements

LOS	Within Pedestrian Priority Network
	Pedestrian facility* where indicated in Pedestrian Priority Network, with a buffer
	Pedestrian facility* provided on one side of the street
	No pedestrian facility

* Pedestrian facility includes sidewalks and shoulders protected by a raised curb

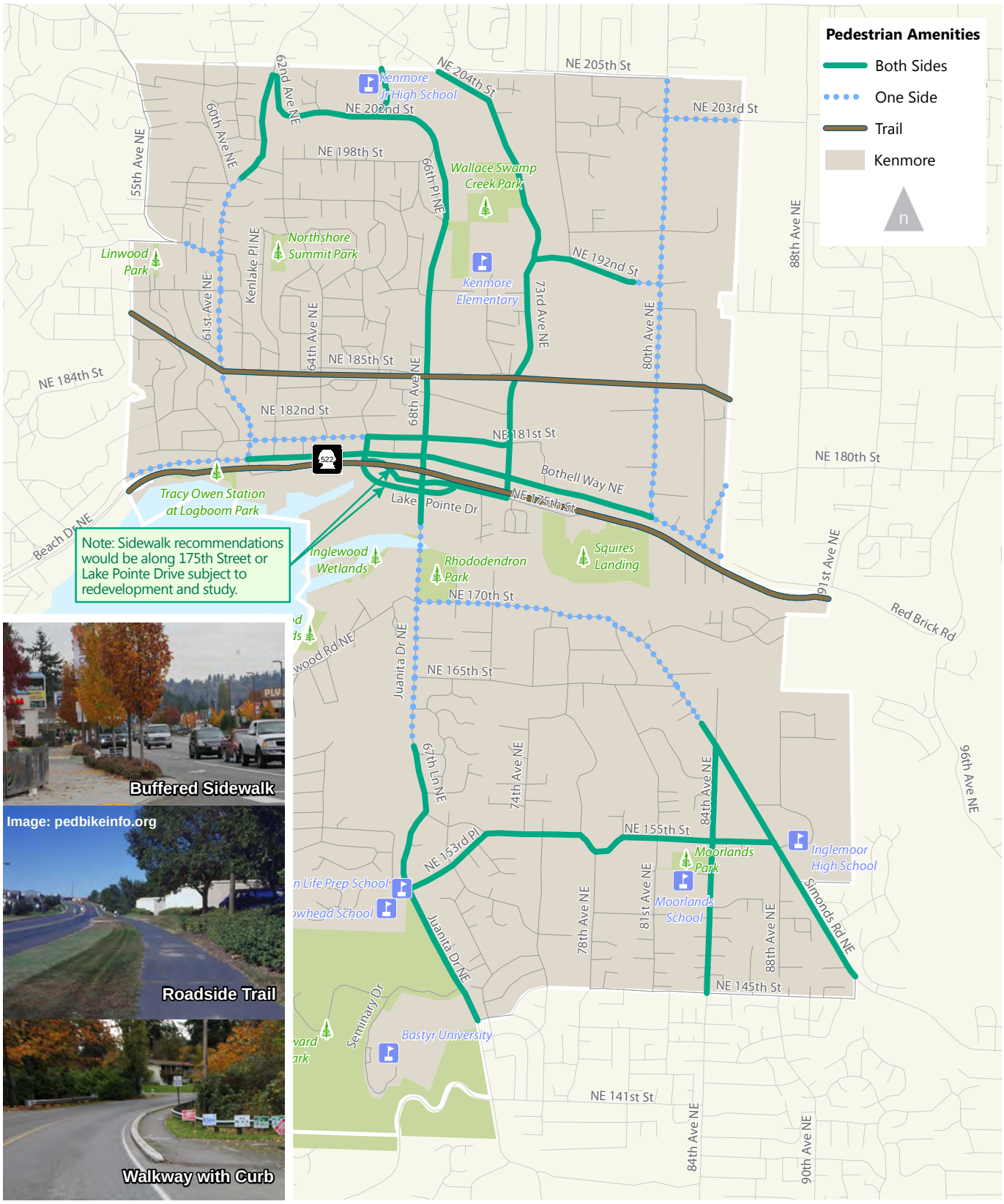

Figure 15.

Pedestrian Priority Network

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Bicycling

Kenmore already sees significant levels of bicycling along the Burke-Gilman Trail and Juanita Drive, which serve as major commuter and recreational corridors. Connecting to these routes from other areas of the City can be challenging, however, due to the lack of bicycle infrastructure. Key mobility corridors for bicyclists, such as 68th Avenue / Juanita Drive / Simonds Road would be best served with separated bicycle facilities, while Class II bike lanes and shared lane markings would suffice on other streets.

Similar to Pedestrian LOS, the City of Kenmore can strive for the green level of service for bicycling by installing the bicycle facilities depicted in the *Bicycle Priority Network* or a facility that offers more separation from vehicle traffic. At a minimum, the City plans to provide the yellow LOS by installing some sort of bicycle infrastructure on the streets identified in the *Bicycle Priority Network* (see **Figure 16**). At a minimum, these facilities would fall into the red standard and not meet the City's LOS for bicycling. The level of service standards for bicycle facilities are described in **Table 4** below.

Table 4: Bicycle LOS – Facility Requirements

LOS	Within Bicycle Priority Network
	Provides minimum treatment* recommendation, as shown within Bicycle Priority Network
	Provides a lower-level facility* than recommended in the Bicycle Priority Network
	No Facility

* Bicycle facilities – lowest-level to highest-level of treatment: shared; bike lanes; buffered bike facility; separated trail.

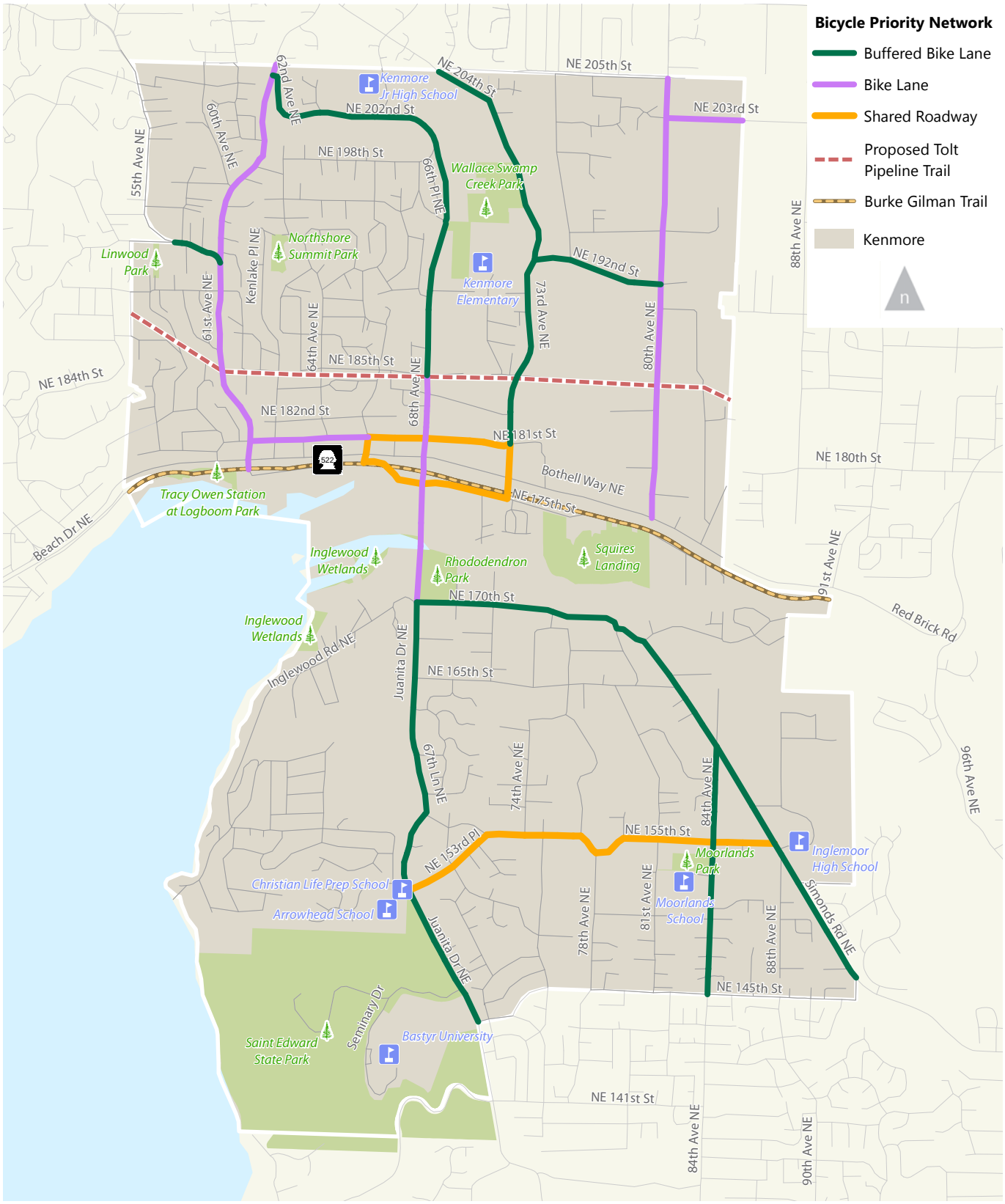

Figure 16.

Bicycle Priority Network - Green Standard

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Transit

Transit operations are out of the City's direct control, but Kenmore can still aim to create corridors that are welcoming to transit. The *Transit Priority Network* identifies the corridors that the City should focus their efforts on and is shown in **Figure 17**. The City can boost transit use by offering:

- Street lighting
- Bus shelters and benches
- Safe routes for accessing transit stops

Kenmore's transit LOS is defined based on the amenities, access, and service frequencies discussed above. The City can reach the green LOS standard by providing a high level of the transit supportive amenities at major stops, installing sidewalks and marked crosswalks at all stops, and attracting frequent, all day transit service. The yellow standard, which the City will adopt as its minimum target, includes some transit stop amenities, sidewalks and marked crosswalks at some stops, and all day service with headways of 30 minutes or less during the peak hour and 60 minutes or less during midday. Kenmore's measurement of transit LOS is summarized in the **Table 5** below.

Table 5: Transit Priority Corridor Level of Service

LOS	Transit Stop Amenities	Pedestrian Access	Frequency of Service
	High level	Sidewalks and marked crosswalks serving stops	All day service. Peak service 15 minutes or less, midday 30 minutes or less
	Some amenities	Sidewalks and marked crosswalks serving some stops	All day service. Peak services 30 minutes or less, midday service 60 minutes or less
	Little or no amenities	General lack of sidewalks and marked crosswalks	Low level of service

While the City itself does not operate transit, these amenities can encourage residents and employees to use transit and therefore gain additional service hours from King County Metro and Sound Transit.

Figure 17.

Transit Priority Network

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Freight and Auto

Residents and workers in Kenmore use nearly every street in the roadway network at some point each day to access their homes, jobs, and other destinations. Many of these streets are local streets, however, and do not see significant traffic volumes throughout the day. Similarly, goods movement and delivery vehicles use some corridors frequently while other streets see only the occasional local delivery.

Figure 18 (which is the same as Figure 14, just reproduced here for readability) calls out the classification of each of Kenmore's streets, in terms of whether it is a Boulevard, Urban Avenue, Neighborhood Connector, or Local Street. These classifications indicate the intended function of each street, specifically in terms of its intended function in facilitating vehicle and freight mobility as well as other models. These classifications (further described in **Appendix D-3**) should guide future investments in streetscape and LOS objectives.

Kenmore will maintain its current LOS standard, as presented below. However, the City will measure LOS at the corridor level on SR 522 and 68th Avenue / Juanita Drive / Simonds Road rather than at the intersection level. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. For this reason, average delay along the corridor is a more meaningful level of service standard than the experience at a single intersection.

The City's level of service policy sets the following standards for its roadways:

- Boulevards (Primary Arterials) – LOS E or better
- Urban Avenues, Neighborhood Connections (Minor Arterials) – LOS D or better
- Local Streets (Collectors) – LOS C or better

The expected growth in Kenmore and across the region by 2035 will generate higher auto volumes on City roadways. **Figure 19** displays the forecast volumes on Kenmore's street network.

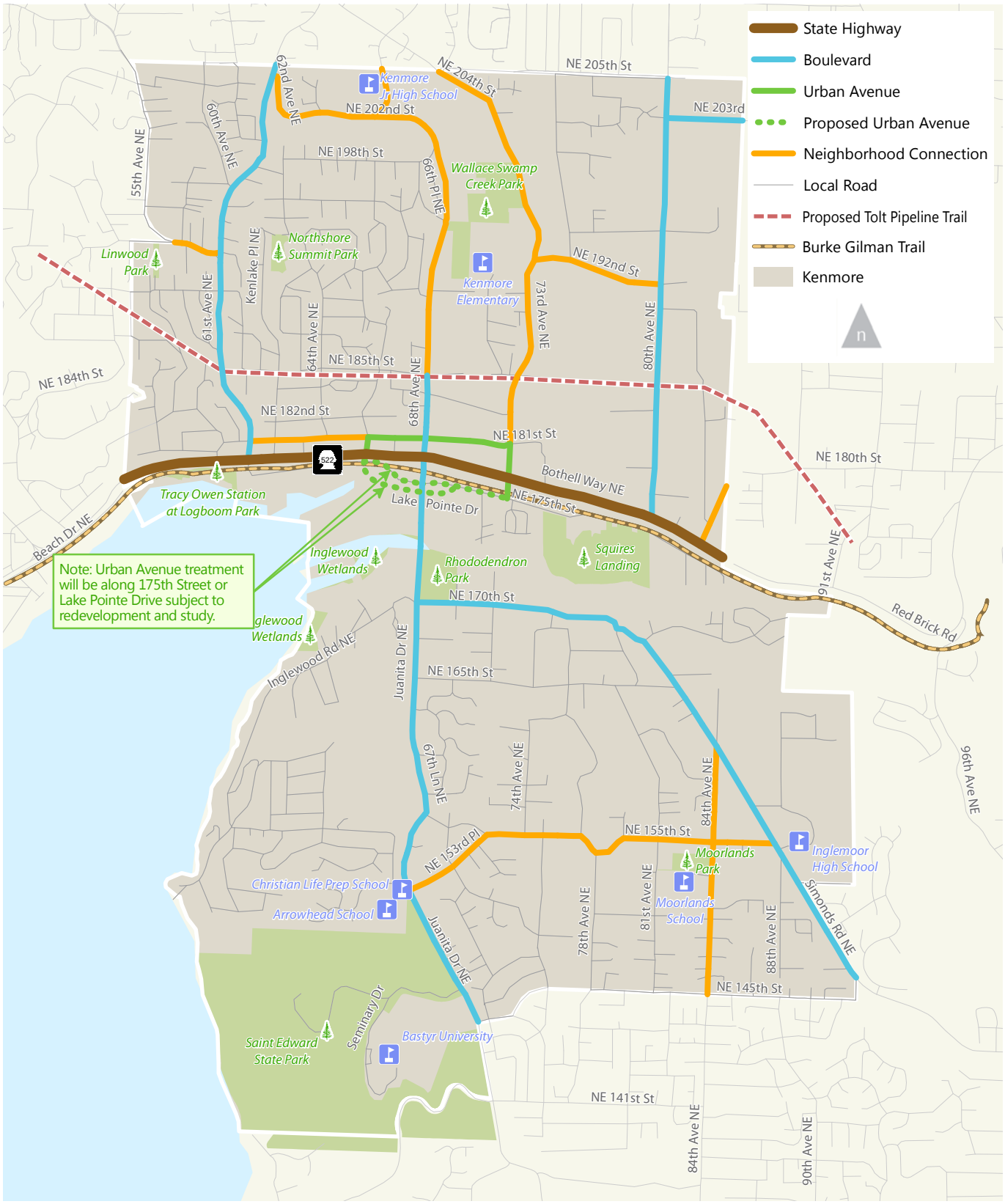

Figure 18.

City's Layered Network

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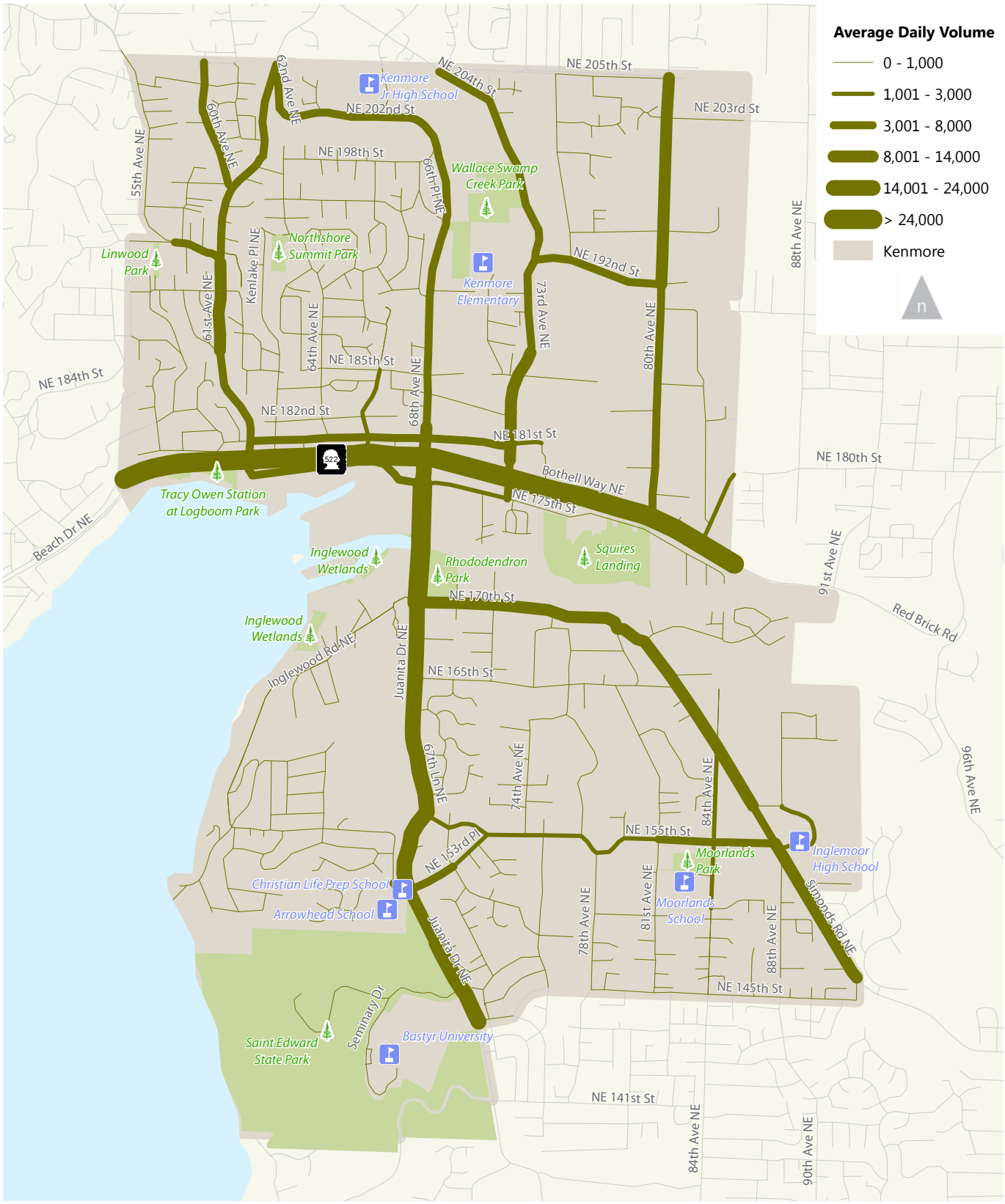

Figure 19.

Future Traffic Volumes

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DOWNTOWN PARKING

The City's on-street parking supply is currently available on a first-come, first-served basis, without time restrictions or charges. Anticipated development in the Downtown quadrants may necessitate more active parking management in the future as demand for parking increases.

The City should monitor parking use in downtown and consider the following actions, as appropriate, to manage demand:

- Once on-street parking supply utilization exceeds 85 percent on downtown roadway segments during business hours, consider implementing time limits (2 or 4 hours) or parking charges to encourage parking space turnover.
- If parking spillover is perceived as an issue on nearby residential streets, consider establishing residential parking zones (RPZs) to maintain curb space for neighborhood residents.
- As downtown develops, review the City's parking code to ensure it is aligned with an urban setting.
- Consider encouraging more shared parking by developing a public parking facility that promotes a "park once" concept in the downtown.

There are 693 designated park and ride spaces in Kenmore of which 603 spaces are provided in the Kenmore park and ride lot off 73rd Ave N, and the remainder in two church parking lots. The spaces are largely used by commuters who then access King County Metro and Sound Transit bus service on SR522. On weekdays, these facilities are typically filled to 90% capacity. This results in overflow parking on adjoining streets and properties in the downtown area, thereby reducing the availability of downtown parking. The City should consider working with transit operators (King County Metro and Sound Transit) to identify opportunities to address park and ride demand.

CHAPTER 5: NEAR TERM AND LONG TERM CAPITAL PLANS

This chapter presents the capital program that forms the basis of this Transportation Element. Collectively, this program adds up to over $100 million in transportation projects to be constructed over the next few decades. For planning purposes, the near term list represents years 0 to 6 (2015-2020) and is financially constrained to only those projects that could realistically receive funding over the next six years[1]. The long term list reaches out to the 20 year time horizon (through 2035) and includes unfunded projects that may stretch beyond this time period. Detailed cost estimates are provided in **Appendix D-4**. Projects that are included on the City's near- and long-term lists as a result of an anticipated future deficiency are summarized in **Appendix D-3**.

The overall capital plans were developed to create a transportation system that realizes Kenmore's ultimate transportation vision:

- **Goal 1:** Provide a **complete transportation network** serving local and regional circulation needs, safely accommodating all users.
- **Goal 2: Coordinate with other regional entities** to develop and operate the transportation system.
- **Goal 3:** Promote a transportation system that contributes to **fiscal and environmental sustainability**.
- **Goal 4:** Encourage transportation options and strategies that **reduce the need for driving**.
- **Goal 5: Maintain safe air travel services** in Kenmore.
- **Goal 6:** Facilitate **freight mobility and economic prosperity**.

With these goals in mind, as well as completing the layered networks described in the previous chapter, the 6 and 20 year project lists were developed. **Table 6** describes the Six Year Project List. The selected projects represent a balance of safety, maintenance, and operational improvements for all modes. **Figure 20** displays the locations of these projects around the City. None of these projects conflict with the goals listed above.

It is important to note that the Six Year Project List reflects a rough order of priority. Based on direction received from the Planning Commission, this order seeks to maintain safety, focus on projects that provide the most benefit to Kenmore residents, and leverage outside funds to the extent possible.

It is recognized that the availability of outside funds is not always predictable. As a result, any of the projects on the near term list are high priority projects that the City would consider moving forward should funding become available.

[1] It should be noted that it is unlikely that all of the projects on the six year list would receive funding (the projects total to over $50 million). However, at this time, it is uncertain which ones will move forward in the near term and which will not. All of these projects are high priority projects that the City would move forward with if funds are available.

Table 6: Six-Year Project List

Projects	*Benefit to Kenmore*	*Primary Benefit*	*Total Cost*	*Expected City Contribution*	*Goal Met*
West Sammamish River Bridge	Safely accommodate all users by rebuilding aging bridge; maintain freight mobility/economic prosperity	Regional, local	$20M	$1.8M	1, 6
SR 522 improvements (61st – 65th)	Improve capacity for vehicle, transit, bicycle, and pedestrian safety	Regional	$9.8M	$3.8M	1, 2, 6
SR 522 improvements (Lake Forest Park – 61st)	Improve capacity for vehicle, transit, bicycle, and pedestrian safety	Regional	$9.0M	$550K	1, 2, 6
Sidewalk and crossing program	Improve pedestrian safety and accommodation for all users	Local	$900K	$900K	1, 4
Downtown parking feasibility study	Evaluate existing and future parking needs in downtown and identify options for addressing these needs	Regional, local	$75K	$38K	1, 2, 3, 4, 6
61st Ave sidewalk replacement (east side)	Improve pedestrian safety and accommodation for all users	Local	$2.1M	$2.1M	1, 4
Neighborhood transportation plans	Develop plans that address neighborhood specific mobility challenges, including safety and circulation of all modes.	Local	$1.5M	$1.5M	1, 2, 3, 4, 6
Arterial restriping to add bike lanes on 73rd Ave (south of 192nd), 80th Ave, and Simonds Rd	Improve bicycle and pedestrian safety along key city arterials within existing right-of-way	Local	$360K	$360K	1, 3, 4
Juanita Drive (NE 143rd St to NE 155th Pl)	Improve bicycle/pedestrian safety along Juanita Drive, connecting between Kirkland and 155th	Regional, local	$6.5M	$3.2M	1, 2, 4

Projects	*Benefit to Kenmore*	*Primary Benefit*	*Total Cost*	*Expected City Contribution*	*Goal Met*
Feasibility study for grade-separated crossing of SR 522	Understand infrastructure constraints and opportunities for next project	Local	$250K	$250K	1, 2, 4
68th Ave northbound right turn pocket extension	Improve local/regional circulation by improving the efficacy of 68th/SR522 intersection in moving vehicles	Regional, local	$2.6M	$500K	1, 2, 3, 6
175th Swamp Creek Bridge	Safely accommodate all users by rebuilding aging bridge; maintain freight mobility	Local	$810K	$80K	1, 6
	Total		**$53,895,000**	**$15,078,000**	

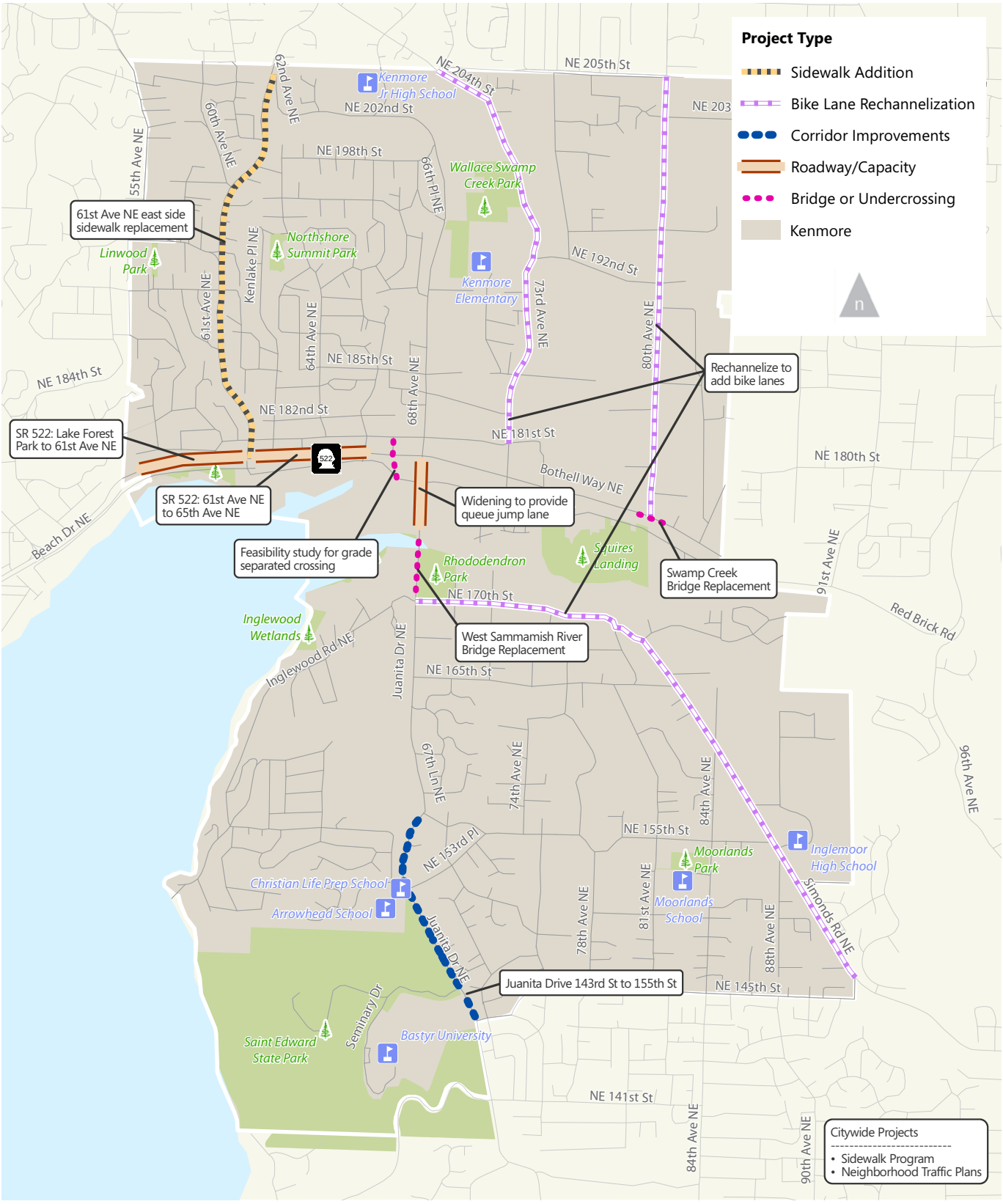

Figure 20.

Six-Year Project List

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The full list of projects that the City would like to complete during the 20-year planning horizon (including the 6 year projects) are shown in **Table 7** and **Figures 20-23.** While all of these projects would help complete the layered network and realize the City's transportation vision, many are deemed to be longer-term.

Projects included on the Six-Year Project List are considered community priorities that the City would move forward in the near term should funds become available. These projects provide a starting point for the City in developing its financial constrained Six-Year Capital Improvement Plan, which is updated every two years and is developed based on more updated knowledge related to project feasibility and funding availability.

The longer-term list (7-20+ years) also represents important projects, but these projects tend not to have identified funding or are only necessary to address future growth, rather than existing deficiencies.

Table 7: Twenty Year Project List (Includes Six Year Projects)

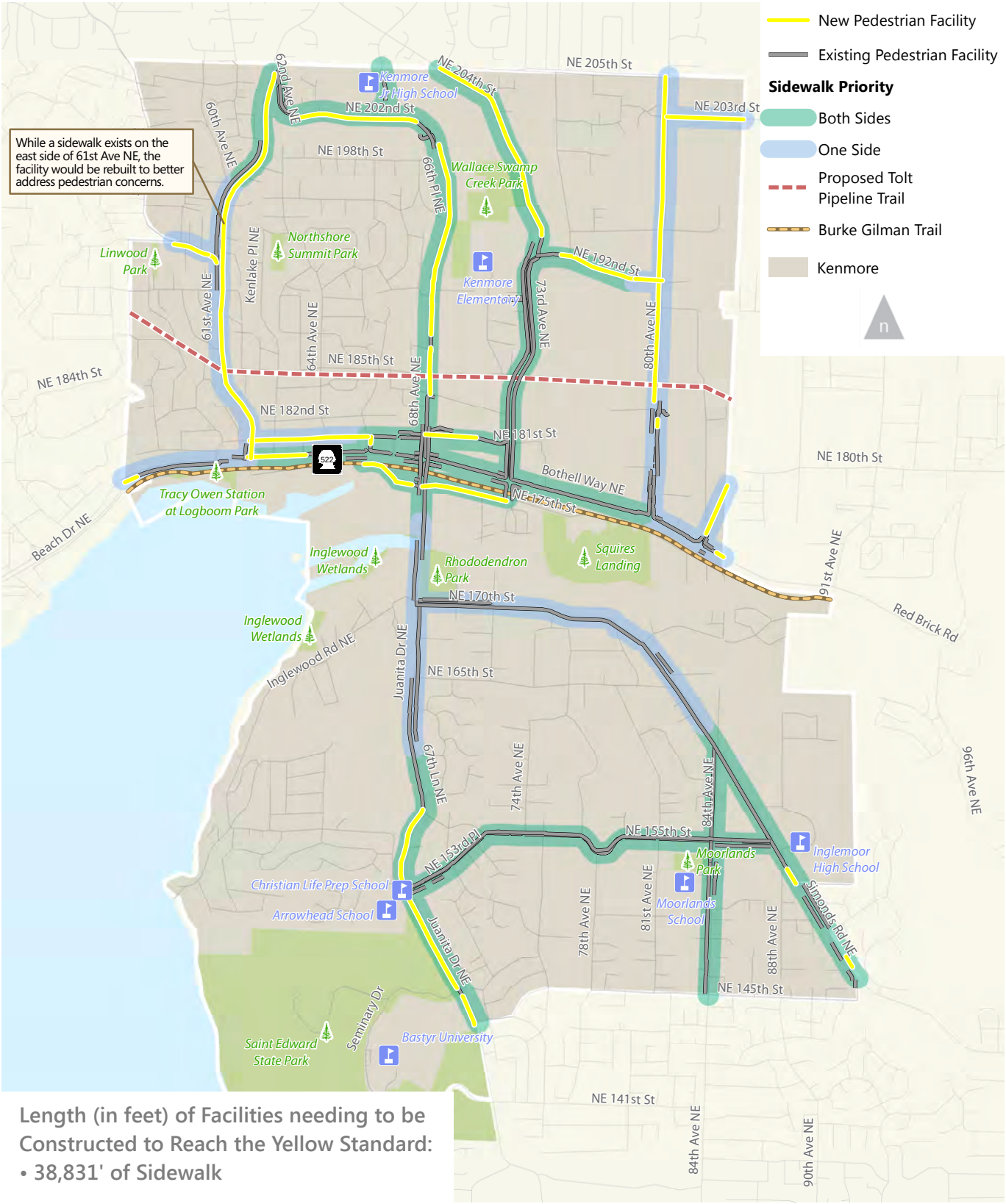
Projects	*Benefit to Kenmore*	*Primary Benefit*	*Total Cost*	*Expected City Contribution*	*Goal Met*
Near Term (0-6 year) Projects					
West Sammamish River Bridge	Safely accommodate all users by rebuilding aging bridge; maintain freight mobility/economic prosperity	Regional, local	$20M	$1.8M	1, 6
SR 522 improvements (61st – 65th)	Improve capacity for vehicle, transit, bicycle, and pedestrian safety	Regional	$9.8M	$3.8M	1, 2, 6
SR 522 improvements (Lake Forest Park – 61st)	Improve capacity for vehicle, transit, bicycle, and pedestrian safety	Regional	$9.0M	$550K	1, 2, 6
Sidewalk and crossing program	Improve pedestrian safety and accommodation for all users	Local	$900K	$900K	1, 4
Downtown parking feasibility study	Evaluate existing and future parking needs in downtown and identify options for addressing these needs	Regional, local	$75K	$38K	1, 2, 3, 4, 6
61st Ave sidewalk replacement (east side)	Improve pedestrian safety and accommodation for all users	Local	$2.1M	$2.1M	1, 4

Projects	*Benefit to Kenmore*	*Primary Benefit*	*Total Cost*	*Expected City Contribution*	*Goal Met*
Neighborhood transportation plans	Develop plans that address neighborhood specific mobility challenges, including safety and circulation of all modes.	Local	$1.5M	$1.5M	1, 2, 3, 4, 6
Arterial restriping to add bike lanes on 73rd Ave (south of 192nd), 80th Ave, and Simonds Rd	Improve bicycle and pedestrian safety along key city arterials within existing right-of-way	Local	$360K	$360K	1, 3, 4
Juanita Drive (NE 143rd St to NE 155th Pl)	Improve bicycle/pedestrian safety along Juanita Drive, connecting between Kirkland and 155th	Regional, local	$6.5M	$3.2M	1, 2, 4
Feasibility study for grade-separated crossing of SR 522	Understand infrastructure constraints and opportunities for next project	Local	$250K	$250K	1, 2, 4
68th Ave northbound right turn pocket extension	Improve local/regional circulation by improving the efficacy of 68th/SR522 intersection in moving vehicles	Regional, local	$2.6M	$500K	1, 2, 3, 6
175th Swamp Creek Bridge	Safely accommodate all users by rebuilding aging bridge; maintain freight mobility	Local	$810K	$80K	1, 6
	Total		**$53.9M**	**$15.1M**	

Longer Term (7-20 year) Projects					
Yellow standard pedestrian facilities (see **Figure 20**)	Improve pedestrian facility coverage (at least on one side of the street) on non-local streets and near schools	Local	$18.9M	$18.9M	1, 4
Yellow standard bicycle facilities (see **Figure 21**)	Improve safety and comfort for people biking around the City. Better connects Burke Gilman Trail with neighborhoods.	Local	$18.8M	$15.0M	1, 2, 4

Longer Term (7-20 year) Projects					
Improved pedestrian crossings	Improve safety of pedestrians crossing busy streets, as well as near schools and transit stops; improved access to transit	Local	$650K	$650K	1, 2, 3, 4
Grade separated SR 522 crossing	Improve local circulation, while relieving pressure on regional system; provide better options for walking/biking across SR 522	Regional, local	$17.1M	$3.4M	1, 2, 3, 4, 6
Intersection treatments at 67th Ave/181st St and 67th Ave/175th St	Intersection treatments necessary to accommodate increased volumes related to the grade separated crossing	Local	$6.0M	$1.2M	1, 2, 3, 4, 6
Intersection treatment at 73rdAve/ 192nd St, 80th Ave/192nd St, and 84th Ave/Simonds Rd	Intersection treatment to improve safety and vehicle operations; would become necessary as traffic volumes grow	Regional, local	$3.8M	$1.9M	1, 4, 5
Lakepointe Drive west (SR 522 to 68th Ave), including new intersection at 68th Ave	Improve local circulation, while relieving pressure on the regional system; providing more appealing options for travel in southwest downtown quadrant	Local	$7.5M	$3.7M	1, 2, 3, 4, 6
175th signal removal	Remove signal and make right in/right out only to improve safety	Local	$20K	$20K	1, 2, 3, 4, 6
	Total		**$72.8M**	**$44.8M**	

Beyond 20 Year Vision					
Lakepointe Drive east (68th Ave to SR 522)	This project would only be needed if the southeast quadrant fully develops	Local	$7.5M	$3.7M	1, 2, 3, 4, 6



Length (in feet) of Facilities needing to be Constructed to Reach the Yellow Standard:
- 38,831' of Sidewalk

Figure 21.

Sidewalk Priority Network - Yellow Standard

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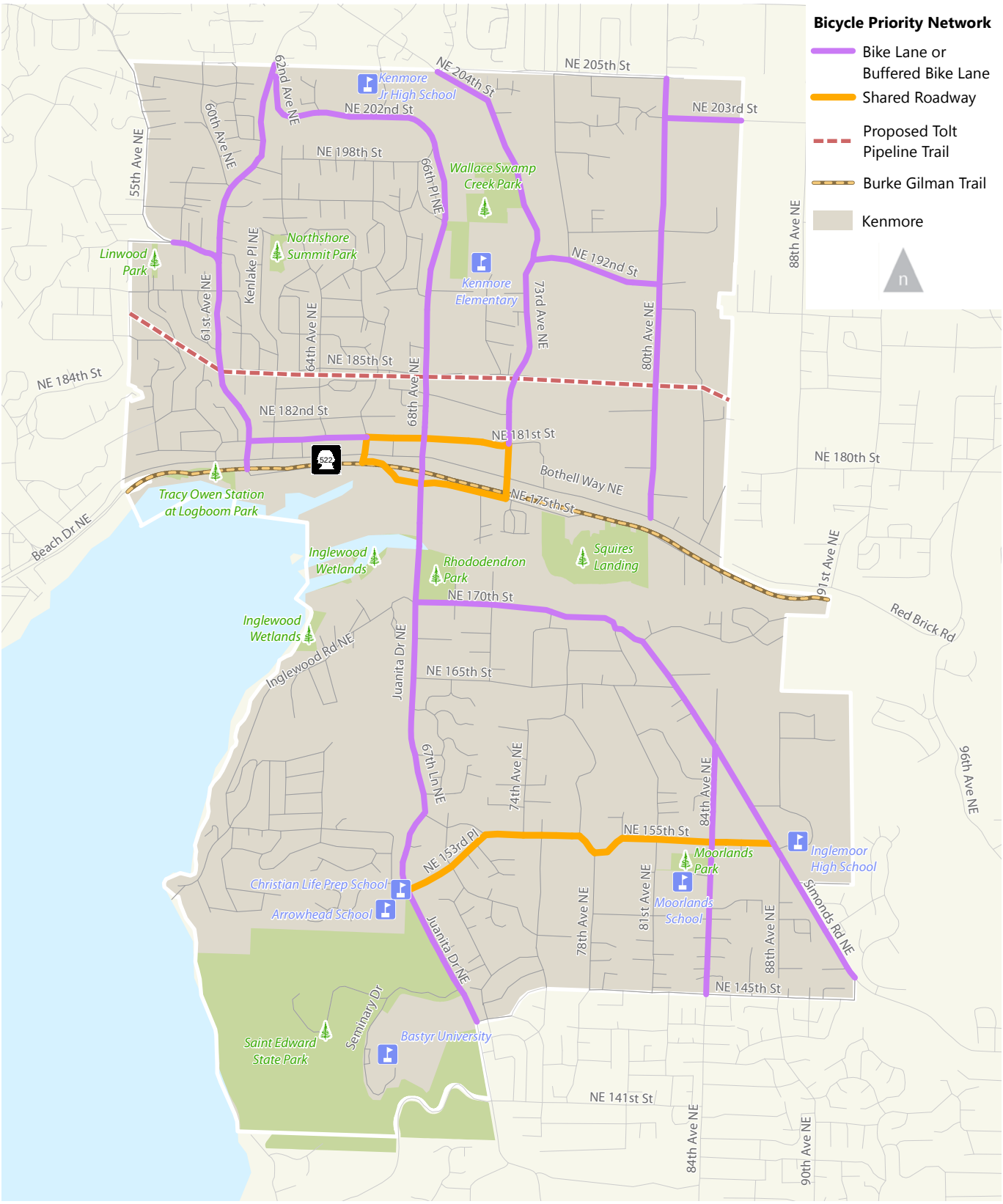

Figure 22.

Bicycle Priority Network - Yellow Standard

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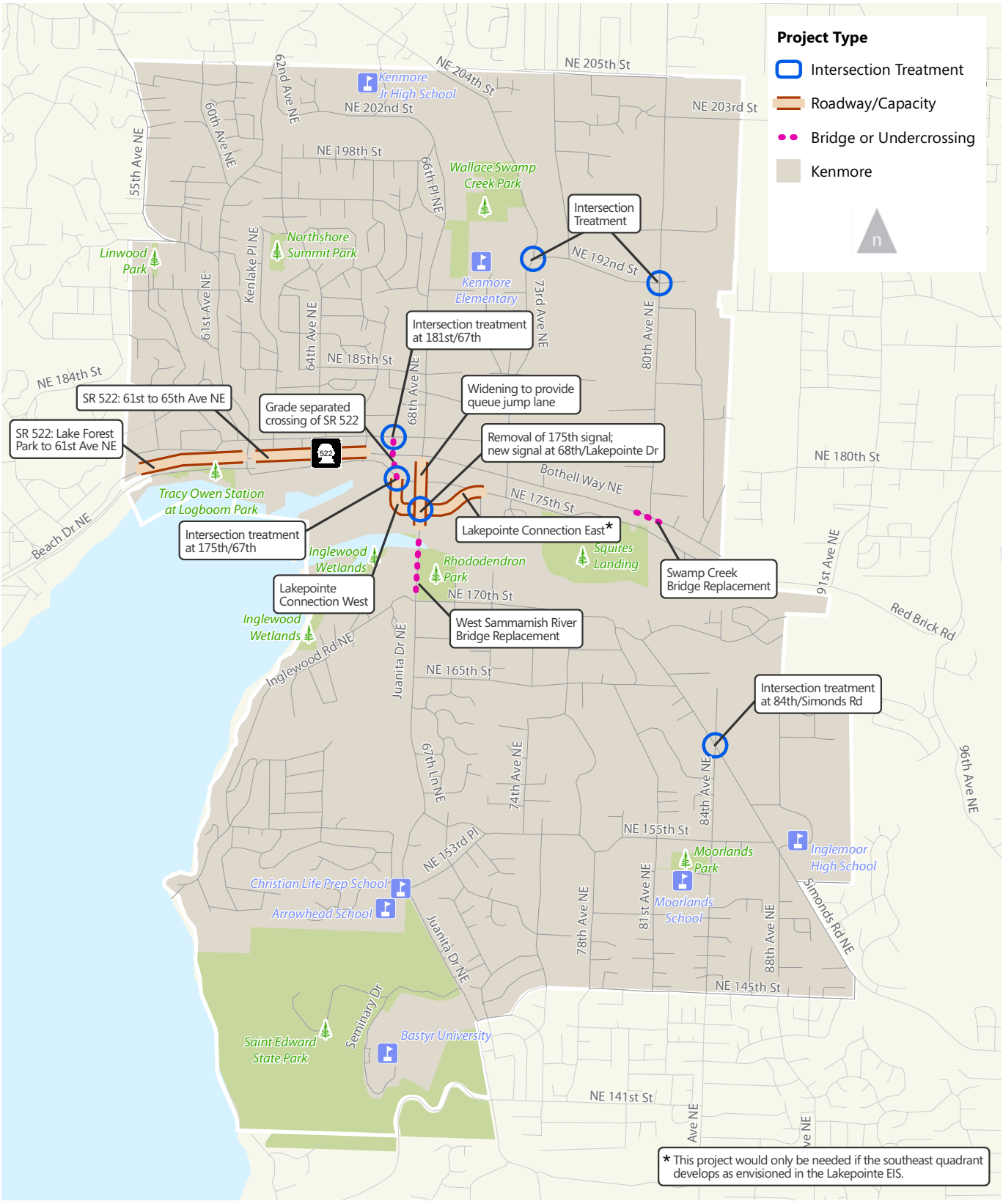

Figure 23.

Draft Auto Project List

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While the scope of the 20-year project list exceeds revenues from exclusively city sources over the next few decades, it has been sized to fit within reasonable assumptions for grants and other outside funding sources.

NON-CITY PROJECTS

State Facilities

There are projects outside of Kenmore's purview that will also affect travel in and around the City. WSDOT oversees planning and operations of SR 522, a Highway of Statewide Significance and Kenmore's major east-west corridor. The City coordinates with WSDOT and provides input on potential roadway projects on SR 522, but the State ultimately has control of this corridor.

Another State-controlled project affecting travel in Kenmore is the tolling of the SR 520 Bridge across Lake Washington. Future increases in this toll, or potential tolling of I-90 (which has also been discussed), may cause additional drivers to divert along Lake Washington, adding volume to Kenmore's already busy 68th Avenue / Juanita Drive and SR 522 corridors. The City will continue to monitor congestion changes along these corridors and work with the State to identify potential solutions.

Downtown Development South of SR 522

The southern two downtown quadrants between SR 522 and the Sammamish River (including the Lakepointe properties, Glacier/Cal Portland properties and properties within the Plywood Supply Special Study Area) have long been envisioned as sites for future master planned urban mixed-use development. These properties are subject to additional development regulations called P-Suffix regulations. P-Suffix regulations are property specific and include requirements for transportation infrastructure improvements that would need to be in place to accommodate full development.

Transportation infrastructure improvements described within the P-Suffix regulations include:

- Construction of a new road (Lakepointe Drive) from 65th Avenue/SR522 to 68th Avenue NE
- Extending Lakepointe Drive east of 68th Ave NE
- Construction of the new Lakepointe Drive/68th Avenue intersection, including a new traffic signal.
- Elimination of the signal at 175th Street/68th Avenue.
- Installation of a signalized full-access intersection at 65th Avenue/SR 522.
- Construction of a pedestrian overcrossing of SR 522.

This Transportation Element does not assume that all of these properties will fully buildout within the 20-year horizon. Thus, many of the projects described above are not assumed within the 20-year horizon of this plan. Recognizing that the properties could eventually fully develop, the above projects are reflected in this plan as longer-term projects.

CHAPTER 6: IMPLEMENTING THE TRANSPORTATION ELEMENT

The recommended projects and programs of the Transportation Element were developed by travel mode, as described in previous chapters. Implementing the Transportation Element will require close coordination among the City departments, citizens, businesses, and other agencies within the region.

In order to guide the City's implementation of the plan, priority should be assigned to assist in assembling an updated six-year Capital Improvement Program (CIP), working toward the 2035 planning horizon. This chapter summarizes the recommended plan and documents the criteria used to prioritize projects.

The Transportation Element is a living document and serves as the blueprint for transportation in Kenmore over the next several years. Realistically, the plan is most useful over the next five years, at which point it should be updated. Several implementation steps should be initiated over the next couple of years to determine if changes are needed, or to reaffirm a particular strategy.

OVERVIEW OF COSTS AND REVENUES

A key GMA planning requirement is the concept of fiscal restraint in transportation planning. A fiscally constrained Transportation Element must first allow for operation and maintenance of existing facilities, and then capital improvements. To introduce fiscal constraint into the plan, an inventory of revenues and costs was undertaken to identify funds that are likely to be available for capital construction and operations.

The proposed Transportation Element for the City of Kenmore contains a variety of projects that will likely cost the city between $67 and $117 million over 20 years. **Table 8** summarizes the costs of the major types of transportation improvements. The Transportation Element focuses on capital projects that will complete the layered network plan. The plan also includes ongoing pavement maintenance to ensure that the roadway network is kept in good condition.

Table 8: Costs of Kenmore Transportation Element (20+ years)

Project Needs	*Description*	*Total Cost*	*Expected City Cost*
Auto/Truck Priority Projects	Bridges, traffic signals, intersection channelization, SR 522 improvements	$40-50M	$5-10M
Pedestrian Projects	Sidewalks, crossings	$20-30M	$20-30M
Bicycle Projects	Bike boulevards, bike lanes, crossings	$15-20M	$12-17M
Multimodal Projects	Multimodal corridors, SR 522 crossings	$40-50M	$10-20M
Pavement Maintenance	Overlay and pavement repair	$20-40M	$20-40M
	Total	**$135-190M**	**$67-117M**

*Costs denoted in millions

It is worthwhile to note that the City of Kenmore has spent around $5 million annually for transportation capital and operations. Revenues include those from outside sources and grants, general city funds, real estate excise taxes, impact fees, and gas tax receipts. If the city were able to maintain this level of revenue, the City could afford around $100 million in transportation projects over the next 20 years.

The comparison of revenues to costs indicates that the city will need to carefully prioritize its projects, since not all of the transportation needs are likely to be affordable with existing revenue sources during the 20-year period. If this occurs, the City has several options:

- Increase the amount of revenue from existing sources, including impact fees, real estate excise taxes, transportation benefit district, or increased general fund revenues.
- Adopt new sources of revenue (see text box on following page).

- Lower the level of service standard, and therefore reduce the need for some transportation improvements.

WHAT ARE POTENTIAL NEW REVENUE SOURCES?

- Proceeds from General Obligation Bonds
- Creation of Local Improvement Districts
- Reciprocal impact fees with adjacent jurisdictions
- Business license fee per employee

The city can explore the feasibility and likely revenue amounts from these or other sources as the plan is implemented over the next several years.

Note that the city could also weigh changing the land use element to reduce the amount of development planned (and thus reduce the need for additional public facilities). However, in a community such as Kenmore that is largely built out, land use changes would not likely result in reduced facility needs.

SETTING PRIORITIES

Project prioritization is needed to help identify when best to fund and implement the projects since funding is limited. Criteria were established to help prioritize the projects and implementation. These criteria, not listed in any priority order, are identified in the text box below.

CRITERIA FOR PROJECT PRIORITIZATION

1. Meets City's transportation goals:
   - **Goal 1:** Provide a complete transportation network serving local and regional circulation needs, safely accommodating all users.
   - **Goal 2:** Coordinate with other regional entities to develop and operate the transportation system.
   - **Goal 3:** Promote a transportation system that contributes to fiscal and environmental sustainability.
   - **Goal 4:** Encourage transportation options and strategies that reduce the need for driving.
   - **Goal 5:** Maintain safe air travel services in Kenmore.
   - **Goal 6:** Facilitate freight mobility and economic prosperity.
2. Maintains/improves safety of traveling in Kenmore
3. Provides tangible benefits to Kenmore residents
4. Leverages non-city (federal, state, private) funds freeing up city revenues for additional projects

Using these criteria, the recommended projects will need to be evaluated and ranked based on how well each could meet the criteria. Since one of the criteria relates to funding availability, priorities may shift over time as fund sources change.

High priority projects for Kenmore are those that meet multiple criteria in terms of effectiveness, benefit to the community, and ability to be implemented. These attributes will allow the City to take advantage of a variety of public and private funding sources to complete key projects.

MONITORING AND EVALUATION

The Transportation Element is a long-range plan that enables the City to plan for its current and future transportation needs. Nonetheless, the transportation network is dynamic, constantly changing due to circumstances beyond the scope and influence of this plan. Hence, regular updates are necessary to ensure the plan remains current and relevant. The Transportation Element includes the following actions to monitor and evaluate the progress of implementing the plan.

Bi-Annual Mobility Report Card

A bi-annual mobility report card will be developed to document progress towards plan implementation and to monitor the transportation system performance. The City will use this information to inform the public regarding the City's actions, and results, related to the Transportation Element. The report card will also provide a basis for future updates of the Transportation Element.

The report card is expected to report on the following topics:

- Land Use and Transportation Trends – These data will describe general land use and transportation trends within Kenmore. Information will include:
    - Current population and employment levels and growth rates,
    - Summary of yearly development activity, and
    - Summary of growth in traffic volumes, transit service and other trends
- Transportation Performance – These data will focus on documenting the current performance of the transportation system, by mode. Information will include:
    - Transit route ridership (from KC Metro and Sound Transit)
    - Park-and-ride lot utilization
    - On-street parking utilization in downtown and nearby park-and-ride locations
    - Traffic volumes
    - Collisions
    - Traffic level of service (auto/truck priority corridors)
    - Pedestrian and bicycle volumes
    - Pavement Maintenance Ratings
- Project Implementation Status – These data will summarize the city's progress towards implementing the priority network improvements recommended in the Transportation Element. Information is expected to include:
    - Auto/truck facilities constructed
    - Pedestrian facilities constructed
    - Bicycle facilities constructed
    - Miles of Pavement overlays

The report card will provide the necessary information to help the city adjust transportation priorities and to facilitate updates to the Transportation Element every few years.

PARKS, RECREATION AND OPEN SPACE ELEMENT

The City of Kenmore Park, Recreation and Open Space Plan, adopted by Ordinance 13-0368 on November 25, 2013, is the City's Parks, Recreation and Open Space Element. See associated document.

SURFACE WATER ELEMENT

INTRODUCTION

The Surface Water Element of the Comprehensive Plan consists of goals, objectives and policies relevant to the management of the City's municipal separate storm sewer system (MS4), private surface water systems and natural surface water systems (i.e. streams, wetlands and shoreline). Surface Water Management is an interdisciplinary practice and many of the policies and programs discussed in this element affect other Comprehensive Plan Elements. This element provides guidance for the overall surface water management program, which expands beyond this element.

PLANNING REQUIREMENTS

The Growth Management Act (GMA) does not require a surface water management element for comprehensive plans. However, components of surface and storm water management are referenced in other elements, including land use, capital facilities, transportation, parks and recreation, natural environment and shoreline. State regulations allow the City to include this as an optional element because it deals with environmental protection, natural resource lands, design and natural hazard reduction and supports the implementation of other elements.

The GMA also requires that cities and counties develop county-wide planning policies to ensure consistency between regionally connected comprehensive plans. King County Countywide Planning Policies (CPP) identify policies relevant to surface and storm water management including the encouragement of low impact development, managing natural drainage systems and designing new developments and transportation systems that create and integrate natural drainage systems. This element supports the policies of the CPP.

BACKGROUND

The City of Kenmore is predominantly covered by six drainage basins, which include Lake Washington, Sammamish River, Swamp Creek and its tributaries, Tributary 0056, Tributary 0057 and Tributary 0222. A drainage basin is a watershed in which rain falling at higher elevations flows to lower elevations and converge into one major water body (i.e. a stream or lake). These drainage basins developed rapidly after the mid-1970s, and much of the development occurred without the benefit of adequate surface water management. As a result of clearing and grading combined with the creation of impervious surfaces, widespread drainage problems have occurred. A contributing factor to many of the drainage problems that continue to plague the City of Kenmore involve the fact that the City is at the lowest elevation and receiving end of most of its drainage basins, including its two largest drainage basins, Swamp Creek and Sammamish River. The City's Surface Water Master Plan contains more detailed descriptions of these drainage basins and how they are managed.

In an effort to manage surface water more effectively, the City drafted its first Surface Water Element of the Comprehensive Plan in March of 2001. This element, along with the City's first Surface Water Management Plan created at the same time, provided the framework for how

surface water management issues would be addressed, including water quality, development, maintenance and operations of surface water systems and localized flooding issues, such as Swamp Creek along 73rd Avenue NE.

The 2001 surface water element has remained unchanged until this update and the Surface Water Management Plan received one update in 2008. Surface water management regulations and standards have changed significantly since 2001 and the City has made significant advancements with its surface water management programs. The following timeline provides a brief summary of the major surface water management milestones for the City.

- Adoption of Title 13 Kenmore Municipal Code in 1998 (City Incorporation)
- Adoption of the 2001 Surface Water Element of the Comprehensive Plan
- Adoption of the 2001 Surface Water Management Plan (including CIP)
- Implementation of the 2007 – 2012 Western Washington Phase II Municipal Stormwater Permit (National Pollutant Discharge Elimination System and State Waste Discharge General Permit)
- Adoption of the 2008 Surface Water Management Plan Update (including CIP)
- Adoption of Chapter 13.40 Kenmore Municipal Code update
- Adoption of 2009 King County Surface Water Design Manual
- Adoption of Chapter 13.45 Kenmore Municipal Code update
- Adoption of 2009 Stormwater Pollution Prevention Manual
- Implementation of the 2012 – 2013 Western Washington Phase II Municipal Stormwater Permit (National Pollutant Discharge Elimination System and State Waste Discharge General Permit)
- Implementation of the 2013 – 2018 Western Washington Phase II Municipal Stormwater Permit (National Pollutant Discharge Elimination System and State Waste Discharge General Permit)
- Currently updating the 2014 Surface Water Master Plan (including CIP 2014/2015)
- Currently updating Chapter 13.40 Kenmore Municipal Code (2014/2015)

As the City's surface water management program matures, many of the same issues continue to challenge the City today as they did at the City's incorporation in 1998. High volumes of polluted runoff continue to flood streams and lakes resulting in localized flooding issues and degraded aquatic systems. Through the objectives and policies stated in this element, and the programs referenced therein, the City's goal is to develop, maintain, manage and improve a surface water system that serves the community, enhances the quality of life and protects the environment. While the City's goal remains relatively unchanged since 2001, the implementation strategies have and are provided in this element update.

GOALS, OBJECTIVES AND POLICIES

GOAL SW-1. DEVELOP, MAINTAIN, MANAGE AND IMPROVE A SURFACE WATER SYSTEM THAT SERVES THE COMMUNITY, ENHANCES THE QUALITY OF LIFE AND PROTECTS THE ENVIRONMENT.

Surface water systems include constructed components, both public and private, and natural systems, which include streams, wetlands, ground water, Sammamish River and Lake Washington. The City strives to meet the needs of development, economic growth, transportation and recreation while protecting and enhancing a healthy aquatic environment. The following objectives and policies help the City achieve this goal.

OBJECTIVE SW-1.1 Effectively manage the city's municipal separate storm sewer system and private surface water systems in a manner that reduces flooding, maintains water quality and protects the natural environment.

Policy SW-1.1.1 Comply with the current Western Washington Phase II Municipal Stormwater Permit (National Pollutant Discharge Elimination System and State Waste Discharge General Permit).

Policy SW-1.1.2 Implement and update as necessary the City's Stormwater Management Program Plan, which describes the City's programs for public education & outreach, public involvement & participation, illicit discharge detection & elimination, controlling runoff from new development, redevelopment & construction sites, municipal operations & maintenance and total maximum daily load.

Policy SW-1.1.3 Adopt and implement an approved Surface Water Design Manual, as needed, which is equivalent to the current Washington State Department of Ecology Stormwater Management Manual for Western Washington.

Policy SW-1.1.4 Where feasible, the City will make low impact development (LID) the preferred and commonly-used approach to site development. LID is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning and distributed stormwater management practices that are integrated into a project design.

Policy SW-1.1.5 Implement a Capital Improvement Program that maintains and improves the MS4 in a manner that enhances and protects the City's natural environment, mitigates flooding problems, improves water quality, promotes a reliable and safe transportation network and provides the community a safe and healthy place for living, working and recreation.

Policy SW-1.1.6 In an effort to protect public resources, water quality and reduce flooding, the City manages private surface water systems by providing inspections, education, technical assistance and, if necessary, enforcement action to private property owners within the City. The City does not operate or maintain privately owned surface water systems unless that system has been formally accepted by the City

and is located within the right-of-way or within a tract or easement dedicated to the City for the purpose of operating and maintaining said system.

Policy SW-1.1.7 Seek opportunities to design and implement surface water management facilities that are functional, serve as amenities, and serve multiple purposes such as those described in the Parks Element of the City of Kenmore Comprehensive Plan.

Policy SW-1.1.8 Participate in the Regional Stormwater Monitoring Program (RSMP), which includes effectiveness monitoring of stormwater management program activities and source identification information repository.

OBJECTIVE SW-1.2 Protect, maintain, enhance and restore natural surface water systems

Policy SW-1.2.1 Support shoreline management policies outlined in the Shoreline Element of the City of Kenmore Comprehensive Plan, which strive to preserve, protect and enhance the City's abundant shoreline habitat.

Policy SW-1.2.2 Support natural environment policies outlined in the Natural Environment Element of the City of Kenmore Comprehensive Plan, which include protection of wetlands, plants and wildlife, maintaining and promoting a diversity of species and habitat, participation in Watershed Resource Inventory Area 8 (WRIA 8) and using low impact development best management practices.

Policy SW-1.2.3 Implement critical and sensitive area regulations that protect and enhance surface waters, which may include but are not limited to buffers, setbacks, erosion and sediment control, mitigation, State Environmental Policy Act (SEPA) compliance, Hydraulic Permit Approval (HPA) compliance and compliance with any other applicable local, state and federal requirements.

Policy SW-1.2.4 Protect, enhance and restore flood storage, conveyance functions and ecological values of floodplains, wetlands and riparian corridors through the development and implementation of capital improvement projects, studies and plans. Current and past efforts can be found in more detail in the Surface Water Master Plan and Capital Improvement Program Plan.

Policy SW-1.2.5 Promote and support opportunities for public involvement and participation, which may include but are not limited to stewardship groups, volunteer opportunities and grant partnerships.

Policy SW-1.2.6 Promote and support opportunities for regional coordination and watershed level management of the City's natural surface water systems. Kenmore often contains only a portion, and in some cases a very small portion, of the natural surface water systems that pass through the City. The City will actively pursue coordination with upstream jurisdictions and partners to manage these natural resources and share responsibility.

Policy SW-1.2.7 Participate in the Regional Stormwater Monitoring Program (RSMP), which includes status and trends monitoring in receiving waters.

IMPLEMENTATION STRATEGIES

The City must implement the 2013 – 2018 Western Washington Phase II Municipal Stormwater Permit issued by Washington State Department of Ecology. Major compliance milestones for the City during this implementation period include:

- Participate in the regional stormwater monitoring program (RSMP) by August 14, 2014

- Update the City's Swamp Creek Total Maximum Daily Load (TMDL) Quality Assurance Project Plan (QAPP) by February 2, 2015 and begin implementation by August 1, 2015.

- When feasible, make low impact development the preferred and commonly-used approach to site development by December 31, 2016. This process will impact many City departments, including land development, planning, transportation and parks. To achieve this requirement, coordination between departments will be required as codes, standards and policies are updated.

- Adoption of a Surface Water Design Manual that is equivalent to the 2012 Stormwater Management Manual for Western Washington and approved by the Washington State Department of Ecology by December 31, 2016.

- Field screening of 40% of the City's MS4 by December 31, 2017.

Swamp Creek sedimentation and flooding issues continue to persist in the City, particularly in the wetland areas located downstream of the 73rd Avenue NE bridge. The City will continue to investigate options to manage Swamp Creek, including:

- Investigate capital improvement project options to mitigate sedimentation and flooding issues within Swamp Creek.

- Seek regional collaboration with other Swamp Creek basin partners to address flooding and sedimentation issues occurring in Kenmore.

Three of the primary methods for implementing the Surface Water Element are implementation of the Surface Water Master Plan, Title 13 of the Kenmore Municipal Code and the surface water capital improvement program. All three are being updated in 2014/2015.

SUPPORTING DOCUMENTATION

Additional documentation which provides more detailed information regarding how the Surface Water Element goal is implemented can be found in the following documents. City produced documents are available on the City's webpage or at City Hall. Other documents are available through the organization's webpage that produced them.

Surface Water Master Plan

Previous versions of this document have been titled the "Surface Water Management Plan" but it is now titled "Surface Water Master Plan" to avoid confusion with the "Stormwater Management

Plan", which is a document required as part of the City's Western Washington Phase II Municipal Stormwater Permit. Components of this document include:

- An overview of the City's Surface Water Management programs
- An overview of surface water regulatory framework
- An overview of City's drainage basins
- An overview of the Capital Improvement Program
- An analysis of current surface water program needs (gap analysis)
- An implementation plan to address identified gaps in programs

Stormwater Management Program Plan

This document accompanies the City's Western Washington Phase II Municipal Stormwater Permit report, which is typically submitted to the Washington State Department of Ecology annually. It describes and updates the following surface water programs as they pertain to the Permit:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination (IDDE)
- Controlling Runoff from New Development, Redevelopment and Construction Sites
- Municipal Operations and Maintenance (O&M)
- Total Maximum Daily Load (TMDL)

Kenmore Illicit Discharge Detection and Elimination Program Manual

This guidance document describes how the City implements IDDE related policies and procedures and is updated as needed. It includes information regarding:

- Surface Water Mapping
- Water Quality Regulations
- IDDE Procedures
- Outfall Reconnaissance Inventory
- Field Screening

Kenmore Operations & Maintenance Practices and Policies Manual

This guidance document describes how the City implements operations and maintenance related policies and procedures and is updated as needed. It includes information regarding:

- Maintenance standards
- Inspection programs

- Facility maps
- Best Management Practice (BMP) worksheets for general maintenance activities
- Public lands map and associated BMP worksheets for typical maintenance activities (includes parks, right-of-way and real properties)
- Stormwater Pollution Prevention Plan (SWPPP) for maintenance yards
- Training
- Nutrient Management Plan
- Integrated Pest Management Plan
- Surface Water Operations and Maintenance Contracts Summary

Surface Water Design Manual

At the time of this update, the City has adopted the 2009 King County Surface Water Design Manual. The City will adopt, as needed, a surface water design manual equivalent to the current Washington State Department of Ecology Stormwater Management Manual for Western Washington. This manual provides requirements and standards for designing and constructing surface and storm water management systems, which includes information regarding, but is not limited to:

- Drainage Review and Requirements
- Drainage Plan Submittal
- Hydrologic Analysis and Design
- Conveyance System Analysis and Design
- Flow Control Design
- Water Quality Design
- Low Impact Development Design
- Maintenance Requirements
- Erosion & Sediment Control Standards

Roads Standards Manual

At the time of this update, the City has adopted the 1993 King County Road Standards Manual. The City is currently working on producing a new City of Kenmore Road Standards Manual. This manual provides specifications and drawings for designing and constructing drainage infrastructure, including but not limited to catch basins, manholes, frames, grates, ditches and flow control structures.

Title 13 Kenmore Municipal Code (Utilities and Public Works)

Kenmore Municipal Code is the codification of all the City's ordinances, which provides the regulatory framework that the City operates within. Surface water management is addressed in three chapters of Title 13, which include:

- Chapter 13.35 Surface Water Runoff Policy
- Chapter 13.40 Surface Water Management Program
- Chapter 13.45 Water Quality

Integrating LID into Local Codes: A Guidebook for Local Governments

This document (which is referenced in the 2013-2018 Western Washington Phase II Municipal Stormwater Permit) provides guidance for reviewing, revising and making effective the City's development-related codes, rules, standards or other enforceable documents to incorporate and require LID principles and BMPs. The City is required to perform a similar review and revision process for LID code integration outlined in this guidance document, which was produced by the Puget Sound Partnership.

LID Technical Guidance Manual for Puget Sound

This guidance document, produced by Washington State University and Puget Sound Partnership, provides technical guidance regarding the assessment, planning, design, construction and maintenance of LID BMPs. This document will provide the City technical guidance as LID BMPs are integrated into development standards, codes and regulations.

PUBLIC SERVICES ELEMENT

INTRODUCTION

The Public Services Element focuses upon citizen participation and communication, efficient municipal services, emergency services, education, and human services. Public services and facilities are a key determinant in the community's quality of life and the capacity of the City to address future development.

Growth Management Act Requirements

A goal of the Growth Management Act (GMA) is to ensure that those public facilities and services necessary to support development are adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.

Countywide Planning Policies

The King County Countywide Planning Policies overarching goal for public services is that residents have access to the services needed in order to advance public health and safety, protect the environment, and carry out the Regional Growth Strategy. Coordination between jurisdictions and service providers should result in providing residents with a full range of services.

EXISTING CONDITIONS/FORECAST OF FUTURE NEEDS

Overview

Multiple agencies and districts provide services in the Kenmore City limits, including a fire district and two school districts. Several governmental buildings that house special district and City functions are located in the City. Governmental facilities are located on **Figure PS-1**. This Element focuses on City services, human services, emergency services, and education. Parks and recreation are more fully addressed in the **Parks, Recreation and Open Space Element**, and water and sewer services are addressed in the **Utilities Element**.

City Services

The City of Kenmore has a council-manager form of government. Seven City Council members are elected at large by the registered voters in the City. The City Council elects a Mayor from among the Council members to serve a two-year term as the Chairperson of the Council. The City Council also appoints a City Manager who manages the day-to-day operations of the City.

In addition to the City Manager, there are 30.75 regular positions as of January 2015, organized into five departments: City Manager, Public Works, Finance and Administration, Community Development, and Development Services.

City Attorney and all legal and court services are provided on a contract basis. An additional staff member serves under contract as Police Chief, coordinating public safety resources. There are approximately 1.48 regular City employees per 1,000 population (assuming the Year 2014 population of 21,370).

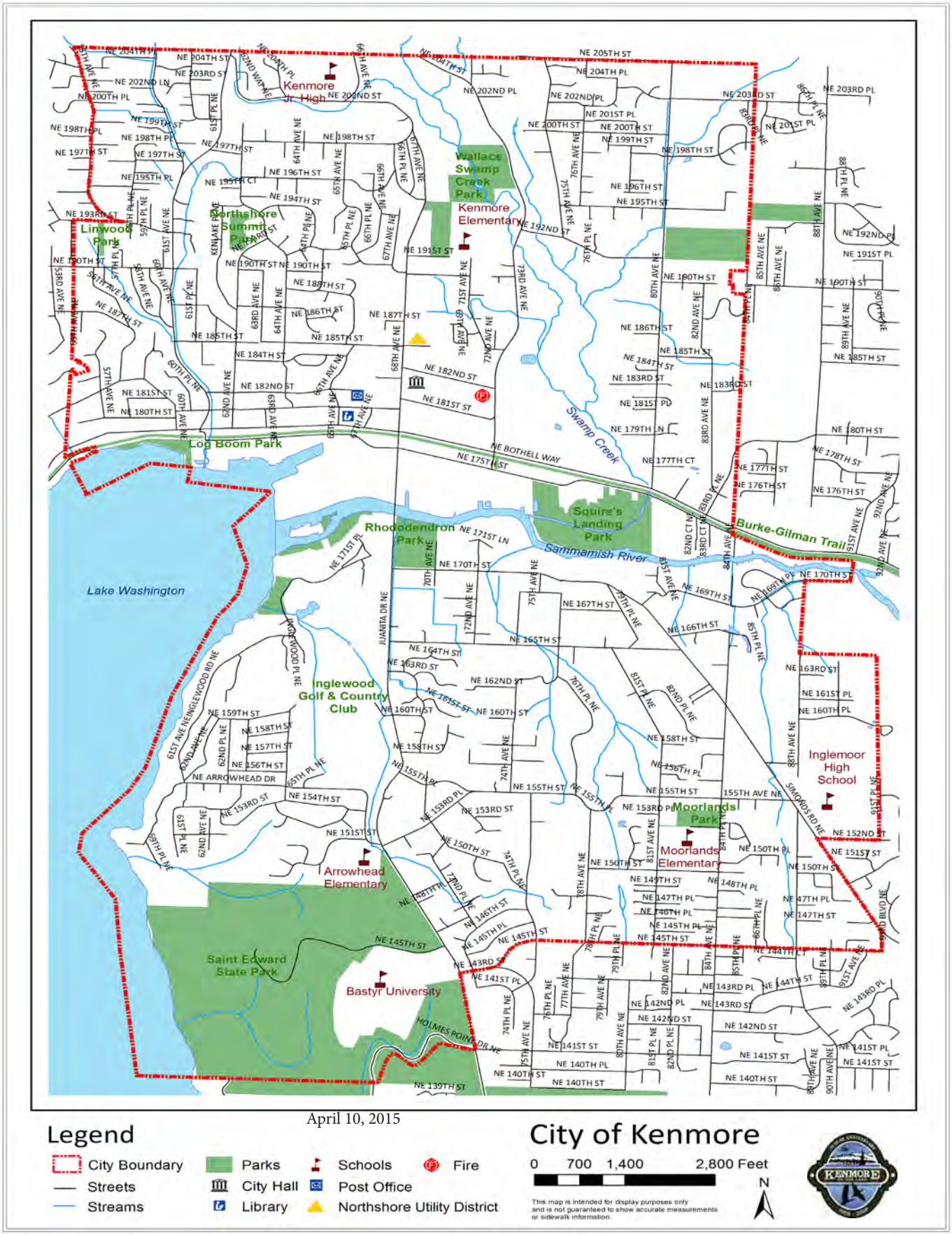

Kenmore Jr. High
Wallace Swamp Creek Park
Kenmore Elementary
Northshore Summit Park
Linwood Park
Log Boom Park
Swamp Creek
Squire's Landing Park
Rhododendron Park
Sammamish River
Burke-Gilman Trail
Lake Washington
Inglewood Golf & Country Club
Inglemoor High School
Moorlands Park
Moorlands Elementary
Arrowhead Elementary
Saint Edward State Park
Bastyr University
April 10, 2015
Legend
City Boundary
Streets
Streams
Parks
City Hall
Library
Schools
Post Office
Northshore Utility District
Fire
City of Kenmore
0 700 1,400 2,800 Feet
N
This map is intended for display purposes only and is not guaranteed to show accurate measurements or sidewalk information.

Figure PS-1

The City is responsible for the following services:

- General Administration: General administration includes all aspects of the finance and City Clerk functions for the City, including cash and investment management, accounting and preparation of quarterly financial reports, the annual financial report, accounts receivable, cashiering, general ledger, payroll, records retention, information technology, and human resources. General administration also includes city management functions, including day-to-day direction to, and leadership of, the organization, franchise negotiations, communications, events and volunteerism, economic development, human services, City Council policy and administrative support, and government relations.

- Public Safety: Public safety functions include police, jail, prosecuting attorney, public defender, and court services, and animal control, all of which are contracted with King County. The City's emergency management functions are handled in-house in coordination with the Northshore Fire Department and other regional partners.

- Community Development: Community development functions include developing City Council policy recommendations on such matters as land use regulation and comprehensive planning, managing the capital improvement program for parks, and permit review. Land use permits, right-of-way permits, engineering permits, and commercial and residential building permits are received and issued at City Hall.

- Public Works: Public works functions include management of the City's transportation capital improvement program, maintenance of parks and streets, surface water policy and maintenance of storm water facilities, engineering services, and fleet management. Public works functions also include maintenance of City facilities, including City Hall.

City functions are managed in the 21,000 square foot City Hall building at 18120 68th Avenue NE. At the time of construction, it was anticipated that the building would be adequate to house City functions for twenty years or more.

Human Services

Many residents of Kenmore require a broad range of human services to meet their daily needs. These services generally fall into three categories: **family services, senior services, and youth services**. The types of services range from transportation for seniors, to recreational opportunities for teens, to family counseling, to homeless services. Generally, the lower the income of the family or individual, the greater is their need for subsidized assistance to make the service affordable.

Services currently provided to Kenmore residents generally are made available through several very strong agencies located outside of the City limits. As a result, the current location of service providers is not convenient to many Kenmore residents in need of the services they offer.

The following pages provide a partial inventory of services available in the Kenmore area. Services were selected because of a Kenmore location, a known Kenmore clientele, or because funding has been provided by the City to serve the area.

Family Services

An array of services is available serving the needs of Kenmore families:

- **Seventeen (17) childcare providers** in Kenmore have a capacity for approximately 628 children, including daycares, preschools, Champions after-school programs at Arrowhead and Moorlands elementary schools, and a Northshore YMCA after-school program at Kenmore Elementary School.

- **Child Care Resources** Homeless Program, based in Seattle, provides funding for child care for homeless children in King County to allow their family the time they need to work on finding housing or a job.

- **The Kenmore Elementary PTA** Social Service Crisis Support program provides crisis support for Kenmore Elementary students, which includes emergency food, clothing, counseling, medical, and transportation costs.

- **Northshore Youth and Family Services (NYFS),** located in Bothell, provides drug and alcohol prevention programs for youth and mental health programs for individuals and families.

- **The Center for Human Services'** two Family Support Centers provide early learning, youth development, parent education/support and community resources to the residents of North King County. The family centers are located in Bothell and Shoreline, and the agency partners to provide services on-site at churches and low-income housing complexes in Woodinville, Kenmore, Lake Forest Park and Shoreline.

- **The Northshore YMCA**, located in Bothell, services the Kenmore area. It provides physical fitness programs and parent-child programs at the site in addition to a variety of youth and senior programs. A gym, pool, weight room and meeting rooms are located in its facility. The YMCA offers scholarships for those who are unable to afford services.

- **Hopelink,** with centers in Kirkland and Shoreline, is the largest provider in the area of services for low and moderate-income families. Its services include a food bank, emergency and transitional housing, employment programs, transportation, utility assistance, and other emergency financial assistance. In 2013, Hopelink opened a food bank in Kenmore through a partnership with Northlake Lutheran Church.

- **The Kenmore Family Emergency Shelter**, operated by Hopelink and currently undergoing remodeling, will provide eleven apartments for emergency shelter for homeless families.

- **The HealthPoint Dental Program**, with a location in Bothell, offers affordable dental services to low income and marginalized communities in suburban King County.

- **The Health Point Medical Program,** also located in the Bothell center, offers family practice, obstetric, and pediatric medical services with supportive behavioral health and case management programs.

- **Seattle-King County Public Health** is a provider of basic health services including maternity support services and case management services for young mothers. Services are available through the Northshore Public Health Center in Bothell.

- **Crisis Clinic 2-1-1 Community Information Line** provides information and referral services to all King County residents by coaching callers on how best to present their problem, explaining how the social service system works, and empowering callers to find solutions when there are no resources.

- **Crisis Clinic 24-hour Crisis Line** provides emergency telephone intervention for all King County residents in crisis or emotional distress every day of the year, listening and providing feedback and referrals to other agencies or direct linkage to emergency mental health services as needed.

- **Lifewire (**formerly **Eastside Domestic Violence Program)** provides a variety of direct services designed to address the immediate needs of survivors of domestic violence and their children in north and east King County.

- **Wonderland Developmental Center** in Shoreline serves children with developmental disabilities and their families.

- **ATWORK!,** based in Bellevue, is a provider of employment training and case management for persons with disabilities.

- **Various Other agencies** also provide services to families in Kenmore.

Senior Services

Services for Kenmore seniors are made available primarily through two area non-profit organization:

- **The Northshore Senior Center** is the primary provider of senior services for Kenmore residents. Among the services available are: adult day programs, senior transportation services; health, nutrition and exercise programs; occupational therapy; and an extensive list of outings and social events. The Senior Center provides services at its Bothell location. It also delivers some services at multiple sites throughout the area, including in Kenmore. The Kenmore Senior Center, located at 6910 NE 170th Street in Rhododendron Park, offers a variety of activities (such as social activities, educational programs, and health courses).

- **The Northshore YMCA** in Bothell is the only other major provider of senior programs. Senior fitness programs and social activities are available.

Youth Services

While a wide range of activities is available to Kenmore youth, only a few facilities are actually located in the community:

- **The Northshore YMCA** in Bothell provides teen recreational activities at its pool and gym, and events off-site, in addition to its teen leadership and Youth in Government programs. The Drop In Teens program provides a place for teens to meet friends, play games and get homework support. A Late Night program on Saturdays also is available. The Northshore YMCA operates the Hang Time after school program at Kenmore Junior High.

- **Friends of Youth** provides shelter and transitional housing for homeless youth. The Youth Haven Emergency Shelter in Kirkland serves youth ages 11-17.

- **Northshore Youth & Family Services** provides counseling out of its Bothell facility and at Cascadia College. It also offers a teen-parenting program for first-time teen moms.

- **Alliance of People with disAbilities'** youth programs teach skills to prepare King County youth with disabilities for life as an adult.

- **Crisis Clinic Teen Link** is an anonymous help line answered by teen volunteers each evening from 6-10 p.m., providing a confidential, safe place for youth to seek comfort and support.

- **The Kenmore Public Schools** are a major source of in-community services. The schools offer counseling and referral as well as health services.

The City presently provides funding for human services through awards to individual agencies. The City also participates in an interlocal agreement with Bellevue, Issaquah, Kirkland, Mercer Island, Sammamish, Redmond, and Shoreline to pool a portion of human services funds into single contracts with approved human services programs. The City of Bellevue is the lead administrator of these funds.

Library Services

The King County Library System (KCLS) is one of the busiest library systems in the U.S. and includes 48 public libraries throughout King County (excluding those in Seattle). KCLS has served Kenmore since before incorporation.

The Kenmore Library originated in 1957 through the efforts of the Kenmore Elementary School PTA. Opening day was July 21, 1958. The site was a small red barn on 73rd Avenue NE near where Swamp Creek crosses the road. KCLS provided books and services and the community contributed funds and labor.

In 1976 the Kenmore Library was relocated into a 2,112 sq. ft. modular building at 18138 73rd NE. In July 2011, the library moved again into a new 10,000 square foot library at 6531 Northeast 181st Street in Kenmore's downtown. The new facility was awarded the Civic Design Honor by The American Institute of Architects (AIA), Washington Chapter, in 2012.

In 2013, the Kenmore Library had 332,267 checkouts, compared with Lake Forest Park's 256,136 checkouts and Bothell's 1,168,305 checkouts. KCLS as a whole had more eBooks downloaded in 2013 than any other library system in the country.

Residents in Kenmore also use the Bothell Regional Library, the Lake Forest Park Medium Library, and the Kingsgate Large Library Branches.

Kenmore established a Library Advisory Board in 2007 to serve in an advisory capacity to Kenmore City officials on matters regarding the Kenmore Library. Advisory Board members also act as a liaison between the Kenmore Library, the City of Kenmore, and KCLS. The Library Advisory Board consists of eight voting members who serve three-year terms. All members are appointed by, and serve at the pleasure of, a majority of the Kenmore City Council.

Fire/Emergency Services

King County Fire Protection District No. 16 – Northshore Fire Department

The Northshore Fire Department (District) provides fire prevention, fire suppression, and emergency medical services to the Cities of Kenmore and Lake Forest Park. It operates from two fire stations, Station 51 in Kenmore, and Station 57 in Lake Forest Park.

In total, the Fire District serves over eleven square miles. The estimated population served is approximately 33,000. The State Office of Financial Management (OFM) reports year 2014 population estimates of 21,370 and 12,750 for Kenmore and Lake Forest Park, respectively.

Both fire stations serve the Kenmore area, as well as other parts of the District and adjacent jurisdictions. Station 51 is centrally located within the downtown commercial area of Kenmore at 7220 NE 181st Street.

At the time of this writing, the District employs 48.5 full time employees, 40 of which are uniformed personnel including firefighters, lieutenants, and Battalion Chiefs. The other eight and a half employees make up the Fire Prevention, Training, and Administrative Divisions of the District. At any given time in the District, there is a minimum of nine emergency responders on duty. Out of the nine responders, there is a minimum of six on duty at Station 51 in Kenmore, and three on duty at Station 57 in Lake Forest Park. The proportional distribution of staffing between the two fire stations closely aligns with the number of calls for service and the population served between the two cities.

During 2014, out of a total of 3,525 requests for service, the majority of calls received were for medical emergencies—including motor vehicle accidents with or without injury and extrication (2,666 calls = 76%). Another 444 calls (12.5%) pertained to other types of emergency issues, including someone smelling smoke, carbon monoxide incidents, gasoline spills, downed power lines and other hazards (including a few calls for service that were cancelled once District personnel arrived on the scene). Seventy-one fire responses (2%) involved fires in structures, automotive vehicles, public utilities and outside areas. Ninety-one non-emergency requests for assistance (2.5%) involved helping citizens with lock-outs, assisting with patient care, and even addressing minor flooding issues.

The number of calls for service has increased by 10.3% over the last ten years (3,196 in 2004 and 3,525 in 2014). It is anticipated that the call volume will continue to increase at this relatively stable rate. However, the majority of the increase will be in Kenmore due to its higher rate of projected growth.

The District's facilities are relatively new and were constructed with future growth trends taken into consideration. The Kenmore station can accommodate additional response units when the increase in the number of calls for service dictates additional staffing.

Within Kenmore in 2013, the average response times for priority fire or EMS calls for service was 3:42 minutes for areas north of the Sammamish River and 5:53 minutes for areas to the south of the River.

The District has automatic aid agreements with all of its neighboring jurisdictions. These mutually beneficial agreements reduce response times, especially to the fringe areas of a jurisdiction. They also provide additional staffing for labor intensive incidents such as structure fires and incidents involving technical rescues. In 2014, the District received assistance from neighboring agencies 241 times, and provided assistance 621 times.

Police Services

Kenmore contracts with the King County Sheriff's Office for one police chief (sergeant) and 13 police officers, including 12 patrol officers, and a burglary/larceny detective. The City also contracts for various support services, i.e. major crimes, bomb disposal, etc. Since police services are contracted from the King County Sheriff's Office, all vehicles and equipment are provided by the County in the cost of the officers. All of the Kenmore officers work out of Kenmore City Hall at 18120 68th Avenue NE.

As of 2013, the City had 14 officers with support services equaling 15.97 FTEs, and the level of service was about 75 officers per 1,000 population (including commissioned officers).

Dispatch calls for service between 2008 and 2013 were as follows:

- 2008 – 3,130

- 2010 – 3,287
- 2013 –3,342

Crimes are divided into Part I and Part II offenses. Part I offenses include criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. Part II offenses include all other crimes not considered Part I, such as simple assaults, forgery/counterfeiting, fraud, embezzlement, stolen property, prostitution, sex offenses (except forcible rape or prostitution), drug violations, gambling, offenses against the family and children, driving under the influence, liquor violations, drunkenness, disorderly conduct, etc.

In Kenmore, Part I offenses tend to include burglary and larceny cases. Part II offenses in Kenmore tend to include assault, forgery/fraud, vandalism, and driving while under the influence. When reviewing data by patrol district, sector E-2 in the northeast portion of the City generates more dispatched calls for service than the other patrol districts. Refer to **Figure PS-2** for patrol districts.

In Kenmore as a whole, the crime rate is shown in **Table PS-A**.

TABLE PS-A
KENMORE CRIME RATE STATISTICS PER 1,000 POPULATION

OFFENSE	2008	2010	2013
Part I – Crime Rate	18	21	17
Part II – Crime Rate	33	38	21

Source: Police Services Data, 2013.

Police response times between 2008 and 2013 are shown in the **Table PS-B**. Response times vary by the priority nature of the call. The variation in Critical Dispatch times is due to a number of factors, such as how many officers are on duty at the time of the call, the time of day the call was received, or traffic congestion.

Staffing needs are determined through the contracting process. Facility/equipment repair or renovation needs do not apply since police services are contracted.

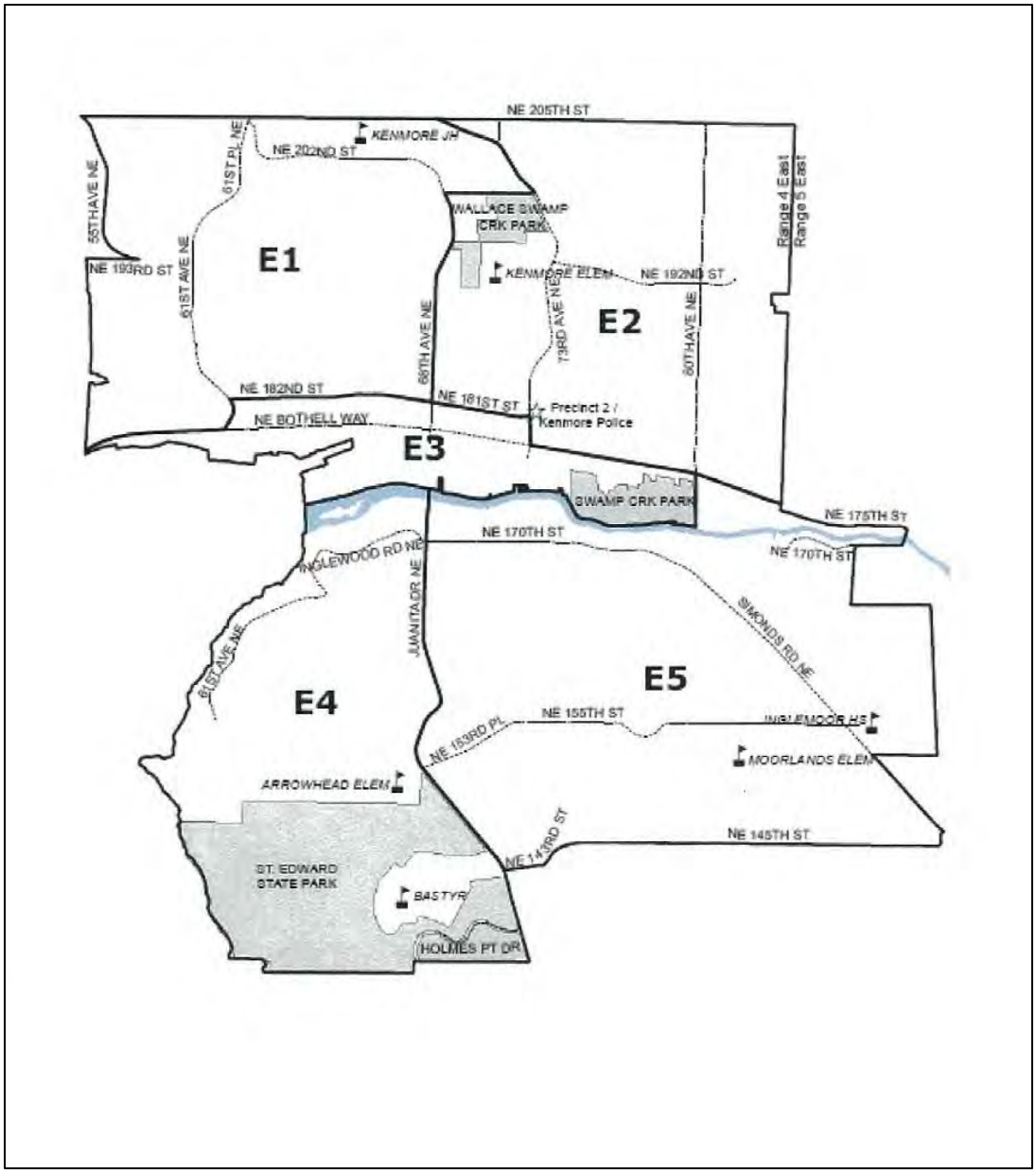
Dedicated officers under contract to cities do not provide service to patrol districts in unincorporated areas.

TABLE PS-B
POLICE RESPONSE TIMES

DATE	PRIORITY	AVERAGE RESPONSE TIME
2008	X	4.06 min.
	1	7.25 min.
	2	10.74 min.
2010	X	2.55 min.
	1	6.79 min.
	2	10.23 min.
2013	X	3.64 min.
	1	5.57 min.
	2	8.13 min.

Notes:
Priority X Critical Dispatch – In progress events that pose obvious danger to life
Priority 1 Immediate Dispatch – Events requiring immediate police action
Priority 2 Prompt Dispatch – Less critical situations that may escalate
Note: The variation in Critical Dispatch times is due to factors such as staffing available, number of calls received, number of months included in assessment, etc.

Source: Police Services Data, 2013.



City of Kenmore Patrol Districts

This map is intended for planning purposes only and is not guaranteed to show accurate measurement.

Source: Police Service Highlights & Data Report: 2012

Figure PS-2

Not to Scale

April, 2015

Schools

The Northshore School District primarily serves seven jurisdictions: King County, Snohomish County, the City of Bothell, the City of Brier, the City of Kenmore, the City of Kirkland, and the City of Woodinville. The District boundaries are shown in **Figure PS-3.**

Lake Washington School District serves King County and the Cities of Kirkland and Redmond. The northern boundary of this District bisects St. Edward State Park in Kenmore. Refer to **Figure PS-4.** As there is no residential population living with school-age children in this area, no additional information on the Lake Washington School District is included in the Element. The Northshore School District is addressed below.

Northshore School District

Five schools are located within Kenmore City limits, including three elementary schools, one junior high school and one high school:

- Arrowhead Elementary
- Kenmore Elementary
- Moorlands Elementary
- Kenmore Junior High School
- Inglemoor High School

Schools in the immediate vicinity of the City include Sorenson Early Childhood Center, Westhill, Lockwood, and Shelton View Elementaries; Canyon Park and Northshore Junior Highs; and Bothell High School. These nearby schools serve a portion of Kenmore residents.

Attendance boundaries for the high schools show that the greater part of Kenmore is within the Inglemoor High School attendance boundaries. Students on the northeast side of Kenmore, east of 80th Avenue NE, are within the Bothell High School attendance boundaries.

The Northshore School District will open a new high school, North Creek, in north Bothell off 35th Avenue between 188th and 192nd streets in Snohomish County and implement grade reconfiguration (move to K-5 elementary, 6-8 middle and 9-12 high schools) in the fall of 2017 to provide greater academic and other opportunities for students. Boundary adjustments will also be made in fall 2017 to create a service area and feeder pattern for North Creek High School and to help balance districtwide enrollment.

School Classroom Size, Capacities, and Deficiencies

The Northshore School District establishes its level of service by defining class size goals. Refer to **Table PS-C**. The student capacity of a school is determined by the classroom size goal as well as the building area.

TABLE PS-C
NORTHSHORE SCHOOL DISTRICT
STANDARD OF SERVICE

CLASSROOM TYPE	AVERAGE STUDENTS PER CLASSROOM
ELEMENTARY (K-6)	
Kindergarten	22
Regular, alternative, EAP	24
Special education, mid-level	12
Special education, functional skills & academics	8
Integrated regular & special education	21
JUNIOR HIGH (7-9)	
Regular, alternative	27
Special education, mid-level	12
Special education, functional skills & academics	8
SENIOR HIGH (10-12)	
Regular, alternative	27
Special education, mid-level	12
Special education, functional skills & academics	8
Vocational education	27

Source: 2016 Capital Facilities Plan, Northshore School District 417

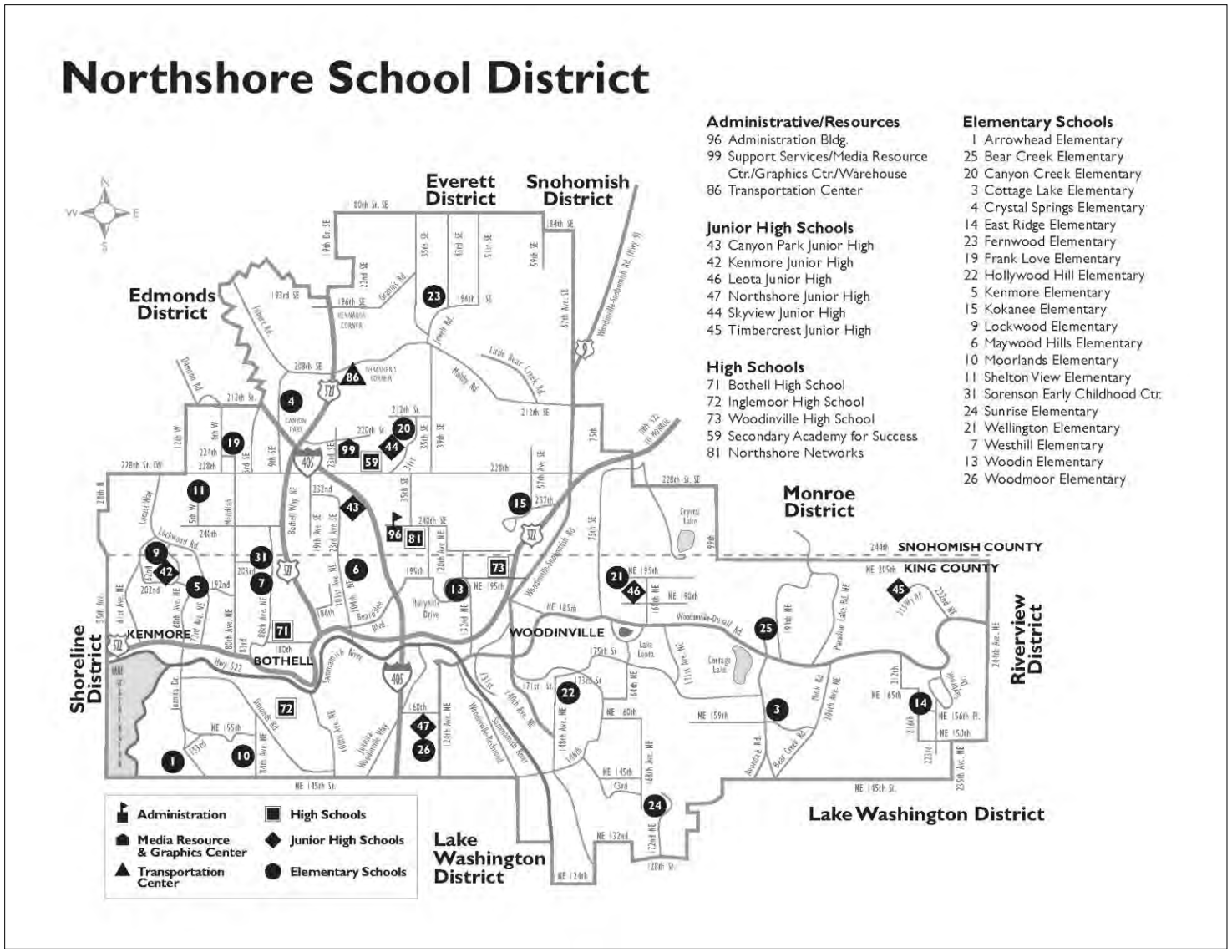
The design capacity and scheduled capacity of the schools within Kenmore and outside of Kenmore, which serve Kenmore residents, are shown in **Table PS-D**. To provide planning time and space for teacher preparation, and meet required instructional needs, some facilities will only support a design capacity utilization of 85%. Scheduled capacity reflects the specific programs that take place in each room.

Capacity information includes portables at the school. To optimize instructional program flexibility and maximum service levels in the most cost-effective way possible, the District maintains 10-15% of its total design capacity in portables.

TABLE PS-D
NORTHSHORE – SCHOOL STUDENT CAPACITIES AND ENROLLMENT

SCHOOL	DESIGN CAPACITY	2016 SCHEDULED CAPACITY [1]	2016 ENROLLMENT (FTEs)	% UTILIZED SCHEDULED CAPACITY
ELEMENTARY				
Arrowhead	597	453	423	93%
Kenmore	646	571	561	98%
Lockwood	669	561	612	110%
Moorlands	765	704	787	112%
Shelton View	574	503	527	105%
Westhill	598	527	493	94%
JUNIOR HIGH				
Canyon Park	1,258	1,063	809	76%
Kenmore	1,054	940	623	66%
Northshore	1,195	1,066	737	69%
SENIOR HIGH				
Inglemoor	2,125	1,873	1,350	72%
Bothell	2,251	1,960	1,638	84%

[1]Source: 2016 Capital Facilities Plan, Northshore School District 417. Reflects the different types of school spaces (classrooms, gym, music room, etc.) and programmatic requirements that may limit number of students per class.



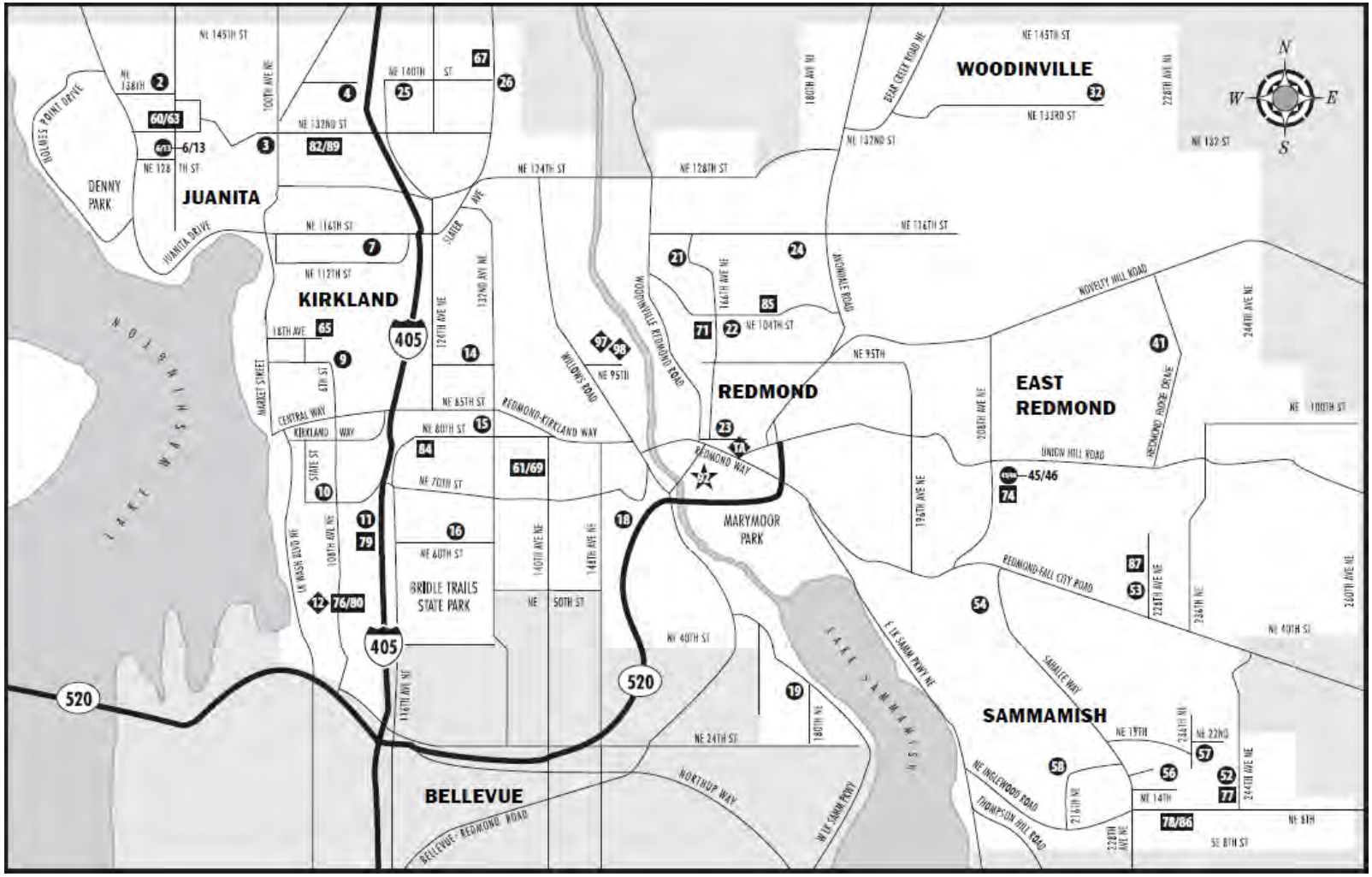
Northshore School District

This map is intended for planning purposes only and is not guaranteed to show accurate measurements.
Source: Northshore School District

Figure PS-3

Not to Scale

April, 2015



Lake Washington School District

This map is intended for planning purposes only and is not guaranteed to show accurate measurements.
Source: Lake Washington School District

Figure PS-4

Not to Scale

April, 2015

Future Growth

To determine planned improvements, the District projects student enrollment at the elementary, junior and senior high levels. Increases in enrollment at the elementary level continue to drive capacity challenges, particularly in the north half of the district (Northshore School District 417, 2014 Capital Facilities Plan). Projected enrollment in 2025 is 22,798 FTE, compared with a projected enrollment of 19,753 FTE in 2015.

Improvements planned for schools in the District that may impact Kenmore include:

- Construction of the new North Creek comprehensive high school;
- Construction of a new elementary school in the north end of the district;
- Improvements to existing District facilities including but not limited to mechanical systems, flooring, building controls, roofing, boilers, circulation, security, casework and seismic upgrades;
- Improvements to District facilities to meet current ADA requirements;
- Energy efficiency improvements; and
- Upgrades to playfields and gymnasiums, including tracks, tennis courts, athletic fields, and artificial turf.

Impact Fees

Impact fees are calculated based upon the District's cost per dwelling unit and can be used to purchase land for school sites, make site improvements, construct schools and purchase/install temporary facilities (portables).

Along with the opening of North Creek High School and grade reconfiguration, the District is making several boundary line adjustments in 2017 to increase District-wide facility utilization and accommodate planned growth. They also have identified the need for a new elementary school in the northern part of the District.

Bastyr University

Bastyr University is located along Juanita Drive on privately owned property adjacent to St. Edward State Park. The University was founded in 1978 in Seattle by practicing naturopathic physicians and moved to its location in Kenmore in 1996. In 2012, the University opened a second campus in San Diego, California.

The University is a leading institution of science-based natural medicine. The University offers 18 baccalaureate, masters and doctoral degree programs, along with two certificate programs, in the following areas of study:

- Naturopathic Medicine
- Nutrition
- Acupuncture and Oriental Medicine
- Exercise Science
- Counseling Psychology
- Health Psychology
- Herbal Sciences
- Holistic Landscape Design
- Integrated Human Biology
- Midwifery

- Ayurvedic Sciences

In 2013/2014, the University estimated an enrollment of over 1,123. There is a full-time faculty of 76, part-time adjunct faculty totaling 189, and 8 research faculty.

The University has a ten-year Master Plan, approved by the City, which sets out future enrollment projections and proposed development. The Master Plan approval extends through December 31, 2020.

GOALS, OBJECTIVES, AND POLICIES

Following are the public services goals, objectives and policies.

GOAL PS-1. ENSURE THAT CITY GOVERNMENT REMAINS OPEN AND RESPONSIVE TO ITS INFORMED CITIZENRY.

OBJECTIVE PS-1.1 Strengthen communication between government and the people.

Policy PS-1.1.1 Strive for communication with citizens, business owners, property owners, and others by:

- Providing a newsletter to the general public and working with local newspapers to provide information about the City, public meetings, plans, programs, policies, and regulations.
- Using signage, as appropriate, to alert citizens to City meetings and events.
- Using the City web site and social media to provide information about the City, its elected officials, public meetings, plans, programs, policies and regulations.
- Using other methods of communication, such as focus groups, advisory committees, and consultations to inform the community, business, and development community about City plans, programs, policies, and regulations.
- Coordinating with public and private schools to involve youth in the City's plans and programs, such as park and recreation plans, volunteer programs, and other aspects of City plans and programs that would benefit from youth involvement.

Policy PS-1.1.2 Prior to action on City plans and regulations, seek and integrate public input through public workshops, meetings, and hearings.

Policy PS-1.1.3 Support community engagement techniques that will encourage a diversity of voices.

OBJECTIVE PS-1.2 Actively seek public involvement.

Policy PS-1.2.1 Encourage City staff and elected officials to regularly attend civic and community organization meetings.

Policy PS-1.2.2 Seek broad representation on boards, commissions, and advisory groups.

Policy PS-1.2.3 Work with civic organizations to educate the general public on the responsibilities of government and their participation.

OBJECTIVE PS-1.3 Encourage and facilitate charitable giving, community service and volunteerism.

Policy PS-1.3.1 Provide for recruiting, training, organization, and recognition of volunteers within the community to address appropriate public needs.

GOAL PS-2. PROVIDE EFFICIENT MUNICIPAL SERVICES THAT MEET THE NEEDS OF THE COMMUNITY.

OBJECTIVE PS-2.1 When appropriate, contract with public agencies and private providers for the cost-efficient delivery of quality municipal services.

Policy PS-2.1.1 Establish clear level of service standards, and regularly evaluate alternatives for the cost-effective delivery of services.

Policy PS-2.1.2 On a regular basis, evaluate contracts for the delivery of service.

OBJECTIVE PS-2.2 Provide sufficient resources, staffing, and procedures to provide quality City-managed services to the community.

Policy PS-2.2.1 Prepare an annual report on the achievement of Comprehensive Plan goals, objectives and policies, as well as progress towards implementing functional and capital facility plans. Determine through the budget review process if resources and staffing are sufficient to meet desired outcomes.

OBJECTIVE PS-2.3 Develop and implement permit processes that are timely, predictable, and fair to all affected parties.

Policy PS-2.3.1 Review development regulations to ensure they are necessary and directly relate to implementation of the Comprehensive Plan and other State and Federal mandates. Eliminate duplicative and unnecessary regulations.

Policy PS-2.3.2 Provide procedures to process permits in a timely fashion.

Policy PS-2.3.3 Implement uniform application, public notice, permit review, and appeal procedures.

Policy PS-2.3.4 Strive to involve the public in the permit process such that their comments may be heard and considered:

a. Provide public notice of major development proposals;

b. Encourage, and facilitate where possible, early communication between developers and neighbors about the project and its impacts; and,

c. Educate the citizens about development rules and help them effectively participate in the development and land use regulation process. Reports and documents should be made available in advance and available on the City's website, at City Hall, the library, and other appropriate locations.

GOAL PS-3. SUPPORT AND PROVIDE A HIGH LEVEL OF POLICE PROTECTION, FIRE SUPPRESSION, AND EMERGENCY SERVICES.

OBJECTIVE PS-3.1 Provide and maintain a police system sufficient to meet the community's public safety needs.

Policy PS-3.1.1 Provide community crime education programs. Provide or encourage those programs or activities that stimulate neighborhood cohesiveness such as Neighborhood Watch programs, community clubs, and others.

Policy PS-3.1.2 Include "Crime Prevention through Environmental Design" components in site design guidelines for new development as discussed in the Land Use Element.

OBJECTIVE PS-3.2 Support the fire service provider in its efforts to provide a Fire Prevention, Fire Suppression and Emergency Medical Services response system sufficient to meet the community's public safety needs.

Policy PS-3.2.1 Continue to coordinate review of development plans with the Northshore Fire Department and the Northshore Utility District to ensure Uniform Fire Code and fire flow requirements are met.

Policy PS-3.2.2 Continue to coordinate efforts to maintain an effective fire code inspection program with the Northshore Fire Department, to ensure that all commercial, multifamily, and public facilities developments provide safe environments for citizens to live, work and visit.

OBJECTIVE PS-3.3 Establish an emergency management office and system.

Policy PS-3.3.1 Establish emergency management procedures for the City in consultation with the Northshore Utility District, the Northshore Fire Department, adjacent jurisdictions, King County, Snohomish County, and the State.

Policy PS-3.3.2 Participate in regional emergency management programs.

Policy PS-3.3.3 Work with the community to educate citizens about emergency preparedness and encourage citizens to be prepared for natural disasters.

GOAL PS-4. SUPPORT THE PROVISION OF QUALITY EDUCATIONAL OPPORTUNITIES TO THE KENMORE COMMUNITY.

OBJECTIVE PS-4.1 Support public and private education providers in providing the best education for members of the community.

Policy PS-4.1.1 Inventory public and private education facilities.

Policy PS-4.1.2 Coordinate and communicate with the appropriate school districts on issues of mutual interest including, school facility location/expansion, impacts of new development, impacts of school facilities and activities on the community, parks and recreation programs, population and growth projections, and school involvement in the community.

OBJECTIVE PS-4.2 Encourage diverse and continuing education opportunities.

Policy PS-4.2.1 Inventory public and private education programs that serve Kenmore.

Policy PS-4.2.2 Recognize Bastyr University as an important institution providing higher education in the region. Establish regular communication with the University regarding traffic and circulation, parks and recreation, and other areas of community concern.

Policy PS-4.2.3 Support continuing education programs offered by the University of Washington – Bothell campus, Bastyr University, Shoreline and Cascadia College, the King County Library System, and other providers.

OBJECTIVE PS-4.3 Provide adequate library services in the community.

Policy PS-4.3.1 In partnership with the King County Library System, encourage increased local library services to the Kenmore community.

GOAL PS-5. SUPPORT THE PROVISION OF EFFECTIVE AND ACCESSIBLE HUMAN SERVICES THAT ADDRESS COMMUNITY CONCERNS

OBJECTIVE PS-5.1 Coordinate with existing human service providers to make the most effective use of resources committed to human services including family, senior, youth, health, etc. in the Kenmore community.

Policy PS-5.1.1 Increase coordination among providers of services with the aim of expanding services to Kenmore residents. Work with the talent base already available in the service provider community to develop comprehensive approaches to meet the needs of residents. Consider the following roles for active City involvement:

a. Convene meeting(s) of providers serving Kenmore to develop plans for increased or more focused services in Kenmore.

b. Improve community information on services available to Kenmore residents. City Hall should continue to be a central source for information on services available to Kenmore residents.

OBJECTIVE PS-5.2 Make health and human services more accessible to the Kenmore community.

Policy PS-5.2.1 Help make health and human services more accessible and less subject to the barriers of inadequate transportation and facilities space. Consider the following roles for active City participation:

a. Facilitating improved transportation services for Kenmore residents. The City should meet with Metro transportation services and Sound Transit staff to develop increased transit service within Kenmore and routes between Kenmore and neighboring communities.

b. Supporting partnerships between schools and local service agencies for space to operate youth programs and services at school sites.

Policy PS-5.2.2 Support the efforts of the Kenmore Senior Program, and the Northshore Senior Center, to provide a variety of recreational, social, educational, and wellness programs to the Kenmore Community.

Policy PS-5.2.3 Help prevent obesity through programs that make Kenmore a healthy place to live, learn and thrive.

OBJECTIVE PS-5.3 Recognize the City's limited resources by applying municipal funds to fill gaps in services or to leverage federal, state or regional funding received.

Policy PS-5.3.1 Encourage agencies and human services providers to update information on community needs and available services, with recommendations on how providers might reduce or eliminate gaps in service for Kenmore residents.

Policy PS-5.3.2 Utilize Federal and State funding, or other grant funding, to help expand programs to fill gaps in services.

IMPLEMENTATION STRATEGIES

These Public Services policies would require new or increased commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations would be needed to address:

- Preparation of an annual report on the status of Comprehensive Plan goals, objectives, and policies, and implementing plans
- Inventorying educational facilities and programs serving Kenmore.
- Encouraging agencies and human services providers to update information on community needs and available services, with recommendations on how providers might reduce or eliminate gaps in service for Kenmore residents.
- Development of a recreational guide to promote locations and opportunities for physical activity.

Additional or continuing efforts would need to be made to coordinate with adjacent jurisdictions or participate in regional programs, including:

- Coordinate with the Northshore Fire Department in their development review and inspection programs
- Participate in regional emergency management systems
- Coordinate with school districts and Bastyr University
- Coordinate with the Library District
- Facilitate meeting(s) with human service providers.

REFERENCES

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UTILITIES ELEMENT

INTRODUCTION

Purpose

City residents rely on a number of basic services that help define their quality of life and maintain their health and well being. Water supply and sewage and solid waste disposal systems and the delivery of natural gas, electricity, and telecommunication services are considered "utilities." These services are often taken for granted, yet without coordination and conscientious planning for future growth, service may be interrupted, inadequate, or prohibitively expensive. The Utilities Element addresses electricity, telecommunications (telephone, cable, internet), and natural gas provision as well as water, wastewater, and solid waste services. The Element also addresses conservation and recycling.

Growth Management Act Requirements

The Growth Management Act (GMA) has the goal of ensuring that those public facilities and services necessary to support development shall be adequate to serve the development at the time development is available for occupancy and use without decreasing current service levels below locally established minimum standards. A Utilities Element is required to address the general location, proposed location and capacity of existing and proposed utilities, including electrical lines, telecommunication lines, and natural gas lines.

Countywide Planning Policies

The King County Countywide Planning Policies include general policies to ensure adequate infrastructure for planned development within the King County Urban Growth Boundary. Growth is to be directed to centers and urbanized areas with existing infrastructure capacity.

EXISTING CONDITIONS/FORECAST OF FUTURE NEEDS

Electricity

Puget Sound Energy (PSE) is a private utility providing electric and natural gas service to homes and businesses in the Puget Sound region and portions of Eastern Washington, covering 10 counties and approximately 6,000 square miles. PSE provides electrical power to more than 1.2 million electric customers throughout 8 counties. Within the City of Kenmore, PSE serves approximately 9,468 metered customers.

Existing Distribution System

To provide the City of Kenmore with electricity, PSE builds, operates, and maintains an extensive integrated electric system consisting of generating plants, transmission lines, substations, switching stations, sub-systems, overhead and underground distribution systems, attachments, appurtenances, and metering systems.

PSE generates approximately 46 percent of the electricity for its customers from its own generation plants--hydro, thermal, solar and wind. PSE currently has about 3,000 megawatts of power-generating capacity, and purchases the rest of its power supply from a variety of other utilities, independent power producers and energy marketers across the western United States and Canada.

The PSE electric transmission facilities in City of Kenmore are important components of the electric energy delivery grid serving the city and Puget Sound region. As electricity reaches the City, the voltage is reduced and redistributed through lower-voltage transmission lines, distribution substations, overhead and underground distribution lines, smaller transformers, and to individual meters. PSE operates and maintains approximately 5.8 miles of 115 kilovolt (kV) high-voltage transmission lines, 1 switching station, 2 substations, 53 miles of overhead and 48 miles of underground 12kV distribution lines in Kenmore. **Figure U-1** shows the locations of existing primary electric transmission lines and substations within the City.

Regulatory Environment

PSE's operations and rates are governed by the Washington Utilities and Transportation Commission (WUTC). PSE electric utility operations and standards are further governed by the Federal Energy Regulatory Commission (FERC), the National Electric Reliability Corporation (NERC), and the Western Electricity Coordinating Council (WECC). These respective agencies monitor, assess and enforce compliance and reliability standards for PSE. The residents of Kenmore and the region rely on the coordinated effort between PSE and City for the adoption and enforcement of ordinances and/or codes to protect transmission and distribution line capacity and support federal and state compliance of safe, reliable, and environmentally sound operation of PSE's electric facilities. Routine utility maintenance work, including vegetation management, is required to maintain compliance with FERC, NERC, and WECC regulations.

Planned Upgrades to System

In order for PSE to meet regulatory requirements, it updates and files an Integrated Resource Plan (IRP) with the WUTC every two years. The IRP presents a long-term forecast of the lowest reasonable cost combination of resources necessary to meet the needs of PSE's customers to provide dependable and cost effective service over the next 20 years. The current plan, which was filed in May of 2013, details both the energy supply and transmission resources needed to reliably meet customers' wintertime, peak-hour electric demand over the next 20 years. The plan, which will be updated in the fall of 2015, forecasted that PSE would have to acquire approximately 4,900 megawatts of new power-supply capacity by 2033. This resource need is driven mainly by expiring purchased-power contracts and expected population and economic growth in the Puget Sound region. The IRP suggests that roughly more than half of the utility's long-term electric resource need can be met by energy efficiency and the renewal of transmission contracts. This reduces the need down to 2,200 MW by 2033. The IRP states that the rest of PSE's gap in long-term power resources is likely to be met most economically with added natural gas-fired resources.

As part of its planning for the future, PSE must maintain compliance with the Washington Energy Independence Act (I-937). This voter-approved law requires utilities to provide 15 percent of their customers' electricity from renewable sources by 2020. PSE today is the top utility producer of renewable energy in the Northwest, with 773 megawatts of generating capacity from its three large wind farms in Washington.

PSE will be systematically deploying smart grid technology at each level of infrastructure to enhance and automate monitoring, analysis, control and communications capabilities along its entire grid. Smart grid technologies can impact the electricity delivery chain from a power generating facility all the way to the end-use application of electrical energy inside a residence or place of business. The ultimate goals of smart grid are to enable PSE to offer more reliable and efficient energy service, and to provide customers with more control over their energy usage.

PSE's Renewable Energy Advantage Program (REAP) voluntarily encourages the growth of renewable electricity production in its service area in support of WAC 458-20-273 through payments to the customer for energy produced. Currently, there are approximately 3,000 small customer-owned generation facilities. The generation facilities are interconnected with PSE's electrical distribution system. Dependent upon a customer's consumption, surplus energy can be exported onto the grid. The vast majority of these renewable systems are solar panel installations. Although this provides a modest portion of PSE's electrical supply portfolio, the number of customer-owned installations continues to increase every year. This voluntary set of rules allows Washington state utilities the option of participating in an incentive program for eligible customers who use solar PV, wind or anaerobic digesters to generate their own electricity. The incentives are available to individuals and businesses within the City. There are 29 small customer-owned generation facilities in Kenmore, one of which is at Kenmore City Hall.

Specific transmission and substation construction that is anticipated in Kenmore in the next 10 years includes reconstruction of the existing Moorlands-Vitulli transmission line that was built in the 1940s between the Moorlands substation in Kenmore and the Vitulli substation in Bothell. This five-mile long line brings power to customers in Kenmore and Bothell and is approaching its capacity limits, making it at risk of overloading during periods of high energy usage—putting customers at risk for power outages. The transmission line is scheduled for reconstruction in 2015. The new line, generally running along NE 195th Street, will include a high capacity conductor, new poles, and associated equipment.

Two proposed substations (Spruce and Chickadee) may also serve Kenmore in the future, but are not proposed for construction within the next 10 years.

Conversion to Underground Service

The cost of undergrounding of electric facilities is regulated by the Washington Utilities and Transportation Commission (WUTC). Underground installations by PSE must be done in accord with the rates and tariffs on file with the WUTC.

Undergrounding may be two to four times the cost of installing overhead lines, plus the cost of trenching and hard surface restoration. The latter may result in costs up to 10 times the amount of overhead line installation. In addition, there are costs to the customer, particularly affecting commercial customers, for installing lines from the transformer to the meter at the building.

Challenges to undergrounding include environmental constraints such as wetlands and buffers, as well as the need for easements when large pad-mounted equipment such as transformers and switches cannot be accommodated in the right-of-way.

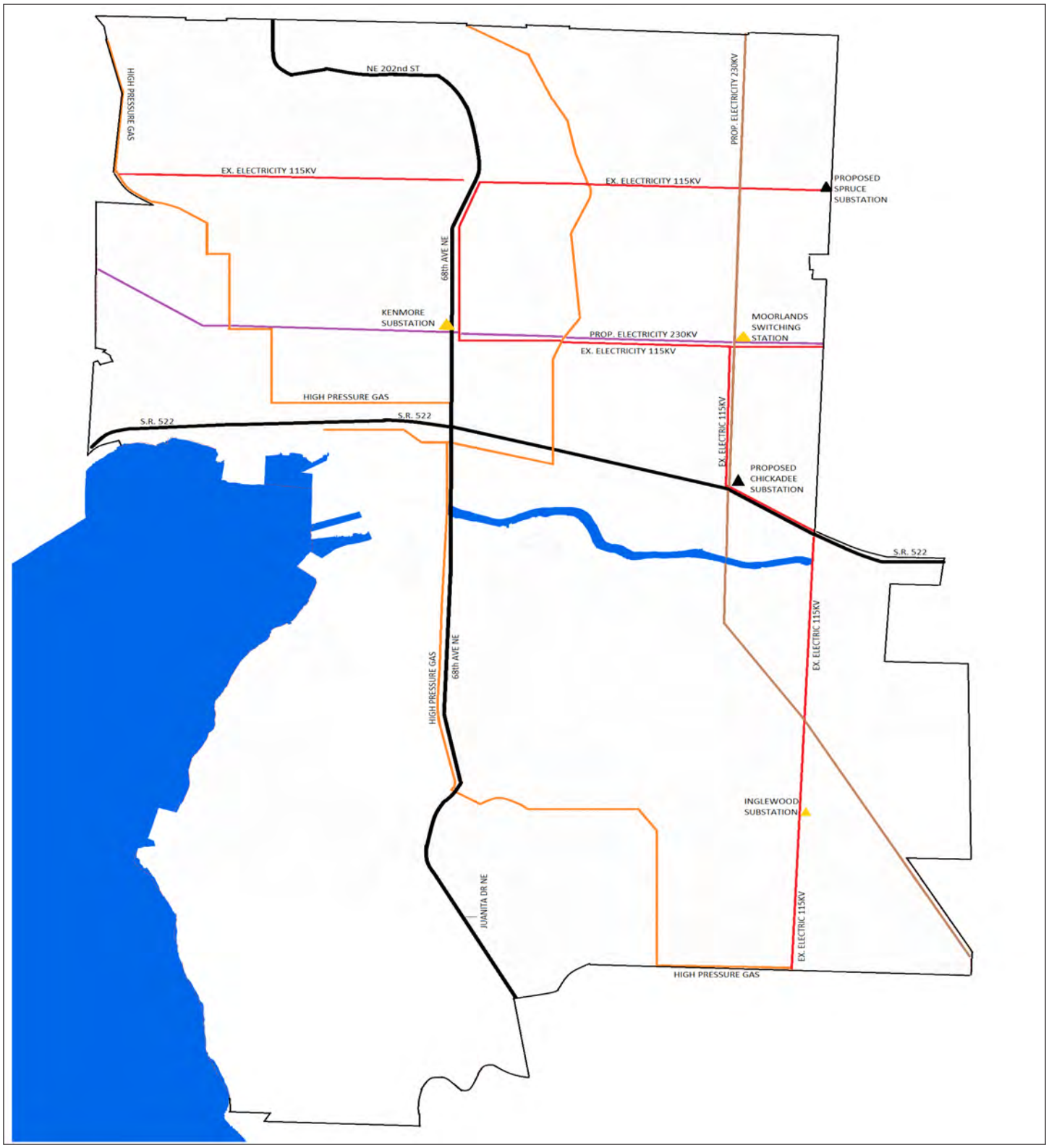
Energy Conservation Programs

PSE currently has several energy conservation programs for residential, commercial, and industrial customers. While these programs may change from year-to-year, current programs range from technical assistance and information to referrals and financial assistance. PSE maintains an "Energy Efficiency Hotline" to help direct customers to the various conservation programs. For residential customers PSE offers a free, do-it-yourself home energy audit as well as several free informational brochures. PSE also provides weatherization assistance for low-income customers.

Policy on Electric and Magnetic Fields

Electric and magnetic fields exist in nature as well as around all types of electrical devices. The electric and magnetic fields around all electrical appliances and power lines fall within the extremely low frequency (ELF) range. For several years, scientists reflecting a broad range of scientific disciplines have considered the question of whether EMF presents a hazard to human health. The scientific consensus, according to PSE, is that current evidence does not confirm the existence of any health consequences from exposure to low level EMF. PSE's policy statement says that Puget Sound Energy has and will continue to:

- Follow all applicable laws and regulations governing the installation of electrical facilities
- Remain informed about important developments in EMF research.
- Share accurate and objective information about EMF with customers.



POWER & GAS

LEGEND

- PSE - EXISTING HIGH PRESSURE GAS
- PSE - EXISTING ELECTRIC 115 KV
- PSE - EXISTING ELECTRIC SUBSTATION
- PSE - PROPOSED ELECTRIC SUBSTATION
- PSE - PROPOSED ELECTRIC 115 KV
- PSE - PROPOSED ELECTRIC 230 KV

Source:
Electric and Gas Facillity locations from mapping provided by Puget Sound Energy, 2015.

0.4 0.6 0.8 Miles

Figure U-1

Natural Gas

Natural gas utility service for the City of Kenmore also is provided by Puget Sound Energy (PSE). Currently, PSE provides natural gas to more than 770,000 customers, throughout 6 counties, covering an approximately 2,900 square-mile area. Within the City of Kenmore, PSE serves 5,612 metered customers.

Existing Distribution System

PSE controls its gas-supply costs by acquiring gas, under contract, from a variety of gas producers and suppliers across the western United States and Canada. PSE purchases 100 percent of its natural-gas supplies needed to serve its customers. About half the natural gas is obtained from producers and marketers in British Columbia and Alberta, and the rest comes from Rocky Mountain States. All the gas PSE acquires is transported into PSE's service area through large interstate pipelines owned and operated by Williams Northwest Pipeline. PSE buys and stores significant amounts of natural gas during the summer months, when wholesale gas prices and customer demand are low, and stores it in large underground facilities. PSE then withdraws the natural gas in winter when customer usage is highest, ensuring that a reliable supply of gas is available.

To provide the City of Kenmore and adjacent communities with natural gas, PSE builds, operates, and maintains an extensive system consisting of transmission and distribution natural gas mains, odorizing stations, pressure regulation stations, heaters, corrosion protection systems, above ground appurtenances, and metering systems. When PSE takes possession of the gas from its supplier, it is distributed to customers through more than 21,000 miles of PSE-owned natural gas mains and service lines.

PSE receives natural gas transported by Williams Northwest Pipeline's 36" and 30" high pressure transmission mains at pressures ranging from 500 PSIG to 960 PSIG. The custody change and measurement of the natural gas occurs at locations known as Gate Stations. PSE currently has 39 such locations throughout its service territory. This is also typically where the gas is injected with the odorant mercaptan. Since natural gas is naturally odorless, this odorant is used so that leaks can be detected. The Gate Station is not only a place of custody transfer and measurement but is also a common location of pressure reduction through the use of "pressure regulators". Due to state requirements, the pressure is most commonly reduced to levels at or below 250 PSIG. This reduced pressure gas continues throughout PSE's high pressure supply system in steel mains ranging in diameter of 2" to 20" until it reaches various other pressure reducing locations. PSE currently has 755 pressure regulating stations throughout its service territory. These locations consist of Limiting Stations, Heaters, District Regulators, and/or high pressure Meter Set Assemblies.

The most common of these is the intermediate pressure District Regulator. It is at these locations that pressures are reduced to the most common levels ranging from 25 PSIG to 60 PSIG. This reduced pressure gas continues throughout PSE's intermediate pressure distribution system in mains of various materials consisting of polyethylene and wrapped steel that range in diameters from 1-1/4" to 8" (and in a few cases, larger pipe). The gas flows through the intermediate pressure system until it reaches either a low pressure District Regulator or a customer's Meter Set Assembly.

To safeguard against excessive pressures throughout the supply and distribution systems due to regulator failure, over-pressure protection is installed. This over-pressure protection will release gas to the atmosphere, enact secondary regulation, or completely shut off the supply of gas. To safeguard steel main against corrosion, PSE builds, operates, and maintains corrosion control mitigation systems to prevent damaged pipe as a result of corrosion.

Currently within the City of Kenmore PSE operates and maintains: 6 miles of high pressure main, 5 District Regulators, 79 miles of intermediate and low pressure main, and approximately 87 miles of service lines. **Figure U-1** shows the locations of existing primary natural gas transmission lines within the City.

Regulatory Environment

PSE's operations and rates are governed by the Washington Utilities and Transportation Commission (WUTC). PSE natural gas utility operations and standards are further regulated by the U.S. Department of Transportation (DOT), including the Pipeline and Hazardous Materials Administration (PHMSA). PHMSA's Pipeline Safety Enforcement Program is designed to monitor and enforce compliance with pipeline safety regulations. This includes confirmation that operators are meeting expectations for safe, reliable, and environmentally sound operation of PSE's pipeline infrastructure. PHMSA and the WUTC update pipeline standards and regulations on an ongoing basis to assure the utmost compliance with standards to ensure public safety. The residents within Kenmore rely on the coordinated effort between PSE and the City for the adoption and enforcement of ordinances and/or codes to support on the safe, reliable, and environmentally sound construction, operation and maintenance of PSE's natural gas facilities.

Planned Upgrades to System

The Integrated Resource Plan (IRP), filed with the WUTC every two years, identifies methods to provide dependable and cost effective natural gas service that address the needs of retail natural gas customers. Natural gas sales resource need is driven by design peak day demand. The current design standard ensures that supply is planned to meet firm loads on a 13-degree design peak day, which corresponds to a 52 Heating Degree Day (HDD). Currently, PSE's supply/capacity is approximately 970 MDth/Day at peak. This figure will be updated in the fall of 2015. The IRP suggests the use of liquefied natural gas (LNG) for peak day supply and to support the needs of emerging local maritime traffic and truck transport transportation markets.

To meet regional and City natural gas demand, PSE's delivery system is modified every year to address new or existing customer growth, load changes that require system reinforcement, rights-of-way improvements, and pipeline integrity issues. Ongoing system integrity work in Kenmore may include the replacement of DuPont manufactured polyethylene main and service piping and certain qualified steel wrapped intermediate pressure main and service piping. Ongoing pipe investigations throughout the city will determine the exact location of any DuPont pipe and qualified steel wrapped pipe to be replaced. In addition, ongoing investigation will determine locations where gas lines may have been cross bored through sewer lines, necessitating subsequent repairs.

Energy Conservation Programs

PSE currently has several energy conservation programs for residential, commercial, and industrial customers. While these programs may change from year-to-year, current programs range from technical assistance and information to referrals and financial assistance. PSE maintains an "Energy Efficiency Hotline" to help direct customers to the various conservation programs. For residential customers PSE offers a free, do-it-yourself home energy audit as well as several free informational brochures. PSE also provides weatherization assistance for low-income customers.

Hazardous Liquid Pipelines

According to the Northshore Fire Department, there are no hazardous liquid transmission pipelines located in Kenmore.

Telecommunications

Telecommunications services are regulated by several entities, including the Federal Communications Commission and the Washington Utilities and Transportation Commission. As these telecommunication entities frequently merge and often provide overlapping services, analysis of service by individual carrier is difficult.

Telephone

Telephone service is provided within the city by a number of providers—both landline and cellular. Carriers include New Cingular Wireless (formerly AT&T) and Verizon.

Cable

Cable service is provided within the city by Comcast and other providers, including Frontier and Wave. The City's franchise agreement with Comcast provides free cable service to City Hall, the Northshore Fire District headquarters, the Library, Northshore Utility District headquarters, Fire Station 54, the Police Precinct, and schools.

Internet

Internet services within the city also are provided by a number of private carriers, including Comcast.

Local Water Service

The Northshore Utility District (NUD) provides public water service to the entire City of Kenmore. As of December 31, 2014, approximately 6,819 NUD water service connections were located in the City of Kenmore--31% of the District's total. NUD is organized as a special purpose district that has the authority to operate under Title 57 of the Revised Code of Washington (RCW).

The District owns and operates a water distribution and storage system. All water is purchased from Seattle Public Utilities (SPU) through connections to the Tolt Pipelines No. 1 and 2, and the Tolt Eastside Supply Line. The district has an additional connection to SPU at the Maple Leaf pipeline, used only in emergency situations. SPU is responsible for water quality treatment. The current water supply contract with SPU expires in 2062.

The current Comprehensive Water System Plan for the District was completed in 2009. This plan evaluates the existing system and its ability to meet anticipated requirements for water source, quality, transmission storage, and distribution for a twenty-year period (2006-2026) in accordance with the Growth Management Act. District population estimates for the planning period are based on the 2000 Transportation Analysis Zone (TAZ) projections provided by the Puget Sound Regional Council and Utility District staff determinations.

According to the Plan, the District has sufficient capacity in its existing storage and distribution system to meet growth needs to the 2026 planning horizon and beyond. The SPU contract water supply is sufficient to provide adequate water to the District to at least the year 2025. And although the Plan indicates that

average day and peak season demands at build out exceed the SPU supply contract amount, the shortfall is minimal, and may ultimately be eliminated as conservation measures and water-use habits continue to reduce demand. In addition, reclaimed water projects may introduce new cost-effective supply options. As a member of the Snohomish River Regional Water Authority, NUD holds a water right for the Snohomish River but is not currently withdrawing water under this water right. Although NUD has drilled a groundwater well in west Bothell, no water right was granted by the State and groundwater is not considered to be a viable water supply option for the district.

The 2009 plan includes a $13 million six-year Capital Improvement Plan and a $19 million 10-year plan. Projects include water supply source development, improvements to the distribution system, metering and telemetry improvements, and emergency preparedness. The majority of these projects constitute ongoing upgrades to the system.

The Northshore Utility District 2009 Water System Comprehensive Plan should be referred to directly for detailed information about the District and its facilities. **Figure U-2** shows existing water mains and reservoirs in the City of Kenmore.

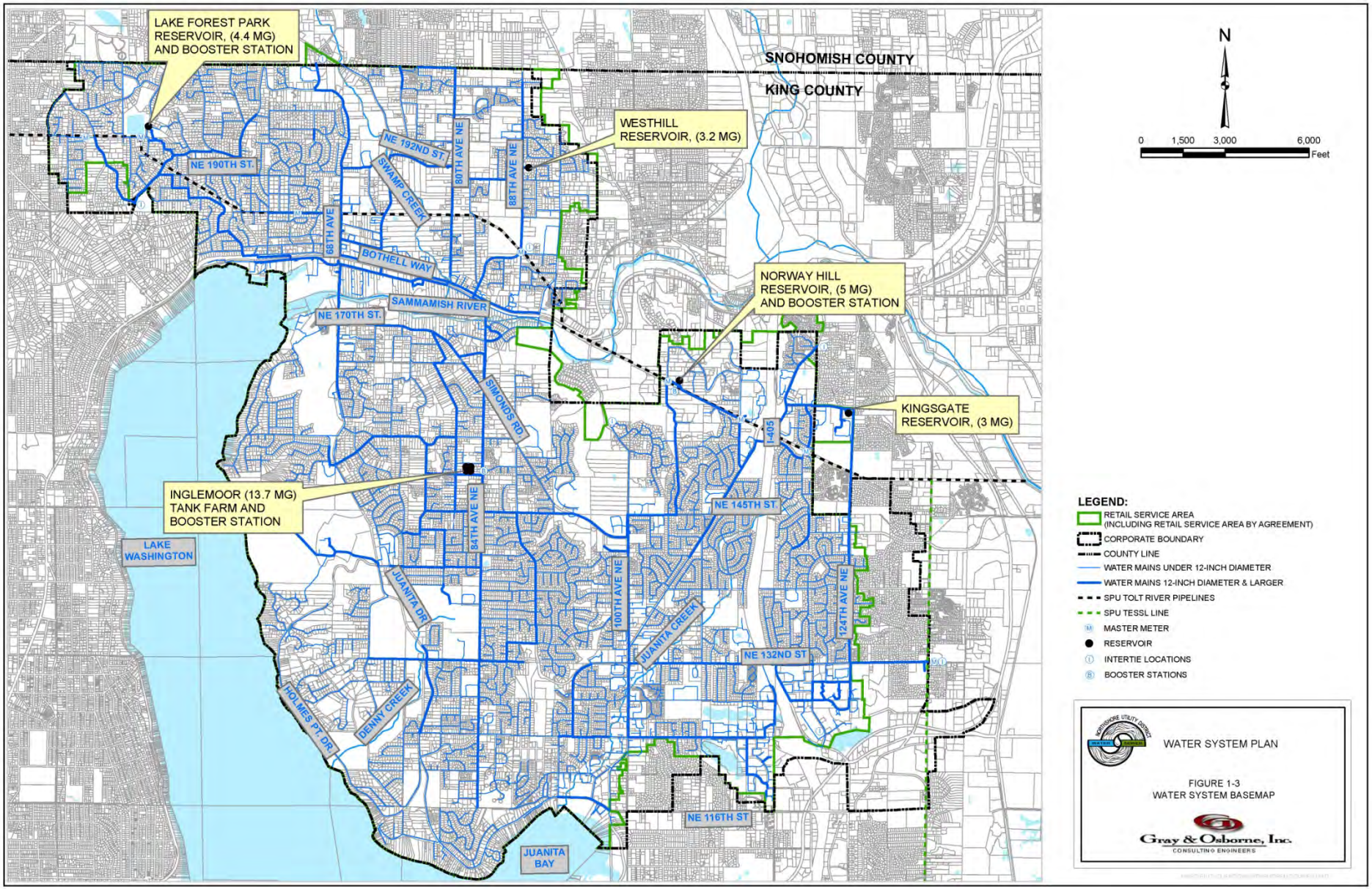


Figure U-2

Not to Scale

April, 2015

Regional Water Service

The Seattle Public Utilities Tolt Pipelines No. 1 and 2 cross the city of Kenmore from east to west, primarily along the NE 185th Street alignment. At 61st Avenue NE the pipeline alignment turns in a northwest direction to the western City boundary.

Several taps into the Tolt Pipeline exist within the city to provide service.

Local Wastewater Service

The Northshore Utility District (NUD) provides public sewer service to the entire City of Kenmore. As of December 31, 2014, 6,211 of NUD's 21,232 sewer service connections were in Kenmore. The district is organized as a special purpose district that has the authority to operate under Title 57 of the Revised Code of Washington (RCW).

The District owns and operates a wastewater collection system consisting of collection sewers, trunk sewers, lift stations, and force mains. Wastewater treatment is provided by King County Department of Natural Resources, Wastewater Treatment Division at plants in Renton and at West Point in Seattle. The wastewater agreement with the County extends to 2036.

The current Comprehensive Wastewater System Plan for the District was completed in 2009. The 2009 plan evaluates the existing collection system and identifies improvements needed to meet the needs of current and future sewer customers in light of changing regulatory requirements, population growth, development trends, and aging facilities for the time frame of 2006-2026. District population estimates for the planning period are based on the Transportation Analysis Zone (TAZ) projections provided by the Puget Sound Regional Council and Utility District staff determinations.

The Plan includes a policy of providing public sewer service to areas within its sewer service area. NUD published a Sewer System Buildout Catalog in 2006, with the goal to provide sewer service to the majority of parcels served by on-site septic systems within 8 years. As of December 31, 2014, 877 parcels within the District were served by on-site septic systems. Of those 877 parcels, 550 have district sewer service available but have not yet connected.

The 2009 plan recommends projects for the 2006-2026 time frame that include construction of new and supporting facilities, and upgrades as well as other improvements that will increase system efficiency. The plan includes a $29 million ten-year capital improvement plan.

The Northshore Utility District 2009 Wastewater Comprehensive Plan should be referred to directly for detailed information about the District and its facilities. **Figure U-3** shows the existing District boundary and sewer service area, with some Kenmore facilities. Currently unsewered areas are shown on **Figure U-4**.

Regional Wastewater Facilities

King County Department of Natural Resources, Wastewater Treatment Division operates regional facilities within Kenmore. These include the Kenmore Pump Station/Logboom Regulator System, Swamp Creek Trunk, and Kenmore Interceptor. The Kenmore Pump Station/Logboom Regulator System controls flows in the Kenmore Lakeline, a 48-inch diameter, five-mile long pipeline constructed in Lake Washington between Kenmore and Matthew's Beach. This system conveys sewage from King County's North Service Area to Matthews Beach Pump Station and from there to the West Point Treatment Plant. The Kenmore Interceptor is a 72-inch diameter sewer within Kenmore that enters the city from the east.

The Swamp Creek Trunk is a 36-inch pipeline conveying sewage from the Swamp Creek basin to the Kenmore Pump Station. This facility serves the Swamp Creek Basin in King County as well as the Snohomish County Service Area. Currently, flows from the Swamp Creek Basin are conveyed from the Alderwood Sewer District's 36-inch trunk at the county line through an 18-inch Northshore Utility District main to NE 192nd Street, where the Swamp Creek Trunk currently ends.

The 2014 Comprehensive Review of the Regional Wastewater Service Plan (originally adopted in 1999) states that, with the operation of the new Brightwater treatment facility, there is sufficient treatment plant capacity for the region until the 2030s. It is expected that NUD's wastewater will continue to receive treatment at the Renton plant and at West Point in Seattle, but that some wastewater treatment service may be transferred to Brightwater in the future.

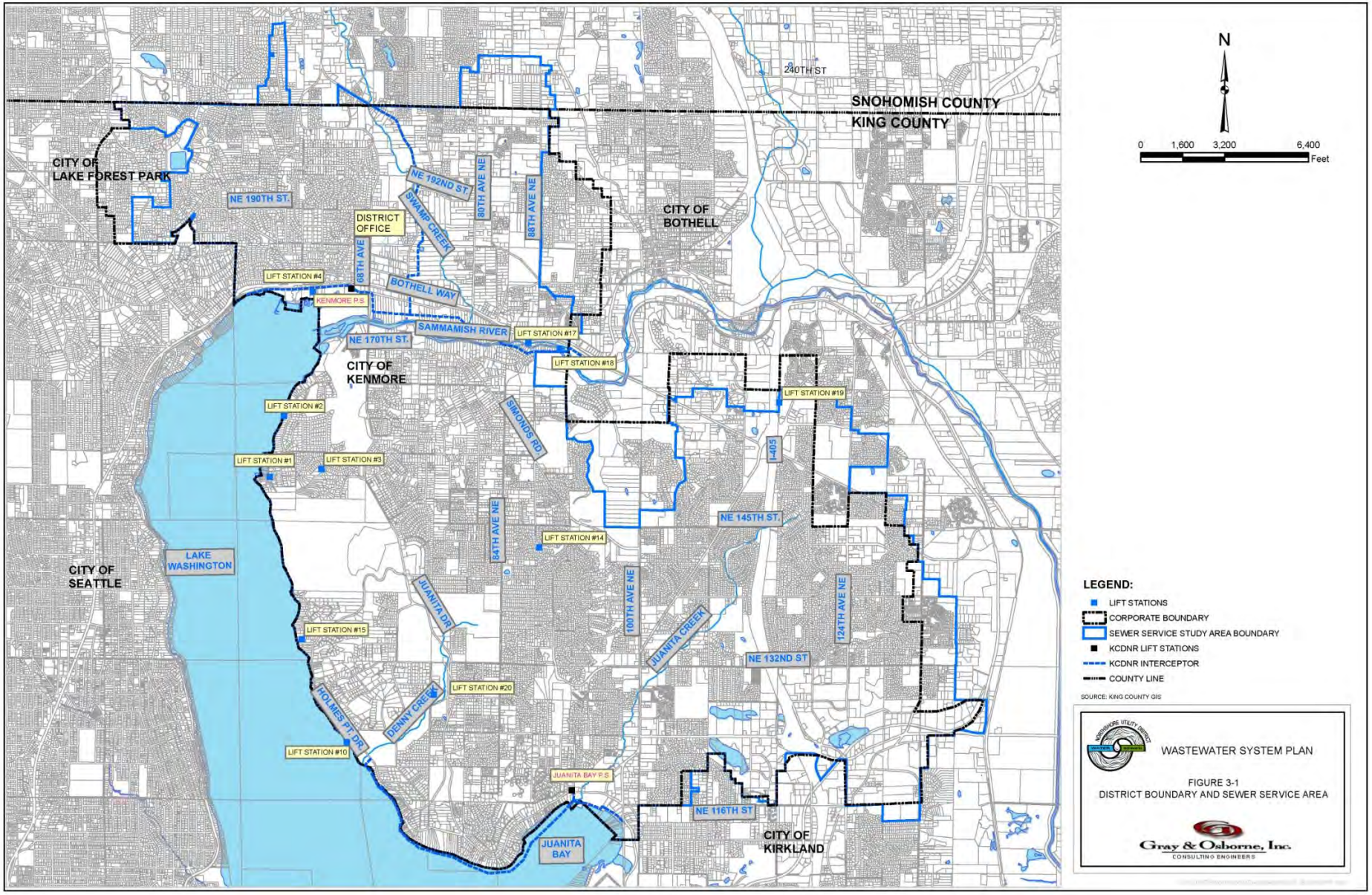


Figure U-3

Not to Scale

April, 2015

SEWER SYSTEM BUILDOUT CATALOG: FUTURE EXTENSION PROJECTS

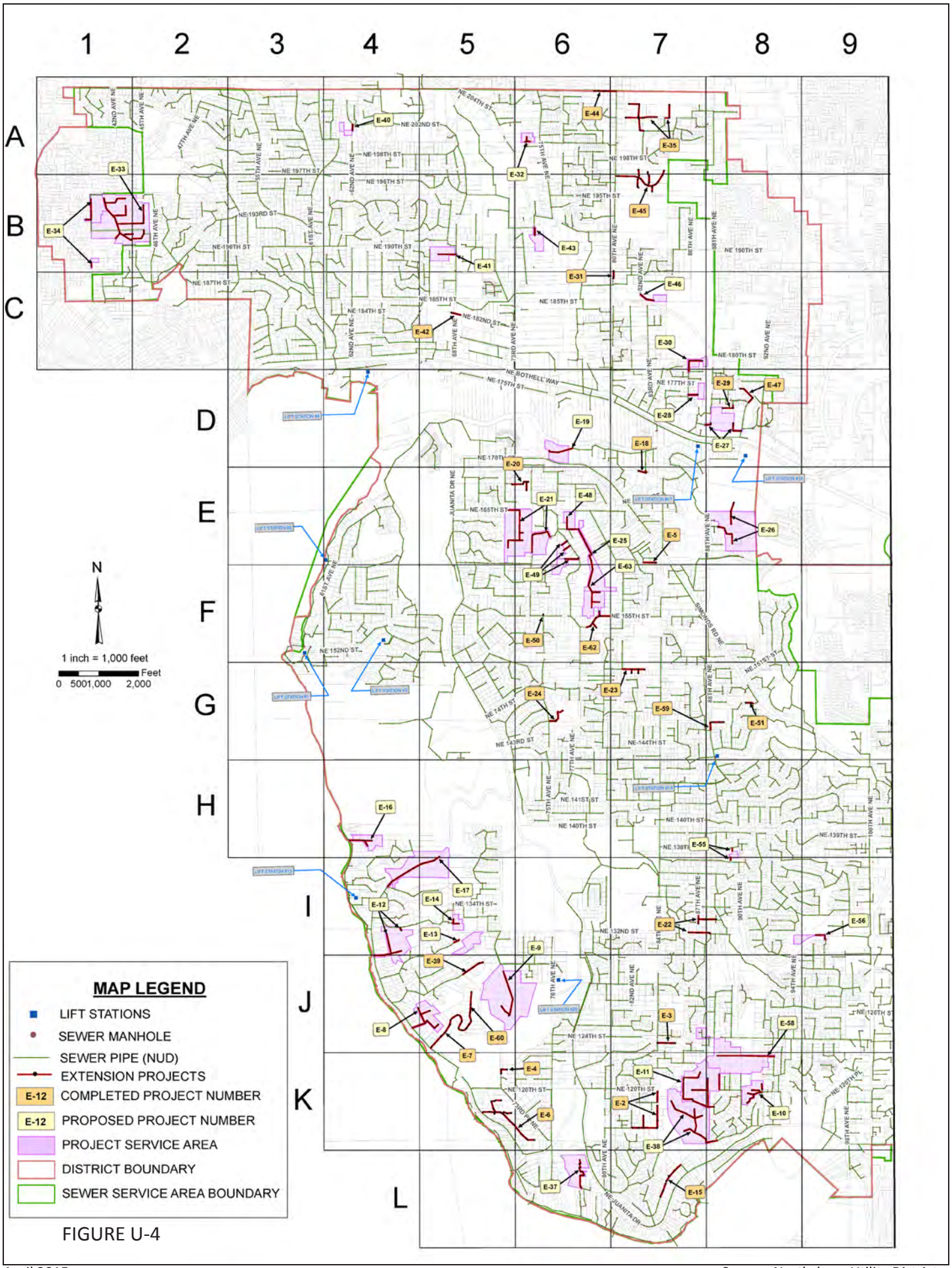


FIGURE U-4

Source: Northshore Utility District
2014 Update

Solid Waste

Coordination of Service

The King County Department of Natural Resources and Parks, Solid Waste Division, operates King County's transfer and disposal system comprised of a regional landfill, eight transfer stations, and two rural drop boxes for residential and non-residential self-haul customers and commercial haulers. Kenmore has an interlocal agreement with King County that guarantees the tonnage and associated revenue to allow the Solid Waste Division to operate the system through 2040.

Unincorporated areas of King County are served by private garbage collection companies which receive oversight through the Washington State Utilities and Transportation Commission (WUTC). When an area incorporates, it has the option to establish a franchise with a private hauler but is not required to do so. If a local jurisdiction enters into a franchise, the franchise regulations would supersede state regulations and the private hauler is no longer regulated by the State. The City of Kenmore has elected to allow the state to continue to regulate the private hauler serving the City. The City has no immediate plans to establish a franchise, but may wish to establish one at some point in the future. Republic Services is the garbage/recycling service provider to Kenmore.

General Waste Collection

Republic Services collects residential and commercial solid waste and recycling on a weekly basis in the City of Kenmore. In 2013, Republic served 5,565 residential customers and 437 commercial customers.

The company collects and then hauls garbage to the King County Houghton Transfer Station in Kirkland. Except for construction debris, which is recycled, refuse at the transfer station is trucked to the Cedar Hills Landfill.

The 2006 Solid Waste Transfer and Waste Export System Plan identifies the need for a new "Northeast Lake Washington" transfer station in the northeast part of King County. King County presently is reviewing this plan to determine whether in fact a new transfer station is needed.

It is expected that the Cedar Hills Landfill will be operational through 2030 based on current tonnage forecasts and 70% recycling goal. The Draft 2013 Comprehensive Solid Waste Management Plan explores the concept of using emerging technologies for waste disposal, rather than pursuit of additional landfill space once Cedar Hills is no longer operational.

Recycling

In Kenmore, recycling collection services are provided to single-family and multi-family residences, as well as to commercial customers with individual agreements. Kenmore has a 57% recycling rate—well above the national average residential recycling rate of 30%.

Recycling material is collected curbside every other week and taken to Republic Services Recycling in south Seattle. Yard waste is collected at curbside and taken to Cedar Grove Compost where it is composted then sold for use in gardens and flower beds.

GOALS, OBJECTIVES, AND POLICIES

Following are the utility goals, objectives and policies.

GOAL U-1. ENSURE THAT ALL HOUSEHOLDS ARE SERVED OR CAN BE SERVED BY WATER AND SANITARY SEWER UTILITIES AT ACCEPTED SERVICE LEVELS.

OBJECTIVE U-1.1 Coordinate with the Northshore Utility District, the King County Department of Natural Resources Wastewater Treatment Division, and the City of Seattle to ensure that sufficient sanitary sewer infrastructure and treatment, water supply, infrastructure, and fire flow are available or can be provided to all areas of the community to meet existing and future needs and to protect environmental quality.

Policy U-1.1.1 Ensure City regulations allow for improvements and additions to water and sewer facilities as needed to accommodate growth and provide reliable service.

Policy U-1.1.2 Furnish regular updates of population, employment and development projections to the Northshore Utility District, King County and the City of Seattle in order to ensure appropriate services will be available as needed.

Policy U-1.1.3 Coordinate with the Northshore Utility District in the amendment and implementation of its Water System Plan and Wastewater System Plan in order to achieve shared goals and objectives of providing reliable, service to Kenmore citywide, and to ensure consistency with City's Comprehensive Plan.

Policy U-1.1.4 Coordinate with the Northshore Utility District and Northshore Fire District 16 to ensure adequate fire flow in all areas of the City.

Policy U-1.1.5 If an areawide water or sewer deficiency is identified, ensure that the applicable service providers remedy the deficiency through capital improvement programs and long-term funding strategies. If financing and level of service remedies cannot solve the deficiency, the City may change zoning to address the problem.

Policy U-1.1.6 Coordinate with the appropriate service providers to ensure water system plans include aggressive conservation and re-use measures, as well as development of new sources to support planned land uses with reliable service at minimum cost.

Policy U-1.1.7 In partnership with the City of Seattle, identify appropriate shared uses along the Tolt Pipeline in consideration of environmental features.

Policy U-1.1.8 Through memorandums of understanding or other methods, ensure the implementation of the County's Regional Wastewater Service Plan results in full mitigation of siting, construction, and operational impacts of new or expanded facilities in Kenmore.

Policy U-1.1.9 To address ground and surface water quality, ensure Northshore Utility District sewer plans require hook-ups to the sanitary sewer system in the case of septic system failures when reasonably available. Work with the Northshore Utility District to determine the circumstances under which hook-up would be appropriate. Determine if funding sources are available in the case of economic hardship.

Policy U-1.1.10 Ensure new development is served by the public sanitary sewer system.

Policy U-1.11 Ensure that the implementation of the County's Regional Wastewater Service Plan and the Northshore Utility District's Wastewater System Plan minimizes failures, overflows, and contamination affecting the City's surface waters.

GOAL U-2. PROVIDE SOLID WASTE COLLECTION AND DISPOSAL SERVICES TO THE COMMUNITY CONSISTENT WITH SOLID WASTE MANAGEMENT PLANS.

OBJECTIVE U-2.1 Monitor the delivery of solid waste services provided by King County and waste handlers to ensure appropriate service levels are provided at a reasonable cost.

Policy U-2.1.1 Support the planning of solid waste services, and the provision of disposal capacity on a regional basis.

Policy U-2.1.2 Monitor the levels of solid waste service and costs currently provided to the Kenmore community through the Washington State Utilities and Transportation Commission's oversight of the local private hauler.

Policy U-2.1.3 Coordinate with current service providers to ensure that waste pick-up and curb-side recycling services are reliable.

Policy U-2.1.4 Coordinate with service providers to educate citizens about safe hazardous waste disposal.

Policy U-2.1.5 Provide educational materials to the public which inform that waste burning is prohibited and identify appropriate solid waste services that are available.

GOAL U-3. ENSURE THAT PRIVATELY PROVIDED UTILITIES, INCLUDING ELECTRICITY, NATURAL GAS, CABLE TELEVISION, AND OTHER TELECOMMUNICATIONS, ARE AVAILABLE OR CAN BE PROVIDED TO SERVE THE COMMUNITY.

OBJECTIVE U-3.1 Ensure utility providers make improvements and additions to improve service and accommodate growth in a timely manner.

Policy U-3.1.1 Ensure City regulations allow for improvements and additions to electric, natural gas, cable television, and telecommunication facilities as needed to accommodate growth provide reliable service, and support economic development.

Policy U-3.1.2 Furnish regular updates of population, employment, and development projections to private utilities and service providers in order to ensure appropriate services will be available as needed.

Policy U-3.1.3 Require franchise agreements where necessary for private utility use of the City rights-of-ways.

Policy U-3.1.4 Whenever possible, ensure that franchise agreements support the provision of excellent utility service to Kenmore customers.

Policy U-3.1.5 Coordinate with other jurisdictions in the implementation of multi-jurisdictional electric facility additions and improvements.

Policy U-3.1.6 Support the availability and efficient use of natural gas.

Policy U-3.1.7 Encourage state of the art telecommunication services to mitigate the transportation impacts of development and growth through such means as telecommuting and videoconferencing.

Policy U-3.1.8 Support cable television services that meet the cable-related needs and interests of all segments of the community, taking into account the cost of meeting such needs and interests. Encourage the completion of the "universal line up" where the region will be able to receive the same channels and programming.

Policy U-3.1.9 Support the relocation of utility poles to protect the public safety and to further the Comprehensive Plan goals and realization of the Vision Statement.

OBJECTIVE U-3.2 Coordinate the timing and location of utilities to minimize cost and disruption.

Policy U-3.2.1 Strive to notify private utilities and service providers of construction work in the public rights-of-way which may affect their equipment. Encourage coordination of public and private utility trenching activities for new construction and maintenance and repair of existing roads.

Policy U-3.2.2 Promote when reasonably feasible, co-location of new public and private utility distribution facilities in shared trenches and coordination of construction timing to minimize construction-related disruptions to the public and reduce the cost to the public of utility delivery.

Policy U-3.2.3 Encourage use of the Utility Notification Center ("Call Before You Dig") prior to site construction or development,

OBJECTIVE U-3.3 Facilitate the provision of reliable utility service in a way that minimizes environmental and safety impacts while allowing for a fair and reasonable price for the utility's product.

Policy U-3.3.1 Review periodically, the state of scientific research on electromagnetic fields (EMF), and make changes to policies if the situation warrants.

Policy U-3.3.2 Require utilities to define alternative routes to avoid impacts to environmentally sensitive areas where possible.

OBJECTIVE U-3.4 Encourage undergrounding of overhead utilities and co-location of utilities to reduce aesthetic impacts, minimize the need for pruning of trees and shrubs, and reduce power loss during severe weather events.

Policy U-3.4.1 To the extent feasible, require underground utility networks in new developments in the City.

Policy U-3.4.2 Where undergrounding is not presently feasible, require developers to install empty conduit or take other measures to facilitate future undergrounding of aerial utilities.

Policy U-3.4.3 Where significant work in existing rights-of-way will occur, investigate with service providers the possibility of buried lines where existing overhead lines are presently located and encourage them to underground if feasible.

Policy U-3.4.4 Consider creating a funding mechanism for undergrounding of utilities on a continuing basis in developed areas.

Policy U-3.4.5 Minimize impacts of personal wireless services, telecommunication facilities, and towers on adjacent land uses through careful siting and design.

Policy U-3.4.6 Require communication facilities and poles, including cell or radio towers, to consider existing sites and co-locating prior to establishing new sites.

Policy U-3.4.7 Consider view corridors when reviewing utility pole or facility placement.

GOAL U-4. ENCOURAGE RESOURCE AND ENERGY CONSERVATION.

OBJECTIVE U-4.1 Promote and support water conservation efforts.

Policy U-4.1.1 Support water conservation programs of the Northshore Utility District for residential, commercial and industrial users.

Policy U-4.1.2 Consider water conservation principles when constructing, maintaining and improving City facilities and parks.

Policy U-4.1.3 Promote the use of water conservation features in the design or rehabilitation of residential structures.

Policy U-4.1.4 Work with the Northshore Utility District to address the feasibility of using reclaimed water from the Brightwater plant for irrigation.

OBJECTIVE U-4.2 Encourage increased solid waste reduction and recycling.

Policy U-4.2.1 Support King County and waste-hauler programs for increased waste reduction, composting and recycling in accordance with the adopted King County Solid Waste Management Plan, and with any future City solid waste plans.

OBJECTIVE U-4.3 Promote and support energy conservation.

Policy U-4.3.1 Continue to enforce State Energy Code requirements.

Policy U-4.3.2 Review and update codes as necessary regarding solar energy and other alternative energy sources.

Policy U-4.3.3 Establish standards for street widths, parking lots, and landscaping to moderate temperature, provide shade, and minimize impervious surfaces.

Policy U-4.3.4 Promote higher density and infill developments that are located near major transportation and transit links.

Policy U-4.3.5 Encourage the rehabilitation of existing buildings as an alternative to demolition, where appropriate, to encourage the conservation of energy, building materials, and historic preservation.

IMPLEMENTATION STRATEGIES

The Utility Element policies require commitments of City resources to prepare new regulations, review/amend existing regulations, create educational or incentive programs, or coordinate with adjacent jurisdictions.

New programs, rules, or regulations may be needed to address:

- Alternative energy sources, such as solar, wind and/or thermal

A review of existing programs, rules and regulations is needed to ensure they meet the policies, including:

- Coordination of utility construction and relocation of poles in the right-of-way
- Updated communication facility regulations addressing co-location, alternate siting, and view corridors
- Energy code requirements
- Street tree and landscaping requirements
- Street and parking area standards.

Additional or continuing efforts would need to be made to coordinate with adjacent jurisdictions or participate in regional programs, including:

- Coordination with the Northshore Utility District, City of Seattle, and King County regarding water and wastewater services
- Coordination with private utilities including Puget Sound Energy and telecommunications carriers
- Coordination with the County and franchisees regarding solid waste and recycling services and programs.
- Cross promotion of agency activities and programs in support of recycling and conservation.

City business may be conducted in a manner that leads by example through activities such as:

- Use of water-conserving fixtures in City facilities
- Use of alternative energy sources
- City recycling programs
- Native plantings in parks to reduce irrigation needs

REFERENCES

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CAPITAL FACILITIES ELEMENT

INTRODUCTION

Purpose

The Capital Facilities Element is intended to assist the City of Kenmore and its officials make the financial decisions to ensure that the public facilities and services City residents rely on will continue to adequately support City residents today and into the future. The Capital Facilities Element places particular focus on those facilities that the City is responsible for funding. This Element contains a six-year plan for capital improvements that support the City of Kenmore's current and future population and economy. The six-year capital improvements described here must be fully funded.

Another purpose of the Capital Facilities Element is to respond to Growth Management Act requirements to provide a process to review the potential siting of uses typically difficult to locate in most communities due to environmental, economic, or social costs. This Element provides policies that would guide local permit and public review of essential public facilities.

Growth Management Act Requirements

The Growth Management Act (GMA) establishes many of the requirements of the capital facilities element. It establishes an overall goal to "ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards." The GMA requires that the capital facilities element include an inventory of existing publicly owned capital facilities, a forecast of the future needs for new or expanded facilities, and a six-year plan to indicate from what sources the identified future facilities will be financed. The GMA defines public facilities to include roadways, street lighting, traffic signals, sidewalks, domestic water systems, storm and sanitary sewer systems, parks and recreational facilities, and schools. Public services are defined to include fire protection, law enforcement, public health, education, recreation, environmental protection, and other government services. The Capital Facilities Element is intended to provide a general assessment of major public services which impact land use issues, rather than a detailed analysis of every service provided by government.

Another key GMA requirement is to include a process for identifying and siting essential public facilities. Essential public facilities include "those facilities that are typically difficult to site, such as airports, state education facilities and state or regional transportation facilities as defined in RCW 47.06.140, regional transit authority facilities as defined in RCW 81.112.020, state and local correctional facilities, solid waste handling facilities, and in-patient facilities including substance abuse facilities, mental health facilities, group homes, and secure community transition facilities as defined in RCW 71.09.020." No local comprehensive plan or development regulation may preclude the siting of essential public facilities.

Countywide Planning Policies

The King County Countywide Planning Policies include general policies regarding adequate infrastructure for planned development for those areas within the Urban Growth Area. Growth is to be directed to centers and urbanized areas with existing infrastructure capacity. Policies also include several policy statements regarding water and wastewater. In summary, the policies address regional coordination of water supplies, water conservation, alternate sewer treatment technologies and systems, and preference for urban water and sewer systems to serve new construction in the areas identified for growth.

The King County Countywide Planning Policies indicate that public capital facilities of a regional or statewide nature should be sited in a way that equitably disperses impacts and benefits and supports the Countywide Planning Policies.

Concurrency, Level of Service and Impact Fees

Concurrency refers to the timely provision of public facilities and services relative to the need for them, especially for transportation improvements. WAC 365-196-210 states, "Concurrency means that adequate public facilities are available when the impacts of development occur, or within a specified time thereafter." The City maintains a 6-year capital improvement program that identifies needed improvements and the funds to pay for them. Longer-term facilities plans are described in individual Comprehensive Plan elements and summarized in this element, along with estimates of future costs.

Level of service standards provide the baseline by which the impacts of new development are measured. WAC 365-196-210 states, "Level of service means an established minimum capacity of public facilities or services that must be provided per unit of demand or other appropriate measure of need. Level of service standards are synonymous with locally established minimum standards." For transportation facilities, if growth will reduce the level of service below the City's adopted standards, development permits cannot be issued until facilities are provided. The Transportation Element discusses level of service standards for multimodal transportation facilities.

The City's impact fee requirements are in place to maintain desired levels of service by providing funding from new development for needed improvements. Impact fees are available as a funding mechanism for transportation facilities, parks, fire protection facilities, and schools. The City requires impact fees for transportation facilities and parks. If the Northshore School District determines that impact fees for schools are needed, they may request that the City collect school impact fees on their behalf. The need for additional fire protection facilities was not identified in the Public Services Element.

Sound Fiscal Management

Planning for major capital facilities and their costs enables the City of Kenmore to demonstrate the need for facilities and the need for revenues to pay for them. It also allows the City to estimate the future operation/maintenance costs of new facilities that will impact the annual budget. Additionally, it helps the City take advantage of sources of revenue (i.e., grants, fees, real estate excise taxes) that require a Capital Facilities Plan to qualify for the revenue. Lastly, it may help the City get better ratings on bond issues when the City borrows money for capital facilities.

Eligibility for Grants and Loans

The State Department of Community Development's Public Works Trust Fund requires that local governments have a Capital Facilities Plan in order to be eligible for grants and loans. Some other grants and loans have similar requirements (i.e., Washington State Recreation and Conservation Office grants, or the Department of Ecology's Centennial Clean Water Fund), or give preference to jurisdictions that have a Plan.

INVENTORY/FORECAST OF FUTURE NEEDS

General

The inventory and forecast of needs required in the Capital Facility Element have been met in other Elements as follows:

- Existing and future needs for transportation facilities, **Chapter 6, Transportation Element**
- Domestic water systems, storm and sanitary sewer systems, **Chapter 10, Utilities Element**
- Parks and recreational facilities, **Chapter 7, Parks, Recreation and Open Space Element**
- Government services including City, fire, police, human, library, and school services, **Chapter 9, Public Services Element**

Levels of service analyses, where appropriate, also are discussed in these other Elements.

In 2018, the City of Lake Forest Park ended their contract with the City of Kenmore to provide public works services. The existing public works shop in Lake Forest Park will no longer be used by the City of Kenmore. This shop provides services needed to support the Transportation; Parks, Recreation and Open Space; Surface Water; and Public Services Elements of this Plan. Based on a level-of-service analysis of Kenmore's participation in the Lake Forest Park shop, the City estimates that a shop capable of housing twelve employees (five maintenance workers, an Administrative Assistant and six seasonal employees) will be required. This shop would maintain existing shop capacity and would continue to serve the City for the foreseeable future.

The focus of the Capital Facilities Element is to identify the capital facility costs and timeframes for at least 6 years to support the Comprehensive Plan.

Essential Public Facilities

Existing Essential Public Facilities

Within Kenmore today, there are several existing facilities that would qualify as "essential public facilities" including, but not limited to:

- SR-522 – Bothell Way, a state transportation facility (classified as a Highway of Statewide Significance)
- Kenmore Air Harbor, a private seaplane base, which is considered a "public use airport" by the Washington State Aviation System Plan
- Several adult family homes and group homes as described in **Chapter 5, Housing Element.**

Although not specifically listed in the definition of essential public facilities, regional wastewater facilities could be considered essential public facilities, since the definition lists examples and is not a definitive list. Examples of regional wastewater facilities include:

- King County Department of Natural Resources, Wastewater Treatment Division, regional facilities within Kenmore. These include the Kenmore Pump Station/Logboom Regulator System, Swamp Creek Trunk, and Kenmore Interceptor. The Kenmore Pump Station/Logboom Regulator System controls flows in the Kenmore Lakeline, a 48-inch diameter, five-mile long pipeline constructed in Lake Washington between Kenmore and Matthew's Beach. This system conveys sewage from King County's North Service Area to Matthews Beach Pump Station and from there to the West Point Treatment Plant. The Kenmore Interceptor is a 72-inch diameter sewer within Kenmore that enters the City from the east.

Planned Essential Public Facilities

The State of Washington Office of Financial Management (OFM) is required to maintain a list of those essential state public facilities that are required or likely to be built within the next six years. The OFM 2015-2021 Six-Year Facilities Plan includes no planned facilities in Kenmore.

CAPITAL FACILITIES PLANNING

This section addresses short and long-term improvement plans for City facilities including parks and recreation, surface water and transportation. **Tables CF-A** through **CF-D** are the Capital Facilities Plans through 2035. **Table CF-E** is the City's current Capital Improvement Program, showing the 6-year plans for capital facilities with forecasts of expenditures and revenues. Cost estimates and revenue projections are most accurate for the current biennium and least accurate for the long-term assessments. Projects and schedules in the Capital Facilities Element of the Comprehensive Plan will be updated annually as part of the City's budget process.

The Element also incorporates by reference the 6-year capital facility plans for the special districts that provide water, wastewater services, fire protection and school services: the Northshore Utility District, the Northshore Fire Department and the Northshore School District. Agencies or special districts, in accordance with the provisions of the Growth Management Act, may need to update their Comprehensive Plans and/or 6-year capital improvement plans in order to be consistent with the City's Comprehensive Plan.

TABLE CF-A

PARKS CAPITAL IMPROVEMENTS
CITY OF KENMORE
2015-2035 FISCALLY UNCONSTRAINED LIST

PROJECT DETAIL	TOTAL DOLLAR AMOUNT
ACQUISITION	
Kenmore Water Walk and Waterfront Master Plan (Acquisition & Development)	Planning 200,000 (Acquisition and Development Unknown)
Waterfront at Lake Washington	Unknown
Natural Areas/Open Space and Waterfront at Sammamish River	3,300,000
Swamp Creek Natural Areas/Open Space	1,060,000
Sheriff Precinct Property (heron rookery)	0
Community Park Land	10,000,000-15,000,000
Moorlands Park Expansion	624,000-1,000,000
Indoor Recreation Space--Partnership Community Center (Acquisition & Development)	2,799,000
DEVELOPMENT	
Log Boom Park	2,640,000
Rhododendron Park	385,000
Wallace Swamp Creek Park	721,000
Kenmore Village Public Square/"Town Green"	1,092,000
Entry Gateways	287,500
City Hall Park	476,400
Twin Springs Park	1,265,000-2,430,000
Athletic Fields	2,700,000
Picnic Facilities	Unknown
Swamp Creek Nature Trail	1,150,000
Sport Courts	Unknown
Off-Leash Area	739,000
Skate Park	287,500
Tolt Pipeline Trail Phase 1	36,200-136,700
Tolt Pipeline Trail Phase 2	399,000
Natural Areas and Waterfront at Squire's Landing Park	15,305,000
RENOVATION	
Moorlands Park	929,000
Linwood Park	587,000
TOTAL	$46,982,600-$53,624,100

TABLE CF-B

SURFACE WATER FACILITIES CAPITAL IMPROVEMENTS
CITY OF KENMORE
2015-2035 FISCALLY UNCONSTRAINED LIST

PROJECT DETAIL	TOTAL DOLLAR AMOUNT
Little Swamp Creek Culvert Replacement at 192ND Street	395,000
0056 Culvert Replacement and Repairs at 190TH Street	1,111,000
Surface Water Component of SR 522 Corridor Improvement Project – West A	634,000
Tributary 0056 Evaluation	100,000
Ditch Rehabilitation	68,000
Tributary 0057 Evaluation	25,000
Sammamish Tributary 02 Evaluation	25,000
Small Works Projects	1,000,000
Strawberry Hills Surface Water Facility Retrofit	460,000
Wallace Swamp Creek Park Pond Beaver Management	96,000
Little Swamp Creek Relocation	1,274,000
Northlake Heights LID Retrofit	1,588,000
Juanita Drive Surface Water Facility Retrofit	698,000
TOTAL	**$7,474,000**

TABLE CF-C

TRANSPORTATION CAPITAL IMPROVEMENTS
CITY OF KENMORE
2015-2035 AND BEYOND FISCALLY UNCONSTRAINED LIST

PROJECT DETAIL	TOTAL DOLLAR AMOUNT
West Sammamish River Bridge	20,000,000
SR-522 Improvements (61st-65th)	9,800,000
SR-522 Improvements (Lake Forest Park-61st)	9,000,000
Sidewalk and Crossing Program	900,000
Downtown Parking Feasibility Study	75,000
61st Ave. Sidewalk Replacement (East Side)	2,100,000
Neighborhood Transportation Plans	1,500,000
Arterial Restriping to add Bike Lanes on 73rd Ave. (south of 192nd), 80th Ave. and Simonds Road	360,000
Juanita Drive (NE 143rd St. to NE 170th St.)	13,000,000
Feasibility Study for Grade-Separated Crossing of SR 522	250,000
68th Ave. Northbound Right Turn Pocket Extension	2,600,000
175th Swamp Creek Bridge	810,000
Yellow Standard Pedestrian Facilities	18,900,000
Yellow Standard Bicycle Facilities	18,800,000
Improved Pedestrian Crossings	650,000
Grade Separated SR522 Crossing	17,100,000
Intersection Treatments at 67th Ave./181st St. and 67th Ave./175th St.	6,000,000
Intersection Treatments at 73rd Ave./192nd St., 80th Ave./192nd St., and 84th Ave./Simonds Rd.	3,800,000
Lakepointe Drive West (SR522 to 68th Ave.), including new intersection at 68th Ave.	7,500,000
175th Signal Removal	20,000
Lake Pointe Dr. East (68th Ave. to SR 522)	7,500,000
TOTAL	$140,665,000

TABLE CF-D

OTHER CAPITAL IMPROVEMENTS

CITY OF KENMORE

2015-2035 AND BEYOND FISCALLY UNCONSTRAINED LIST

PROJECT DETAIL	TOTAL DOLLAR AMOUNT
Public Works Shop Land Acquisition and Development	$6,500,000
TOTAL	$6,500,000

TABLE CF-E

CITY OF KENMORE, WASHINGTON
CAPITAL IMPROVEMENT PROGRAM
FOR THE YEARS 2019-2024

PARKS							
P 1 Twin Springs Interim Use Plan	$100,000	$0	$0	$0	$0	$0	$100,000
P 18 Rhododendron Park Waterfront Mitigation	5,000	5,000	5,000	5,000	5,000	0	25,000
P18a Rhododendron Park Float & Mitigation	5,000	5,000	5,000	5,000	5,000	0	25,000
P 26 Squire Landing Float Mitigation	5,000	5,000	5,000	5,000	5,000	0	25,000
P 27 Squires Landing Park Waterfront & Open Space	500,000	220,000	690,000	3,940,000	40,000	360,000	5,750,000
P 28 Log Boom Park Waterfront Access and Viewing	300,000	120,000	590,000	1,330,000	40,000	360,000	2,740,000
P 29 St Edward Ballfield Improvements	300,000	0	0	0	0	500,000	800,000
P 30 Rhododendron Park Boathouse Pavilion	455,000	0	0	0	0	0	455,000
P 31 Squires Landing Park Land Acquisition	1,000,000	0	0	0	0	0	1,000,000
Total Parks	**$2,670,000**	**$355,000**	**$1,295,000**	**$5,285,000**	**$95,000**	**$1,220,000**	**$10,920,000**
TRANSPORTATION							
T 8 SR 522 West B 57th to 61st	$0	$0	$600,000	$7,400,000	$4,000,000	$0	$12,000,000
T 27 Sidewalk Program							
Sidewalk Gaps	100,000	100,000	100,000	100,000	100,000	100,000	600,000
T 47 Arrowhead Dr	11,100	132,800	726,133	0	0	0	870,033
T 45 NE 153rd Pl	612,500	0	0	0	0	0	612,500
T 46 NE 181st (65th -67th)	681,413	0	0	0	0	0	681,413
T 35 Pavement Preservation	805,351	450,000	450,000	450,000	450,000	450,000	3,055,351
T 37 West Sammi Bridge	10,288,614	10,292,286	7,164,859	249,951	20,923	20,923	28,037,556
T 41 Juanita Dr Pedestrian & Bicycle Safety All Segments	8,896,910	2,267,090	0	0	0	0	11,164,000
T 42 68th Ave Pedestrian & Bicycle Safety All Segments	5,453,300	1,807,080	0	0	0	0	7,260,380
T 43 SR 522 Pedestrian Crossing Study	500,000	0	0	0	0	0	500,000
Total Transportation	**$27,349,188**	**$15,049,256**	**$9,040,992**	**$8,199,951**	**$4,570,923**	**$570,923**	**$64,781,233**
SURFACE WATER							
SW 8 190th Culvert at 61st	$1,300,000	$0	$0	$0	$0	$0	$1,300,000
SW 8 Trust Fund Loan Repayment	0	81,650	81,650	81,650	81,650	81,650	408,250
SW 20 Small Works Projects	50,000	50,000	50,000	50,000	50,000	50,000	300,000
SW 25 Strawberry Hills SW Tank Retrofit	360,000	0	0	0	0	0	360,000
SW 29 Infiltration Tank Retrofit at 61st Ave NE/NE 190th St	500,000	0	0	0	0	0	500,000
SW 30 Drainage Improvements at153rd/NE Arrowhead Dr	100,000	0	0	0	0	0	100,000
SW 31 Drainage Impr & Street Repair at 66th Ave NE /196th	115,000	0	0	0	0	0	115,000
SW 32 61st Ave Stabilization	150,000	0	0	0	0	0	150,000
Total Surface Water	**$2,775,000**	**$131,650**	**$131,650**	**$131,650**	**$131,650**	**$131,650**	**$3,433,250**
CITY FACILITIES							
F 1 Public Works Shop Land Acquisition & Development	$0	$2,000,000	$4,500,000	$0	$0	$0	$6,500,000
F 2 Debt Repayment	0	0	500,000	500,000	500,000	500,000	2,000,000
Total City Facilities	**$0**	**$2,000,000**	**$5,000,000**	**$500,000**	**$500,000**	**$500,000**	**$8,500,000**
TOTAL EXPENDITURES	**$32,794,188**	**$17,535,906**	**$15,467,642**	**$14,116,601**	**$5,297,573**	**$2,422,573**	**$87,634,483**

REVENUES	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed	2023 Proposed	2024 Proposed	2019-2024 Totals
Real Estate Excise Tax (Transportation)	$1,640,300	$2,357,080	$2,550,000	$550,000	$550,000	$550,000	$8,197,380
Real Estate Excise Tax (Parks)	500,000	0	0	0	0	500,000	1,000,000
Transportation Impact Fee Revenue	811,547	63,750	1,560,309	249,951	20,923	20,923	2,727,403
Park Impact Fee Revenue	260,000	10,000	10,000	250,000	50,000	360,000	940,000
General Fund	10,000	0	125,000	125,000	125,000	125,000	510,000
Federal Preservation Grants	355,351	0	0	0	0	0	355,351
TIB Grant - Sidewalks	435,410	0	0	0	0	0	435,410
WSDOT Safe Routes to School - Sidewalks	581,846	99,670	678,360	0	0	0	1,359,876
BRAC Grant West Sammi Bridge Replacement	6,413,800	2,122,336	1,167,042	0	0	0	9,703,178
TIB Grant: West Sammi Bridge Replacement	2,862,726	4,037,274	0	0	0	0	6,900,000
Connecting WA Funds West Sammi Bridge Replacement	988,298	4,102,056	2,485,281	0	0	0	7,575,635
Walkways & Waterways Bonds: Juanita and 68th Ave	6,763,000	0	0	0	0	0	6,763,000
WSDOT Grant: Juanita Drive	225,000	0	0	0	0	0	225,000
TIB Grant: Juanita Drive	3,771,910	2,267,090	0	0	0	0	6,039,000
Interfund Loan: Juanita Drive	2,000,000	0	0	0	0	0	2,000,000
Washington State Ped & Bicycle Safety Grant: Ped Crossing	500,000	0	0	0	0	0	500,000
Washington State LEAP Transportation Bill	0	0	600,000	7,400,000	4,000,000	0	12,000,000
Surface Water Utility Funds	1,275,000	131,650	376,650	376,650	376,650	376,650	2,913,250
RCO Park Grants	402,500	0	0	1,000,000	0	0	1,402,500
State Capital Budget	192,500	0	0	0	0	0	192,500
King County Conservation Futures Trust Grant	500,000	0	0	0	0	0	500,000
Public Works Trust Fund Loan	1,500,000	0	0	0	0	0	1,500,000
Walkways & Waterways Bonds: Log Boom, Squires	805,000	345,000	1,285,000	4,035,000	45,000	360,000	6,875,000
Street Fund	0	0	130,000	130,000	130,000	130,000	520,000
10 year Note Public Works Shop	0	6,500,000	0	0	0	0	6,500,000
TOTAL REVENUES	**$32,794,188**	**$22,035,906**	**$10,967,642**	**$14,116,601**	**$5,297,573**	**$2,422,573**	**$87,634,483**

GOALS, OBJECTIVES, AND POLICIES

Following are the goals, objectives and policies addressing capital facility planning and financing. These are applicable to Kenmore as well as to other agencies planning public capital facilities and services in Kenmore.

GOAL CF-1. ESTABLISH APPROPRIATE LEVELS OF SERVICE FOR PUBLIC FACILITIES TO ADEQUATELY SERVE EXISTING AND FUTURE DEVELOPMENT.

Objective CF-1.1 Identify and define types of public facilities.

Policy CF-1.1.1 Maintain an inventory of existing public facilities owned or operated by the City, and reference those of the County, State, special districts, or other public entities within Kenmore. Include in the inventory the locations and capacities of such facilities and systems.

Objective CF-1.2 Review standards for levels of service, where appropriate, for each public facility, and determine what additional public facilities are needed in order to achieve and maintain the desired quality of life and vision for the City of Kenmore.

Policy CF-1.2.1 Level of service standards should 1) measure the quality of life based on the City's vision of its future and values, 2) be achievable for existing development and growth anticipated in the land use plan, and 3) be achievable with existing and proposed financing plans.

Policy CF-1.2.2 If appropriate, use the level of service standards to 1) determine the need for public facilities and 2) test the adequacy of such facilities to serve proposed development. In addition, use the level of service standards for city-owned public facilities to develop the City's annual budget and 6-year Capital Improvement Program.

Policy CF-1.2.3 Reassess the Capital Facility Element annually to ensure that public facilities needs, financing, and level of service are consistent with the land use plan. The annual update should be coordinated with the annual budget process, and the annual amendment of the Comprehensive Plan.

GOAL CF-2. PROVIDE ADEQUATE PUBLIC FACILITIES CONCURRENT WITH THE IMPACT OF NEW DEVELOPMENT.

Objective CF-2.1 Provide a variety of responses to the demands of growth on capital facilities.

Policy CF-2.1.1 Ensure City public facilities and services are provided concurrent with the impact of new development or redevelopment, including stormwater, roads, and local parks. Require that non-City public facilities are provided concurrent with the impact of new development or redevelopment including, water and sewer. Consistent with the Growth Management Act, road improvements may be provided at the time of, or within 6-years of, development. Local parkland to serve new development may be in place at the time of, or within 6-years of, development.

Policy CF-2.1.2 Make the most efficient use of existing public facilities, including techniques such as:

- Conservation
- Demand management
- Improved scheduling
- Encourage development that uses existing facilities
- Contracting for services
- Other methods of improved efficiency.

Policy CF-2.1.3 Provide additional public facility capacity when existing facilities are used to their maximum level of efficiency consistent with adopted standards for levels of service.

Policy CF-2.1.4 Encourage development where adequate public facilities and services exist or can be provided in an efficient manner.

GOAL CF-3. COORDINATE CAPITAL FACILITY PLANS WITH STATE, COUNTY, AND LOCAL AGENCIES AND DISTRICTS.

Objective CF-3.1 Coordinate the land use planning and decisions with plans for public facility capital improvements.

Policy CF-3.1.1 Coordinate with non-City providers of public facilities about maintaining adopted levels of service standards, funding, and construction of capital improvements. Work in partnership with non-City public facility providers to prepare functional plans consistent with the City of Kenmore Comprehensive Plan as provided in Objective 2.7 and associated policies in the Land Use Element.

Policy CF-3.1.2 Establish interagency planning mechanisms to assure coordinated and mutually supportive capital facility plans from non-City providers of public facilities.

a. Establish priority areas for infrastructure improvements consistent with the City's vision as provided in Policy LU-2.4.1.

b. Annually assess development trends and infrastructure provision to identify and remedy deficiencies or need to reassess the land use plan as provided in Policy LU-2.4.2.

GOAL CF-4. MAINTAIN A SIX-YEAR CAPITAL IMPROVEMENT PROGRAM TO IMPLEMENT THE COMPREHENSIVE PLAN.

Objective CF-4.1 **Annually develop a six-year Capital Improvement Program to implement the Comprehensive Plan.**

Policy CF-4.1.1 Prepare and utilize the six-year Capital Improvement Program to identify City capital projects necessary to respond to the planned growth of the community and maintain desired levels of service.

Policy CF-4.1.2 Prepare and utilize the six-year Capital Improvement Program to integrate all of the community's capital project resources such as grants, bonds, city funds, donations, impact fees and other available funding.

Policy CF-4.1.3 Maintain the Capital Improvement Program as follows:

a. Provide for annual review of the Capital Improvement Program contained in this Capital Facilities Element by the City Council and incorporate a citizen participation process.

b. Ensure that the Capital Improvement Program:

- Is consistent with the overall Comprehensive Plan
- Defines the projects' need and links to levels of service and facility plans
- Includes construction costs, timing, and funding sources, and considers operations and maintenance impacts where appropriate
- Establishes priorities for capital project development
- Adopts by reference annual updates of the Northshore School District Capital Facilities Plan, Lake Washington School District Capital Facilities Plan if appropriate, Northshore Utility District water and sewer plans, and Northshore Fire District 16 (Northshore Fire Department) facility plans if any.

GOAL CF-5. PREPARE AND MAINTAIN A CAPITAL IMPROVEMENT PROGRAM THAT IS FULLY FUNDED AND FINANCIALLY FEASIBLE.

Objective CF-5.1 **Establish mechanisms to ensure that the required public facilities are financially feasible.**

Policy CF-5.1.1 Base the financing plan for public facilities on realistic estimates of current local revenues and external revenues that are reasonably anticipated to be received by the City.

Policy CF-5.1.2 Finance the six-year Capital Improvement Program within the City's financial capacity to achieve a balance between available revenue and needed public facilities. If the projected funding is inadequate to finance needed public facilities based on adopted level of service standards and forecasted growth, the City could do one or more of the following:

- Lower the level of service standard
- Change the Land Use Plan
- Increase the amount of revenue from existing sources
- Adopt new sources of revenue

Objective CF-5.2 Establish mechanisms to ensure that the required public facilities are fully funded.

Policy CF-5.2.1 Match revenue sources to capital improvements on the basis of sound fiscal policies.

Policy CF-5.2.2 Revise the financing plan in the event that revenue sources for capital improvements, which require voter approval in a local referendum, are not approved.

Policy CF-5.2.3 Ensure that the ongoing operating and maintenance costs of a public facility are financially feasible prior to constructing the facility.

GOAL CF-6. ENSURE GROWTH PAYS PROPORTIONATE COSTS OF CAPITAL FACILITIES REQUIRED TO SERVE THE GROWTH

Objective CF-6.1 Ensure existing and future development pay for the costs of needed capital improvements.

Policy CF-6.1.1 Ensure that existing development pays for capital improvements that reduce or eliminate existing deficiencies, and pays for some or all of the cost to replace obsolete or worn out facilities. Existing development may also pay a portion of the cost of capital improvements needed by future development. Existing development's payments may take the form of user fees, charges for services, special assessments, and taxes.

Policy CF-6.1.2 Ensure that future development pays a proportionate share of the cost of new facilities that it requires. Future development may also pay a portion of the cost to replace obsolete or worn-out facilities. Future development's payments may take the form of voluntary contributions for the benefit of any public facility, impact fees, mitigation payments, capacity fees, dedications of land, provision of public facilities, and future payments of users' fees, charges for services, special assessments, and taxes.

GOAL CF-7. LOCATE AND DESIGN CAPITAL FACILITIES TO REALIZE THE VISION STATEMENT, AND TO BE COMPATIBLE WITH SURROUNDING LAND USES AND THE ENVIRONMENT.

Objective CF-7.1 **Promote capital facilities that protect the public health, safety and welfare, and that serve as models for function, design, and environmental protection.**

Policy CF-7.1.1 Consider the quality of public facilities in planning for capital improvements.

- Ensure that public facilities' design meets appropriate policies in the Community Design Sub-Element, complies with City design standards, and is compatible with the surrounding areas.
- Maintain public spaces and enhance their appearance.

Policy CF-7.1.2 Encourage public amenities and facilities which serve as catalysts for beneficial development.

Policy CF-7.1.3 Protect public health and environmental quality through the appropriate design and installation of public facilities.

- Promote conservation of energy, water, and other natural resources in the location and design of public facilities.
- Practice efficient and environmentally responsible maintenance and operating procedures for public facilities.
- Preserve existing significant natural vegetation and features in the development of public facilities.

GOAL CF-8. ALLOW FOR THE APPROPRIATE SITING OF ESSENTIAL PUBLIC CAPITAL FACILITIES OF A STATE-WIDE OR COUNTY-WIDE NATURE.

OBJECTIVE CF-8.1 **Participate in a cooperative inter-jurisdictional approach to the siting of essential public facilities in accordance with the <u>King County Countywide Planning Policies</u>. The approach should address definitions, inventories, incentives, compensation, public involvement, environmental protection, and alternative sites analysis.**

Policy CF-8.1.1 Identify essential public facilities based upon the Growth Management Act, State Office of Financial Management list of essential public facilities required or likely to be built, <u>King County Countywide Planning Policies</u>, and any City lists which may be developed.

Policy CF-8.1.2 Classify a facility as an essential public facility if it has one or more of the following characteristics:

a. The facility meets the Growth Management Act definition of an essential public facility;

b. The facility is on a State, County or City list of essential public facilities;

c. The facility serves a significant portion of the County or metropolitan region or is part of a Countywide service system; or

d. The facility is the sole existing facility in the County for providing that essential public service.

OBJECTIVE CF-8.2 Establish a local public review and permit process for essential public facilities.

Policy CF-8.2.1 Require a siting analysis for proposed new or expansions to existing essential public facilities consisting of the following:

a. An inventory of similar existing essential public facilities in King County and neighboring counties, including their locations and capacities;

b. A forecast of the future needs for the essential public facility, and definition of a logical service area;

c. An analysis of the potential social and economic benefits to jurisdictions receiving or surrounding the facilities;

d. An analysis of environmental, social, and economic impacts, including mitigation, of any existing essential public facility, as well as of any new site(s) under consideration as an alternative to expansion of an existing facility;

e. An analysis of alternatives to the facility, including decentralization, conservation, demand management and other strategies;

f. Consideration of any applicable prior review conducted by a public agency, local government, or citizen's group;

g. An analysis of the consistency with Comprehensive Plan policies and designations; and,

h. Consideration of other standards and criteria as outlined in the King County Countywide Planning Policies and other locally defined plans and ordinances.

Policy CF-8.2.2 Require a public process by which citizens have a reasonable opportunity to participate in the site selection process.

Policy CF-8.2.3 Siting criteria for essential public facilities which are not difficult to site should provide for site design and buffering techniques to ensure compatibility with surrounding uses, and enable the facility to be permitted outright in appropriate zoning classifications whenever feasible.

Policy CF-8.2.4 Work with King County and other municipalities to standardize review procedures and criteria for the siting of Statewide and Countywide essential public facilities and incorporate these procedures within interlocal agreements.

OBJECTIVE CF-8.3 Cooperate regionally to ensure appropriate and equitable siting of essential public facilities.

Policy CF-8.3.1 Encourage the State and County to site essential public facilities equitably among communities. No single community should absorb an inequitable share of these facilities and their impacts. Siting should consider environmental equity and environmental, economic, technical, and service area factors. The net impact of siting new essential public facilities should be weighted against the net impact of expansion of existing essential public facilities, with appropriate buffering and mitigation.

Policy CF-8.3.2 Participate in a cooperative interjurisdictional approach to the siting of essential public facilities in accordance with the King County Countywide Planning Policies. Joint planning agreements should be sought where appropriate.

OBJECTIVE CF-8.4 Seek to mitigate disproportionate financial burdens to the City due to the siting of essential public facilities.

Policy CF-8.4.1 Through joint planning or interlocal agreements, the City should seek to mitigate disproportionate financial burdens due to the siting of essential public facilities

Policy CF-8.4.2 Seek amenities or incentives for neighborhoods in which the facilities are located, and require compensation for adverse impacts.

IMPLEMENTATION STRATEGIES

The Capital Facilities Element policies would require new or increased commitments of City resources to prepare new regulations, review/amend existing regulations, or coordinate with agencies and other service providers.

New programs, rules, or regulations would be needed to address:

- A concurrency review and implementation system addressing multimodal transportation facilities
- Evaluation reports monitoring implementation of the goals and policies of the Capital Facilities Element.

A review of existing programs, rules and regulations would be needed to ensure they meet the policies. Rules, regulations and programs that should be reviewed include:

- Impact fee approaches, given revised facilities lists
- Levels of service for non-City-owned facilities.

REFERENCES

King County Growth Management Planning Council (December 2012). Countywide Planning Policies. Seattle, WA.

State of Washington Office of Financial Management (January 2015). 2015-21 Six-Year Facilities Plan. Olympia, WA.

ACRONYMS AND ABBREVIATIONS

BPA	Bonneville Power Administration
CDP	Census Defined Place
cfs	cubic feet per second
CIP	Capital Improvement Plan
CDBG	Community Development Block Grant
CPP	Countywide Planning Policies
DOE	Washington State Department of Ecology
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EMS	Emergency Services
ESA	Endangered Species Act
FAZ	Forecast Analysis Zones
FEMA	Federal Emergency Management Act
FHRP	Flood Hazard Reduction Plan
FHWA	Federal Highway Administration
GIS	Geographic Information System
GMA	Growth Management Act
GMPC	Growth Management Planning Council
HUD	Housing and Urban Development
KCLS	King County Library Service
KCSWDM	King County Surface Water Design Manual
HSPF	Hydrologic Simulation Program - Fortran
LID	Local Improvement District
LOS	Level of Service
NAAQS	National Ambient Air Quality Standards
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRPA	National Recreation and Park Administration
PHS	Priority Habitat and Species Program
ppm	Parts per million
PRSA	Parks and Recreation Service Area
PSAPCA	Puget Sound Air Pollution Control Agency
PSWQMP	Puget Sound Water Quality Management Plan
PSE	Puget Sound Energy
PSRC	Puget Sound Regional Council
NAAQS	National Ambient Air Quality Standards
(NOx)	Nitrogen oxides
SEPA	State Environmental Policy Act
SIP	State Implementation Plan
TIP	Transportation Improvement Program
TAZ	Transportation Analysis Zones
TIP	Transportation Improvement Program
TSP	Total suspended particulates
USFW	U.S. Department of Fish and Wildlife
VOC	Volatile organic compounds
WSDOT	Washington State Department of Transportation
WUTC	Washington Utilities and Transportation Commission

Appendices to the Comprehensive Plan

June, 2015

KENMORE
BY THE LAKE

APPENDIX A

(Reserved)

APPENDIX B

(Reserved)

APPENDIX C
SHORELINE RESTORATION PLAN

Approved by the Kenmore City Council, Ordinance 10-0312
Approved by the Washington State Department of Ecology,
March 2012

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Introduction and Background

The City of Kenmore (City) is updating its Shoreline Master Program (SMP) to comply with the requirements of the Washington State Shoreline Management Act (SMA or the Act) (Revised Code of Washington [RCW] 90.58) and the state's shoreline guidelines (Washington Administrative Code [WAC] 17 3-26 Part III).

Kenmore is located in King County Washington, at the north end of Lake Washington where the Sammamish River enters the lake (Map 1).

This restoration plan is an important part of the City's SMP and was developed to meet the requirements of the Washington State Department of Ecology (Ecology) and Washington Administrative Code Title 173 Chapter 26 Section 201. Ecology dictates that shoreline restoration plans:

> *…shall include goals, policies and actions for restoration of impaired shoreline ecological functions…and should be designed to achieve overall improvements in shoreline ecological functions over time*. (WAC 173-26-201(2)(f)).

This restoration plan builds on the 2008 *Draft Kenmore Shoreline Master Program Update: Inventory and Analysis* (ESA Adolfson 2008) and provides a framework for implementing the SMP goals and policies for restoration. The plan also describes how future restoration efforts may be integrated with existing work being done by local agencies, non-governmental organizations (NGO's) and private citizens.

The objectives of this report are to:

- Identify the City of Kenmore's shoreline restoration **goals**
- Describe potential restoration **opportunities** and recommend specific restoration **actions**
- Identify potential **partners** and existing restoration activities
- Explain how future restoration actions can be **implemented** to achieve the greatest overall benefit

The Kenmore region includes some of the most intensely developed land within Washington State (ESA Adolfson 2008a). More than 50 percent of the land area in the city is single-family residential development, with multi-family and commercial development on the rise (ESA Adolfson 2008a). This urbanization has degraded shoreline ecology in many parts of the city. It also fragments habitat, contributes to pollution of the shoreline and waters of the state, and limits available sites for restoration due to land costs and other economic factors.

This restoration plan describes goals and opportunities for both protection and restoration of shorelines within Kenmore. Restoration and protection are both critical components for maintaining ecosystem functions in developed or developing areas.

"Protection" is attained through policies and regulations that shield resources from possible damage caused by future development; for example, land use restrictions and special designations may be used to protect specific areas. Protection is generally accomplished through regulatory measures, such as prohibiting or restricting development (ESA Adolfson 2008b), although protection can also be accomplished through acquisition and management.

"Restoration" generally means to return an ecosystem to an earlier, often pristine or native condition, but it can also encompass rehabilitation, enhancement, and reclamation of an area. In the context of shoreline master plans, "restoration" has been defined as:

> *...the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions*. (WAC 173-26-020.27)

Table 1 provides examples of typical protection and restoration actions applied to shorelines in the Puget Sound region.

Table 1. Examples of Protection and Restoration Actions for Shoreline Areas.

Common Protection Actions	Common Restoration Actions
▪ Treating stormwater runoff using best management or low impact development practices to reduce pollutants ▪ Maintaining existing wetlands ▪ Preventing development in areas containing high quality habitat ▪ Establishing buffer and setback requirements ▪ Protecting/preserving existing trees/vegetation ▪ Protecting water quality by limiting pesticide/fertilizer use ▪ Regulating groundwater withdrawals ▪ Limiting construction of new docks, bulkheads, and staircases ▪ Clustering residential development away from sensitive resources ▪ Preserving property through easement or acquisition ▪ Limiting the amount of new impervious surface and managing runoff to mimic natural conditions	▪ Removing dikes and setting levees back ▪ Replacing bulkheads with soft shore stabilization structures (e.g., bio-stabilization) ▪ Replanting/enhancing riparian vegetation ▪ Replacing blocked or undersized culverts ▪ Removing fill from wetlands ▪ Removing invasive species ▪ Replacing dock decking with open grating material to allow light penetration ▪ Replacing treated wood docks with nontoxic materials ▪ Retrofitting existing impervious surfaces to include stormwater treatment and flow control ▪ Adding large woody debris or engineered log jams to streams ▪ Replacing pavement with pervious pavement (such as at parks/boat launches) ▪ Relocating infrastructure outside sensitive habitats

In comparison to protection, restoration involves taking proactive, on-the-ground steps to restore ecological functions which may have become degraded as a result of past development or land use activities. For example, the restoration component of SMPs centers around opportunities to restore ecological functions through actions that improve water quality, improve fish and wildlife habitat, or restore natural processes such as beach erosion and sediment transport. Additionally, restoration actions often occur in phases and are an ongoing process that may take years to complete (ESA Adolfson 2008b).

In general, protection should be the goal for areas in already excellent ecological condition, while restoration measures should be focused on areas that are degraded and restoration is both feasible and sustainable (National Research Council 2002).

Specific protection and restoration opportunities in the Kenmore area are considered in Chapter 5, Shoreline Management Issues and Opportunities, in the *Inventory and Analysis* (ESA Adolfson 2008a) and provided a basis for developing the restoration recommendations included in this plan. The Kenmore SMP addresses three water bodies that are classified as "shorelines of the state": Lake Washington, Sammamish River, and Swamp Creek. The SMP divides each of the geographic regions or water bodies into shoreline planning areas (or reaches), based on changes in the physical and biological composition (Map 2). The water bodies are discussed in detail in the *Inventory and Analysis*, and summarized in Section 2 (below). This plan uses the reach names used in the Kenmore SMP.

Additionally, tributary streams that contribute to the general health and function of waters that are designated shorelines of the state are considered in this restoration plan. Tributary streams can affect large areas of the watershed, smaller streams, connected wetlands, and ground water. In particular, this plan addresses a small stream (Stream 0056) that flows into Lake Washington. Stream 0056 is included in this plan as it plays a significant role in the quality and availability of aquatic habitat within Lake Washington shoreline reach 4 (Lake_WA_04) (Map 2).

Although this plan focuses primarily on restoration activities, protection measures can also contribute toward achieving general restoration goals. Protection of existing shoreline habitat and the associated ecological functions that it provides may reduce the need for future restoration activities or reduce the level of effort required to achieve restoration goals. Specific restoration actions recommended for shorelines within Kenmore are identified in Section 4 of this plan.

Shoreline Master Program Update
City of Kenmore

KENMORE BY THE LAKE

ESA Adolfson

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Feet

Map 1
Watershed Scale

SOURCE: King County, 2007; WSDOT, 2005

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Shoreline Master Program Update
City of Kenmore

KENMORE BY THE LAKE

ESA Adolfson

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Map 2
Shoreline Planning Areas

SOURCE: King County, (2002)2007; ESA Adolfson, 2007; WDFW, 2007, FEMA (KC), 2007

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Watershed Overview

The following background information is summarized from the *Kenmore Shoreline Master Program Update: Inventory and Analysis* (ESA Adolfson 2008a) and provides an overview of the watershed in and around Kenmore.

Kenmore is situated in the Puget Sound Lowlands, in the Cedar-Sammamish Watershed Resource Inventory Area (WRIA) 8. The watershed extends from southwest Snohomish County to the north and the Sammamish Plateau and headwaters of the Cedar River in the Cascade Mountain Range to the east and south (Map 1). The Lake Washington drainage includes waters from the Cedar and Sammamish Rivers, and Lake Union. It eventually drains into the Puget Sound.

Lake Washington

Lake Washington covers approximately 35 square miles and drains an area of roughly 470 square miles. The lake water level is controlled to fluctuate 2 feet throughout the year (high water levels in May and June). There are no mapped floodplains on the lake. Three and a half miles of lake shoreline, representing approximately 100 acres of shoreline planning area, are within Kenmore. This shoreline area has been divided into four reaches for the purpose of the SMP.

Contributing streams within Kenmore include the Sammamish River and its tributaries, Stream 0056 (discussed below), and several other small, unnamed tributaries. Landslide hazards are common in the region, which result in potential for significant erosion. Topography includes low lying south-facing slopes and steeper west-facing slopes.

Significant portions of shoreline have been altered by localized dredging, residential docks and piers, and armoring. There are at least 61 docks (90 percent of the properties) within the most developed reach (Lake_WA_02) of the Kenmore shoreline (Map 2). There are several parks in the area, including Saint Edward State Park, Inglewood wetlands and Log Boom Park (also known as Tracy Owen Station Park) (Map 3).

Lake Washington is included on the Washington State list of impaired waters (known as the 303(d) list) due to high phosphorus concentrations and PCBs (Ecology 2009). The high phosphorus concentrations in the vicinity of Kenmore have been attributed to high loading of phosphorus from the Sammamish River (King County WLRD 2005). Several noxious and invasive plants, such as Eurasian water-milfoil (*Myriophyllum spicatum*) and Brazilian elodea (*Egeria densa*), are present in the area.

The Kenmore area waters and shoreline support an abundance of fish and wildlife. Approximately 30 fish species, including native trout and salmon, use the lake for rearing, migration, and/or spawning. Notable shoreline habitat dependent species include great blue herons (*Ardea herodias*), bald eagles (*Haliaeetus leucocephalus*), and pileated woodpecker (*Dryocopus pileatus*), which use the area for breeding grounds.

A small fish-bearing stream (Stream 0056) enters Lake Washington in the vicinity of Kenmore. Although Stream 0056 is not classified as a “shoreline of the state”, the

tributary is important to the Kenmore community and to connected shoreline habitat, and has therefore been included in this plan. The stream headwaters originate north of 181st Street. The stream flows under Bothell Way (SR 522) and discharges into Lake Washington near Log Boom Park (Map 2). Stream bank erosion is contributing to elevated suspended sediments and sedimentation in the stream channel. Near the stream's mouth, the banks are heavily developed and native vegetation is essentially absent, which is likely accelerating the rate of erosion at this location. In addition, an existing weir may prevent fish from entering the stream, thus reducing the availability of habitat for fish.

Stream 0056 and other small streams that flow into Lake Washington have been affected by upstream changes in land use, such as the increase in impervious surface, that have increased stormwater runoff and sediment inputs to the lake. These land use changes in the basins draining to the shoreline have altered the intensity, timing and duration of peak flows, causing erosion and impacts to shoreline processes and functions.

Sammamish River

The mainstem of the Sammamish River is approximately 14 miles long. The river originates at Lake Sammamish and discharges into the northeast section of Lake Washington. Approximately 1.8 miles and 144 acres of shoreline planning area are within Kenmore. There are three reaches of the Sammamish River within Kenmore. Tributaries to the Sammamish include Swamp Creek, Bear Creek, Little Bear Creek, Issaquah Creek and other unnamed tributaries. Associated wetlands also exist in the area. However, approximately 95 percent of historic wetlands were filled when the Lake Washington Ship Canal was constructed in the early 1900s (WRIA 8 Steering Committee 2005).

Historical land-use practices and activities have confined the lower Sammamish River to a straight channel; bulkheads, piers and docks line the shoreline. The entire river was dredged and widened as part of a 1966 flood control project (King County WLRD 2006). Inglewood wetlands, Rhododendron Park, and Swamp Creek Park are all adjacent to the river (Map 3). Additionally, a public boat launch maintained by WDFW is located near the mouth of the river (Map 3).

Development along most reaches of the river consists of a mix of residential and open space. The river banks are generally stable in this area and have adequate vegetation. However, the highly invasive weed reed canarygrass is present in numerous areas along the shore. One reach (SAMM_RV_03) has an unstable slope that may represent a landslide and erosion hazard (ESA Adolfson 2008a). The river supports several fish and wildlife species including salmonids, which use the river for rearing and migration, and a great blue heron colony.

The Sammamish River has generally poor water quality and is included on the Washington State list of impaired waters (known as the 303(d) list) due to low concentrations of dissolved oxygen, high summertime temperatures, and high concentrations of fecal coliform bacteria.

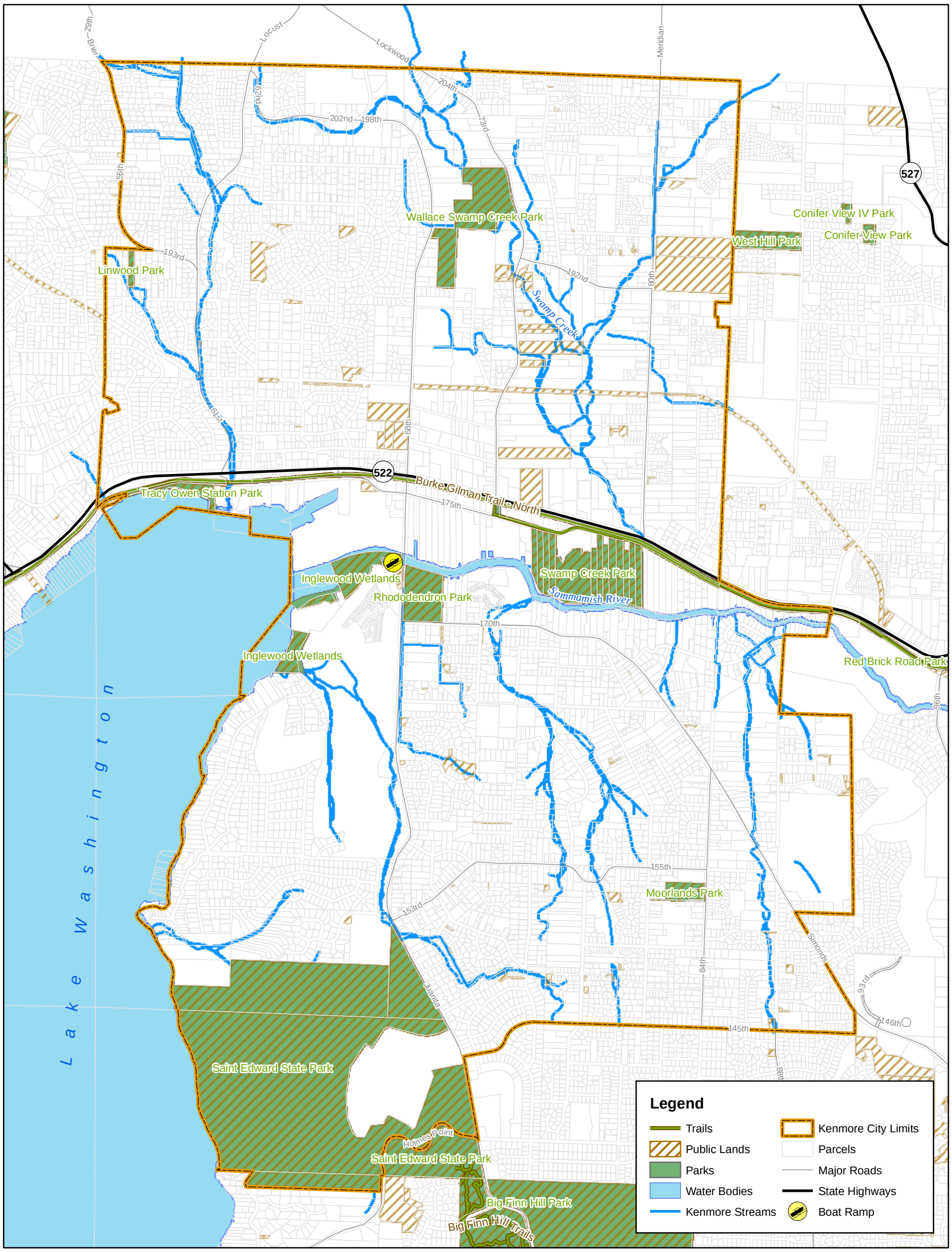
Swamp Creek

The mainstem of Swamp Creek is approximately 14.6 miles long. The creek's headwaters originate in wetlands south of Everett, then flow into Sammamish River, within Kenmore. There are approximately 2.5 miles of creek and 230 acres of shoreline planning area within the City that are associated with Swamp Creek. Four reaches of Swamp Creek lie within the City's SMP planning area. Tributaries include Little Swamp Creek, Muck Creek, and an unnamed stream. Two parks in the vicinity include Swamp Creek Park and Wallace Swamp Creek Park (Map 3).

The Swamp Creek watershed contains some of the highest quality wetlands in the Kenmore area. Approximately 137 acres of associated wetlands are in the shoreline planning area; these primarily lie within the two upper reaches of the creek. The reach nearest the Sammamish River (SWAMP_CK_01) contains large patches and frequent smaller occurrences of several invasive species, whereas the two upper sections (SWAMP_CK_03 and SWAMP_CK_04) generally contain native vegetation with a few pockets of invasive plants. These latter reaches are classified in the highest category of wetlands. The middle reach (SWAM_CK_02) consists of a mix of residential development and open space.

All reaches are relatively stable; therefore, erosion and landslide hazards are not of significant concern (ESA Adolfson 2008a). Water quality may be degraded by upstream erosion, sediment discharge, runoff and other upstream sources. Swamp Creek is included in Ecology's list of impaired waters (i.e., the 303(d) list) due to elevated temperature and low dissolved oxygen concentrations.

The river and shoreline supports numerous fish and wildlife species. Trout and several salmonid species use the river for migration and rearing. Other wildlife in the area includes a great blue heron colony and state listed purple martin (*Progne subis*).



Shoreline Master Program Update
City of Kenmore

KENMORE BY THE LAKE

ESA Adolfson

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Map 3

Parks, Open Space and Public Access

SOURCE: King County, 2007

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Restoration Goals and Opportunities

The Kenmore SMP has been developed in accordance with statewide policies established in the Shoreline Management Act (RCW 90.58.020). Protecting the shoreline environment is an essential statewide policy goal, consistent with other policy goals. The SMP protects shoreline ecology by developing an inventory that ensures a meaningful understanding of current and potential ecological functions provided by shorelines, and by regulating development in a manner that ensures no net loss of ecological functions from direct or cumulative impacts of development. The SMP also recognizes that the shoreline ecology is already degraded in many areas of Kenmore and that long term sustainability of ecological functions is only achievable if restoration of those natural functions is accomplished over time. The SMP includes the following policy statement to support that overall goal:

Restoration and Enhancement

Shoreline habitat and natural systems enhancement projects should be supported and coordinated with other plans and regulations, such as salmon conservation plans, the King County Flood Hazard Reduction Plan and Flood Control Zone District, and flood hazard management policies in the Kenmore Comprehensive Plan Natural Environment Sub-Element and Surface Water Element.

Policy LU-24.7.1 Kenmore should allow for habitat and natural systems enhancement projects that include, but are not limited to:

1. Modification of vegetation;
2. Removal of nonnative or invasive plants;
3. Shoreline stabilization using soft or non-structural techniques; and
4. Dredging, and filling, provided that the primary purpose of such actions is clearly restoration of the natural character and ecological processes and functions of the shoreline.

Policy LU-24.7.2 Habitat and natural systems enhancement projects should ensure that the projects address legitimate restoration needs and facilitate implementation of Kenmore's Shoreline Restoration Plan.

Conservation

Policy LU-21.1.3 Where appropriate, land and water uses should be located so that they do not interfere with the restoration or enhancement of shoreline ecological processes and functions.

Critical Freshwater Habitat

Policy LU-21.5.1 Kenmore should establish priorities for protection and restoration, where appropriate, along river corridors and lake shorelines.

Policy LU-21.5.4 Kenmore should facilitate authorization of appropriate restoration projects.

Shoreline Stabilization

Policy LU-24.2.22 Kenmore shall ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline, except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological processes and functions. Where feasible, Kenmore shall require ecological restoration and public access improvements to be incorporated into the project.

Fill

Policy LU-24.4.2 Kenmore shall allow fill waterward of the ordinary high-water mark only when necessary to support:

1. Water-dependent use;
2. Public access;
3. Cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan;
4. Disposal of dredged material considered suitable under, and conducted in accordance with, the dredged material management program of the Washington Department of Natural Resources;
5. Expansion or alteration of SR 522 in the shoreline and then only upon a demonstration that alternatives to fill are not feasible; or
6. Mitigation actions, environmental restoration, beach nourishment, enhancement projects and flood risk reduction projects.

Policy LU-24.4.3 Kenmore shall require a shoreline conditional use permit for fill waterward of the ordinary high-water mark for any use except ecological restoration and maintenance, repair and replacement of flood protection facilities.

Dredging

Policy LU-24.6.3 Kenmore shall not allow dredging waterward of the ordinary high-water mark for the primary purpose of obtaining fill material, except when the material is necessary for the restoration of ecological processes and functions. When allowed, the site where the fill is to be placed shall be located waterward of the ordinary high-water mark. The project must be either associated with a habitat restoration project under the Model Toxics Control Act or the Comprehensive Environmental Response, Compensation, and Liability Act, or, if approved through a shoreline conditional use permit, any other significant habitat enhancement project.

Policy LU-24.6.9 Disposal of dredge and excavation spoils within shorelines should be prohibited except when the material is necessary for the restoration of ecological processes and functions.

Aquaculture

Policy LU-23.3.7 Community restoration projects associated with aquaculture should be reviewed and permitted in a timely manner.

Commercial

Policy LU-23.5.2 Kenmore shall prohibit nonwater-oriented commercial uses in the shoreline jurisdiction unless they meet the following criteria:

1. The use is part of a mixed-use project that includes water-dependent uses and provides a significant public benefit with respect to the Shoreline Management Act's objectives, such as providing public access and/or ecological restoration; or

2. Navigability is severely limited at the proposed site and the commercial use provides a significant public benefit with respect to the Shoreline Management Act's objectives, such as providing public access and/or ecological restoration.

Industrial

Policy LU-223.6.3 Kenmore should encourage redevelopment, environmental clean up and shoreline restoration on existing industrial sites.

Policy LU-23.6.4 Kenmore should prohibit new nonwater-oriented industrial development in the shoreline jurisdiction, except when the use is part of a mixed-use project that includes water-dependent uses or the use provides a significant public benefit with respect to the Shoreline Management Act's objectives, such as providing public access and/or ecological restoration.

Table 2 summarizes restoration opportunities identified for various shorelines within Kenmore. Specific reaches to which the restoration opportunity applies are indicated. Restoration *opportunities* are general activities that correspond with potential improvements to ecological structure or functions. They are not restoration *actions* (described later in this plan [Section 4]). However, they provide a foundation for identifying and prioritizing specific restoration actions, and represent the linkage between restoration goals and recommended actions.

Table 2. Table of Restoration Opportunities (as summarized in ESA Adolfson 2008).

Lake Washington Reaches					
Restoration Opportunities	Functions Improved	Reaches			
		01	02	03	04
Riparian enhancement	▪ Increased input of detritus and insects from shoreline vegetation ▪ Increased large woody debris ▪ Improved wildlife habitat ▪ Reduction of invasive plant species extent and potential for future spread		X	X	X
Protection of wetlands that drain to lake tributaries	▪ Attenuation of stormwater flows ▪ Filtration of sediments ▪ Improvement of stormwater quality (nutrients, fecal coliform, chemicals)	X	X	X	
Removal or improvement in the design of docks and other overwater structures, for example, by using light-permeable dock surfaces or community docks	▪ Improve rearing and migratory habitat for juvenile fish ▪ Reduce potential for water quality contamination from leaching of chemically treated wood ▪ Reduce overwater shading that may attract juvenile salmonid predators		X	X	X
Restoration of armored shorelines, for example through reducing shoreline slope, revegetating with native species	▪ Allow natural sediment movement from upland areas to shorelines ▪ Improve conditions for growth of riparian vegetation ▪ Improve nearshore foraging habitat for fish ▪ Provide large wood and nutrient inputs to lake ▪ Restore shallow-water emergent wetland areas		X	X	X
Restoration of smaller tributary streams	▪ Improve fish access to tributaries ▪ Reconnect and enhance the mouths of small streams as juvenile salmon rearing areas ▪ Protect and restore riparian buffers along streams ▪ As redevelopment occurs throughout the basins draining to Kenmore's shorelines, ensure that stormwater regulations are enforced to reduce water quality and high flow impacts.		X	X	
Preservation of remaining natural areas, for example through acquisition or easement	▪ Potential for incremental improvement in all the above functions		X		

Sammamish River Reaches				
Restoration Opportunities	Functions Improved	Reaches		
		01	02	03
Riparian enhancement	▪ Increased input of detritus and insects from shoreline vegetation ▪ Increased large woody debris ▪ Improved wildlife habitat ▪ Reduction of invasive plant species extent and potential for future spread ▪ Improved shading and incremental reduction of stream temperatures	X	X	X
Restoration and reconnection of floodplain wetlands	▪ Attenuation of stormwater flows ▪ Filtration of sediments ▪ Improvement of stormwater quality (nutrients, fecal coliform, chemicals) ▪ Improvement of habitat for wetland-dependent wildlife species	X	X	X
Removal or improvement in the design of docks and other overwater structures, for example, by using light-permeable dock surfaces or community docks	▪ Improved rearing and migratory habitat for juvenile fish ▪ Reduced potential for water quality contamination from leaching of chemically treated wood ▪ Reduced overwater shading that may attract juvenile salmonid predators	X	X	X
Restoration of armored shorelines, for example through reducing shoreline slope, revegetating with native species	▪ Restored natural sediment movement from upland areas to shorelines ▪ Improved conditions for growth of riparian vegetation ▪ Improved nearshore foraging habitat for fish ▪ Increased large wood and nutrient inputs to river ▪ Restored floodplain wetland areas	X	X	X
Restoration of smaller tributary streams	▪ Improved fish access to tributaries ▪ Reconnected and enhanced the mouths of small streams as juvenile salmon rearing areas ▪ Protected and restored riparian buffers along streams ▪ Reduced water temperatures of tributaries thereby providing incremental improvement in river temperature	X	X	X

Sammamish River Reaches				
Restoration Opportunities	Functions Improved	Reaches		
		01	02	03
Creation of pools in river channel downstream of tributaries	▪ Improved refuge and cover for salmon		X	X
Education of recreational users of river	▪ Reduced impacts of recreational use – invasive aquatics, pollution, noise	X	X	X
Preservation of remaining natural areas, for example through acquisition or easement	▪ Potential for incremental improvement in all the above functions	X	X	X
Education of shoreline property owners on ways to restore and protect shoreline areas	▪ Potential for incremental improvement in all the above functions	X	X	X

Swamp Creek Reaches					
Restoration Opportunities	Functions Improved	Reaches			
		01	02	03	04
Riparian enhancement	▪ Increased input of detritus and insects from shoreline vegetation ▪ Increased large woody debris ▪ Improved wildlife habitat ▪ Reduction of invasive plant species extent and potential for future spread ▪ Improved shading and incremental reduction of stream temperatures	X	X	X	X
Restoration and preservation of floodplain wetlands	▪ Attenuation of stormwater flows ▪ Filtration of sediments ▪ Improvement of stormwater quality (nutrients, fecal coliform, chemicals)			X	X
Restoration of smaller tributary streams	▪ Improved fish access to tributaries ▪ Reconnected and enhanced the mouths of small streams as juvenile salmon rearing areas ▪ Protected and restored riparian buffers along streams			X	X
Preservation of remaining natural areas, for example through acquisition or easement	▪ Potential for incremental improvement in all the above functions			X	X
Education of shoreline property owners on ways to restore and protect shoreline areas	▪ Potential for incremental improvement in all the above functions	X	X	X	X

Restoration Actions

Restoration actions are specific recommendations derived from potential opportunities identified in the draft Kenmore SMP Update *Inventory and Analysis* (ESA Adolfson 2008a), an October 2008 site review, discussion with local and state resource agencies and Kenmore community members, as well as pertinent scientific literature and restoration guidance documents. In order to achieve restoration goals, it is important to pursue programmatic efforts that may contribute to restoration of ecological functions on a broader scale across all shorelines and the region in general, in addition to implementing reach-specific or project-specific restoration actions.

Map 4 provides an overview of the restoration opportunities recommended below.

Programmatic Actions

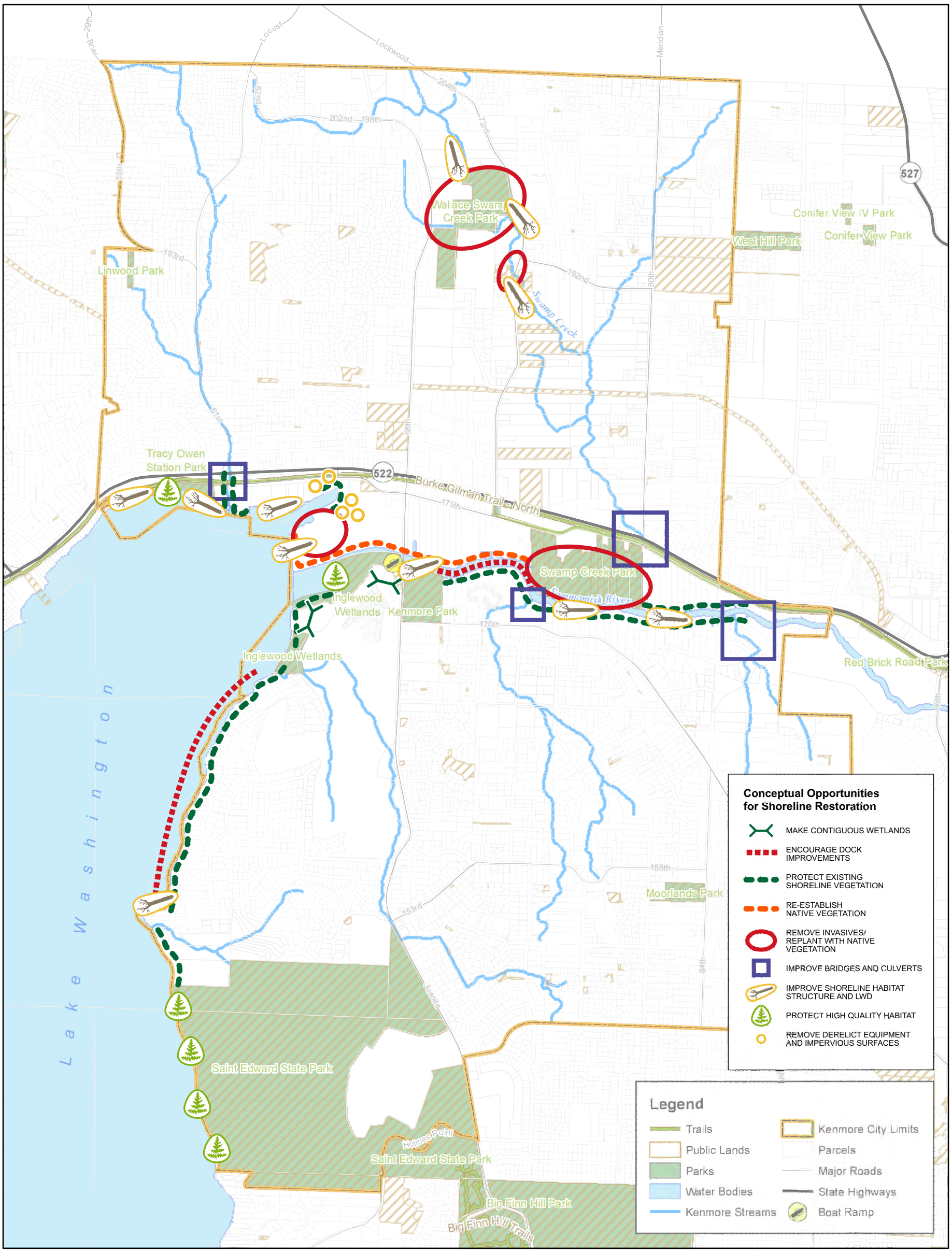
The following programmatic actions are applicable to most jurisdictions with shoreline area. Many of these actions are appropriate to apply at a watershed-wide scale rather than just in the designated shoreline area. The City of Kenmore should:

- Establish a City of Kenmore "shoreline" homeowners association or interest group to support shoreline stewardship, to promote environmentally friendly use of shorelines, and to provide a pathway for public participation in implementing the SMP restoration plan.
- Support implementation of stormwater treatment and control strategies throughout the watershed, including existing Kenmore regulations and improved regulations to be developed in 2010. Encourage, through incentives or local regulations, Low Impact Development (LID) practices for new development and retrofit of existing properties within the watershed. Retrofitting could include on-site stormwater detention for new or redeveloped sites to mimic the natural hydrologic cycle for the basin.
- Work with WSDOT and County roads departments to identify undersized or poorly installed culverts and other road maintenance needs. Create a list of prioritized needs for the City and track progress on completion.
- Provide educational workshops and an incentives program for City residents, property owners, and developers on proper shoreline stewardship practices, landscape care and integrated pest management (IPM) techniques.
- Establish a routine survey program for invasive species (including aquatic and terrestrial noxious weeds) for all shorelines, parks and other natural areas. Develop and implement a city-wide IPM plan to identify appropriate control measures for each weed type for different levels of infestation.

- Develop a program to remove existing rip-rap and other bank hardening structures on public property where feasible.
- Promote bulkhead, dock, and ramp replacements to improve their design. For new or replacement structures, encourage or require design standards that reduce impacts on habitat. For example, new structures should be required to meet NOAA guidance on dock design, including decreasing the dock footprint, increasing light penetration, and encouraging the use of joint or community docks. For docks and bulkheads, the City may develop local standards to incorporate guidance already available for Lake Washington shorelines (City of Seattle 2009).
- Remove any creosote treated wooden piles and structures from the shoreline environment. Replace with concrete, steel or other materials if a structure is needed.
- Increase shoreline and channel habitat structure along all publicly owned properties. This should include placement of large boulders or logs and other large woody debris, establishing native vegetation including shrub and tree canopy to shade the nearshore zone, and providing for future habitat by planting larger tree species at regular intervals.

Reach-Specific Restoration or Protection Actions

Restoration actions of site-specific importance are summarized in Table 3. The table includes actions that may be implemented to restore specific shorelines included in this plan. Recommended actions are grouped by reach. Site-specific recommendations as well as programmatic recommendations of particular importance to a specific reach or site within the reach are provided.



FILE NAME: Map4_RestorationPriorities.ai / Restoration Plan
CREATED BY: JAB / DATE LAST UPDATED: 06/04/09

Shoreline Master Program Update
City of Kenmore

KENMORE BY THE LAKE

ESA Adolfson

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Map 4
Shoreline Restoration Opportunities

SOURCE: King County, 2007

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Table 3. Recommended restoration and protection actions for City of Kenmore Shorelines.

Reach	Recommended Restoration Action	Associated Goals and Policies
Lake Washington		
Lake_WA_01	▪ Maintain intact forest and riparian habitat structure at St. Edward State Park.	Goal 21.1 Policy LU-21.1.4 Policy LU-21.2.1 Policy LU-17.4.1 Policy LU-17.4.5 Policy LU-21.5.1
Lake_WA_02	▪ Add shoreline structure (e.g., overhanging trees and shrubs and large woody debris) in NE Arrowhead Drive and 59th Avenue NE cove area. ▪ Encourage replacement of residential docks with structures that better address habitat requirements, such as use of grated decking, nontoxic materials, and minimizing overwater coverage in shallow water areas. ▪ Encourage the replacement of bulkheads with softer stabilization methods that include better habitat value, such as creating shallow water areas and providing overhanging vegetation. ▪ Promote the development of a riparian buffer along the golf course through education and voluntary action. ▪ Enhance adjacent riparian areas to reduce fragmentation of existing wetland habitat (create one contiguous wetland area) for the Inglewood Wetlands. ▪ Promote improved stormwater control in basins draining to the shoreline through implementation of existing or new stormwater regulations as development occurs.	Policy LU-17.2.1 Policy LU-17.3.1 Policy LU-21.1.2 Policy LU-21.3.1 Policy LU-21.4.2 Policy LU-23.10.2 Policy LU-24.2.11 Policy LU-24.3.6 Policy LU-24.7.1 Policy LU-21.5.1 Policy LU-21.5.4
Lake_WA_03	▪ Create a master plan for the long term development of the LakePointe property (near 68th Street) that provides for a protected riparian corridor with enhanced vegetation. ▪ Remove debris and derelict equipment within the LakePointe property shoreline. Survey this area and other commercial and industrial areas for debris, including submerged material, that should be removed from the shoreline zone. ▪ Promote reduction in impervious surface and re-establishment of riparian vegetation along the shoreline at the Kenmore Air Harbor Marina. ▪ Promote improved stormwater control in basins draining to the shoreline through implementation of existing or new stormwater regulations as development occurs.	Policy LU-17.1.5 Policy LU-21.1.2 Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4

Reach	Recommended Restoration Action	Associated Goals
Lake_WA_04	▪ Develop and implement a stream stabilization and rehabilitation plan for the mouth of Stream 0056 near Log Boom Park. This should include modifications to improve fish passage. The plan should also include the establishment of riparian vegetation and installation of wood pieces to improve the link between terrestrial and aquatic habitat, and to improve refuge and foraging opportunities for fish. ▪ Maintain established wildlife trees at Log Boom Park. ▪ Introduce additional native vegetation in Log Boom Park, specifically between the park and Harbor Village Condominiums to create a longer riparian corridor. Include this area in a general invasive vegetation survey and removal program. ▪ Add shoreline habitat structure (e.g., boulders, logs and large woody debris, and overhanging vegetation) in cove area near Log Boom Park. ▪ Replace SR 522 culvert to proper size in order to improve Stream 0056.	Policy LU-17.3.12 Policy LU-17.3.1 Policy LU-21.1.2 Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4
Sammamish River		
Samm_Rv_01	▪ Maintain existing habitat on the island near Inglewood wetlands/stream mouth. ▪ Develop a plan for Inglewood wetlands to manage them as one contiguous wetland area through cooperation with adjacent property owners and/or additional City acquisition. ▪ Work with WDFW to improve boat launch area, including possible installation of equipment wash facilities to reduce the spread of invasive plants, protecting and restoring the adjacent wetland areas, and enhancing the area with larger riparian plants such as willows.	Policy LU-17.3.1 Policy LU-21.1.2 Policy LU-21.3.1 Policy LU-19.3.1 Goal 21.4 Policy LU-21.5.1 Policy LU-21.5.4
Samm_Rv_02 and Samm_Rv_03	▪ Install large woody debris where possible to promote pooling and habitat diversity within the channel. ▪ Encourage the establishment of additional vegetation in the riparian buffer as redevelopment occurs. ▪ Create off-channel habitat at Swamp Creek Park. ▪ Eliminate barriers to fish passage at the mouths of small streams on the south side of the river by modifying culverts or daylighting the streams, if feasible.	Policy LU-17.2.1 Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.3 Policy LU-21.5.4
Swamp Creek		
Swam_Ck_01	▪ Remove reed canarygrass and regrade area to enhance wetland formation.	Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4
Swam_Ck_02	▪ Remove creosote-treated wooden pilings from the Burke-Gilman pedestrian bridge adjacent to SR 522. Consider replacing the existing pedestrian bridge with a clear-span bridge. ▪ In the vicinity of the pedestrian bridge and the nearby SR 522 (bridge and road construction area) remove invasive vegetation such as Japanese knotweed and improve habitat structure through bank grading, placement of LWD, and installation of native riparian vegetation.	Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4

Reach	Recommended Restoration Action	Associated Goals
Swam_Ck_03	▪ Control and monitor encroaching invasive plants, including Japanese knotweed, Himalayan blackberry, and Scots broom below 73rd Avenue bridge and in upland buffer areas. ▪ Remove ecology blocks and other material remaining from flood damage repairs and replace with large woody debris.	Policy LU-17.2.1 Policy LU-17.3.1 Policy LU-17.3.11 Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4
Swam_Ck_04	▪ Remove concrete and asphalt debris from stream channel in Wallace Park area. ▪ Remove extensive Japanese knotweed and Scot's broom in Wallace Park and surrounding area. ▪ Commit to a long term strategy for identification and removal of invasive plants.	Policy LU-17.3.1 Policy LU-17.3.11 Policy LU-21.3.1 Policy LU-21.5.1 Policy LU-21.5.4

Recommended Restoration and Protection Actions

Restoration actions were selected based on field review, discussions, and literature mentioned previously, as well as comments received in response to the December 2008 Technical Memorandum regarding restoration opportunities (Herrera 2008). Restoration opportunities should be periodically re-evaluated to respond to changes in land use designations, project status (i.e., completion and success level), community support, funding availability, and overall feasibility. The City should continue to work with local programs, agencies, citizens, and scientists to identify activities that would produce the most benefit for the restoration of ecological functions. The following general guidance may be used to prioritize restoration actions:

- Areas of high importance (for ecological processes and functions) are higher priorities for restoration than areas of low importance (Adolfson 2003b)
- Areas of low alteration (i.e., low level of development) are higher priorities for preservation than highly altered areas (i.e., urbanized or developed) (Adolfson 2003b)
- Projects with high overall feasibility (e.g., projects that have available funding, political and community support, and site access) are generally higher priorities for restoration than less feasible projects (Bellingham 2008)

Lake Washington

Programmatic Action

Important programmatic activities for the Lake Washington shoreline are associated with impacts from docks and establishment of vegetation in the nearshore (riparian) zone. Many docks and piers that line the shoreline of the lake are impairing shoreline function

by creating a light and dark interface that increases predation on salmon, and by reducing riparian cover and altering wave energy. New docks or replacement docks should be required to meet NOAA Fisheries standards such as those that limit size, and rely upon light permeable decking. Shoreline vegetation is also lacking on residential properties. An education program for water-front property owners that focuses on the benefits of shoreline vegetation, low-maintenance shoreline landscape designs, and integrated pest management should also be implemented. Shoreline development practices such as those described in the City of Seattle "Green Shorelines" publication (City of Seattle 2009) that reduce the impacts of bulkheads and docks should be encouraged through incentives or regulation.

Although difficult to implement, these actions are fairly simple and could make significant differences to shoreline structure and quality. While implementation of these actions is typically slow and piecemeal, they have the advantage of being highly feasible (over time). In fact, new dock design requirements have already been implemented.

Peninsula Area (LakePointe Property) off 68th Avenue (Lake_WA_03)

The shoreline in this area has been extensively modified; it is largely armored, derelict materials are located in the nearshore area, and there is little, if any shoreline vegetation. Removal of impervious surface, shoreline armoring and restoring the riparian vegetation, in addition to controlling or eradicating invasive vegetation are recommended. Strategic placement of large woody debris or other structures in the nearshore zone are recommended in order to provide improved habitat. Soil testing, site clean-up, bank sloping, and design and implementation of an aggressive plan for vegetating the site should occur. This parcel has been identified for restoration because it could result in creation of a fairly large, contiguous habitat area which typically results in higher relative value toward restoration of ecological functions than restoring many, smaller, separate parcels. Proposed development for a portion of this shoreline also provides a significant restoration opportunity to improve the quality of the shoreline environment while promoting environmentally sound recreational use. The Peninsula's location at the intersection of the lake and stream environments represents potential value to a diverse range of species.

Inglewood Golf Course and Adjacent Properties (Lake_WA_02 and SAMM_RV_01)

The golf course fairway grass extends to the very edge of the Sammamish River in close proximity to Lake Washington. Establishment of shoreline vegetation in the form of grasses, sedges, shrubs, and a few tall trees would retain the views while improving shoreline structure. Constructing bird nest boxes within the shoreline zone might also contribute to improved habitat and wildlife use.

Adjacent development and fragmentation of the Inglewood Wetlands may reduce ecological function of this high quality wetland area. The wetlands should be maintained by removing encroaching structures and non-native landscape features, removing invasive plants, including Himalayan blackberry and purple loosestrife, and restoring

native vegetation in modified areas. A long-term plan to manage the site as a contiguous wetland, through cooperation with adjacent property owners and/or City acquisition of adjacent property, is also recommended to ensure the quality of this wetland over the long term.

Stream 0056 Adjacent to Log Boom Park (Lake_WA_04)

The lower portion of this urbanized stream is adjacent to Log Boom Park and represents an opportunity to improve significant fish habitat and to link stream and lake shoreline habitat near an existing park. High flows have recently altered the channel near the stream's outlet. The stream banks in the lower reach are almost devoid of native vegetation. Specific issues to address in this area are whether to re-route the lower part of the stream, whether to repair or remove the existing weir, and developing a plan to restore the stream bank and channel conditions. Enhancing riparian vegetation and channel structure (for example, by incorporating LWD or boulders) near the mouth will result in improved habitat and water quality by providing shade, diffusing high-energy flows, and reducing suspended sediments in the stream before it discharges into Lake Washington. Sections of the park that provide existing wildlife habitat, such as large perch and shade trees, should remain in order to ensure habitat connectivity. Two organizations, *People for an Environmentally Responsible Kenmore* and the *Lake Forest Park Stewardship Foundation*, have shown interest in improving fish passage along Stream 0056 and have sought City of Kenmore collaboration and grant funding (ESA Adolfson 2008a).

In addition to restoring the lower reach of the stream, upstream culverts such as the box culvert located at SR 522 and the culvert near 181st Street should be evaluated to ensure they are sized properly. Stormwater flow control structures should be assessed in upstream areas. Those identified as insufficient, degraded, or impacting fish passage should be improved.

Sammamish River

Programmatic Action

The lack of adequate forest riparian vegetation likely contributes to high water temperatures and degrades habitat for fish and wildlife. Preserving existing trees, increasing riparian vegetation (specifically planting trees), and encouraging vegetated buffers through incentives or regulation could improve habitat. Riparian vegetation can strongly affect water temperatures as a result of direct shading as well as indirectly by creating a micro-climate of cooler air temperatures that acts to insulate the river from higher ambient air temperatures of adjacent developed areas. In addition, in-stream habitat is generally lacking in the Kenmore reach of the river.

A program to promote removing bank armoring, replacing shoreline vegetation and placing designed habitat structures in the nearshore zone would provide some in-stream complexity and improve habitat.

Boat Launch and Adjacent Wetlands (SAMM_RV_01)

The boat launch just west of the Sammamish River bridge is devoid of significant riparian vegetation and the soil is hardened, which allows for significant runoff. A partnership with Washington State Department of Fish and Wildlife (WDFW) could be beneficial to improve the boat launch and associated wetland. This area could be enhanced with hardy native shoreline vegetation, designing features to create backwater pooling in the wetland area (to increase floodplain connectivity), or installing bird nest boxes. Non-native species are frequently introduced by boats and fishing gear at public boat ramps. The introduction and spread of invasive or noxious weeds can be minimized by equipping the site with decontamination facilities. A collaborative program with WDFW could be developed to provide and maintain ramp facilities.

Swamp Creek Park Habitat Restoration (SAMM_RV_03)

The City is currently working on a design for habitat enhancements at this park. The project will include removal of invasive weeds, new native plantings, and placement of large woody debris. A future phase could include creation of new off-channel habitat.

Swamp Creek

Three areas in Swamp Creek have specifically been identified for restoration action:

Lower Swamp Creek (SWAM_Ck_01)

The Burke-Gilman bridge along SR 522 is supported by old, creosote-treated, wood pilings. The pilings are likely leaching toxicants into the water and sediments, as well as causing localized scour. The bridge is also constraining the stream channel and concrete slabs have been placed on the stream bank. Additionally, there are significant patches of invasive Japanese knotweed and Scot's broom in this area. The bridge should be replaced with a clear span bridge and the disturbed area restored by controlling or eradicating invasive weeds and enhancing native vegetation.

The Swamp Creek Park area contains a considerable amount of noxious plants, such as reed canarygrass and Himalayan blackberry, which reduce species diversity and degrade stream and shoreline habitat and associated ecological functions. Removal of the invasive species, some re-grading of the area, replanting with native vegetation, and installing bird/small mammal boxes would greatly enhance this area. A grant has been obtained and design work is beginning on this effort. See additional description of the project under SAMM_RV_03.

Swamp Creek Wetland Complex (SWAM_Ck_03)

At the 73rd Street Bridge, the banks are armored and invasive plants, especially Japanese knotweed, are beginning to encroach on the stream channel. This is impacting shoreline vegetation and habitat structure as well as posing a threat to the adjacent wetland. Invasive vegetation should be controlled or eradicated. Native vegetation, LWD, boulders, or other beneficial modification that improves structure, stability, and habitat

should be incorporated into the bank and channel. There are currently two such projects being undertaken by the Adopt-a-Stream Foundation in this area. The stream bank should be monitored to ensure that additional erosion does not occur.

Wallace Swamp Creek Park/Northern Swamp Creek (SWAM_Ck_04)

Much of Wallace Swamp Creek Park is dominated by invasive species, including Japanese knotweed and Scot's broom. This represents a significant threat to native shoreline vegetation and riparian habitat structure. A plan should be developed and implemented to remove invasive vegetation and replant these with native vegetation to enhance habitat structure by increasing vegetation diversity.

Continue current work to improve fish and wildlife habitat, placing large woody debris, improving hydrologic dynamics through channel modification, and enhancing riparian vegetation.

The presence of concrete and asphalt contributes to habitat degradation in this reach. Armoring with these materials or isolated occurrences within the stream may impact channel structure and reduce water quality by introducing pollutants. These should be removed to improve habitat and associated ecological functions.

Implementation of Restoration Actions

To ensure that restoration goals are being achieved, it is important for the city to evaluate the performance effectiveness of this plan and to adapt to changing conditions. At minimum, this restoration plan will be evaluated by Ecology for its ability to improve the overall ecological functions of shorelines and the actual improvements to ecological function will be re-evaluated again in seven years, when the SMP update is required.

During the 7-year interim period between SMP updates, it is valuable to develop implementation and monitoring programs for the individual restoration actions. Due to the nature of restoration actions (i.e., diverse project or site-specific factors that influence their implementation), performance standards and monitoring plans should be developed for individual projects or actions once the City has determined priorities and identified funding sources. Annual assessments should occur to determine how well performance criteria are met and how effectively the goals of this restoration plan are achieved.

Programmatic activities such as educational and volunteer programs to improve riparian condition and effective permitting guidance for new docks, bulkheads or other shoreline modifications, and public information campaigns are best implemented through the SMP process and through other local ordinances, regulations and programs. As stated previously, although implementation of these takes time, over the long term their overall effectiveness can be significant due to the length of shoreline that can be affected. The ecological function improvements are very high compared to the direct cost of these activities, contributing to the overall feasibility of their implementation.

Invasive weed control and vegetation enhancement projects can begin quickly with adequate funding. Frequently, these projects can be initiated with existing staff or volunteer assistance. For invasive weed control and native vegetation enhancement

projects in particular, it is important to implement a monitoring program to ensure success. It can take several years for natural vegetation to establish in an area where invasive plants were present. Likewise, non-natives can quickly colonize an area once only one or two plants have been introduced. Restoration of the shorelines relies on specific monitoring and benchmarks unique to each specific project. Monitoring sites on an annual basis will allow re-assessment of priorities based on project success, available funding, and other factors. Further action should be pursued on those sites where restoration activities have already begun (e.g., Wallace Swamp Creek Park and the flood damage repair area along Swamp Creek at 73rd Avenue), sites where shoreline restoration activities such as channel and bank grading results in significant temporary disturbance, and sites where invasive plants are threatening areas of high ecological value (e.g., Wallace Swamp Creek Park, Inglewood Wetlands, and Swamp Creek wetland complex).

A few of the actions listed can be linked to activities by other agencies and steps should be taken to ensure these agencies are aware of these concerns and have included restoration or repair in their appropriate work schedules. For example, evaluation of the box culvert on SR 522 should be done by WSDOT and of the other culverts and drainage facilities by the City of Kenmore. These specific activities should be identified for inclusion in their operation and maintenance plans. Likewise, WDFW should be contacted to discuss concerns about the boat launch.

Two potential restoration sites involving numerous activities have been identified that will require significant planning and procurement of funding in order to fully implement. Restoration activities at Stream 0056 could potentially occur in conjunction with proposed improvements within the adjacent Tracy Owen Station Park (Log Boom Park). For this project, and for the potential LakePointe property restoration activities, detailed plans will need to be developed and agreed upon by stakeholders. The City may need to acquire additional parcel ownership and develop funding sources. However, these projects were deemed important because of their potential to result in considerable improvements to ecological functions and habitat quality for numerous species. The LakePointe property in particular provides significant opportunity not only to restore habitat but also to improve access and recreational use of the shoreline. This can result in increased public awareness of shoreline management issues and promote environmentally sound stewardship of local resources if coupled with well developed educational programs. The site could also provide opportunities to mitigate for other development activities within the City of Kenmore which could potentially be used to offset restoration costs. The LakePointe site will also benefit from a long term protection plan which should be incorporated into the restoration efforts early in the development phase to ensure success.

Organizations and Funding

Several agencies and organizations are working for restoration of the area watershed. Most restoration efforts are implemented because local citizens, tribes, NGOs, and local city, state, and federal resource agencies collaborate to solve problems and share responsibility to achieve the goal (ESA Adolfson 2008b). Continued collaboration at all levels is needed to reach the goals of this plan.

In many instances collaboration and coordination between stakeholders is necessary to implement restoration actions. Organizations that are likely to contribute significantly, or already involved with the restoration actions in the area, are listed in Table 4.

Table 4. Organizations potentially providing support for Kenmore restoration activities.

Organization	Mission	Potential Participation in Restoration Goals
Washington State Department of Transportation	"*Our work will incorporate environmental protection and improvements into the day-to-day operations of the department as well as the ongoing development of the state's transportation plans and facilities."*	May help to upgrade culverts to improve stream flow and habitat
Washington Department of Fish and Wildlife	*"Achieve healthy, diverse and sustainable fish and wildlife populations…for social and economic benefit.* *Ensure effective use of current and future financial resources in order to meet the needs of the state's fish and wildlife resource for the benefit of the public.* *Implement processes that produce sound and professional decisions, cultivate public involvement and build public confidence and agency credibility."*	May provide grant funding, collaborate on wetland enhancement projects, or provide technical assistance or staffing for restoration projects
Inglewood Shores Home Owners Association		Fundraising, volunteer staffing
People for an Environmentally Responsible Kenmore		Fundraising, volunteer staffing
StreamKeepers of Lake Forest Park	*"To contribute to the well-being of our community by fostering awareness, understanding, appreciation, and stewardship of our natural environment; and by preserving and enhancing parks and open spaces."*	Monitoring assistance, guidance, volunteer staffing
Lake Forest Park Stewardship Foundation		Technical assistance, volunteer staffing

Several funding opportunities are available to help with restoration actions in the Puget Sound region. Organizations that may provide funding opportunities for Kenmore's shoreline restoration efforts are identified in Table 5.

Table 5. Potential funding sources.

Organization & Contact Information	Grants Description
Washington State Department of Ecology P.O. Box 47600 Olympia, WA 98504-7600 http://www.ecy.wa.gov/programs/wq/funding/funding.html	Various sources of funding including low-interest loans and grants for improvement in water quality, or prevention and control of non-native aquatic plants.
Washington Department of Fish and Wildlife 600 Capitol Way N. Olympia, WA 98501 http://wdfw.wa.gov/grants/alea/	Grants include financial assistance for private landowners taking measures to restore habitat to benefit at-risk species, and local programs taking actions that benefit fish and wildlife.
National Fish and Wildlife Foundation 1120 Connecticut Avenue NW, #900 Washington, D.C. 20036 Kathleen Pickering (202) 857-0166 www.nfwf.org	Funds for community-based projects that restore native salmon habitat. This includes fish passage barriers removal and improving habitat needs.
NOAA Restoration Center Community-based Restoration Program Northwest Region Jennifer Steger, Director http://www.nmfs.noaa.gov	Financial and technical assistance to help grass-roots partnerships and restoration programs.
Environmental Protection Agency Region 10: Pacific Northwest Grants Administration Unit Bob Phillips Phillips.bob@epa.gov	Funds a variety of projects to protect the natural environment, including wetland protection, restoration and stewardship discretionary funding related to Section 404 of the Clean Water Act.
US Fish & Wildlife Service Nell Fuller 911 NE 11th Avenue Portland, OR 97232-4181 (503) 231-2014 Nell_Fuller@fws.gov	Assists and funds several fish passage programs, including barrier culvert removal or replacement program and *a North American Wetlands Conservation Act Grants Program*.
U.S. Army Corps of Engineers Basinwide Restoration New Starts General Investigation Bruce Sexauer P.O. Box 3755 Seattle, WA 98134 (206) 764-6959	Cost shares assistance available for projects correlated to fish and wildlife, flood management, general restoration, riparian areas and other related topics.
Ducks Unlimited Matching Aid to Restore Habitat (MARSH) (916) 852-2000 conserve@ducks.org	Helps develop and protect waterfowl habitat, with reimbursement matching funds for projects relating to habitat restoration and enhancement.
Puget Sound Restoration Fund http://www.restorationfund.org/	PSRF is dedicated exclusively to restoring marine habitat, water quality and native species in Puget Sound. They pursue restoration collaboratively with industry, tribes, government agencies, private landowners and community groups.

Organization & Contact Information	Grants Description
King County Ken Pritchard, Grant Exchange Coordinator King County Dept. of Natural Resources and Parks 201 Jackson Street, Suite 600 Seattle, WA 98104-3855 (206) 296-8265 ken.pritchard@kingcounty.gov	King County Water Quality Grant Fund. Grants up to $60,000 are available for community projects that protect or improve watersheds, streams, rivers, lakes, wetlands and tidewater.
Lake Washington / Kenmore Area Home Owners Associations	Potential fundraising contributors

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APPENDIX D

TRANSPORTATION DOCUMENTATION

APPENDIX D - 1: LEVEL OF SERVICE REPORTS

This appendix shows level of service (LOS) calculations at 19 intersections for year 2013 Existing conditions, year 2035 No Action conditions, and year 2035 With Improvements conditions. The 2035 With Improvements conditions include 4 additional analyzed intersections. The 2013 volumes represent counts collected in fall 2013. For both of the 2035 future scenarios, volumes represent traffic forecasts developed using the Kenmore City Model and the traffic growth assumptions described in Appendix D-2. The 2035 No Action LOS calculations assume no changes are made to the City's existing transportation system. The 2035 With Improvements LOS calculations assume the improvements recommended as a part of this plan are in place.

As noted within the plan, the City will measure LOS at the corridor level on SR 522 and 68th Avenue / Juanita Drive / Simonds Road rather than at the intersection level. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. For this reason, average delay along the corridor is a more meaningful level of service standard than the experience at a single intersection.

Corridor LOS Values (volume weighted averages)

	2013 EX	2035 NA	2035 w/Imp
SR 522 Corridor[1]	E / 66.1	F / 93.6	E / 68.3
Simonds Rd / 68th Ave Corridor[2]	C / 34.9	E / 63.5	D / 53.6

[1] Intersections: 61st Ave NE, 68th Ave NE, 73rd Ave NE, 80th Ave NE, 83rd Ave NE
[2] Intersections: NE 181st St, SR 522, NE 175th St, NE 170th St

HCM Unsignalized Intersection Capacity Analysis
1: NE 193rd St & 61st Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	4	150	4	1	0	291	356	4	1	216	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	38	4	155	4	1	0	300	367	4	1	223	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1009	1196	223	1196	1194	186	223			371		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1009	1196	223	1196	1194	186	223			371		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	97	80	96	99	100	78			100		
cM capacity (veh/h)	163	146	787	94	146	831	1351			1184		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	197	5	484	188	224	40
Volume Left	38	4	300	0	1	0
Volume Right	155	0	0	4	0	40
cSH	750	101	1351	1700	1184	1700
Volume to Capacity	0.26	0.05	0.22	0.11	0.00	0.02
Queue Length 95th (ft)	26	4	21	0	0	0
Control Delay (s)	15.9	42.5	6.0	0.0	0.0	0.0
Lane LOS	C	E	A		A	
Approach Delay (s)	15.9	42.5	4.3		0.0	
Approach LOS	C	E				

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	2116	271	5	1908	132	57	32	1	61	10	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00		1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.96	1.00
Satd. Flow (prot)	1770	3539	1550	1787	3574	1599		1803			1786	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79			0.73	1.00
Satd. Flow (perm)	1770	3539	1550	1787	3574	1599		1461			1352	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	264	2159	277	5	1947	135	58	33	1	62	10	224
RTOR Reduction (vph)	0	0	60	0	0	43	0	0	0	0	0	168
Lane Group Flow (vph)	264	2159	217	5	1947	92	0	92	0	0	72	56
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	27.1	79.7	79.7	25.0	77.6	77.6		40.0			40.0	40.0
Effective Green, g (s)	27.1	79.7	79.7	25.0	77.6	77.6		40.0			40.0	40.0
Actuated g/C Ratio	0.17	0.50	0.50	0.16	0.48	0.48		0.25			0.25	0.25
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0			3.0	3.0
Lane Grp Cap (vph)	300	1763	772	279	1733	776		365			338	396
v/s Ratio Prot	0.15	c0.61		0.00	c0.54							
v/s Ratio Perm			0.14			0.06		c0.06			0.05	0.04
v/c Ratio	0.88	1.22	0.28	0.02	1.12	0.12		0.25			0.21	0.14
Uniform Delay, d1	64.9	40.1	23.4	57.1	41.2	22.5		48.0			47.5	46.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	24.4	106.4	0.9	0.1	63.8	0.3		1.7			1.4	0.7
Delay (s)	89.2	146.5	24.3	57.2	105.0	22.8		49.7			49.0	47.4
Level of Service	F	F	C	E	F	C		D			D	D
Approach Delay (s)		128.4			99.6			49.7			47.8	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	110.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.3
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	124	6	36	227	46	43	41	69	28	14	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	133	6	39	244	49	46	44	74	30	15	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	145	332	165	51
Volume Left (vph)	5	39	46	30
Volume Right (vph)	6	49	74	5
Hadj (s)	-0.02	-0.07	-0.20	0.06
Departure Headway (s)	4.9	4.6	4.9	5.4
Degree Utilization, x	0.20	0.42	0.22	0.08
Capacity (veh/h)	689	749	669	596
Control Delay (s)	9.0	10.9	9.3	8.8
Approach Delay (s)	9.0	10.9	9.3	8.8
Approach LOS	A	B	A	A

Intersection Summary			
Delay	10.0		
HCM Level of Service	A		
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	14	290	66	2	18	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	15	312	71	2	19	1
Pedestrians					82	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					7	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	155				496	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	155				496	154
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	100
cM capacity (veh/h)	1339				486	824

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	327	73	20
Volume Left	15	0	19
Volume Right	0	2	1
cSH	1339	1700	497
Volume to Capacity	0.01	0.04	0.04
Queue Length 95th (ft)	1	0	3
Control Delay (s)	0.5	0.0	12.6
Lane LOS	A		B
Approach Delay (s)	0.5	0.0	12.6
Approach LOS			B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	167	182	60	129	47	159	266	77	26	194	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96			0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1805	1740		1770	1789			3404		1770	1801	
Flt Permitted	0.64	1.00		0.49	1.00			0.78		0.46	1.00	
Satd. Flow (perm)	1222	1740		916	1789			2692		859	1801	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	172	188	62	133	48	164	274	79	27	200	57
RTOR Reduction (vph)	0	57	0	0	19	0	0	26	0	0	18	0
Lane Group Flow (vph)	98	303	0	62	162	0	0	491	0	27	239	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	12.5	12.5		12.5	12.5			13.5		13.5	13.5	
Effective Green, g (s)	12.5	12.5		12.5	12.5			13.5		13.5	13.5	
Actuated g/C Ratio	0.35	0.35		0.35	0.35			0.38		0.38	0.38	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	430	613		323	630			1024		327	685	
v/s Ratio Prot		c0.17			0.09						0.13	
v/s Ratio Perm	0.08			0.07				c0.18		0.03		
v/c Ratio	0.23	0.49		0.19	0.26			0.48		0.08	0.35	
Uniform Delay, d1	8.1	9.0		8.0	8.2			8.3		7.0	7.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.3	0.2			0.4		0.1	0.3	
Delay (s)	8.4	9.7		8.3	8.4			8.7		7.1	8.2	
Level of Service	A	A		A	A			A		A	A	
Approach Delay (s)		9.4			8.4			8.7			8.1	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	9.5
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1249	427	183	1348	88	644	271	109	109	239	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1564	3433	3539	1564	3467	3408		1770	3435	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1564	3433	3539	1564	3467	3408		1770	3435	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1288	440	189	1390	91	664	279	112	112	246	60
RTOR Reduction (vph)	0	0	129	0	0	27	0	26	0	0	15	0
Lane Group Flow (vph)	141	1288	311	189	1390	64	664	365	0	112	291	0
Confl. Bikes (#/hr)			1			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	16.9	71.4	71.4	13.6	68.1	68.1	33.5	39.2		15.5	21.2	
Effective Green, g (s)	16.9	71.4	71.4	13.6	68.1	68.1	33.5	39.2		15.5	21.2	
Actuated g/C Ratio	0.11	0.45	0.45	0.08	0.43	0.43	0.21	0.25		0.10	0.13	
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	1579	698	292	1506	666	726	835		171	455	
v/s Ratio Prot	c0.08	c0.36		0.06	c0.39		c0.19	0.11		0.06	c0.08	
v/s Ratio Perm			0.20			0.04						
v/c Ratio	0.75	0.82	0.45	0.65	0.92	0.10	0.91	0.44		0.65	0.64	
Uniform Delay, d1	69.5	38.6	30.6	70.9	43.5	27.5	61.9	51.1		69.7	65.8	
Progression Factor	1.00	1.00	1.00	0.92	1.28	2.14	1.01	0.86		1.00	1.00	
Incremental Delay, d2	15.1	4.8	2.1	2.0	5.7	0.1	15.1	0.3		8.7	3.1	
Delay (s)	84.6	43.3	32.7	67.0	61.2	59.0	77.4	44.5		78.4	68.9	
Level of Service	F	D	C	E	E	E	E	D		E	E	
Approach Delay (s)		43.9			61.7			65.2			71.4	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM Average Control Delay	56.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	28	266	54	5	15	41	1084	93	13	911	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		0.95	0.95		0.91			0.95	
Frpb, ped/bikes		1.00	0.99		1.00	0.99		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.99			1.00	
Flt Protected		0.98	1.00		0.96	1.00		1.00			1.00	
Satd. Flow (prot)		1867	1592		1702	1497		5068			3529	
Flt Permitted		0.90	1.00		0.73	1.00		0.87			0.93	
Satd. Flow (perm)		1712	1592		1300	1497		4435			3278	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	29	280	57	5	16	43	1141	98	14	959	15
RTOR Reduction (vph)	0	0	83	0	2	11	0	8	0	0	1	0
Lane Group Flow (vph)	0	45	197	0	62	3	0	1274	0	0	987	0
Confl. Bikes (#/hr)			2			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4		4	6			2		
Actuated Green, G (s)		15.7	15.7		15.7	15.7		54.3			54.3	
Effective Green, g (s)		15.7	15.7		15.7	15.7		54.3			54.3	
Actuated g/C Ratio		0.20	0.20		0.20	0.20		0.68			0.68	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		4.0			4.0	
Lane Grp Cap (vph)		336	312		255	294		3010			2225	
v/s Ratio Prot												
v/s Ratio Perm		0.03	c0.12		0.05	0.00		0.29			c0.30	
v/c Ratio		0.13	0.63		0.24	0.01		0.42			0.44	
Uniform Delay, d1		26.5	29.5		27.1	25.9		5.8			5.9	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.24	
Incremental Delay, d2		0.2	4.1		0.5	0.0		0.4			0.6	
Delay (s)		26.7	33.6		27.6	25.9		6.2			7.9	
Level of Service		C	C		C	C		A			A	
Approach Delay (s)		32.7			27.3			6.2			7.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	6	9	39	0	392	12	835	36	462	709	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		0.97			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1733			1805	1615	1787	3549		1787	1881	1565
Flt Permitted		0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1733			1805	1615	1787	3549		1787	1881	1565
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	23	6	9	39	0	396	12	843	36	467	716	38
RTOR Reduction (vph)	0	7	0	0	0	366	0	1	0	0	0	4
Lane Group Flow (vph)	0	31	0	0	39	30	12	878	0	467	716	34
Confl. Bikes (#/hr)									2			2
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						6
Actuated Green, G (s)		6.4			9.1	9.1	2.6	38.7		44.4	80.5	80.5
Effective Green, g (s)		6.4			9.1	9.1	2.6	38.7		44.4	80.5	80.5
Actuated g/C Ratio		0.05			0.08	0.08	0.02	0.32		0.37	0.67	0.67
Clearance Time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Vehicle Extension (s)		3.0			2.0	2.0	3.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		93			137	123	39	1146		662	1264	1052
v/s Ratio Prot		c0.02			c0.02		0.01	c0.25		c0.26	0.38	
v/s Ratio Perm						0.02						0.02
v/c Ratio		0.34			0.28	0.24	0.31	0.77		0.71	0.57	0.03
Uniform Delay, d1		54.7			52.3	52.1	57.7	36.5		32.1	10.4	6.6
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.2			0.4	0.4	4.4	2.8		2.8	0.3	0.0
Delay (s)		56.8			52.7	52.5	62.2	39.3		34.9	10.8	6.6
Level of Service		E			D	D	E	D		C	B	A
Approach Delay (s)		56.8			52.5			39.6			19.9	
Approach LOS		E			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	21.2
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	54	788	1	14	698
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	56	812	1	14	720
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1561	813			813	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1561	813			813	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	85			98	
cM capacity (veh/h)	122	382			818	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	813	734
Volume Left	1	0	14
Volume Right	56	1	0
cSH	367	1700	818
Volume to Capacity	0.15	0.48	0.02
Queue Length 95th (ft)	13	0	1
Control Delay (s)	16.6	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	16.6	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	32	38	51	26	30	55	677	54	109	484	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1710			1690		1787	1857		1787	1881	1564
Flt Permitted	0.95	1.00			0.98		0.36	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1770	1710			1690		668	1857		190	1881	1564
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	70	33	40	53	27	31	57	705	56	114	504	114
RTOR Reduction (vph)	0	31	0	0	10	0	0	1	0	0	0	17
Lane Group Flow (vph)	70	42	0	0	101	0	57	760	0	114	504	97
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split			pm+pt			pm+pt		custom
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		6
Actuated Green, G (s)	10.0	10.0			9.6		41.8	36.9		47.4	39.7	36.9
Effective Green, g (s)	10.0	10.0			9.6		41.8	36.9		47.4	39.7	36.9
Actuated g/C Ratio	0.12	0.12			0.11		0.50	0.44		0.56	0.47	0.44
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	210	203			193		397	814		253	887	685
v/s Ratio Prot	c0.04	0.02			c0.06		0.01	c0.41		c0.04	c0.27	
v/s Ratio Perm							0.06			0.21		0.06
v/c Ratio	0.33	0.21			0.52		0.14	0.93		0.45	0.57	0.14
Uniform Delay, d1	34.0	33.5			35.1		11.6	22.5		15.6	16.1	14.2
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.2			1.2		0.1	17.2		0.5	0.5	0.0
Delay (s)	34.4	33.7			36.3		11.7	39.7		16.1	16.6	14.2
Level of Service	C	C			D		B	D		B	B	B
Approach Delay (s)		34.0			36.3			37.8			16.1	
Approach LOS		C			D			D			B	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	25.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	163	103	125	373	40	92
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	177	112	136	405	43	100
Pedestrians	6					2
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	329	144			547	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	144			547	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	88			96	
cM capacity (veh/h)	634	898			1017	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	289	136	405	143
Volume Left	177	0	0	43
Volume Right	112	0	405	0
cSH	715	1700	1700	1017
Volume to Capacity	0.40	0.08	0.24	0.04
Queue Length 95th (ft)	49	0	0	3
Control Delay (s)	13.4	0.0	0.0	2.9
Lane LOS	B			A
Approach Delay (s)	13.4	0.0		2.9
Approach LOS	B			

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	5	142	36	24	58	134	318	15	2	163	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.99		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.93			1.00			0.95	
Flt Protected		0.95	1.00		0.99			0.99			1.00	
Satd. Flow (prot)		1776	1563		1746			1793			1752	
Flt Permitted		0.95	1.00		0.99			0.83			1.00	
Satd. Flow (perm)		1776	1563		1746			1508			1748	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	202	5	143	36	24	59	135	321	15	2	165	103
RTOR Reduction (vph)	0	0	114	0	51	0	0	2	0	0	37	0
Lane Group Flow (vph)	0	207	29	0	68	0	0	469	0	0	233	0
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	4%	4%	4%	2%	2%	2%
Turn Type	Split		Perm	Split			Perm			Perm		
Protected Phases	8	8		4	4			6			2	
Permitted Phases		8	8				6			2		
Actuated Green, G (s)		11.8	11.8		7.7			23.9			23.9	
Effective Green, g (s)		11.8	11.8		7.7			23.9			23.9	
Actuated g/C Ratio		0.21	0.21		0.13			0.42			0.42	
Clearance Time (s)		4.5	4.5		4.5			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		365	321		234			628			728	
v/s Ratio Prot		c0.12			c0.04							
v/s Ratio Perm			0.02					c0.31			0.13	
v/c Ratio		0.57	0.09		0.29			0.75			0.32	
Uniform Delay, d1		20.5	18.5		22.4			14.2			11.3	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		2.0	0.1		0.7			4.8			0.3	
Delay (s)		22.5	18.6		23.1			19.0			11.5	
Level of Service		C	B		C			B			B	
Approach Delay (s)		20.9			23.1			19.0			11.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	1443	17	61	1639	216	41	61	126	189	81	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1536	1770	3539	1583	1752	1845	1547	1787	1881	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3505	1536	1770	3539	1583	1752	1845	1547	1787	1881	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	80	1519	18	64	1725	227	43	64	133	199	85	107
RTOR Reduction (vph)	0	0	4	0	0	50	0	0	114	0	0	82
Lane Group Flow (vph)	80	1519	14	64	1725	177	43	64	19	199	85	25
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	1%	1%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	12.2	85.4	85.4	9.4	82.6	82.6	7.8	23.4	23.4	21.5	37.1	37.1
Effective Green, g (s)	12.2	85.4	85.4	9.4	82.6	82.6	7.8	23.4	23.4	21.5	37.1	37.1
Actuated g/C Ratio	0.08	0.53	0.53	0.06	0.52	0.52	0.05	0.15	0.15	0.13	0.23	0.23
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	2.5	3.0	3.0	2.5	3.0	3.0
Lane Grp Cap (vph)	134	1871	820	104	1827	817	85	270	226	240	436	371
v/s Ratio Prot	c0.05	c0.43		0.04	c0.49		0.02	c0.03		c0.11	0.05	
v/s Ratio Perm			0.01			0.11			0.01			0.02
v/c Ratio	0.60	0.81	0.02	0.62	0.94	0.22	0.51	0.24	0.09	0.83	0.19	0.07
Uniform Delay, d1	71.5	30.7	17.5	73.5	36.5	21.1	74.2	60.4	59.1	67.5	49.4	47.9
Progression Factor	1.10	0.70	1.07	0.75	1.58	2.56	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	2.8	0.0	3.5	5.3	0.2	3.4	0.5	0.2	20.1	0.2	0.1
Delay (s)	82.9	24.2	18.8	58.8	63.1	54.3	77.6	60.9	59.2	87.5	49.7	48.0
Level of Service	F	C	B	E	E	D	E	E	E	F	D	D
Approach Delay (s)		27.1			61.9			63.0			68.5	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM Average Control Delay	49.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	232	0	54	0	0	0	77	315	0	0	193	143
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	242	0	56	0	0	0	80	328	0	0	201	149

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	298	0	408	350
Volume Left (vph)	242	0	80	0
Volume Right (vph)	56	0	0	149
Hadj (s)	0.07	0.00	0.06	-0.24
Departure Headway (s)	5.9	6.7	5.4	5.3
Degree Utilization, x	0.49	0.00	0.62	0.51
Capacity (veh/h)	565	419	632	652
Control Delay (s)	14.5	9.7	16.8	13.6
Approach Delay (s)	14.5	0.0	16.8	13.6
Approach LOS	B	A	C	B

Intersection Summary			
Delay	15.1		
HCM Level of Service	C		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	209	1586	0	1711	201	81	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3		5.3	5.3	5.0	5.0
Lane Util. Factor	1.00	0.95		0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539		3574	1566	1770	1562
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539		3574	1566	1770	1562
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	215	1635	0	1764	207	84	146
RTOR Reduction (vph)	0	0	0	0	47	0	119
Lane Group Flow (vph)	215	1635	0	1764	160	84	27
Confl. Bikes (#/hr)					1		1
Heavy Vehicles (%)	2%	2%	1%	1%	1%	2%	2%
Turn Type	Prot		Prot		Perm		Perm
Protected Phases	5	2	1	6		4	
Permitted Phases					6		4
Actuated Green, G (s)	24.9	104.9		75.0	75.0	30.0	30.0
Effective Green, g (s)	24.9	104.9		75.0	75.0	30.0	30.0
Actuated g/C Ratio	0.16	0.66		0.47	0.47	0.19	0.19
Clearance Time (s)	5.0	5.3		5.3	5.3	5.0	5.0
Vehicle Extension (s)	3.0	4.0		4.0	4.0	2.5	2.5
Lane Grp Cap (vph)	275	2320		1675	734	332	293
v/s Ratio Prot	c0.12	0.46		c0.49		c0.05	
v/s Ratio Perm					0.10		0.02
v/c Ratio	0.78	0.70		1.05	0.22	0.25	0.09
Uniform Delay, d1	64.9	17.6		42.5	25.2	55.4	53.8
Progression Factor	0.71	2.17		1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	1.2		37.5	0.7	1.8	0.6
Delay (s)	55.0	39.5		80.0	25.8	57.3	54.4
Level of Service	E	D		E	C	E	D
Approach Delay (s)		41.3		74.3		55.4	
Approach LOS		D		E		E	

Intersection Summary			
HCM Average Control Delay	58.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	30.1
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	130	1544	1810	37	18	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.3	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3574	1565	1787	1599
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3574	1565	1787	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	1625	1905	39	19	108
RTOR Reduction (vph)	0	0	0	5	0	84
Lane Group Flow (vph)	137	1625	1905	34	19	24
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	17.1	106.1	84.0	84.0	35.0	35.0
Effective Green, g (s)	17.1	106.1	84.0	84.0	35.0	35.0
Actuated g/C Ratio	0.11	0.66	0.52	0.52	0.22	0.22
Clearance Time (s)	5.0	5.3	5.3	5.3	5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	4.0	3.0	3.0
Lane Grp Cap (vph)	189	2347	1876	822	391	350
v/s Ratio Prot	0.08	c0.46	c0.53		0.01	
v/s Ratio Perm				0.02		c0.01
v/c Ratio	0.72	0.69	1.02	0.04	0.05	0.07
Uniform Delay, d1	69.2	16.8	38.0	18.5	49.4	49.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.2	1.7	24.7	0.1	0.2	0.4
Delay (s)	81.3	18.5	62.7	18.5	49.6	49.9
Level of Service	F	B	E	B	D	D
Approach Delay (s)		23.4	61.8		49.9	
Approach LOS		C	E		D	

Intersection Summary			
HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	381	0	3	510	10	0	0	4	10	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	448	0	4	600	12	0	0	5	12	0	2
Pedestrians		2						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	612			450			1072	1074	450	1071	1068	608
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612			450			1072	1074	450	1071	1068	608
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	100	99	94	100	100
cM capacity (veh/h)	967			1114			197	220	612	191	215	484

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	451	0	615	5	14
Volume Left	2	0	4	0	12
Volume Right	0	0	12	5	2
cSH	967	1700	1114	612	212
Volume to Capacity	0.00	0.00	0.00	0.01	0.07
Queue Length 95th (ft)	0	0	0	1	5
Control Delay (s)	0.1	0.0	0.1	10.9	23.2
Lane LOS	A		A	B	C
Approach Delay (s)	0.1		0.1	10.9	23.2
Approach LOS				B	C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	114	23	36	165	15	28	37	14	12	74	18
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	120	24	38	174	16	29	39	15	13	78	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	149	227	83	109
Volume Left (vph)	5	38	29	13
Volume Right (vph)	24	16	15	19
Hadj (s)	-0.06	0.01	0.07	-0.05
Departure Headway (s)	4.6	4.6	5.0	4.9
Degree Utilization, x	0.19	0.29	0.12	0.15
Capacity (veh/h)	730	745	657	678
Control Delay (s)	8.7	9.4	8.7	8.7
Approach Delay (s)	8.7	9.4	8.7	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	17	122	63	30	56	184	388	38	40	293	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.89			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1667			1838	1615	1805	1875		1770	1858	
Flt Permitted		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1667			1838	1615	1805	1875		1770	1858	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	18	128	66	32	59	194	408	40	42	308	5
RTOR Reduction (vph)	0	119	0	0	0	53	0	2	0	0	0	0
Lane Group Flow (vph)	0	36	0	0	98	6	194	446	0	42	313	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Split			Split		Perm	Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)		7.4			11.4	11.4	15.1	67.7		4.8	57.4	
Effective Green, g (s)		7.4			11.4	11.4	15.1	67.7		4.8	57.4	
Actuated g/C Ratio		0.07			0.10	0.10	0.14	0.61		0.04	0.52	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		111			188	165	245	1140		76	958	
v/s Ratio Prot		c0.02			c0.05		c0.11	c0.24		0.02	0.17	
v/s Ratio Perm						0.00						
v/c Ratio		0.32			0.52	0.04	0.79	0.39		0.55	0.33	
Uniform Delay, d1		49.5			47.4	45.0	46.6	11.2		52.2	15.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			1.2	0.0	14.9	1.0		4.9	0.9	
Delay (s)		50.2			48.6	45.0	61.5	12.2		57.1	16.6	
Level of Service		D			D	D	E	B		E	B	
Approach Delay (s)		50.2			47.2			27.1			21.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	111.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: NE 193rd St & 61st Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	7	259	8	2	0	358	437	5	1	295	53
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	66	7	267	8	2	0	369	451	5	1	304	55
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1271	1500	304	1501	1497	228	304			456		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1271	1500	304	1501	1497	228	304			456		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	32	92	62	79	98	100	71			100		
cM capacity (veh/h)	96	87	698	38	87	781	1261			1101		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	340	10	594	230	305	55
Volume Left	66	8	369	0	1	0
Volume Right	267	0	0	5	0	55
cSH	444	43	1261	1700	1101	1700
Volume to Capacity	0.77	0.24	0.29	0.14	0.00	0.03
Queue Length 95th (ft)	163	20	31	0	0	0
Control Delay (s)	35.3	112.4	6.8	0.0	0.0	0.0
Lane LOS	E	F	A		A	
Approach Delay (s)	35.3	112.4	4.9		0.0	
Approach LOS	E	F				

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	273	2296	281	10	2060	156	175	183	1	124	97	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00		1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98			0.97	1.00
Satd. Flow (prot)	1770	3539	1551	1787	3574	1599		1818			1812	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.56			0.63	1.00
Satd. Flow (perm)	1770	3539	1551	1787	3574	1599		1040			1179	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	279	2343	287	10	2102	159	179	187	1	127	99	232
RTOR Reduction (vph)	0	0	58	0	0	48	0	0	0	0	0	160
Lane Group Flow (vph)	279	2343	229	10	2102	111	0	367	0	0	226	72
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	19.0	90.7	90.7	7.0	78.7	78.7		47.0			47.0	47.0
Effective Green, g (s)	19.0	90.7	90.7	7.0	78.7	78.7		47.0			47.0	47.0
Actuated g/C Ratio	0.12	0.57	0.57	0.04	0.49	0.49		0.29			0.29	0.29
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0			3.0	3.0
Lane Grp Cap (vph)	210	2006	879	78	1758	787		306			346	465
v/s Ratio Prot	c0.16	0.66		0.01	c0.59							
v/s Ratio Perm			0.15			0.07		c0.35			0.19	0.05
v/c Ratio	1.33	1.17	0.26	0.13	1.20	0.14		1.20			0.65	0.15
Uniform Delay, d1	70.5	34.6	17.6	73.6	40.6	22.2		56.5			49.4	41.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	176.8	81.4	0.7	3.4	93.9	0.4		116.9			9.2	0.7
Delay (s)	247.3	116.0	18.3	76.9	134.6	22.6		173.4			58.6	42.5
Level of Service	F	F	B	E	F	C		F			E	D
Approach Delay (s)		119.0			126.5			173.4			50.5	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	119.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
3: NE 181st St & 65th Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	274	16	208	256	47	194	51	107	29	19	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	295	17	224	275	51	209	55	115	31	20	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	323	549	378	62
Volume Left (vph)	11	224	209	31
Volume Right (vph)	17	51	115	11
Hadj (s)	-0.03	0.03	-0.06	0.00
Departure Headway (s)	6.7	6.3	6.8	8.0
Degree Utilization, x	0.60	0.96	0.71	0.14
Capacity (veh/h)	519	564	521	390
Control Delay (s)	19.2	52.7	24.7	12.3
Approach Delay (s)	19.2	52.7	24.7	12.3
Approach LOS	C	F	C	B

Intersection Summary			
Delay	34.5		
HCM Level of Service	D		
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	387	5	275	153	2	195	213	38	28	295	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93
Hourly flow rate (vph)	20	416	5	299	165	2	212	232	41	30	321	1
Pedestrians											82	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											7	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	249			422			1385	1306	419	1462	1308	248
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	249			422			1385	1306	419	1462	1308	248
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			74			0	0	93	0	0	100
cM capacity (veh/h)	1238			1138			0	108	634	0	108	730

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	442	466	485	352
Volume Left	20	299	212	30
Volume Right	5	2	41	1
cSH	1238	1138	0	0
Volume to Capacity	0.02	0.26	Err	Err
Queue Length 95th (ft)	1	26	Err	Err
Control Delay (s)	0.5	6.9	Err	Err
Lane LOS	A	A	F	F
Approach Delay (s)	0.5	6.9	Err	Err
Approach LOS			F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	199	305	70	219	57	223	565	96	32	771	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.97			0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1805	1714		1770	1805			3438		1770	1833	
Flt Permitted	0.48	1.00		0.20	1.00			0.53		0.26	1.00	
Satd. Flow (perm)	910	1714		367	1805			1835		483	1833	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	108	205	314	72	226	59	230	582	99	33	795	96
RTOR Reduction (vph)	0	84	0	0	14	0	0	13	0	0	6	0
Lane Group Flow (vph)	108	435	0	72	271	0	0	898	0	33	885	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	20.3	20.3		20.3	20.3			34.0		34.0	34.0	
Effective Green, g (s)	20.3	20.3		20.3	20.3			34.0		34.0	34.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32			0.53		0.53	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	290	545		117	574			978		257	977	
v/s Ratio Prot		c0.25			0.15						0.48	
v/s Ratio Perm	0.12			0.20				c0.49		0.07		
v/c Ratio	0.37	0.80		0.62	0.47			1.77dl		0.13	0.91	
Uniform Delay, d1	16.8	19.9		18.4	17.4			13.6		7.5	13.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.8	8.0		9.3	0.6			13.1		0.2	11.7	
Delay (s)	17.6	27.9		27.7	18.1			26.7		7.7	25.1	
Level of Service	B	C		C	B			C		A	C	
Approach Delay (s)		26.1			20.0			26.7			24.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	9.5
Intersection Capacity Utilization	120.6%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	1259	508	205	1536	109	656	459	124	389	642	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1564	3433	3539	1563	3467	3450		1770	3487	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1564	3433	3539	1563	3467	3450		1770	3487	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	257	1298	524	211	1584	112	676	473	128	401	662	72
RTOR Reduction (vph)	0	0	189	0	0	34	0	15	0	0	5	0
Lane Group Flow (vph)	257	1298	335	211	1584	78	676	586	0	401	729	0
Confl. Bikes (#/hr)			1			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	19.1	69.0	69.0	10.8	60.7	60.7	23.0	32.9		27.0	36.9	
Effective Green, g (s)	19.1	69.0	69.0	10.8	60.7	60.7	23.0	32.9		27.0	36.9	
Actuated g/C Ratio	0.12	0.43	0.43	0.07	0.38	0.38	0.14	0.21		0.17	0.23	
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	211	1526	674	232	1343	593	498	709		299	804	
v/s Ratio Prot	c0.15	0.37		0.06	c0.45		0.19	0.17		c0.23	c0.21	
v/s Ratio Perm			0.21			0.05						
v/c Ratio	1.22	0.85	0.50	0.91	1.18	0.13	1.36	0.83		1.34	0.91	
Uniform Delay, d1	70.5	40.9	32.9	74.1	49.6	32.4	68.5	60.8		66.5	59.9	
Progression Factor	1.00	1.00	1.00	0.93	1.22	1.96	1.10	0.85		1.00	1.00	
Incremental Delay, d2	133.2	6.2	2.6	5.2	81.5	0.0	169.4	5.3		174.4	13.7	
Delay (s)	203.7	47.0	35.5	73.9	142.1	63.5	245.1	57.1		240.9	73.6	
Level of Service	F	D	D	E	F	E	F	E		F	E	
Approach Delay (s)		63.5			130.0			156.6			132.7	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	114.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	42	317	80	51	46	138	1260	131	18	1198	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		0.95	0.95		0.91			0.95	
Frpb, ped/bikes		1.00	0.99		1.00	0.99		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		0.99	0.85		0.99			0.99	
Flt Protected		0.99	1.00		0.97	1.00		1.00			1.00	
Satd. Flow (prot)		1875	1593		1726	1498		5047			3484	
Flt Permitted		0.91	1.00		0.79	1.00		0.66			0.91	
Satd. Flow (perm)		1737	1593		1406	1498		3337			3177	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	44	334	84	54	48	145	1326	138	19	1261	141
RTOR Reduction (vph)	0	0	35	0	2	29	0	11	0	0	9	0
Lane Group Flow (vph)	0	60	299	0	142	14	0	1598	0	0	1412	0
Confl. Bikes (#/hr)			2			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4		4	6			2		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		50.0			50.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		50.0			50.0	
Actuated g/C Ratio		0.25	0.25		0.25	0.25		0.62			0.62	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		4.0			4.0	
Lane Grp Cap (vph)		434	398		352	375		2086			1986	
v/s Ratio Prot												
v/s Ratio Perm		0.03	c0.19		0.10	0.01		c0.48			0.44	
v/c Ratio		0.14	0.75		0.40	0.04		0.91dl			0.71	
Uniform Delay, d1		23.3	27.7		25.0	22.7		10.8			10.1	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.64	
Incremental Delay, d2		0.1	7.8		0.8	0.0		2.8			1.4	
Delay (s)		23.5	35.5		25.8	22.7		13.5			18.0	
Level of Service		C	D		C	C		B			B	
Approach Delay (s)		33.6			25.1			13.5			18.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	11	14	44	13	569	17	1002	41	642	915	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		0.97			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1734			1829	1615	1787	3550		1787	1881	1565
Flt Permitted		0.97			0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1734			1829	1615	1787	3550		1787	1881	1565
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	31	11	14	44	13	575	17	1012	41	648	924	41
RTOR Reduction (vph)	0	8	0	0	0	533	0	1	0	0	0	4
Lane Group Flow (vph)	0	48	0	0	57	42	17	1052	0	648	924	37
Confl. Bikes (#/hr)									2			2
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						6
Actuated Green, G (s)		8.3			11.3	11.3	4.5	53.5		62.2	111.2	111.2
Effective Green, g (s)		8.3			11.3	11.3	4.5	53.5		62.2	111.2	111.2
Actuated g/C Ratio		0.05			0.07	0.07	0.03	0.34		0.40	0.71	0.71
Clearance Time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Vehicle Extension (s)		3.0			2.0	2.0	3.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		92			132	117	51	1214		710	1337	1112
v/s Ratio Prot		c0.03			c0.03		0.01	c0.30		c0.36	0.49	
v/s Ratio Perm						0.03						0.02
v/c Ratio		0.53			0.43	0.35	0.33	0.87		0.91	0.69	0.03
Uniform Delay, d1		72.2			69.5	69.1	74.5	48.2		44.6	12.9	6.7
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		5.3			0.8	0.7	3.8	6.5		15.8	1.3	0.0
Delay (s)		77.5			70.4	69.8	78.4	54.6		60.4	14.1	6.7
Level of Service		E			E	E	E	D		E	B	A
Approach Delay (s)		77.5			69.9			55.0			32.5	
Approach LOS		E			E			E			C	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	156.5	Sum of lost time (s)	21.2
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	57	963	1	19	931
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	59	993	1	20	960
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1992	993			994	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1992	993			994	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	80			97	
cM capacity (veh/h)	66	300			700	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	60	994	979
Volume Left	1	0	20
Volume Right	59	1	0
cSH	283	1700	700
Volume to Capacity	0.21	0.58	0.03
Queue Length 95th (ft)	20	0	2
Control Delay (s)	21.1	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.1	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	40	47	57	29	34	60	741	59	126	558	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1712			1689		1787	1858		1787	1881	1565
Flt Permitted	0.95	1.00			0.98		0.35	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1770	1712			1689		667	1858		155	1881	1565
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	86	42	49	59	30	35	62	772	61	131	581	131
RTOR Reduction (vph)	0	28	0	0	9	0	0	2	0	0	0	25
Lane Group Flow (vph)	86	63	0	0	115	0	62	831	0	131	581	106
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split			pm+pt			pm+pt		custom
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		6
Actuated Green, G (s)	11.9	11.9			12.9		60.8	57.0		72.3	63.5	57.0
Effective Green, g (s)	11.9	11.9			12.9		60.8	57.0		72.3	63.5	57.0
Actuated g/C Ratio	0.11	0.11			0.12		0.54	0.51		0.64	0.57	0.51
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	188	182			194		400	945		250	1066	796
v/s Ratio Prot	c0.05	0.04			c0.07		0.01	c0.45		c0.05	0.31	
v/s Ratio Perm							0.08			0.29		0.07
v/c Ratio	0.46	0.35			0.59		0.15	0.88		0.52	0.55	0.13
Uniform Delay, d1	47.1	46.5			47.1		12.8	24.5		20.1	15.2	14.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4			3.2		0.1	9.1		0.9	0.3	0.0
Delay (s)	47.7	46.9			50.3		12.9	33.6		21.1	15.5	14.6
Level of Service	D	D			D		B	C		C	B	B
Approach Delay (s)		47.3			50.3			32.2			16.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	205	153	293	493	332	238
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	223	166	318	536	361	259
Pedestrians	6					2
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1305	326			860	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1305	326			860	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	77			54	
cM capacity (veh/h)	94	710			777	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	389	318	536	620
Volume Left	223	0	0	361
Volume Right	166	0	536	0
cSH	150	1700	1700	777
Volume to Capacity	2.60	0.19	0.32	0.46
Queue Length 95th (ft)	855	0	0	62
Control Delay (s)	786.2	0.0	0.0	11.0
Lane LOS	F			B
Approach Delay (s)	786.2	0.0		11.0
Approach LOS	F			

Intersection Summary			
Average Delay	167.9		
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	27	181	36	35	65	134	541	20	26	255	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.99		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.93			1.00			0.94	
Flt Protected		0.96	1.00		0.99			0.99			1.00	
Satd. Flow (prot)		1782	1562		1753			1803			1740	
Flt Permitted		0.96	1.00		0.99			0.80			0.95	
Satd. Flow (perm)		1782	1562		1753			1447			1653	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	244	27	183	36	35	66	135	546	20	26	258	197
RTOR Reduction (vph)	0	0	89	0	32	0	0	1	0	0	19	0
Lane Group Flow (vph)	0	271	94	0	105	0	0	700	0	0	462	0
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	4%	4%	4%	2%	2%	2%
Turn Type	Split		Perm	Split			Perm			Perm		
Protected Phases	8	8		4	4			6			2	
Permitted Phases		8	8				6			2		
Actuated Green, G (s)		19.3	19.3		12.3			56.3			56.3	
Effective Green, g (s)		19.3	19.3		12.3			56.3			56.3	
Actuated g/C Ratio		0.19	0.19		0.12			0.55			0.55	
Clearance Time (s)		4.5	4.5		4.5			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		338	296		212			799			913	
v/s Ratio Prot		c0.15			c0.06							
v/s Ratio Perm			0.06					c0.48			0.28	
v/c Ratio		0.80	0.32		0.50			0.88			0.51	
Uniform Delay, d1		39.5	35.6		41.9			19.8			14.2	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		12.8	0.6		1.8			10.6			0.4	
Delay (s)		52.3	36.2		43.7			30.4			14.6	
Level of Service		D	D		D			C			B	
Approach Delay (s)		45.8			43.7			30.4			14.6	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	1660	22	78	1747	375	46	68	144	338	103	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1535	1770	3539	1583	1752	1845	1547	1787	1881	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3505	1535	1770	3539	1583	1752	1845	1547	1787	1881	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	1747	23	82	1839	395	48	72	152	356	108	107
RTOR Reduction (vph)	0	0	6	0	0	99	0	0	70	0	0	79
Lane Group Flow (vph)	142	1747	17	82	1839	296	48	72	82	356	108	28
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	1%	1%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	16.7	80.7	80.7	10.4	74.4	74.4	6.9	23.6	23.6	25.0	41.7	41.7
Effective Green, g (s)	16.7	80.7	80.7	10.4	74.4	74.4	6.9	23.6	23.6	25.0	41.7	41.7
Actuated g/C Ratio	0.10	0.50	0.50	0.07	0.47	0.47	0.04	0.15	0.15	0.16	0.26	0.26
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	2.5	3.0	3.0	2.5	3.0	3.0
Lane Grp Cap (vph)	183	1768	774	115	1646	736	76	272	228	279	490	417
v/s Ratio Prot	c0.08	c0.50		0.05	c0.52		0.03	0.04		c0.20	0.06	
v/s Ratio Perm			0.01			0.19			c0.05			0.02
v/c Ratio	0.78	0.99	0.02	0.71	1.12	0.40	0.63	0.26	0.36	1.28	0.22	0.07
Uniform Delay, d1	69.8	39.2	19.9	73.3	42.8	28.2	75.3	60.5	61.4	67.5	46.4	44.5
Progression Factor	0.98	0.81	1.25	0.63	1.54	2.49	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	10.9	0.0	1.8	53.7	0.1	14.0	0.5	1.0	149.0	0.2	0.1
Delay (s)	76.4	42.7	24.8	48.0	119.5	70.3	89.3	61.0	62.4	216.5	46.6	44.6
Level of Service	E	D	C	D	F	E	F	E	E	F	D	D
Approach Delay (s)		45.0			108.6			66.8			152.2	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM Average Control Delay	87.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	465	0	174	0	0	0	81	412	0	0	287	211
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	484	0	181	0	0	0	84	429	0	0	299	220

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	666	0	514	519
Volume Left (vph)	484	0	84	0
Volume Right (vph)	181	0	0	220
Hadj (s)	0.00	0.00	0.05	-0.24
Departure Headway (s)	7.1	9.5	7.0	6.8
Degree Utilization, x	1.31	0.00	1.00	0.97
Capacity (veh/h)	513	385	514	529
Control Delay (s)	174.8	12.5	66.2	58.5
Approach Delay (s)	174.8	0.0	66.2	58.5
Approach LOS	F	A	F	F

Intersection Summary			
Delay	106.4		
HCM Level of Service	F		
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	219	1988	0	2064	286	304	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3		5.3	5.3	5.0	5.0
Lane Util. Factor	1.00	0.95		0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539		3574	1566	1770	1562
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539		3574	1566	1770	1562
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	226	2049	0	2128	295	313	157
RTOR Reduction (vph)	0	0	0	0	64	0	124
Lane Group Flow (vph)	226	2049	0	2128	231	313	33
Confl. Bikes (#/hr)					1		1
Heavy Vehicles (%)	2%	2%	1%	1%	1%	2%	2%
Turn Type	Prot		Prot		Perm		Perm
Protected Phases	5	2	1	6		4	
Permitted Phases					6		4
Actuated Green, G (s)	28.9	111.9		78.0	78.0	23.0	23.0
Effective Green, g (s)	28.9	111.9		78.0	78.0	23.0	23.0
Actuated g/C Ratio	0.18	0.70		0.49	0.49	0.14	0.14
Clearance Time (s)	5.0	5.3		5.3	5.3	5.0	5.0
Vehicle Extension (s)	3.0	4.0		4.0	4.0	2.5	2.5
Lane Grp Cap (vph)	320	2475		1742	763	254	225
v/s Ratio Prot	0.13	c0.58		c0.60		c0.18	
v/s Ratio Perm					0.15		0.02
v/c Ratio	0.71	0.83		1.22	0.30	1.23	0.15
Uniform Delay, d1	61.6	17.2		41.0	24.7	68.5	59.9
Progression Factor	0.75	1.61		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.9		105.1	1.0	133.9	1.4
Delay (s)	47.9	28.5		146.1	25.7	202.4	61.3
Level of Service	D	C		F	C	F	E
Approach Delay (s)		30.5		131.5		155.2	
Approach LOS		C		F		F	

Intersection Summary			
HCM Average Control Delay	89.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	30.4
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	263	2035	2351	39	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.3	5.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (prot)	1770	3539	3574	1565	1787	
Flt Permitted	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (perm)	1770	3539	3574	1565	1787	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	277	2142	2475	41	19	0
RTOR Reduction (vph)	0	0	0	6	0	0
Lane Group Flow (vph)	277	2142	2475	35	19	0
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	25.4	133.7	103.3	103.3	16.0	
Effective Green, g (s)	25.4	133.7	103.3	103.3	16.0	
Actuated g/C Ratio	0.16	0.84	0.65	0.65	0.10	
Clearance Time (s)	5.0	5.3	5.3	5.3	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	4.0	3.0	
Lane Grp Cap (vph)	281	2957	2307	1010	179	
v/s Ratio Prot	c0.16	0.61	c0.69		c0.01	
v/s Ratio Perm				0.02		
v/c Ratio	0.99	0.72	1.07	0.03	0.11	
Uniform Delay, d1	67.1	5.5	28.4	10.3	65.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	49.3	1.6	41.8	0.1	1.2	
Delay (s)	116.5	7.1	70.1	10.3	66.7	
Level of Service	F	A	E	B	E	
Approach Delay (s)		19.6	69.2		66.7	
Approach LOS		B	E		E	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	482	105	12	606	10	0	0	5	10	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	567	124	14	713	12	0	0	6	12	0	2
Pedestrians		2						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	725			693			1325	1327	569	1325	1444	721
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	725			693			1325	1327	569	1325	1444	721
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	100			98			100	100	99	91	100	99
cM capacity (veh/h)	878			906			131	154	525	126	126	417

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	569	124	739	6	14
Volume Left	2	0	14	0	12
Volume Right	0	124	12	6	2
cSH	878	1700	906	525	142
Volume to Capacity	0.00	0.07	0.02	0.01	0.10
Queue Length 95th (ft)	0	0	1	1	8
Control Delay (s)	0.1	0.0	0.4	11.9	33.1
Lane LOS	A		A	B	D
Approach Delay (s)	0.1		0.4	11.9	33.1
Approach LOS				B	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	120	24	38	176	16	57	75	28	23	142	35
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	126	25	40	185	17	60	79	29	24	149	37

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	157	242	168	211
Volume Left (vph)	5	40	60	24
Volume Right (vph)	25	17	29	37
Hadj (s)	-0.06	0.01	0.07	-0.05
Departure Headway (s)	5.3	5.2	5.4	5.2
Degree Utilization, x	0.23	0.35	0.25	0.30
Capacity (veh/h)	622	644	604	637
Control Delay (s)	9.8	11.0	10.2	10.5
Approach Delay (s)	9.8	11.0	10.2	10.5
Approach LOS	A	B	B	B

Intersection Summary			
Delay	10.4		
HCM Level of Service	B		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	22	140	67	35	63	194	476	43	43	412	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.89			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1670			1840	1615	1805	1877		1770	1859	
Flt Permitted		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1670			1840	1615	1805	1877		1770	1859	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	23	147	71	37	66	204	501	45	45	434	6
RTOR Reduction (vph)	0	133	0	0	0	58	0	2	0	0	1	0
Lane Group Flow (vph)	0	48	0	0	108	8	204	544	0	45	439	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Split			Split		Perm	Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)		7.1			8.7	8.7	12.3	36.4		2.8	26.9	
Effective Green, g (s)		7.1			8.7	8.7	12.3	36.4		2.8	26.9	
Actuated g/C Ratio		0.09			0.12	0.12	0.16	0.49		0.04	0.36	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		158			213	187	296	911		66	667	
v/s Ratio Prot		c0.03			c0.06		c0.11	0.29		0.03	c0.24	
v/s Ratio Perm						0.00						
v/c Ratio		0.30			0.51	0.04	0.69	0.60		0.68	0.66	
Uniform Delay, d1		31.6			31.1	29.4	29.5	14.0		35.7	20.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.7	0.0	5.3	2.9		20.6	5.0	
Delay (s)		32.0			31.8	29.5	34.8	16.9		56.3	25.2	
Level of Service		C			C	C	C	B		E	C	
Approach Delay (s)		32.0			30.9			21.7			28.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: NE 193rd St & 61st Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	7	259	8	2	0	358	437	5	1	295	53
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	66	7	267	8	2	0	369	451	5	1	304	55
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1271	1500	304	1501	1497	228	304			456		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1271	1500	304	1501	1497	228	304			456		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	32	92	62	79	98	100	71			100		
cM capacity (veh/h)	96	87	698	38	87	781	1261			1101		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	340	10	594	230	305	55
Volume Left	66	8	369	0	1	0
Volume Right	267	0	0	5	0	55
cSH	444	43	1261	1700	1101	1700
Volume to Capacity	0.77	0.24	0.29	0.14	0.00	0.03
Queue Length 95th (ft)	163	20	31	0	0	0
Control Delay (s)	35.3	112.4	6.8	0.0	0.0	0.0
Lane LOS	E	F	A		A	
Approach Delay (s)	35.3	112.4	4.9		0.0	
Approach LOS	E	F				

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
2: SR 522 & 61st Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	2313	281	10	1962	391	178	60	1	91	28	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00		1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96			0.96	1.00
Satd. Flow (prot)	1770	3539	1551	1787	3574	1599		1795			1794	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.62			0.72	1.00
Satd. Flow (perm)	1770	3539	1551	1787	3574	1599		1156			1332	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	311	2360	287	10	2002	399	182	61	1	93	29	245
RTOR Reduction (vph)	0	0	57	0	0	128	0	0	0	0	0	191
Lane Group Flow (vph)	311	2360	230	10	2002	271	0	244	0	0	122	54
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	26.0	104.7	104.7	5.0	83.7	83.7		35.0			35.0	35.0
Effective Green, g (s)	26.0	104.7	104.7	5.0	83.7	83.7		35.0			35.0	35.0
Actuated g/C Ratio	0.16	0.65	0.65	0.03	0.52	0.52		0.22			0.22	0.22
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3		5.0			5.0	5.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0			3.0	3.0
Lane Grp Cap (vph)	288	2316	1015	56	1870	836		253			291	346
v/s Ratio Prot	0.18	c0.67		0.01	c0.56							
v/s Ratio Perm			0.15			0.17		c0.21			0.09	0.03
v/c Ratio	1.08	1.02	0.23	0.18	1.07	0.32		0.96			0.42	0.15
Uniform Delay, d1	67.0	27.6	11.2	75.5	38.1	21.9		61.9			53.8	50.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	75.9	23.6	0.5	6.9	42.6	1.0		48.1			4.4	1.0
Delay (s)	142.9	51.3	11.7	82.4	80.8	22.9		110.0			58.1	51.5
Level of Service	F	D	B	F	F	C		F			E	D
Approach Delay (s)		57.1			71.2			110.0			53.7	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM Average Control Delay	64.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	412	7	100	563	47	18	51	94	29	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.92			0.98	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		1892			1866			1697			1804	
Flt Permitted		0.98			0.88			0.97			0.84	
Satd. Flow (perm)		1862			1657			1660			1551	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	443	8	108	605	51	19	55	101	31	20	11
RTOR Reduction (vph)	0	1	0	0	5	0	0	70	0	0	8	0
Lane Group Flow (vph)	0	461	0	0	759	0	0	105	0	0	54	0
Confl. Peds. (#/hr)	1		4	4		1			5	5		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		28.7			28.7			16.3			16.3	
Effective Green, g (s)		28.7			28.7			16.3			16.3	
Actuated g/C Ratio		0.54			0.54			0.31			0.31	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1008			897			511			477	
v/s Ratio Prot												
v/s Ratio Perm		0.25			c0.46			c0.06			0.04	
v/c Ratio		0.46			0.85			0.21			0.11	
Uniform Delay, d1		7.4			10.3			13.6			13.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			7.4			0.9			0.5	
Delay (s)		7.7			17.7			14.5			13.7	
Level of Service		A			B			B			B	
Approach Delay (s)		7.7			17.7			14.5			13.7	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	53.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	290	34	269	113	2	166	158	122	18	222	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.96			1.00	
Flt Protected		1.00			0.97			0.98			1.00	
Satd. Flow (prot)		1861			1792			1761			1851	
Flt Permitted		0.97			0.58			0.78			0.95	
Satd. Flow (perm)		1815			1079			1403			1774	
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93
Adj. Flow (vph)	19	312	37	292	122	2	180	172	133	19	241	1
RTOR Reduction (vph)	0	9	0	0	1	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	359	0	0	415	0	0	454	0	0	261	0
Confl. Peds. (#/hr)	82					18						
Confl. Bikes (#/hr)						64						
Heavy Vehicles (%)	0%	0%	2%	2%	3%	3%	2%	2%	2%	5%	2%	5%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		18.8			18.8			16.0			16.0	
Effective Green, g (s)		18.8			18.8			16.0			16.0	
Actuated g/C Ratio		0.44			0.44			0.37			0.37	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		797			474			524			663	
v/s Ratio Prot												
v/s Ratio Perm		0.20			c0.39			c0.32			0.15	
v/c Ratio		0.45			0.88			0.87			0.39	
Uniform Delay, d1		8.4			10.9			12.4			9.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			16.5			14.1			0.4	
Delay (s)		8.8			27.4			26.5			10.2	
Level of Service		A			C			C			B	
Approach Delay (s)		8.8			27.4			26.5			10.2	
Approach LOS		A			C			C			B	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	169	61	71	187	57	181	604	95	35	615	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96			0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1805	1818		1770	1797			3446		1770	1803	
Flt Permitted	0.49	1.00		0.52	1.00			0.56		0.28	1.00	
Satd. Flow (perm)	925	1818		960	1797			1951		526	1803	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	108	174	63	73	193	59	187	623	98	36	634	173
RTOR Reduction (vph)	0	20	0	0	17	0	0	11	0	0	11	0
Lane Group Flow (vph)	108	217	0	73	235	0	0	897	0	36	796	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	14.1	14.1		14.1	14.1			34.8		34.8	34.8	
Effective Green, g (s)	14.1	14.1		14.1	14.1			34.8		34.8	34.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24			0.60		0.60	0.60	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	223	439		232	434			1163		313	1074	
v/s Ratio Prot		0.12			c0.13						0.44	
v/s Ratio Perm	0.12			0.08				c0.46		0.07		
v/c Ratio	0.48	0.49		0.31	0.54			0.77		0.12	0.74	
Uniform Delay, d1	19.0	19.1		18.2	19.3			8.8		5.1	8.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.9		0.8	1.4			3.2		0.2	2.8	
Delay (s)	20.7	20.0		19.0	20.7			12.1		5.3	11.3	
Level of Service	C	B		B	C			B		A	B	
Approach Delay (s)		20.2			20.3			12.1			11.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	9.5
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	1330	465	330	1614	110	443	495	124	305	318	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1564	3433	3539	1563	3467	3458		1770	3411	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1564	3433	3539	1563	3467	3458		1770	3411	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	237	1371	479	340	1664	113	457	510	128	314	328	104
RTOR Reduction (vph)	0	0	164	0	0	32	0	14	0	0	19	0
Lane Group Flow (vph)	237	1371	315	340	1664	81	457	624	0	314	413	0
Confl. Bikes (#/hr)			1			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	19.5	68.0	68.0	17.2	65.7	65.7	21.0	32.5		22.0	33.5	
Effective Green, g (s)	19.5	68.0	68.0	17.2	65.7	65.7	21.0	32.5		22.0	33.5	
Actuated g/C Ratio	0.12	0.42	0.42	0.11	0.41	0.41	0.13	0.20		0.14	0.21	
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	1504	665	369	1453	642	455	702		243	714	
v/s Ratio Prot	c0.13	0.39		0.10	c0.47		0.13	c0.18		c0.18	0.12	
v/s Ratio Perm			0.20			0.05						
v/c Ratio	1.10	0.91	0.47	0.92	1.15	0.13	1.00	0.89		1.29	0.58	
Uniform Delay, d1	70.2	43.2	33.1	70.7	47.1	29.3	69.5	62.0		69.0	56.9	
Progression Factor	1.00	1.00	1.00	0.90	1.19	1.84	0.98	0.91		1.00	1.00	
Incremental Delay, d2	89.6	9.9	2.4	4.0	66.2	0.0	40.9	11.9		158.6	1.1	
Delay (s)	159.9	53.1	35.5	68.0	122.2	54.0	109.3	68.2		227.6	58.0	
Level of Service	F	D	D	E	F	D	F	E		F	E	
Approach Delay (s)		61.2			109.9			85.4			129.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	91.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: 175th Ave NE & 68th Ave NE

9/8/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	211	0	0	80	0	1050	219	0	1023	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	222	0	0	84	0	1105	231	0	1077	79
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								218			304	
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1569	2452	398	1802	2376	484	1156			1336		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1110	2131	398	1379	2044	0	1156			840		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	63	100	100	91	100			100		
cM capacity (veh/h)	131	43	607	57	49	940	606			684		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	222	84	442	442	452	431	431	294
Volume Left	0	0	0	0	0	0	0	0
Volume Right	222	84	0	0	231	0	0	79
cSH	607	940	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.09	0.26	0.26	0.27	0.25	0.25	0.17
Queue Length 95th (ft)	42	7	0	0	0	0	0	0
Control Delay (s)	14.3	9.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A						
Approach Delay (s)	14.3	9.2	0.0			0.0		
Approach LOS	B	A						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	11	14	44	13	569	17	1002	41	642	915	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		0.97			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1734			1829	1615	1787	3550		1787	1881	1565
Flt Permitted		0.97			0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1734			1829	1615	1787	3550		1787	1881	1565
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	31	11	14	44	13	575	17	1012	41	648	924	41
RTOR Reduction (vph)	0	8	0	0	0	533	0	1	0	0	0	4
Lane Group Flow (vph)	0	48	0	0	57	42	17	1052	0	648	924	37
Confl. Bikes (#/hr)									2			2
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						6
Actuated Green, G (s)		8.3			11.3	11.3	4.5	53.5		62.2	111.2	111.2
Effective Green, g (s)		8.3			11.3	11.3	4.5	53.5		62.2	111.2	111.2
Actuated g/C Ratio		0.05			0.07	0.07	0.03	0.34		0.40	0.71	0.71
Clearance Time (s)		5.2			5.4	5.4	5.2	5.2		5.4	5.4	5.4
Vehicle Extension (s)		3.0			2.0	2.0	3.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		92			132	117	51	1214		710	1337	1112
v/s Ratio Prot		c0.03			c0.03		0.01	c0.30		c0.36	0.49	
v/s Ratio Perm						0.03						0.02
v/c Ratio		0.53			0.43	0.35	0.33	0.87		0.91	0.69	0.03
Uniform Delay, d1		72.2			69.5	69.1	74.5	48.2		44.6	12.9	6.7
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		5.3			0.8	0.7	3.8	6.5		15.8	1.3	0.0
Delay (s)		77.5			70.4	69.8	78.4	54.6		60.4	14.1	6.7
Level of Service		E			E	E	E	D		E	B	A
Approach Delay (s)		77.5			69.9			55.0			32.5	
Approach LOS		E			E			E			C	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	156.5	Sum of lost time (s)	21.2
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	57	963	1	19	931
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	59	993	1	20	960
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1992	993			994	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1992	993			994	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	80			97	
cM capacity (veh/h)	66	300			700	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	60	994	979
Volume Left	1	0	20
Volume Right	59	1	0
cSH	283	1700	700
Volume to Capacity	0.21	0.58	0.03
Queue Length 95th (ft)	20	0	2
Control Delay (s)	21.1	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.1	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	40	47	57	29	34	60	741	59	126	558	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1712			1689		1787	1858		1787	1881	1565
Flt Permitted	0.95	1.00			0.98		0.35	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1770	1712			1689		667	1858		155	1881	1565
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	86	42	49	59	30	35	62	772	61	131	581	131
RTOR Reduction (vph)	0	28	0	0	9	0	0	2	0	0	0	25
Lane Group Flow (vph)	86	63	0	0	115	0	62	831	0	131	581	106
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Split			Split			pm+pt			pm+pt		custom
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		6
Actuated Green, G (s)	11.9	11.9			12.9		60.8	57.0		72.3	63.5	57.0
Effective Green, g (s)	11.9	11.9			12.9		60.8	57.0		72.3	63.5	57.0
Actuated g/C Ratio	0.11	0.11			0.12		0.54	0.51		0.64	0.57	0.51
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	188	182			194		400	945		250	1066	796
v/s Ratio Prot	c0.05	0.04			c0.07		0.01	c0.45		c0.05	0.31	
v/s Ratio Perm							0.08			0.29		0.07
v/c Ratio	0.46	0.35			0.59		0.15	0.88		0.52	0.55	0.13
Uniform Delay, d1	47.1	46.5			47.1		12.8	24.5		20.1	15.2	14.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4			3.2		0.1	9.1		0.9	0.3	0.0
Delay (s)	47.7	46.9			50.3		12.9	33.6		21.1	15.5	14.6
Level of Service	D	D			D		B	C		C	B	B
Approach Delay (s)		47.3			50.3			32.2			16.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	205	153	293	493	332	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00		1.00	1.00		1.00
Frpb, ped/bikes	0.99		1.00	0.97		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	0.94		1.00	0.85		1.00
Flt Protected	0.97		1.00	1.00		0.97
Satd. Flow (prot)	1690		1900	1564		1803
Flt Permitted	0.97		1.00	1.00		0.64
Satd. Flow (perm)	1690		1900	1564		1180
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	166	318	536	361	259
RTOR Reduction (vph)	45	0	0	221	0	0
Lane Group Flow (vph)	344	0	318	315	0	620
Confl. Peds. (#/hr)		2		6	6	
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%
Turn Type				Perm	Perm	
Protected Phases	6		4			8
Permitted Phases				4	8	
Actuated Green, G (s)	14.3		31.8	31.8		31.8
Effective Green, g (s)	14.3		31.8	31.8		31.8
Actuated g/C Ratio	0.26		0.59	0.59		0.59
Clearance Time (s)	4.0		4.0	4.0		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	447		1117	919		694
v/s Ratio Prot	c0.20		0.17			
v/s Ratio Perm				0.20		c0.53
v/c Ratio	0.77		0.28	0.34		0.89
Uniform Delay, d1	18.4		5.5	5.8		9.7
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	7.8		0.1	0.2		13.9
Delay (s)	26.2		5.7	6.0		23.6
Level of Service	C		A	A		C
Approach Delay (s)	26.2		5.9			23.6
Approach LOS	C		A			C

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	27	181	36	35	65	134	541	20	26	255	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.93			1.00			0.94	
Flt Protected		0.96	1.00		0.99			0.99			1.00	
Satd. Flow (prot)		1782	1549		1753			1803			1740	
Flt Permitted		0.96	1.00		0.99			0.80			0.95	
Satd. Flow (perm)		1782	1549		1753			1447			1653	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	244	27	183	36	35	66	135	546	20	26	258	197
RTOR Reduction (vph)	0	0	89	0	32	0	0	1	0	0	19	0
Lane Group Flow (vph)	0	271	94	0	105	0	0	700	0	0	462	0
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	4%	4%	4%	2%	2%	2%
Turn Type	Split		Perm	Split			Perm			Perm		
Protected Phases	8	8		4	4			6			2	
Permitted Phases		8	8				6			2		
Actuated Green, G (s)		19.3	19.3		12.3			56.3			56.3	
Effective Green, g (s)		19.3	19.3		12.3			56.3			56.3	
Actuated g/C Ratio		0.19	0.19		0.12			0.55			0.55	
Clearance Time (s)		4.5	4.5		4.5			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		338	293		212			799			913	
v/s Ratio Prot		c0.15			c0.06							
v/s Ratio Perm			0.06					c0.48			0.28	
v/c Ratio		0.80	0.32		0.50			0.88			0.51	
Uniform Delay, d1		39.5	35.6		41.9			19.8			14.2	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		12.8	0.6		1.8			10.6			0.4	
Delay (s)		52.3	36.3		43.7			30.4			14.6	
Level of Service		D	D		D			C			B	
Approach Delay (s)		45.8			43.7			30.4			14.6	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	1661	9	10	1963	325	37	91	121	333	77	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3505	1536	1770	3539	1583	1752	1845	1547	3467	1721	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752	3505	1536	1770	3539	1583	1752	1845	1547	3467	1721	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	1748	9	11	2066	342	39	96	127	351	81	107
RTOR Reduction (vph)	0	0	2	0	0	77	0	0	59	0	31	0
Lane Group Flow (vph)	142	1748	7	11	2066	265	39	96	68	351	157	0
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	1%	1%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	16.7	100.5	100.5	2.0	85.8	85.8	6.7	24.2	24.2	13.0	30.5	
Effective Green, g (s)	16.7	100.5	100.5	2.0	85.8	85.8	6.7	24.2	24.2	13.0	30.5	
Actuated g/C Ratio	0.10	0.63	0.63	0.01	0.54	0.54	0.04	0.15	0.15	0.08	0.19	
Clearance Time (s)	5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	2.5	3.0	3.0	2.5	3.0	
Lane Grp Cap (vph)	183	2202	965	22	1898	849	73	279	234	282	328	
v/s Ratio Prot	c0.08	c0.50		0.01	c0.58		0.02	0.05		c0.10	c0.09	
v/s Ratio Perm			0.00			0.17			0.04			
v/c Ratio	0.78	0.79	0.01	0.50	1.09	0.31	0.53	0.34	0.29	1.24	0.48	
Uniform Delay, d1	69.8	22.1	11.1	78.5	37.1	20.7	75.1	60.8	60.3	73.5	57.7	
Progression Factor	0.95	0.78	1.25	0.69	1.27	2.21	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.1	1.1	0.0	1.2	40.9	0.1	5.7	0.7	0.7	136.3	1.1	
Delay (s)	73.5	18.3	13.9	55.4	88.1	45.8	80.8	61.5	61.0	209.8	58.8	
Level of Service	E	B	B	E	F	D	F	E	E	F	E	
Approach Delay (s)		22.4			81.9			64.1			157.1	
Approach LOS		C			F			E			F	

Intersection Summary			
HCM Average Control Delay	66.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	465	0	174	0	0	0	81	412	0	0	287	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			0.99	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						1.00			0.94	
Flt Protected		0.96						0.99			1.00	
Satd. Flow (prot)		1738						1866			1756	
Flt Permitted		0.78						0.67			1.00	
Satd. Flow (perm)		1414						1263			1756	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	484	0	181	0	0	0	84	429	0	0	299	220
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	642	0	0	0	0	0	513	0	0	475	0
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)			2						3			2
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		27.0						25.0			25.0	
Effective Green, g (s)		27.0						25.0			25.0	
Actuated g/C Ratio		0.45						0.42			0.42	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		636						526			732	
v/s Ratio Prot											0.27	
v/s Ratio Perm		c0.45						c0.41				
v/c Ratio		1.01						0.98			0.65	
Uniform Delay, d1		16.5						17.2			14.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		38.2						32.7			2.0	
Delay (s)		54.7						49.9			16.0	
Level of Service		D						D			B	
Approach Delay (s)		54.7			0.0			49.9			16.0	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	219	1988	0	2064	286	304	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3		5.3	5.3	5.0	
Lane Util. Factor	1.00	0.95		0.95	1.00	0.97	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.85	0.95	
Flt Protected	0.95	1.00		1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539		3574	1566	3306	
Flt Permitted	0.95	1.00		1.00	1.00	0.97	
Satd. Flow (perm)	1770	3539		3574	1566	3306	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	226	2049	0	2128	295	313	157
RTOR Reduction (vph)	0	0	0	0	61	41	0
Lane Group Flow (vph)	226	2049	0	2128	234	429	0
Confl. Bikes (#/hr)					1		1
Heavy Vehicles (%)	2%	2%	1%	1%	1%	2%	2%
Turn Type	Prot		Prot		Perm		
Protected Phases	5	2	1	6		4	
Permitted Phases					6		
Actuated Green, G (s)	27.5	118.9		86.4	86.4	16.0	
Effective Green, g (s)	27.5	118.9		86.4	86.4	16.0	
Actuated g/C Ratio	0.17	0.74		0.54	0.54	0.10	
Clearance Time (s)	5.0	5.3		5.3	5.3	5.0	
Vehicle Extension (s)	3.0	4.0		4.0	4.0	2.5	
Lane Grp Cap (vph)	304	2630		1930	846	331	
v/s Ratio Prot	0.13	c0.58		c0.60		c0.13	
v/s Ratio Perm					0.15		
v/c Ratio	0.74	0.78		1.10	0.28	1.29	
Uniform Delay, d1	62.9	12.5		36.8	19.9	72.0	
Progression Factor	0.85	1.38		1.00	1.00	1.00	
Incremental Delay, d2	5.6	1.4		54.6	0.8	153.4	
Delay (s)	59.1	18.7		91.4	20.7	225.4	
Level of Service	E	B		F	C	F	
Approach Delay (s)		22.7		82.8		225.4	
Approach LOS		C		F		F	

Intersection Summary			
HCM Average Control Delay	69.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	30.4
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	263	2035	2351	39	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.3	5.3	5.3	5.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (prot)	1770	3539	3574	1565	1787	
Flt Permitted	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (perm)	1770	3539	3574	1565	1787	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	277	2142	2475	41	19	0
RTOR Reduction (vph)	0	0	0	6	0	0
Lane Group Flow (vph)	277	2142	2475	35	19	0
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	25.4	133.7	103.3	103.3	16.0	
Effective Green, g (s)	25.4	133.7	103.3	103.3	16.0	
Actuated g/C Ratio	0.16	0.84	0.65	0.65	0.10	
Clearance Time (s)	5.0	5.3	5.3	5.3	5.0	
Vehicle Extension (s)	2.5	4.0	4.0	4.0	3.0	
Lane Grp Cap (vph)	281	2957	2307	1010	179	
v/s Ratio Prot	c0.16	0.61	c0.69		c0.01	
v/s Ratio Perm				0.02		
v/c Ratio	0.99	0.72	1.07	0.03	0.11	
Uniform Delay, d1	67.1	5.5	28.4	10.3	65.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	49.3	1.6	41.8	0.1	1.2	
Delay (s)	116.5	7.1	70.1	10.3	66.7	
Level of Service	F	A	E	B	E	
Approach Delay (s)		19.6	69.2		66.7	
Approach LOS		B	E		E	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	482	105	12	606	10	117	41	6	10	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.97			0.96	
Satd. Flow (prot)		1818			1857			1789			1750	
Flt Permitted		1.00			0.99			0.78			0.84	
Satd. Flow (perm)		1816			1837			1448			1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	524	114	13	659	11	127	45	7	11	0	2
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	640	0	0	682	0	0	177	0	0	13	0
Turn Type	custom			Perm			Perm			Perm		
Protected Phases					6			8			4	
Permitted Phases	2	2		6			8			4		
Actuated Green, G (s)		33.4			33.4			9.7			9.7	
Effective Green, g (s)		33.4			33.4			9.7			9.7	
Actuated g/C Ratio		0.60			0.60			0.17			0.17	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1087			1100			252			267	
v/s Ratio Prot												
v/s Ratio Perm		0.35			c0.37			c0.12			0.01	
v/c Ratio		0.59			0.62			0.70			0.05	
Uniform Delay, d1		6.9			7.2			21.7			19.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.3			2.6			8.5			0.1	
Delay (s)		9.3			9.8			30.2			19.3	
Level of Service		A			A			C			B	
Approach Delay (s)		9.3			9.8			30.2			19.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NEL	NER
Lane Configurations		
Volume (vph)	0	5
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	0	5
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	5	0
Turn Type		
Protected Phases	3	
Permitted Phases		
Actuated Green, G (s)	0.7	
Effective Green, g (s)	0.7	
Actuated g/C Ratio	0.01	
Clearance Time (s)	4.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	20	
v/s Ratio Prot	c0.00	
v/s Ratio Perm		
v/c Ratio	0.25	
Uniform Delay, d1	27.3	
Progression Factor	1.00	
Incremental Delay, d2	6.5	
Delay (s)	33.8	
Level of Service	C	
Approach Delay (s)	33.8	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	120	24	38	176	16	57	75	28	23	142	35
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	126	25	40	185	17	60	79	29	24	149	37

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	157	242	168	211
Volume Left (vph)	5	40	60	24
Volume Right (vph)	25	17	29	37
Hadj (s)	-0.06	0.01	0.07	-0.05
Departure Headway (s)	5.3	5.2	5.4	5.2
Degree Utilization, x	0.23	0.35	0.25	0.30
Capacity (veh/h)	622	644	604	637
Control Delay (s)	9.8	11.0	10.2	10.5
Approach Delay (s)	9.8	11.0	10.2	10.5
Approach LOS	A	B	B	B

Intersection Summary			
Delay	10.4		
HCM Level of Service	B		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	22	140	67	35	63	194	476	43	43	412	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.89			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1670			1840	1615	1805	1877		1770	1859	
Flt Permitted		1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1670			1840	1615	1805	1877		1770	1859	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	23	147	71	37	66	204	501	45	45	434	6
RTOR Reduction (vph)	0	133	0	0	0	58	0	2	0	0	1	0
Lane Group Flow (vph)	0	48	0	0	108	8	204	544	0	45	439	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Split			Split		Perm	Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)		7.1			8.7	8.7	12.3	36.4		2.8	26.9	
Effective Green, g (s)		7.1			8.7	8.7	12.3	36.4		2.8	26.9	
Actuated g/C Ratio		0.09			0.12	0.12	0.16	0.49		0.04	0.36	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		158			213	187	296	911		66	667	
v/s Ratio Prot		c0.03			c0.06		c0.11	0.29		0.03	c0.24	
v/s Ratio Perm						0.00						
v/c Ratio		0.30			0.51	0.04	0.69	0.60		0.68	0.66	
Uniform Delay, d1		31.6			31.1	29.4	29.5	14.0		35.7	20.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.7	0.0	5.3	2.9		20.6	5.0	
Delay (s)		32.0			31.8	29.5	34.8	16.9		56.3	25.2	
Level of Service		C			C	C	C	B		E	C	
Approach Delay (s)		32.0			30.9			21.7			28.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	360	251	0	71	0	164	252	0	240	190	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			1.00		1.00	1.00		1.00	0.92	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761			1863		1770	1863		1770	1710	
Flt Permitted		0.95			1.00		0.29	1.00		0.50	1.00	
Satd. Flow (perm)		1690			1863		549	1863		929	1710	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	391	273	0	77	0	178	274	0	261	207	250
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	735	0	0	77	0	178	274	0	261	414	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		41.8			41.8		31.6	31.6		31.6	31.6	
Effective Green, g (s)		41.8			41.8		31.6	31.6		31.6	31.6	
Actuated g/C Ratio		0.51			0.51		0.39	0.39		0.39	0.39	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		868			957		213	723		361	664	
v/s Ratio Prot					0.04			0.15			0.24	
v/s Ratio Perm		c0.43					c0.32			0.28		
v/c Ratio		0.85			0.08		0.84	0.38		0.72	0.62	
Uniform Delay, d1		17.0			10.0		22.5	17.9		21.2	20.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		7.7			0.0		23.7	0.3		7.0	1.8	
Delay (s)		24.7			10.1		46.2	18.2		28.2	21.9	
Level of Service		C			B		D	B		C	C	
Approach Delay (s)		24.7			10.1			29.2			24.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	301	433	163	383	365	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.99	
Flt Protected	1.00			0.99	0.96	
Satd. Flow (prot)	1714			1835	1761	
Flt Permitted	1.00			0.48	0.96	
Satd. Flow (perm)	1714			901	1761	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	327	471	177	416	397	35
RTOR Reduction (vph)	69	0	0	0	4	0
Lane Group Flow (vph)	729	0	0	593	428	0
Turn Type			Perm			
Protected Phases	2			6	4	
Permitted Phases			6			
Actuated Green, G (s)	50.3			50.3	17.0	
Effective Green, g (s)	50.3			50.3	17.0	
Actuated g/C Ratio	0.67			0.67	0.23	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1145			602	398	
v/s Ratio Prot	0.43				c0.24	
v/s Ratio Perm				c0.66		
v/c Ratio	0.64			0.99	1.08	
Uniform Delay, d1	7.2			12.1	29.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.2			32.6	66.8	
Delay (s)	8.4			44.7	96.0	
Level of Service	A			D	F	
Approach Delay (s)	8.4			44.7	96.0	
Approach LOS	A			D	F	

Intersection Summary			
HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	62	379	415	1168	1074	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	
Frt	0.89	0.85	1.00	1.00	1.00	
Flt Protected	0.99	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1638	1504	1770	3539	3539	
Flt Permitted	0.99	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1638	1504	1770	3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	412	451	1270	1167	0
RTOR Reduction (vph)	118	184	0	0	0	0
Lane Group Flow (vph)	126	51	451	1270	1167	0
Turn Type		Perm	Prot			Perm
Protected Phases	2		7	4	8	
Permitted Phases		2				8
Actuated Green, G (s)	17.5	17.5	22.3	54.5	28.2	
Effective Green, g (s)	17.5	17.5	22.3	54.5	28.2	
Actuated g/C Ratio	0.22	0.22	0.28	0.68	0.35	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	358	329	493	2411	1247	
v/s Ratio Prot	c0.08		c0.25	0.36	c0.33	
v/s Ratio Perm		0.03				
v/c Ratio	0.35	0.16	0.91	0.53	0.94	
Uniform Delay, d1	26.5	25.3	27.9	6.3	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.01	
Incremental Delay, d2	2.7	1.0	21.5	0.2	11.3	
Delay (s)	29.2	26.3	49.4	6.5	36.6	
Level of Service	C	C	D	A	D	
Approach Delay (s)	27.8			17.8	36.6	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	313	1837	422	0	2055	136	0	0	171	0	0	382
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	340	1997	459	0	2234	148	0	0	186	0	0	415
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1007							
pX, platoon unblocked	0.60						0.60	0.60		0.60	0.60	0.60
vC, conflicting volume	2382			2455			4209	5059	998	4098	5370	1117
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1967			2455			5020	6440	998	4835	6959	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	0			100			0	0	23	0	0	36
cM capacity (veh/h)	175			187			0	0	242	0	0	649

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	340	998	998	459	1117	1117	148	186	415
Volume Left	340	0	0	0	0	0	0	0	0
Volume Right	0	0	0	459	0	0	148	186	415
cSH	175	1700	1700	1700	1700	1700	1700	242	649
Volume to Capacity	1.95	0.59	0.59	0.27	0.66	0.66	0.09	0.77	0.64
Queue Length 95th (ft)	642	0	0	0	0	0	0	139	115
Control Delay (s)	491.7	0.0	0.0	0.0	0.0	0.0	0.0	56.3	19.9
Lane LOS	F							F	C
Approach Delay (s)	59.8				0.0			56.3	19.9
Approach LOS								F	C

Intersection Summary			
Average Delay	32.2		
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

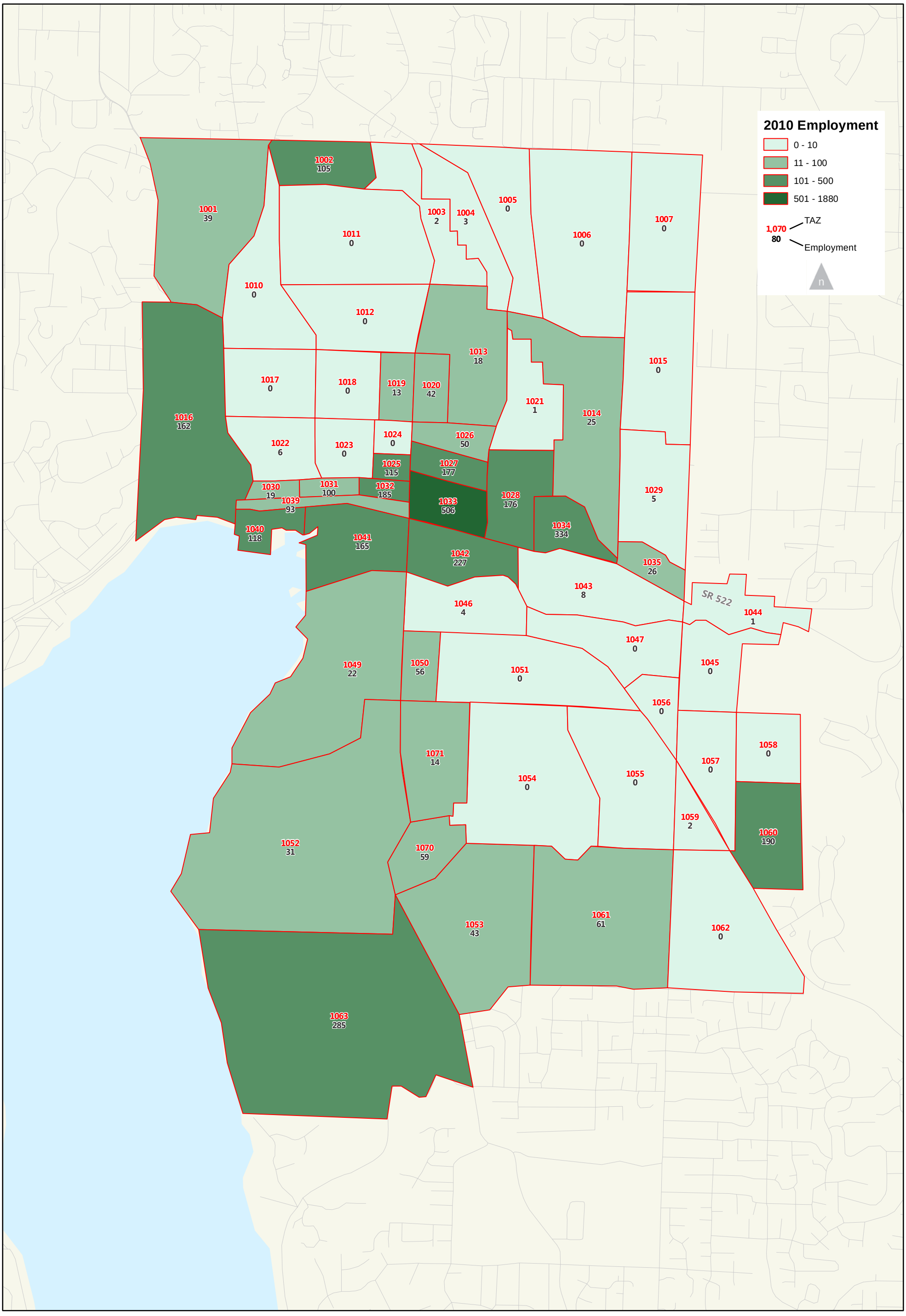
APPENDIX D - 2: LAND USE MAPS

	Housing Units	Employment
2010	8,554	3,487
2035	12,236	6,704
Growth	3,682	3,217

The following maps depict employment and housing land uses by traffic analysis zone (TAZ) around Kenmore. The 2010 maps represent the base year for the travel model, which was calibrated to match the city's data on employment and housing. The 2035 maps show the forecasted future levels of jobs and housing based on the amount of growth assigned by the Puget Sound Regional Council (PSRC) local target representation data set and vetted by the City. The growth maps display where employment and housing growth is expected to occur around Kenmore. This land use growth informs the City on where to expect increases in travel volumes and translates into future traffic levels through the travel demand forecasting process.

Future land use was developed using a variety of sources including city staff input, PSRC regional model land use data, as well as the previous land use forecast from the 2008 Transportation Element Update. The following steps summarize the allocation process for future year land use:

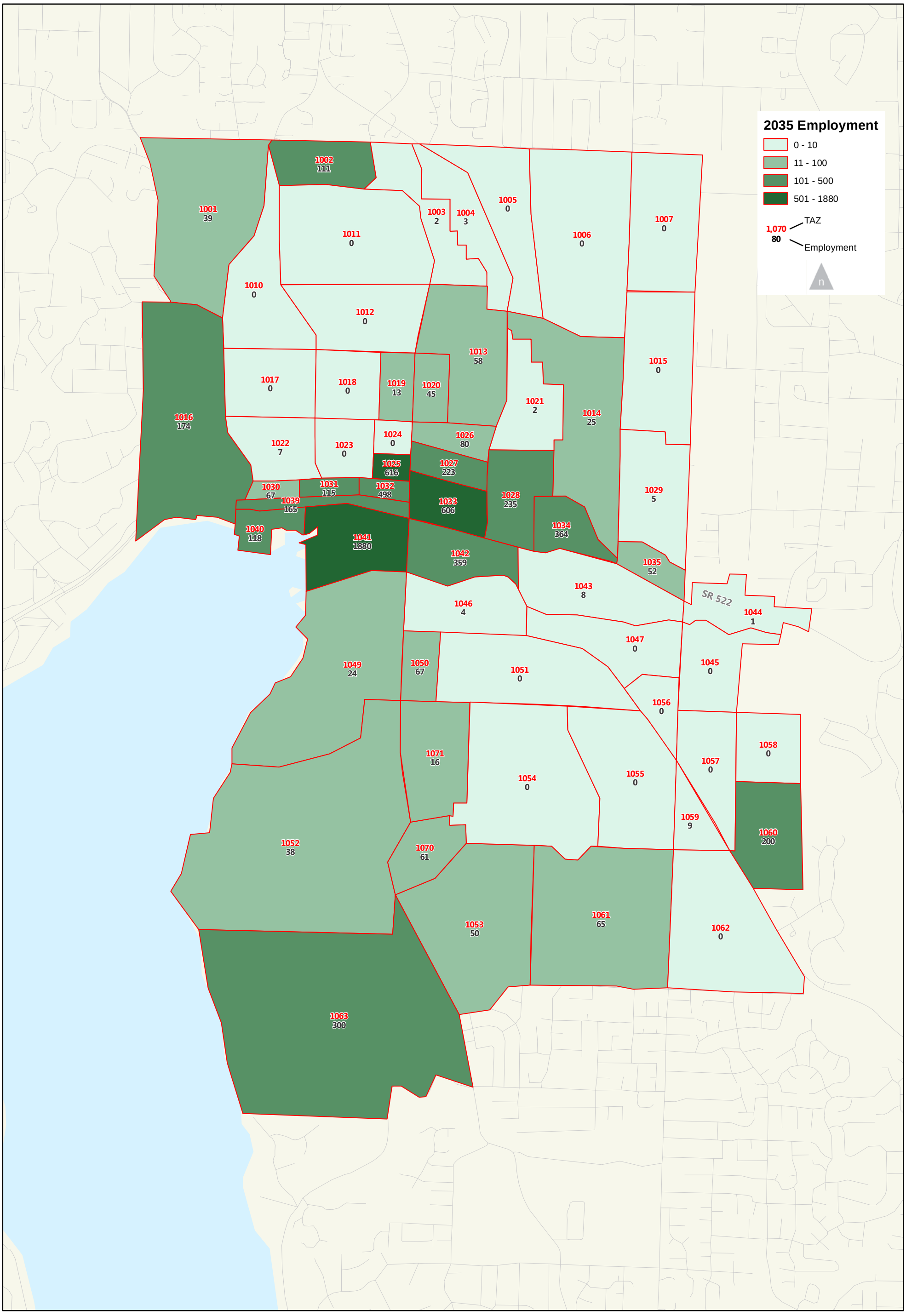
1. The 2035 PSRC local target representation data was provided by regional model TAZ. The land use in the PSRC TAZs comprising Kenmore was scaled to match City-approved growth targets for housing units and employment.
2. Because PSRC TAZs are much larger than those in the Kenmore travel demand model, housing and employment data were disaggregated to the Kenmore TAZ system using land use intensity ratios developed from the 2022 land use forecast (created for the 2008 Transportation Element Update).
3. The 2035 land use by Kenmore TAZ produced in the previous step was scrutinized by City Staff and the project team during an in-person working session. Based on specific knowledge of future developments and zoning allowances as well as review of aerial imagery, household and employment growth were reallocated between Kenmore TAZs.
4. If the specific household and/or employment growth for a Kenmore TAZ was not established during the working session, it was assumed to have the same amount of growth as the 2022 land use forecast. Due to the reliance on 2022 growth expectations, there may be some minor discrepancies in distribution of employment among TAZs within downtown; however, the overall amount of employment growth reflected in the model is consistent with the City and PSRC land use vision and serves as a reasonable basis for developing future forecasts.



Kenmore Model Employment 2010

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\EMP_2010.mxd

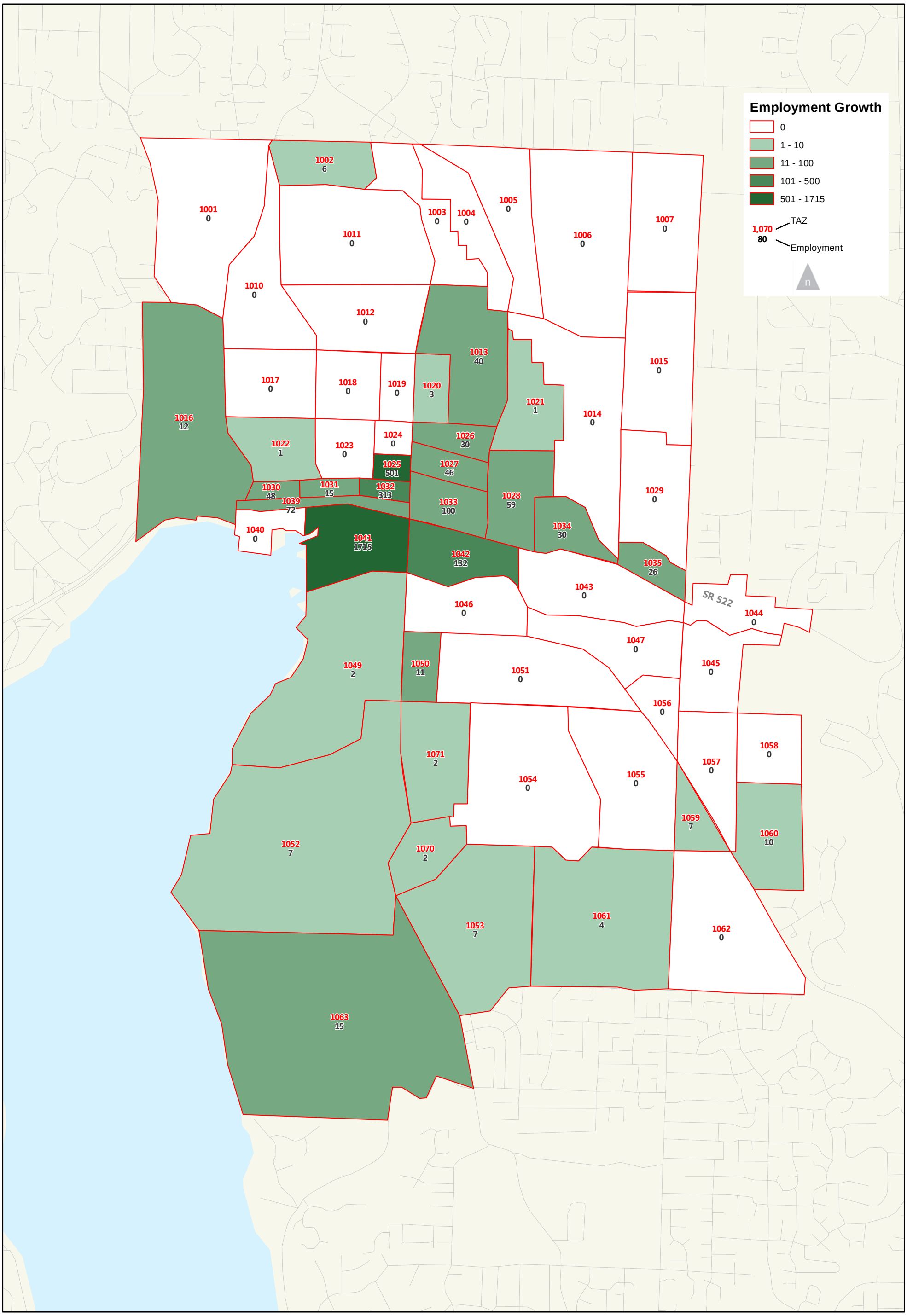
FEHR PEERS



Kenmore Model Employment 2035

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\EMP_2035_adjusted.mxd

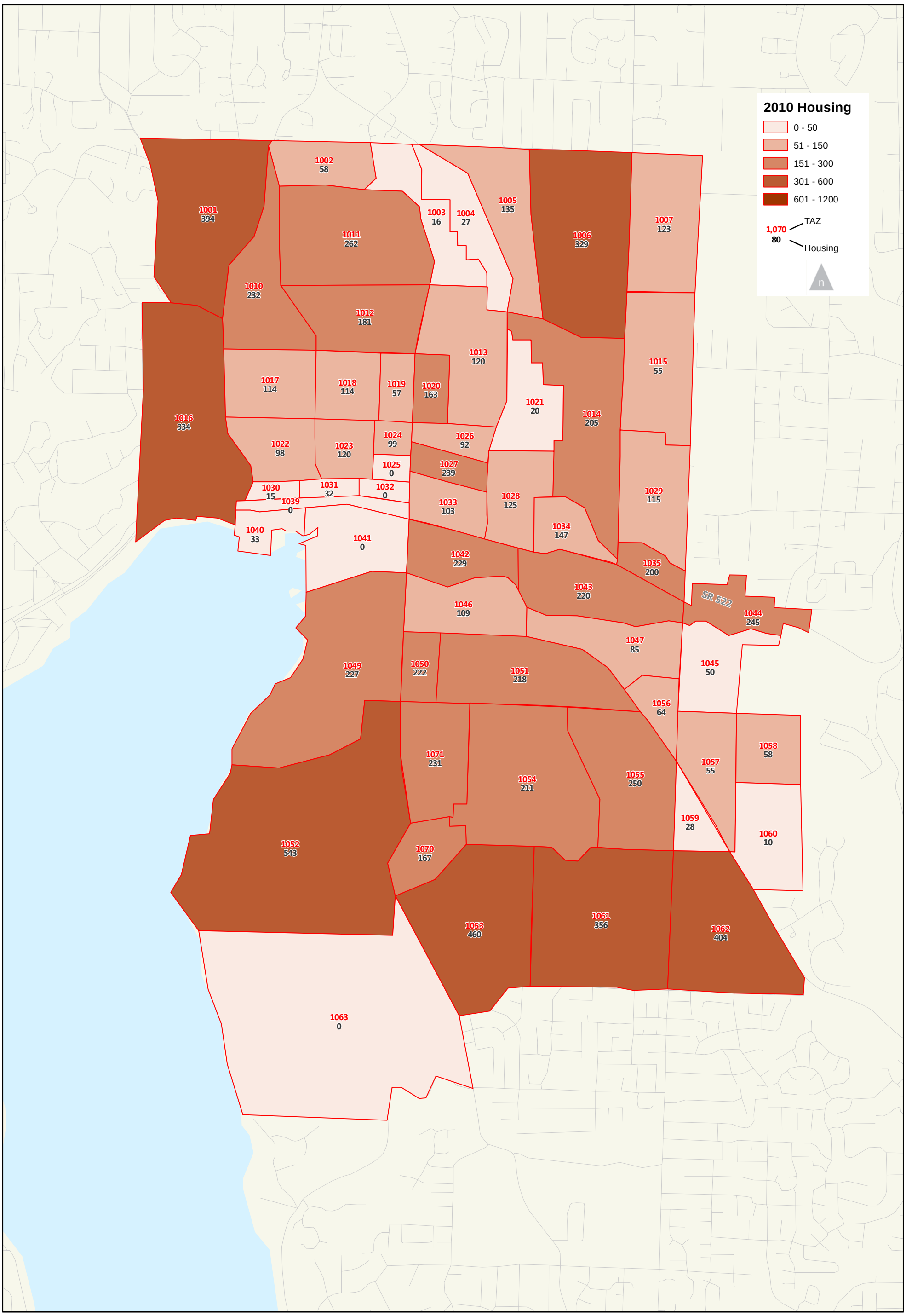
FEHR PEERS



Kenmore Model Employment Growth 2010 to 2035

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\EMP_Growth_adjusted.mxd

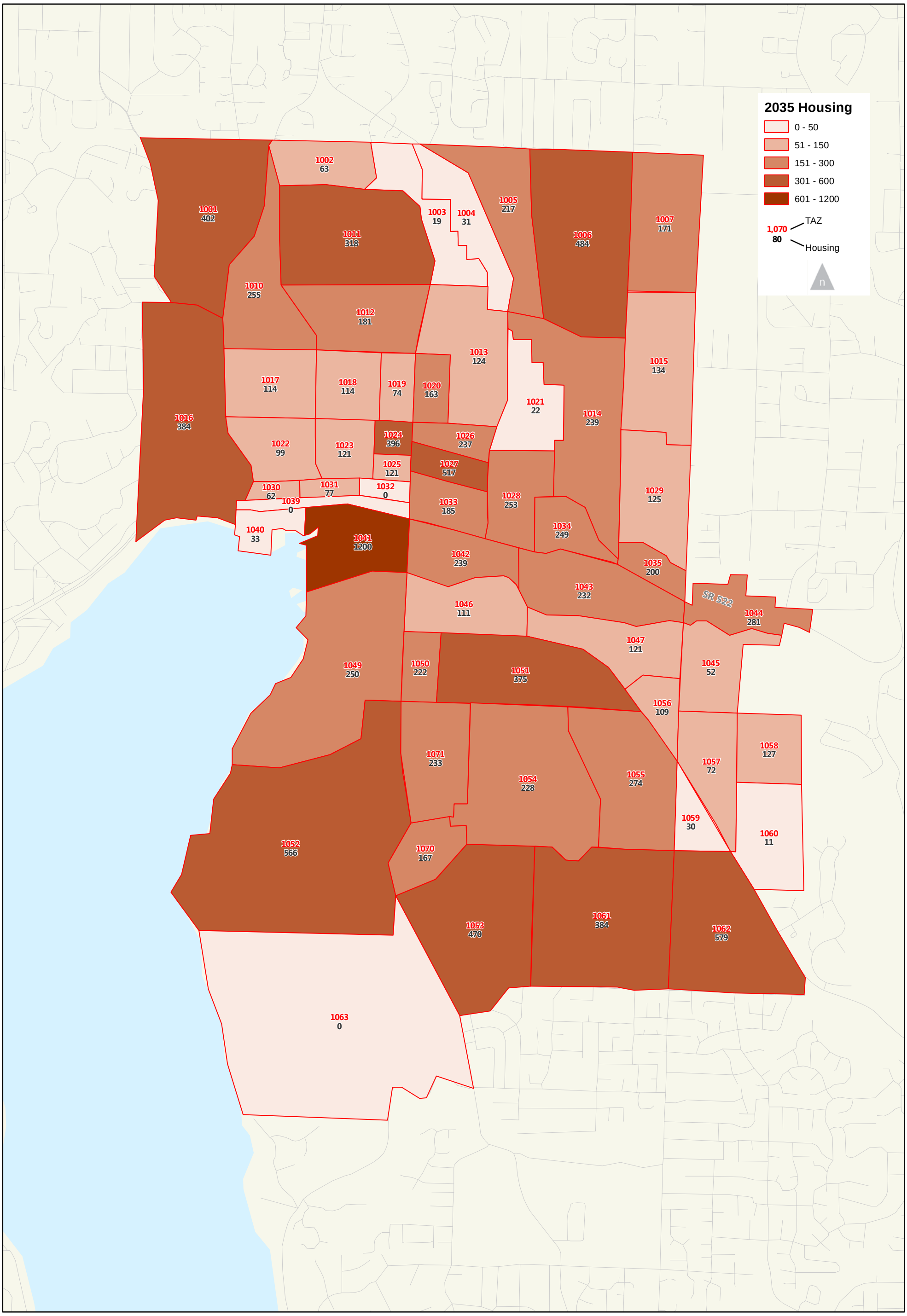
FEHR PEERS



Kenmore Model Housing 2010

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\HU_2010.mxd

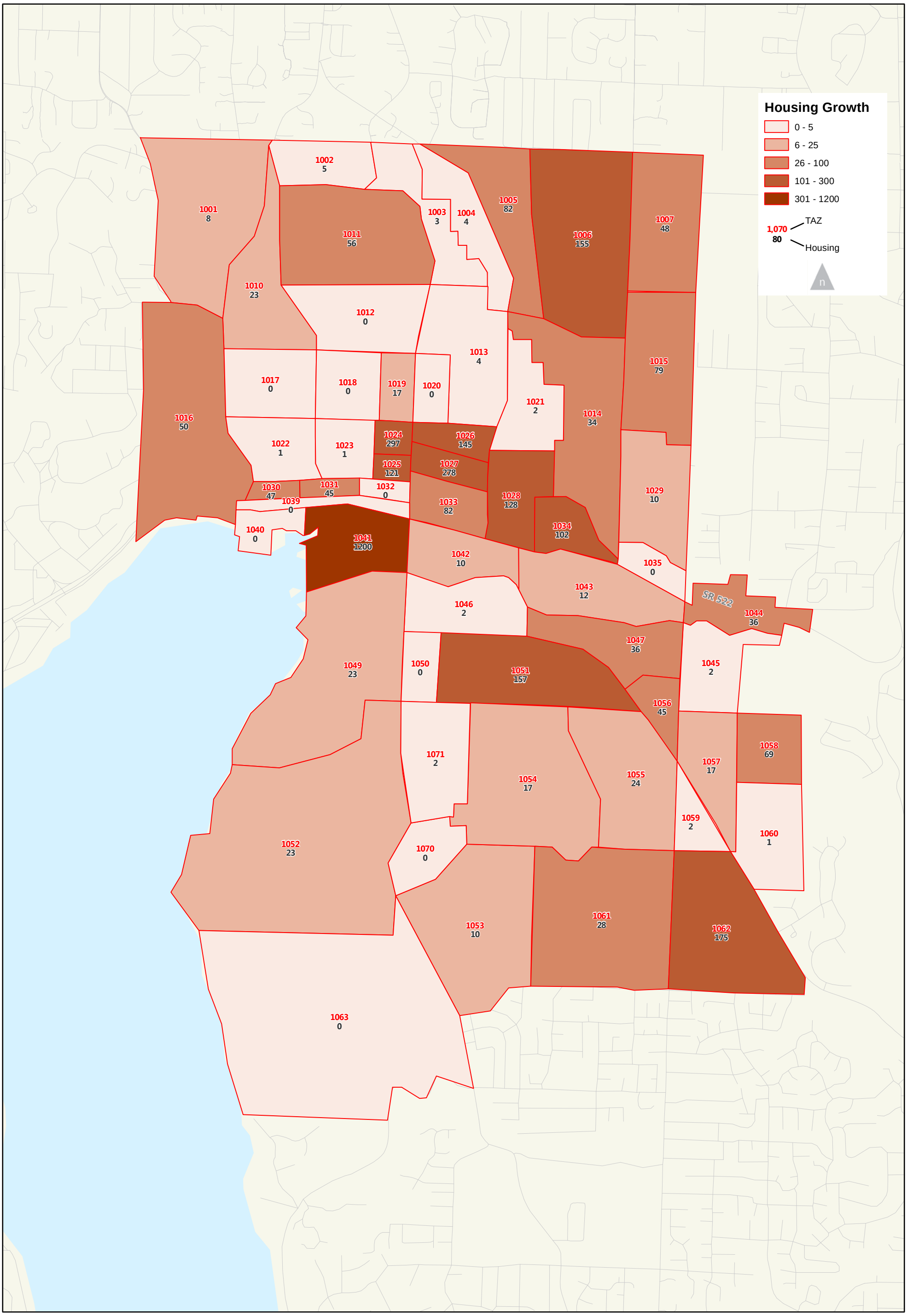
FEHR PEERS



Kenmore Model Housing 2035

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\HU_2035.mxd

FEHR PEERS



Kenmore Model Housing Growth 2010 to 2035

Document Path: \\Fpse03\fpse2\Data2\2013Projects\SE13-0301.04_Kenmore_TE_TO4\Graphics\MXD\Land Use\HU_Growth.mxd

FEHR PEERS

APPENDIX D - 3: ROADWAY FACT SHEETS

The following street typology fact sheets specify the form and intended functions of roadways in Kenmore. While some roadways are intended to serve regional travel and vehicle circulation, other facilities provide safe options for a more multimodal user base. Each fact sheet provides the travel purposes, features, and example locations for the given roadway type.

Boulevard

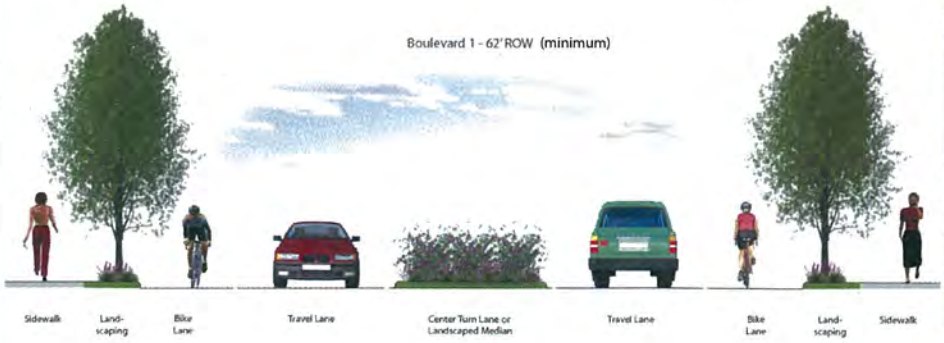
Boulevards are roadways that serve all types of vehicles as well as bicycles and pedestrians. This is the most conducive street type for cross-town trips. The focus is to provide a convenient travel experience for vehicles, accommodate larger vehicles (including trucks, transit, and emergency services), and maintain a friendly atmosphere for pedestrians and bicyclists through effective modal separation.

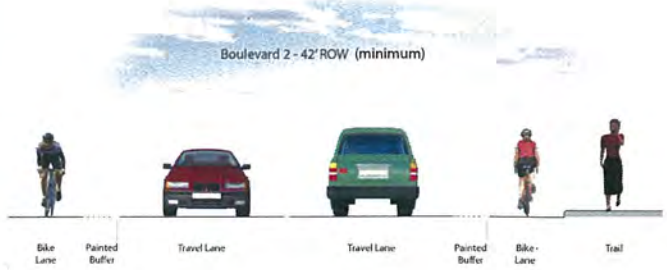
Features:

- Priority users – vehicles, bicycles, and pedestrians
- Serves all trip types, but accommodates cross-town trips best of all street typologies. Direct access by adjacent land uses more limited.
- Turn lanes provided at key intersections to facilitate through traffic. Pedestrian crossings tend to be provided at intersections only.
- Where space is available, add on-street parking lane, bicycle facilities, or landscape buffers for a better walking experience.

Example Locations:

- 61st Ave NE
- Simonds Rd NE
- Juanita Dr NE (Boulevard 2 for portions; other treatments elsewhere)
- 68th Ave NE (south of NE 185th St)





Urban Avenue

Urban avenues serve all modes and trip types, but are focused on signaling the entry into a higher-density commercial or residential zone. Urban avenues accommodate larger vehicles, but provide a lower speed alternative to boulevards or State highways and emphasize multimodal interaction and gateway elements.

Features:

- Priority users: residents, downtown employees, patrons, and visitors; all modes
- Serves as a major travel route through the city center and into downtown. Generally provides more direct access to adjacent land uses than boulevards or State highways.
- Pedestrian treatments include high visibility crosswalks, landscape buffers, and curb extensions.
- Travel lanes may be shared between bicycles and vehicles due to slower speeds.

Example Locations:

- 65th Ave NE
- NE 181st St
- NE 175th St
- 73rd Ave NE

Neighborhood Connection

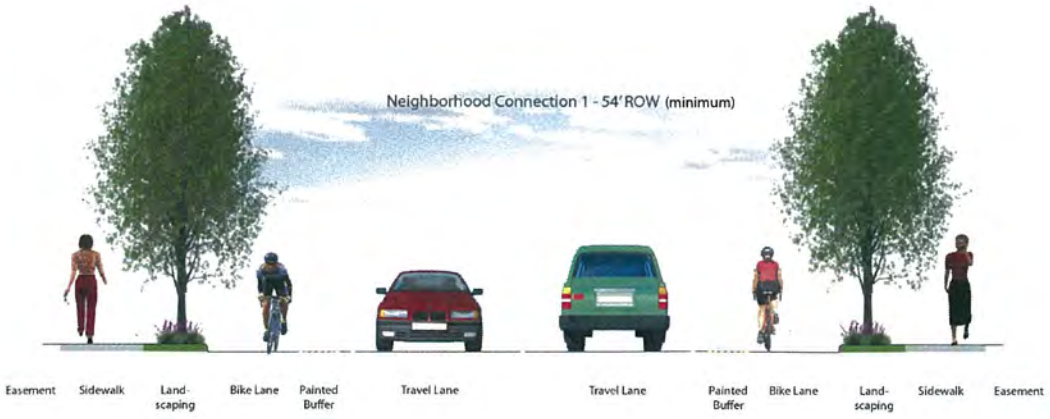
Neighborhood connection streets are focused on providing a safe and enjoyable travel experience for bicycles, pedestrians, and school children. Neighborhood connection streets have narrow travel lanes, separated bike lanes, and buffered sidewalks. These streets feature high-visibility mid-block pedestrian crossings.

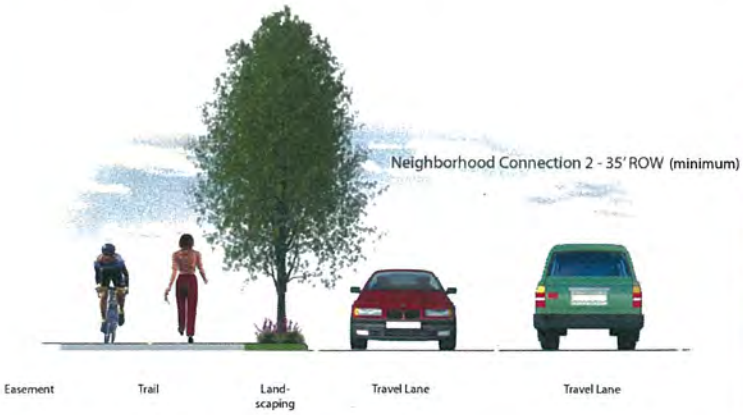
Features:

- Priority users: school children, non-motorized modes
- Serves as a major travel route for school trips, bicycle and pedestrian travel
- Pedestrian crossing treatments include, mid-block crossings, high visibility or raised crosswalks, and curb extensions.

Example Locations:

- 84th Ave NE
- NE 192nd St
- NE 155th St





Local Street

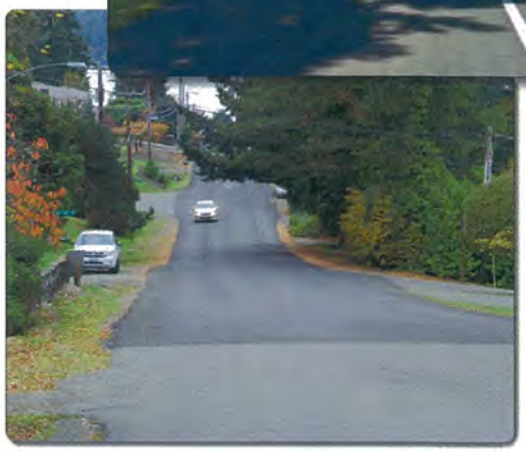
Local streets are walkable, low-speed facilities that serve abutting property (mostly single family residential homes). Because of the low travel speeds, bicycles and vehicles share the right of way. Goods movement on these streets is restricted to local deliveries only.

Features:

- Priority users – local traffic and pedestrians
- Serves as a local connection, but does not encourage through traffic. Provides direct access to adjacent land uses.
- Can serve as quiet streets that are welcoming to cyclists with no additional improvement.

Example Locations:

- NE 198th St
- NE 185th St
- 81st Ave NE



APPENDIX D - 4: DEFICIENCIES IDENTIFICATION & STREET CLASSIFICATION CROSS REFERENCE TABLE

FEHR PEERS

MEMORANDUM

Date: October 23, 2014

To: Kris Overleese, Debbie Bent, and Lauri Anderson, City of Kenmore

From: Kendra Breiland, Fehr & Peers

Subject: ***Identification of Deficiency-Driven Projects in Transportation Element***

The Puget Sound Regional Council (PSRC) has requested that we identify those projects within the near-term and longer-term project lists that address existing or future deficiencies based on the level of service (LOS) policies included in this Transportation Element. Below, we summarize the LOS policy for each mode and identify the projects that address deficiencies.

Auto LOS and Deficiency-Driven Projects

The City's level of service policy sets the following standards for its roadways:

- Boulevards (Primary Arterials) – LOS E or better
- Urban Avenues, Neighborhood Connections (Minor Arterials) – LOS D or better
- Local Streets (Collectors) – LOS C or better

It should be noted that LOS is measured at the corridor level on 68th Avenue / Juanita Drive / Simonds Road rather than at the intersection level. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. It should also be noted that as a highway of statewide significance, SR 522 is exempted from LOS standards.

The following projects were included in the Transportation Element to address deficiencies in meeting this LOS standard in 2035:

- Intersection improvements (signalization or roundabout) at NE 192nd St & 73rd Ave NE – this deficiency would appear in future conditions largely in response to growth in South Snohomish County.
- Intersection improvements (signalization or roundabout) at NE 192nd St & 80th Ave NE – this deficiency would appear in future conditions largely in response to growth in South Snohomish County.

Pedestrian, Bike, and Transit LOS and Deficiency-Driven Projects

The City's LOS policies for non-auto modes are tied to the built environment and the presence of facilities accommodating walking, biking and accessing transit along priority networks, as identified in Chapter 4 of the Transportation Element. The below tables summarize the LOS policies with discussion about projects below.

FEHR PEERS

PEDESTRIAN LOS – SIDEWALK REQUIREMENTS

LOS	Within Pedestrian Priority Network
●	Pedestrian facility* where indicated in Pedestrian Priority Network, with a buffer
●	Pedestrian facility* provided on one side of the street
●	No pedestrian facility

*Pedestrian facility includes sidewalks and shoulders protected by a raised curb.

BICYCLE LOS – FACILITY REQUIREMENTS

LOS	Within Bicycle Priority Network
●	Provides recommended treatment* recommendation, as shown within Bicycle Priority Network
●	Provides a lower-level facility* than recommended in the Bicycle Priority Network
●	No Facility

*Bicycle facilities – lowest-level to highest-level of treatment: shared; bike lanes; buffered bike facility; separated trail.

TRANSIT PRIORITY CORRIDOR LEVEL OF SERVICE

LOS	Transit Stop Amenities	Pedestrian Access	Frequency of Service
●	High level	Sidewalks and marked crosswalks serving stops	All day service. Peak service 15 minutes or less, midday 30 minutes or less
●	Some amenities	Sidewalks and marked crosswalks serving some stops	All day service. Peak services 30 minutes or less, midday service 60 minutes or less
●	Little or no amenities	General lack of sidewalks and marked crosswalks	Low level of service

While all of the bike and pedestrian projects in the plan relate to achieving the above standards, the priority networks for walking, biking, and transit were created to serve and connect with anticipated growth in Kenmore. Moreover, the majority of users of these facilities are also anticipated to be Kenmore residents, thus these projects are identified as growth and vision-accommodating, rather than deficiency-driven.

FEHR PEERS

MEMORANDUM

Date: November 10, 2014

To: Kris Overleese, Debbie Bent, and Lauri Anderson, City of Kenmore

From: Kendra Breiland, Fehr & Peers

Subject: FHWA Street Classification and Layered Network Cross Referencing in the Transportation Element

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The Layered Network for Kenmore's Transportation Element was developed based on current and envisioned future street user priorities, adjacent land uses, and current demands for walking, biking, transit, and auto/freight travel. The street typologies in the Layered Network include:

- State Highway/Boulevard – Most conducive for crosstown trips and focus on transit, freight, and auto mobility.
- Urban Avenue – Signals the entry into a higher-density commercial or residential zone. Emphasizes multimodal interactions and travel experience.
- Neighborhood Connection – Provides a safe and enjoyable travel experience for bicycles and pedestrians.
- Local Street – Prioritizes local access (driveways, on-street parking) and pedestrian travel. Bicycles share the roadway.

Below, we provide a cross-reference between these street typologies and federal aid classifications. Exceptions are highlighted in the right-most column, and potentially indicate areas where the City may want to consider future reclassifications within the federal aid system.

Cross-Reference Table

Federal Classification	Transportation Element Classification	Exceptions
Principal Arterial	State Highway, Boulevard	• Juanita Drive s/o 170th is a Minor Arterial; • 68th Ave (SR 522 to Tolt Pipeline Trail) is a Major Collector; • 80th Avenue is a Minor Arterial; • 61st Ave NE is a Minor Arterial
Minor Arterial	Urban Avenue	
Major Collectors	Neighborhood Connection	• 181st Street west of 65th is not classified
Below Major Collector	Local Streets	

APPENDIX D - 5: DETAILED COST ESTIMATES

Kenmore Transportation Element Projects

Below is a summary of cost estimates that do not include detailed estimation sheets later in this appendix:

- ☐ Sidewalk Program (**$150,000 per year**)
- ☐ Neighborhood Transportation Plans (**$250,000 per year**)
- ☐ 192nd/73rd Signalization (**$220,000 installed**)
- ☐ 192nd/80th Signalization (**$240,000 installed**)
- ☐ Lakepointe Dr/68th Signalization (**$260,000 installed**)
- ☐ Remove Signal at 175th/68th (**$20,000**)
- ☐ 181st/67th Roundabout (**$3 million in 2024**)
- ☐ 175th/67th Roundabout **($3 million in 2024--this would presumably connect Lakepointe SR522 Underpass**)
- ☐ Installation of Improved Crossings – RRFB's **($50,000 per location, 13 locations)**
- ☐ 68th Ave/SR 522 Northbound Right Turn Lane Extension **($2,640,530 as estimated in 2013 TIB application)**

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	CITY OF KENMORE, 20 Yr Bicycle Network - ROADWAY SCHEDULE	Client:	Kenmore, City of
Corridor Section:	Network throughout Kenmore	Date:	Jul-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

Network throughout Kenmore

This projects involves a bicycle network throughout Kenmore. This would consist of either bike lanes or shared roadways through restriping and/or roadway buildout.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT	SY	$10	5,700	$57,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$0	1	$0
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	153,000	$3,825,000
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	17,900	$1,163,500
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	5,400	$594,000
		CRUSHED SURFACING	TON	$25	14,100	$352,500

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 20 Yr Bicycle Network - ROADWAY SCHEDULE
Corridor Section: Network throughout Kenmore
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

Network throughout Kenmore

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$378,500	1	$378,500
		LANDSCAPING	LS	$0	1	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	1	$0
		SIGNING	LS	$50,000	1	$50,000
		CURBS	LF	$20	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		PAINT LINE	LF	$1	250,000	$250,000
		SIDEWALKS	SY	$30	-	$0
		PAINTED BICYCLE LANE SYMBOL	EA	$60	170	$10,200
		PAINTED TRAFFIC ARROW	EA	$35	170	$5,950
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$668,700	1	$668,700
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$147,200	1	$147,200
		SPECIAL ITEMS	EST	$150,000	1	$150,000
		UTILITY RELOCATIONS	EST	$150,000	1	$150,000
6		MISCELLANEOUS (10%)	LS	$780,300	1	$780,300
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$8,582,850
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$858,300	1	$858,300
9		SUBTOTAL (ITEMS 7 & 8)				$9,441,150
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$9,441,150
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$1,133,000	1	$1,133,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$189,000	1	$189,000
14		CONSTRUCTION TOTAL (ITEMS 12 & 13)				$10,763,150
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$1,614,500	1	$1,614,500
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$538,200	1	$538,200
		CITY STAFF (5.0% OF ITEM 14)	EST	$538,200	1	$538,200
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				$13,460,000
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2024	2014	$16,840,000

The above opinion of cost is a planning level estimate only. It is based on best available information and scope at the time, not on the results of a detailed engineering study, and is supplied as a budgeting guide only. Perteet, Inc. does not guarantee or warrant the accuracy of this planning level estimate.

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	CITY OF KENMORE, 73rd Ave NE NORTH Buildout/Restriping - ROADWAY SCHE	Client:	Kenmore, City of
Corridor Section:	NE 192nd St to NE 205th St	Date:	Jul-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

NE 192nd St to NE 205th St

This project would provide a multiuse 8-foot wide trail on one side of 73rd Ave NE from NE 192nd St to NE 205th St. The trail lane would be separated from vehicle traffic by a two-foot wide painted buffer with crosshatching.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	0.6	$3,000
		REMOVING EXISTING PAVEMENT	SY	$10	900	$9,000
		SAWCUTTING	LF	$3	3,800	$11,400
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	2,200	$44,000
		EMBANKMENT COMPACTION	CY	$2	1,100	$2,200
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	18,600	$465,000
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (MSE)	SF	$35	5,400	$189,000
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	400	$44,000
		CRUSHED SURFACING	TON	$25	1,100	$27,500

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 73rd Ave NE NORTH Buildout/Restriping - ROADWAY SCHE
Corridor Section: NE 192nd St to NE 205th St
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

NE 192nd St to NE 205th St

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	1,800	$36,000
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$50,700	1	$50,700
		LANDSCAPING	LS	$0	-	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	-	$0
		SIGNING	LS	$5,000	1	$5,000
		CURBS	LF	$20	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		PAINT LINE	LF	$1	8,250	$8,250
		SIDEWALKS	SY	$30	-	$0
		PAINTED BICYCLE LANE SYMBOL	EA	$60	-	$0
		PAINTED TRAFFIC ARROW	EA	$35	-	$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$89,600	1	$89,600
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$19,700	1	$19,700
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$48,000	1	$48,000
6		MISCELLANEOUS (10%)	LS	$105,300	1	$105,300
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$1,157,650
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$115,800	1	$115,800
9		SUBTOTAL (ITEMS 7 & 8)				$1,273,450
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$1,273,450
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$153,000	1	$153,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$26,000	-	$0
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$1,426,450**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$214,000	1	$214,000
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$71,400	1	$71,400
		CITY STAFF (5.0% OF ITEM 14)	EST	$71,400	1	$71,400
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$1,790,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$2,050,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	CITY OF KENMORE, 73rd Ave NE SOUTH Restriping - ROADWAY SCHEDULE	Client:	Kenmore, City of
Corridor Section:	NE 181st St to NE 192nd St	Date:	Jul-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

NE 181st St to NE 192nd St

This project would provide dedicated bike lanes on both sides of 73rd Ave NE from NE 181st St to NE 192nd St. The bike lanes would be separated from vehicle traffic by two-foot wide painted buffers with crosshatching.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT	SY	$10	-	$0
		REMOVE EXISTING PAINT LINES	LF	$1	-	$0
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	-	$0
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	-	$0
		CRUSHED SURFACING	TON	$25	-	$0

Perteet Inc.

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 73rd Ave NE SOUTH Restriping - ROADWAY SCHEDULE
Corridor Section: NE 181st St to NE 192nd St
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

NE 181st St to NE 192nd St

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$1,300	-	$0
		LANDSCAPING	LS	$0	-	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	-	$0
		SIGNING	LS	$3,000	1	$3,000
		CURBS	LF	$20	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		PAINT LINE	LF	$1	15,400	$15,400
		SIDEWALKS	SY	$30	-	$0
		PAINTED BICYCLE LANE SYMBOL	EA	$60	24	$1,440
		PAINTED TRAFFIC ARROW	EA	$35	24	$840
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$2,100	1	$2,100
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$500	1	$500
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0	1	$0
6		MISCELLANEOUS (10%)	LS	$2,400	1	$2,400
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$25,680
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$2,600	1	$2,600
9		SUBTOTAL (ITEMS 7 & 8)				$28,280
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$28,280
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$4,000	1	$4,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$1,000	-	$0
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$32,280**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$4,900	1	$4,900
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$1,700	1	$1,700
		CITY STAFF (5.0% OF ITEM 14)	EST	$1,700	1	$1,700
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$50,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$60,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 80th Ave NE Restriping - ROADWAY SCHEDULE
Corridor Section: SR 522 to NE 205th St
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

SR 522 to NE 205th St

Bike Lane | Painted Buffer | Travel Lane | Travel Lane | Painted Buffer | Bike Lane

This project would provide dedicated bike lanes on both sides of 80th Ave NE from SR 522 to NE 205th St. The bike lanes would be separated from vehicle traffic by two-foot wide painted buffers with crosshatching.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				$0
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT	SY	$10	-	$0
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$0	1	$0
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	-	$0
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	-	$0
		CRUSHED SURFACING	TON	$25	-	$0

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 80th Ave NE Restriping - ROADWAY SCHEDULE
Corridor Section: SR 522 to NE 205th St
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

SR 522 to NE 205th St

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$2,700	-	$0
		LANDSCAPING	LS	$0	1	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	1	$0
		SIGNING	LS	$5,000	1	$5,000
		CURBS	LF	$20	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		PAINT LINE	LF	$1	35,000	$35,000
		SIDEWALKS	SY	$30	-	$0
		PAINTED BICYCLE LANE SYMBOL	EA	$60	51	$3,060
		PAINTED TRAFFIC ARROW	EA	$35	51	$1,785
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$4,500	1	$4,500
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$1,000	1	$1,000
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0	1	$0
6		MISCELLANEOUS (10%)	LS	$5,100	1	$5,100
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$55,445
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$5,600	1	$5,600
9		SUBTOTAL (ITEMS 7 & 8)				$61,045
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$61,045
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$8,000	1	$8,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$2,000	-	$0
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$69,045**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$10,400	1	$10,400
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$3,500	1	$3,500
		CITY STAFF (5.0% OF ITEM 14)	EST	$3,500	1	$3,500
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$90,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$110,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, 61st Ave NE Sidewalk - ROADWAY SCHEDULE**
Corridor Section: East Side of 61st Ave NE Corridor
Location: Kenmore, City of

Client: Kenmore, City of
Date: Oct-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

This project involves replacing the existing sidewalk on the east side of 61st Ave NE from SR 522 at the south end of the project to the intersection with 62nd Ave NE at the north end of the project, which is at the border with Snohomish County. The typical roadway section will remain the same as the existing roadway section. The major improvements involve bringing the sidewalk and curb ramps up to ADA standards. The new planter strips will match the existing planter strips. There will be no replacement of existing retaining walls and no construction of new retaining walls. Project length is ~7200 LF.

East Side of 61st Ave NE Corridor

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		**RIGHT OF WAY**				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		**CONSTRUCTION**				
1		**PREPARATION/GRADING/DRAINAGE**				
	1.1	**PREPARATION**				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$10	6,900	$69,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$50,000	1	$50,000
		SAWCUTTING	LF	$3	7,300	$21,900
	1.2	**EARTHWORK**				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	700	$14,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	**STORMWATER MITIGATION**				
		DETENTION AND TREATMENT	SF	$6	-	$0
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	**STORM SEWER**				
		CATCH BASIN TYPE 1	EA	$1,200	2	$2,400
		CATCH BASIN TYPE 2	EA	$2,200	2	$4,400
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	200	$7,000
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	100	$1,500
2		**STRUCTURE**				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		**SURFACING**				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$135	600	$81,000
		CRUSHED SURFACING	TON	$25	2,600	$65,000
4		**ROADSIDE DEVELOPMENT**				
		FENCING	LF	$20	2,000	$40,000
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	0.2	$240
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$55,000	1	$55,000
		LANDSCAPING	LS	$35,000	1	$35,000
5		**TRAFFIC**				
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$25,000	1	$25,000
		CURB RAMP	EA	$6,000	17	$102,000
		DRIVEWAY ENTRANCE	EA	$1,000	23	$23,000
		CURB & GUTTER	LF	$30	8,000	$240,000

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, 61st Ave NE Sidewalk - ROADWAY SCHEDULE**
Corridor Section: East Side of 61st Ave NE Corridor
Location: Kenmore, City of

Client: Kenmore, City of
Date: Oct-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

This project involves replacing the existing sidewalk on the east side of 61st Ave NE from SR 522 at the south end of the project to the intersection with 62nd Ave NE at the north end of the project, which is at the border with Snohomish County. The typical roadway section will remain the same as the existing roadway section. The major improvements involve bringing the sidewalk and curb ramps up to ADA standards. The new planter strips will match the existing planter strips. There will be no replacement of existing retaining walls and no construction of new retaining walls. Project length is ~7200 LF.

East Side of 61st Ave NE Corridor

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	4,500	$135,000
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$97,200	1	$97,200
5.1		**OTHER ITEMS**				
		SURVEYING (2%)	LS	$21,400	1	$21,400
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$10,000	1	$10,000
6		**MISCELLANEOUS (10%)**	LS	$110,100	1	$110,100
7		**CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)**				**$1,210,140**
8		**MOBILIZATION (10%)**				
		10% OF ITEM 7	EST	$121,100	1	$121,100
9		**SUBTOTAL (ITEMS 7 & 8)**				**$1,331,240**
10		**SALES TAX**				
		0.0% OF ITEM 9	EST	$0		$0
11		**AGREEMENTS (Utilities, WSP, etc.)**				
			EST	$0	1	$0
12		**SUBTOTAL (ITEMS 9 THRU 11)**				**$1,331,240**
13		**CONSTRUCTION**				
		ENGINEERING (12% OF ITEM 12)	EST	$160,000	1	$160,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$27,000	1	$27,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$1,518,240**
III.		**PRELIMINARY WORK**				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$227,800	1	$227,800
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$76,000	1	$76,000
		CITY STAFF (5.0% OF ITEM 14)	EST	$76,000	1	$76,000
IV.		**TOTAL ESTIMATED COST**				
		(ITEMS I, 14 & III)				**$1,830,000**
V.		**FUTURE ESTIMATED COST**				
			Inflation	**Const. Year**	**Cost Index**	**Future Cost**
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$2,100,000**

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Everett, Washington 98201

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	CITY OF KENMORE, 84th & Simonds Signalization and Realignment	Client:	Kenmore, City of
Corridor Section:	Intersection of 84th Ave NE & Simonds Rd NE	Date:	Sep-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

Intersection of 84th Ave NE & Simonds Rd NE

Realign north and south approaches of 84th Ave at the intersection with Simonds Rd NE. Construct new sidewalks and ADA-compliant curb ramps.

Signalize the intersection of 84th Ave NE & Simonds Rd NE.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	2,000	$120,000
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	2	$30,000
		RIGHT OF WAY TOTAL				$150,000
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	0.3	$1,500
		REMOVING EXISTING PAVEMENT	SY	$10	4,900	$49,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$5,000	1	$5,000
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	1,800	$36,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	3,600	$72,000
		EMBANKMENT COMPACTION	CY	$2	1,800	$3,600
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	7,500	$187,500
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	8	$9,600
		CATCH BASIN TYPE 2	EA	$2,200	2	$4,400
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	2,200	$77,000
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	1,700	$25,500
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	1,600	$176,000
		CRUSHED SURFACING	TON	$25	4,200	$105,000

Perteet Inc.

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, 84th & Simonds Signalization and Realignment
Corridor Section: Intersection of 84th Ave NE & Simonds Rd NE
Location: Kenmore, City of

Client: Kenmore, City of
Date: Sep-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

Intersection of 84th Ave NE & Simonds Rd NE

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$70,900	1	$70,900
		LANDSCAPING	LS	$0	-	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	200	$20,000
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$300,000	1	$300,000
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$25,000	1	$25,000
		CURBS	LF	$20	1,600	$32,000
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	1,100	$33,000
		CONC. TRUCK APRON	SY	$30	630	$18,900
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$125,200	1	$125,200
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$27,600	1	$27,600
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0		$0
6		MISCELLANEOUS (10%)	LS	$140,500	1	$140,500
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$1,545,200
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$154,600	1	$154,600
9		SUBTOTAL (ITEMS 7 & 8)				$1,699,800
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	-	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$1,699,800
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$204,000	1	$204,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$34,000	1	$34,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$1,937,800**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$290,700	1	$290,700
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$96,900	1	$96,900
		CITY STAFF (5.0% OF ITEM 14)	EST	$96,900	1	$96,900
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$2,580,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2024	2014	**$3,230,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	**CITY OF KENMORE, NE 175th St Swamp Creek Bridge**	Client:	Kenmore, City of
Corridor Section:	NE 175th St Swamp Creek Bridge	Date:	Sep-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

NE 175th St Swamp Creek Bridge

This project would replace the old and deficient Swamp Creek bridge located on NE 175th St just south of the intersection of 80th Ave NE and SR 522. This bridge would be 52' long, consist of two 13 foot travel lanes with no pedestrian access as the Burke-Gilman Trail bridge is immediately adjacent and easily accessible. The nearest pedestrian access on NE 175th St is approximately 800 feet to the west of the bridge.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		**RIGHT OF WAY**				
		RIGHT OF WAY (urban developed)	SF	$100	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		ALTERNATIVE ACCESS	LS	$75,000	1	$75,000
		RIGHT OF WAY TOTAL				**$75,000**
II.		**CONSTRUCTION**				
1		**PREPARATION/GRADING/DRAINAGE**				
	1.1	**PREPARATION**				
		CLEAR & GRUB,DEMO	ACRE	$5,000	0.1	$500
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$20	27	$540
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$0	-	$0
		SAWCUTTING	LF	$3	100	$300
		PLANING BITUMINOUS PAVEMENT	SY	$4	600	$2,400
	1.2	**EARTHWORK**				
		ROADWAY EXCAVATION INCL. HAUL	CY	$30	11	$330
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	100	$2,500
		BORROW INCL. HAUL	TON	$20	30	$600
		EMBANKMENT COMPACTION	CY	$15	10	$150
	1.3	**STORMWATER MITIGATION**				
		DETENTION AND TREATMENT	SF	$25	-	$0
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	**STORM SEWER**				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		**STRUCTURE**				
		CONCRETE BRIDGES	SF	$150	1,500	$225,000
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (MSE)	SF	$35	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	1,300	$26,000
		NOISE WALLS	SF	$25	-	$0
3		**SURFACING**				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$270	90	$24,300
		CRUSHED SURFACING	TON	$50	16	$800

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, NE 175th St Swamp Creek Bridge**
Corridor Section: NE 175th St Swamp Creek Bridge
Location: Kenmore, City of

Client: Kenmore, City of
Date: Sep-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

NE 175th St Swamp Creek Bridge

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		**ROADSIDE DEVELOPMENT**				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$17,100	1	$17,100
		LANDSCAPING	LS	$0	-	$0
5		**TRAFFIC**				
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$1,000	1	$1,000
		CURB RAMP	EA	$6,000	-	$0
		DRIVEWAY ENTRANCE	EA	$1,000	-	$0
		CURB & GUTTER	LF	$30	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	-	$0
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$30,200	1	$30,200
5.1		**OTHER ITEMS**				
		SURVEYING (6%)	LS	$20,000	1	$20,000
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0		$0
6		**MISCELLANEOUS (10%)**	LS	$35,200	1	$35,200
7		**CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)**				**$386,920**
8		**MOBILIZATION (10%)**				
		10% OF ITEM 7	EST	$38,700	1	$38,700
9		**SUBTOTAL (ITEMS 7 & 8)**				**$425,620**
10		**SALES TAX**				
		0.0% OF ITEM 9	EST	$0		$0
11		**AGREEMENTS (Utilities, WSP, etc.)**				
			EST	$0	-	$0
12		**SUBTOTAL (ITEMS 9 THRU 11)**				**$425,620**
13		**CONSTRUCTION**				
		ENGINEERING & MATERIAL TESTING (20% OF ITEM 12)	EST	$86,000	1	$86,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$9,000	1	$9,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$520,620**
III.		**PRELIMINARY WORK**				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$78,100	1	$78,100
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$26,100	1	$26,100
		CITY STAFF (5.0% OF ITEM 14)	EST	$26,100	1	$26,100
IV.		**TOTAL ESTIMATED COST**				
		(ITEMS I, 14 & III)				**$700,000**
V.		**FUTURE ESTIMATED COST**				
			Inflation	**Const. Year**	**Cost Index**	**Future Cost**
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$810,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	**CITY OF KENMORE, Juanita Dr Phase II - ROADWAY SCHEDULE**	Client:	Kenmore, City of
Corridor Section:	NE 143rd St to NE 153rd Pl/NE Arrrowhead Dr	Date:	Sep-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

NE 143rd St to NE 153rd Pl/NE Arrrowhead Dr

This Juanita Drive improvement project extends from NE 143rd St north to NE 153rd St/NE Arrowhead Drive. New sidewalk, curb, gutter, and drainage would be installed on the east side of Juanita Drive. Much of the existing channelization would be maintained at intersections, but left turn lanes would be lengthened and there would be added bike lanes on both sides. In areas without need of a left turn lane, the roadway/sidewalk cross section would look as below with the exception that it would 12 feet narrower with an overall width of 39 feet due to no turn lane.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		**RIGHT OF WAY**				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		**CONSTRUCTION**				
1		**PREPARATION/GRADING/DRAINAGE**				
	1.1	**PREPARATION**				
		CLEAR & GRUB,DEMO	ACRE	$5,000	0.6	$3,000
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$10	1,800	$18,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$50,000	1	$50,000
		SAWCUTTING	LF	$3	5,200	$15,600
		PLANING BITUMINOUS PAVEMENT	SY	$3	10,400	$31,200
	1.2	**EARTHWORK**				
		ROADWAY EXCAVATION INCL. HAUL	CY	$20	500	$10,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	900	$18,000
		EMBANKMENT COMPACTION	CY	$2	500	$1,000
	1.3	**STORMWATER MITIGATION**				
		DETENTION AND TREATMENT	SF	$25	15,400	$385,000
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	**STORM SEWER**				
		CATCH BASIN TYPE 1	EA	$1,200	15	$18,000
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	2,830	$99,050
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	2,100	$31,500
2		**STRUCTURE**				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALL (MSE)	SF	$35	7,700	$269,500
		RETAINING WALLS (Cast in Place)	SF	$65	2,570	$167,050
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		**SURFACING**				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	1,700	$187,000
		CRUSHED SURFACING	TON	$25	1,500	$37,500

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, Juanita Dr Phase II - ROADWAY SCHEDULE**
Corridor Section: NE 143rd St to NE 153rd Pl/NE Arrrowhead Dr
Location: Kenmore, City of

Client: Kenmore, City of
Date: Sep-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

NE 143rd St to NE 153rd Pl/NE Arrrowhead Dr

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		**ROADSIDE DEVELOPMENT**				
		FENCING	LF	$20	1,300	$26,000
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$97,100	1	$97,100
		LANDSCAPING	LS	$0	1	$0
5		**TRAFFIC**				
		GUARD RAIL	LF	$18	1,300	$23,400
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$25,000	1	$25,000
		CURB RAMP	EA	$6,000	6	$36,000
		DRIVEWAY ENTRANCE	EA	$1,000	15	$15,000
		CURB & GUTTER	LF	$30	2,900	$87,000
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	2,100	$63,000
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$171,400	1	$171,400
5.1		**OTHER ITEMS**				
		SURVEYING (2%)	LS	$37,800	1	$37,800
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0		$0
6		**MISCELLANEOUS (10%)**	LS	$192,400	1	$192,400
7		**CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)**				**$2,115,500**
8		**MOBILIZATION (10%)**				
		10% OF ITEM 7	EST	$211,600	1	$211,600
9		**SUBTOTAL (ITEMS 7 & 8)**				**$2,327,100**
10		**SALES TAX**				
		0.0% OF ITEM 9	EST	$0		$0
11		**AGREEMENTS (Utilities, WSP, etc.)**				
			EST	$0	1	$0
12		**SUBTOTAL (ITEMS 9 THRU 11)**				**$2,327,100**
13		**CONSTRUCTION**				
		ENGINEERING & MATERIALS TESTING (20% OF ITEM 12)	EST	$466,000	1	$466,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$47,000	1	$47,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$2,840,100**
III.		**PRELIMINARY WORK**				
		CONCEPTUAL STUDY & PRELIM ENGINEERING (15.0% OF ITEM 14)	EST	$426,100	1	$426,100
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$142,100	1	$142,100
		CITY STAFF (5.0% OF ITEM 14)	EST	$142,100	1	$142,100
IV.		**TOTAL ESTIMATED COST**				
		(ITEMS I, 14 & III)				**$3,410,000**
V.		**FUTURE ESTIMATED COST**				
			Inflation	**Const. Year**	**Cost Index**	**Future Cost**
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$3,900,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	**CITY OF KENMORE, Juanita Dr Phase III - ROADWAY SCHEDULE**		Client: Kenmore, City of
Corridor Section:	NE 153rd St/NE Arrowhead Drive to NE 155th Place		Date: Oct-14
Location:	Kenmore, City of		Date of Cost Index: 2014
			Calculated By/Entered By: RGP
			Checked By: DCS

NE 153rd St/NE Arrowhead Drive to NE 155th Place

This Juanita Drive improvement project extends from NE 153rd St/NE Arrowhead Drive north to NE 155th Place. New sidewalk, curb, gutter, and drainage would be installed on the east side of Juanita Drive. Much of the existing channelization would be maintained at intersections, but left turn lanes would be lengthened and there would be added bike lanes on both sides. In areas without need of a left turn lane, the roadway/sidewalk cross section would look as below with the exception that it would 12 feet narrower with an overall width of 39 feet due to no turn lane.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		**RIGHT OF WAY**				
		RIGHT OF WAY (urban developed)	SF	$60	3,900	$234,000
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	2	$30,000
		RIGHT OF WAY TOTAL				**$264,000**
II.		**CONSTRUCTION**				
1		**PREPARATION/GRADING/DRAINAGE**				
	1.1	**PREPARATION**				
		CLEAR & GRUB,DEMO	ACRE	$5,000	0.5	$2,500
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$10	1,000	$10,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$25,000	1	$25,000
		SAWCUTTING	LF	$3	1,500	$4,500
		PLANING BITUMINOUS PAVEMENT	SY	$3	5,400	$16,200
	1.2	**EARTHWORK**				
		ROADWAY EXCAVATION INCL. HAUL	CY	$20	300	$6,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	500	$10,000
		EMBANKMENT COMPACTION	CY	$2	300	$600
	1.3	**STORMWATER MITIGATION**				
		DETENTION AND TREATMENT	SF	$25	6,100	$152,500
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	**STORM SEWER**				
		CATCH BASIN TYPE 1	EA	$1,200	9	$10,800
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	1,570	$54,950
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	1,200	$18,000
2		**STRUCTURE**				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (MSE)	SF	$35	6,150	$215,250
		RETAINING WALLS (Cast in Place)	SF	$65	2,110	$137,150
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		**SURFACING**				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$135	800	$108,000
		CRUSHED SURFACING	TON	$30	600	$18,000

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, Juanita Dr Phase III - ROADWAY SCHEDULE**
Corridor Section: NE 153rd St/NE Arrowhead Drive to NE 155th Place
Location: Kenmore, City of

Client: Kenmore, City of
Date: Oct-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

NE 153rd St/NE Arrowhead Drive to NE 155th Place

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		**ROADSIDE DEVELOPMENT**				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$56,200	1	$56,200
		LANDSCAPING	LS	$0	1	$0
5		**TRAFFIC**				
		GUARD RAIL	LF	$18	1,500	$27,000
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$15,000	1	$15,000
		CURB RAMP	EA	$6,000	3	$18,000
		DRIVEWAY ENTRANCE	EA	$1,000	2	$2,000
		CURB & GUTTER	LF	$30	1,600	$48,000
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	1,200	$36,000
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$99,200	1	$99,200
5.1		**OTHER ITEMS**				
		SURVEYING (2%)	LS	$21,900	1	$21,900
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0		$0
6		**MISCELLANEOUS (10%)**	LS	$111,300	1	$111,300
7		**CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)**				**$1,224,050**
8		**MOBILIZATION (10%)**				
		10% OF ITEM 7	EST	$122,500	1	$122,500
9		**SUBTOTAL (ITEMS 7 & 8)**				**$1,346,550**
10		**SALES TAX**				
		0.0% OF ITEM 9	EST	$0		$0
11		**AGREEMENTS (Utilities, WSP, etc.)**				
			EST	$0	1	$0
12		**SUBTOTAL (ITEMS 9 THRU 11)**				**$1,346,550**
13		**CONSTRUCTION**				
		ENGINEERING & MATERIALS TESTING (20% OF ITEM 12)	EST	$270,000	1	$270,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$27,000	1	$27,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$1,643,550**
III.		**PRELIMINARY WORK**				
		CONCEPTUAL STUDY & PRELIM ENGINEERING (15.0% OF ITEM 14)	EST	$246,600	1	$246,600
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$82,200	1	$82,200
		CITY STAFF (5.0% OF ITEM 14)	EST	$82,200	1	$82,200
IV.		**TOTAL ESTIMATED COST**				
		(ITEMS I, 14 & III)				**$2,240,000**
V.		**FUTURE ESTIMATED COST**				
			Inflation	**Const. Year**	**Cost Index**	**Future Cost**
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$2,570,000**

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Perteet

City of Kenmore Capital Improvement Program

Project Name: SR 522 – West A (61st to 65th Avenues NE Including 61st Avenue NE approaches)

CURRENT DOLLARS

Year	Prior Years	2013	2014	2015	2016	2017	2018	Total
Expenses								
Project Administration	$ 10,000	$ 85,000	$ 65,000					$ 160,000
Design	$ 50,000	$ 363,500						$ 413,500
ROW/ Acquisition	$ 40,000	$2,850,000						$ 2,890,000
Construction		$1,100,000	$4,800,000	$2,000,000				$ 7,900,000
Art								
Total	**$ 100,000**	**$4,398,500**	**$4,865,000**	**$2,000,000**				**$11,363,500**
Revenue								
REET	$ 100,000	$ 335,000	$ 65,000	$ 250,000				$ 750,000
General								$ -
Impact		$ 400,000	$ 380,000	$ 400,000				$ 1,180,000
State		$1,100,000						$ 1,100,000
TIB			$4,100,000	$1,100,000				$ 5,200,000
SWM		$ 63,500	$ 320,000	$ 250,000				$ 633,500
Federal		$2,500,000						$ 2,500,000
Total	**$ 100,000**	**$4,398,500**	**$4,865,000**	**$2,000,000**	**$ -**	**$ -**	**$ -**	**$11,363,500**

SCHEDULE

	2013				2014				2015				2016				2017				2018		
Project Timeline	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Right of Way																							
Final Design																							
Construction																							
Closeout																							

Monday, September 10, 2012

City of Kenmore Capital Improvement Program

Project Name: SR 522 West B (57th to 61st including Burke Gilman Trail Wall)

Project No. T-8

CURRENT DOLLARS

Year	Prior Years	2013	2014	2015	2016	2017	2018	Total
Expenses								
Project Administration				$ 15,000	$ 75,000	$ 15,000		**$ 105,000**
Design				$ 395,000				**$ 395,000**
ROW/ Acquisition								
Construction					$ 8,510,000			**$ 8,510,000**
Total				**$ 410,000**	**$ 8,585,000**	**$ 15,000**		**$ 9,010,000**
Revenue								
REET					$ 300,000			**$ 300,000**
SWM					$ -			**$ -**
Impact Fees					$ 250,000			**$ 250,000**
TIB					$ 2,000,000			**$ 2,000,000**
Tolling								
Federal				$ 354,650				**$ 354,650**
PWTF Loan				$ 55,350	$ 6,035,000	$ 15,000		**$ 6,105,350**
Total				**$ 410,000**	**$ 8,585,000**	**$ 15,000**		**$ 9,010,000**

SCHEDULE

	2013				2014				2015				2016				2017				2018		
Project Timeline	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Right of Way																							
Final Design																							
Construction																							
Closeout																							

Monday, September 10, 2012

City Council Business Agenda Item
City of Kenmore, WA

Subject/Topic: West Sammamish River Bridge Capital Improvement Program Update	**For Council Meeting Agenda of:** February 24, 2014 **Department:** Engineering and Environmental Services **Prepared by:** Kris Overleese, PE **To Be Presented By:** Kris Overleese, PE **Initial & Date** **Approved by Department Head:** KMO 2/20/14 **Approved by City Attorney:** DR-ad 2/21/14 **Approved by Finance Director:** **Approved by City Manager:**
Proposed Council Action/Motion: Adopt Ordinance No. 14-0376 amending the 2013-2018 Capital Improvement Program to modify the West Sammamish River Bridge Project T37	**Exhibits/Attachments:** Exhibit A: West Samm Bridge Fact Sheet Exhibit B: Alternatives Cost Matrix Exhibit C: Alternative Cross Sections Exhibit D: Ordinance No. 14-0376 Exhibit E: Alternative Expenditure Detail Exhibit F: Transportation Impact Fee Fund Projection Exhibit G: REET Fund Projection

Expenditure Required $20,000,000 Amount Budgeted $461,000 Appropriation Required $19,539,000

INFORMATION/BACKGROUND:

On January 27, 2014 City Council approved a weight restriction for the West Sammamish River Bridge (Bridge). This restriction will go into effect when the street signs are fabricated and installed which is anticipated for early March 2014. Please see the current Bridge Fact Sheet in Exhibit A.

Our bridge consultant, Jacobs, continues to evaluate the Bridge and has determined that the Bridge cannot be rehabilitated and must be replaced. The existing bridge is founded on timber piles that appear to have been driven very shallow (1 to 3 feet) into the very dense layer, which leaves the majority of the piles embedded in very soft deposits (peat and alluvial) that provide limited lateral (side to side) resistance during an earthquake. Although possible, we do not believe that retrofitting the existing bridge foundations is cost-effective and practical due to geometric constraints associated with the existing bridge conditions and surrounding environment.

The attached Exhibit B outlines four developed replacement alternatives and the alternative "cross sections" are shown in Exhibit C.

Common Attributes: all four alternatives

All alternatives would provide two lanes southbound and improved pedestrian and bicycle facilities. Jacobs maintains that all four alternatives would allow two lanes of travel southbound during the bulk of construction.

Pedestrian facilities on the current Bridge would be closed during construction and bicycles would have to use the car lanes. For all alternatives, a new structure would be built on the "outside" of the existing Bridge. The traffic would then be placed on the new structure and then the old bridge demolished with new structure constructed in the "middle". Also, all alternatives would require fewer piers/pilings in the river which is a good thing environmentally. The actual structure type will be determined once design begins.

All alternative would take approximately two years to construct as two "fish windows" in the water would be needed. The City will have to rent staging area for all alternatives and acquire right of way for all alternatives. None of the alternatives are funded at this time and significant grant assistance will be required.

Differentiating Attributes: how the alternatives are different
The Alternative 1 Bridge deck is the widest at 55 feet and the alternatives narrow to Alternative 4 which is 45 feet. Both the vehicle and pedestrian/bicycle facilities would fit on all bridge decks.

Alternative 1: At 55 feet wide, this bridge deck is the widest and provides for two lanes of traffic, dual bicycle tracks, a three foot buffer between vehicles and bicycles, and 12 foot wide pedestrian walkway. This option would allow for a future lane of traffic if needed by taking away the buffer and bicycle tracks and slightly widening the sidewalk for pedestrians and bicycles. The cost of this alternative is estimated to be $21.8 Million for design, environmental, right of way and construction.

Alternative 2: At 52 feet wide, this option provides a "trail like" pedestrian and bicycle facility and wider buffers on the inside and outside of the vehicles lanes for traffic. This option would allow for a future lane of traffic if needed by removing buffer from the traffic lanes and reducing pedestrian and bike facilities. The cost of this alternative is estimated at $20.0 Million.

Alternative 3: This alternative is 48 feet wide and provides two lanes of southbound vehicle traffic and a "trail like" pedestrian and bike facility. There is no future flexibility to add another lane of traffic. The cost of this alternative is estimated to be $19.0 Million.

Alternative 4: Alternative 4 is 45 feet wide and provides for improved facilities for bicycles and pedestrians from what exists today. There is no future flexibility to add another lane for vehicles. The cost for this alternative is estimated at $17.8 Million.

Staff Recommendation:
Staff recommends the pursuit of funding for Alternative 2: 52 feet wide, trail like bicycle and pedestrian facility and flexibility in the future for an additional lane of traffic. This recommendation is based on likelihood of grant approval, value for the cost, and ability to accommodate future growth while maintaining adequate bicycle, pedestrian and vehicle facilities. The type of bridge will be determined at a later date once design begins. Staff recommends that an artist and architect be utilized during the design process to add interest to the Bridge for vehicles, pedestrians, bicyclists and boaters. Updated lighting will also be investigated.

The decision to move forward with construction of a new bridge is moving swiftly as it has been recently determined by our structural engineers that a replacement is needed. There are several grant programs in the very near future and we don't want to miss the opportunity to request funding, especially the Puget Sound Regional Council funding.

Staff recommends that Council approve Ordinance 14-0376 to amend the City's Capital Improvement Program and Project T37 West Samm Bridge with a budget based on Alternative 2.

The City will continue to monitor the Bridge and perform needed maintenance until a new structure can be built.

FISCAL CONSIDERATION:

The estimated planning level cost for Alternative 2 is $20 Million and this includes: design, State Environmental Policy Act (SEPA), National Environmental Policy Act (NEPA), permitting, right of way acquisition, construction, construction management/inspection, Washington State Department of Transportation (WSDOT) support, and City staff. The City will need to hire a temporary engineer to manage this project when design funds are secured.

The West Samm Bridge Project currently has a budget of $461,000 which was identified in 2013 for evaluation and monitoring. No emergency scour repair work is necessary at this time. Modifying and increasing the project and budget to $20M will include assumptions for significant funding by grants which staff will begin pursuing now. It is assumed that federal funds will be utilized on the project which requires a significant amount of resources for paperwork and documentation and the need for NEPA completion and right of way acquisition per Federal guidelines.

The grants that staff recommend pursuing include: Federal bridge funds administered through the state Bridge Rehabilitation Advisory Committee (BRAC), Transportation Improvement Board (TIB), federal funds through the Puget Sound Regional Council, the State of Washington legislature, and potentially the Freight Mobility Strategic Investment Board. All of these funding cycles exist in 2014. Staff believes that an appropriate City contribution at the planning level to begin applying for grants is 10%. The typical federal matching funds required is 13.5% and BRAC match is typically 20% unless we can demonstrate project completion by 2018 which will be challenging.

State funds and Federal funds can match each other. See the attached budget spreadsheet in Exhibit E that demonstrates a City match under $2.0 Million, which may not be adequate, but is a reasonable planning level assumption. Projections of Transportation Impact Fees and Real Estate Excise Taxes indicate that funds should be available for the match with the elimination of project T5: 68th Ave NE, SR 522 to Samm Slough (the queue jump). See Exhibits F and G.

Staff will begin applying for grants this spring and as the next City budget is put together, the numbers will be adjusted as appropriate. No budget amendment is needed at this time.

COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:

12. To continue to seek transportation funding and mitigation for State impacts on the city's transportation system, air-water quality, and noise to include but not limited to SR 522, Sammamish River Bridge, local roads and Lake Washington sediment depths.

Exhibit A

FACT SHEET

West Sammamish River Bridge (southbound traffic)

Kenmore's 68th Avenue crossing of the Sammamish River is two bridges—the bridge carrying southbound traffic is known as the West Sammamish River Bridge. This bridge was constructed in 1938, crosses the Sammamish River on 68th Avenue NE (.2 miles south of SR 522), carries southbound traffic only and is located within the City of Kenmore. Over 13,000 vehicles a day (week day traffic) use this Bridge. The adjacent northbound, East Sammamish River Bridge was built in the 1970s and carries over 12,000 vehicles per day. The West and East bridges are the only Kenmore crossing of the Sammamish River and it connects the north and south parts of the City. Over 25,000 vehicles per day cross the Sammamish River on these bridges and Kenmore's population is 21,000 residents. The Sammamish crossing is part of the popular Lake Washington bicycle loop. Traffic volumes have increased at the crossing as a direct result of the tolling of SR 520 across Lake Washington.

What is the current condition of the West (southbound) Sammamish River Bridge?
The live loads (vehicles) and dead loads (asphalt, concrete barriers) on the Bridge are greater than the bridge was designed for and the bridge is showing signs of deterioration such as cracking, leaching, and spalling. Traffic volumes on the bridge continue to increase. The bridge is structurally deficient and Kenmore City Council imposed a weight restriction on the bridge in January of 2014. The bridge does not currently have adequate pedestrian and bicycle facilities.

Does the East (northbound) Sammamish River Bridge on 68th Ave NE have problems?
No, the East Sammamish River Bridge carries northbound traffic (over 12,000 vehicles a day during the week) across the river, was built in the 1970s, and is currently in good condition. The City will continue regular inspections and maintenance of this bridge as it does all City Bridges.

What has the City done to evaluate the West Sammamish River Bridge?
In 2013, the City conducted an engineering study of scour, load limits and geotechnical condition of the West Sammamish River Bridge. The bridge is at the end of its functional life. The City's

engineering team has been evaluating replacement vs. rehabilitation and has determined that the bridge must be replaced in the near future and currently has a Sufficiency Rating of 2.5 (out of 100).

What is the cost to replace the West Sammamish River Bridge?

The cost to replace the bride is estimated to be $20 Million. The bridge is critical to local and regional traffic circulation and it connects the Kenmore community. The City does not currently have the resources to replace this bridge and significant funding assistance will be necessary.

City of Kenmore
Department of Engineering
18120 68th Ave NE
Kenmore, WA 98028
Phone: 425-398-8900

EXHIBIT B

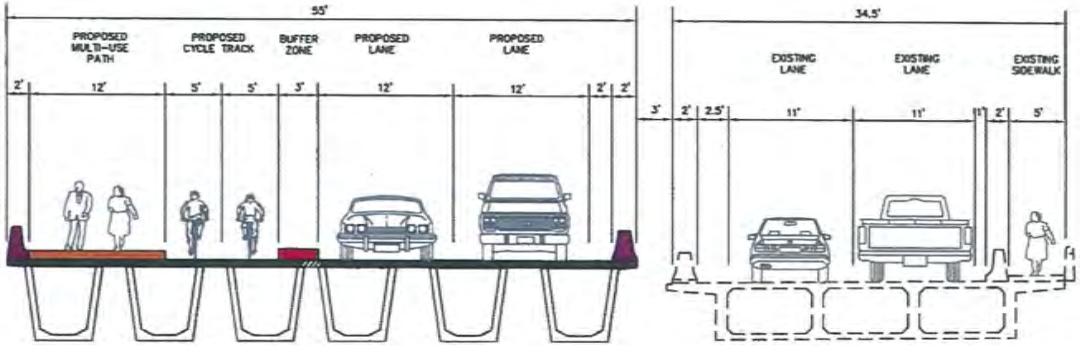
City of Kenmore, WA.
West Sammamish River Bridge Replacement

Replacement Alternatives Evaluation Matrix

Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Bridge Length (ft)	600	600	600	600
Bridge Width (ft, out to out)	55	52	48	45
Sidewalk Width (ft)	12	16	16	8
Bike Lane Width (ft)	10	-	-	5
Combined Ped & Bike Facilities?	No	Yes	Yes	No
Supplements northbound Ped/Bike Surfaces (Safety)	Yes	Yes	Yes	No
Provides for a future 3rd traffic lane?	Yes	Yes	No	No
Maintains 2 traffic lanes during construction?	Yes	Yes	Yes	Yes
Impacts WDFW property?	Yes	Yes	Yes	Yes
Estimated Construction Duration	20 - 24 months	20 - 24 months	18 -22 months	18 - 22 months
Cost of Bridge without Ped & Bike Facilities	$ 4,780,000	$ 5,340,000	$ 4,860,000	$ 4,970,000
Cost of Ped & Bike Facilities on Bridge	$ 3,190,000	$ 2,370,000	$ 2,430,000	$ 2,020,000
Total Bridge Construction Cost	**$ 7,970,000**	**$ 7,710,000**	**$ 7,290,000**	**$ 6,990,000**
Cost of North Approach (Roadway Only)	$ 400,000	$ 400,000	$ 340,000	$ 360,000
Cost of North Approach (Ped/Bike Only)	$ 280,000	$ 170,000	$ 170,000	$ 160,000
Cost of South Approach (Roadway Only)	$ 890,000	$ 740,000	$ 710,000	$ 580,000
Cost of South Approach (Ped/Bike Only)	$ 660,000	$ 310,000	$ 310,000	$ 160,000
Total Approach Construction Cost	**$ 2,230,000**	**$ 1,620,000**	**$ 1,530,000**	**$ 1,260,000**
Subtotal - Construction Cost	**$ 10,200,000**	**$ 9,330,000**	**$ 8,820,000**	**$ 8,250,000**
Planning Level Contingency (30% of const cost)	$ 3,100,000	$ 2,800,000	$ 2,600,000	$ 2,500,000
Cost Escalation (2yrs - 6% total)	$ 800,000	$ 730,000	$ 690,000	$ 650,000
Total Construction Cost	**$ 14,100,000**	**$ 12,860,000**	**$ 12,110,000**	**$ 11,400,000**
R/W Area North Approach (SF) - 4 parcels	19,350	18,100	18,100	14,010
R/W Area South Approach (SF) - WDFW parcel	4,800	4,800	4,800	4,800
Total R/W Area (SF)	24,150	22,900	22,900	18,810
Right-of-Way Acquisition Cost (Est. $45/SF)	$ 1,090,000	$ 1,030,000	$ 1,030,000	$ 850,000
Staging Area (Rental) Cost (20,000 sf for 2 yrs.)	$ 180,000	$ 180,000	$ 180,000	$ 180,000
Design Engineering (20% Total Construction Cost)	$ 2,820,000	$ 2,570,000	$ 2,420,000	$ 2,280,000
Construction Admin & Management (18% of Const. Cost)	$ 2,540,000	$ 2,310,000	$ 2,180,000	$ 2,050,000
Agency Administration Cost	$ 650,000	$ 650,000	$ 650,000	$ 650,000
WSDOT Administration Cost	$ 400,000	$ 400,000	$ 400,000	$ 400,000
TOTAL PROJECT COST	**$ 21,800,000**	**$ 20,000,000**	**$ 19,000,000**	**$ 17,800,000**
FUNDING STRATEGY (in $1,000,000)				
BRAC (FHWA)				
PSRC (Federal)				
TIB (State)				
City				
Other				

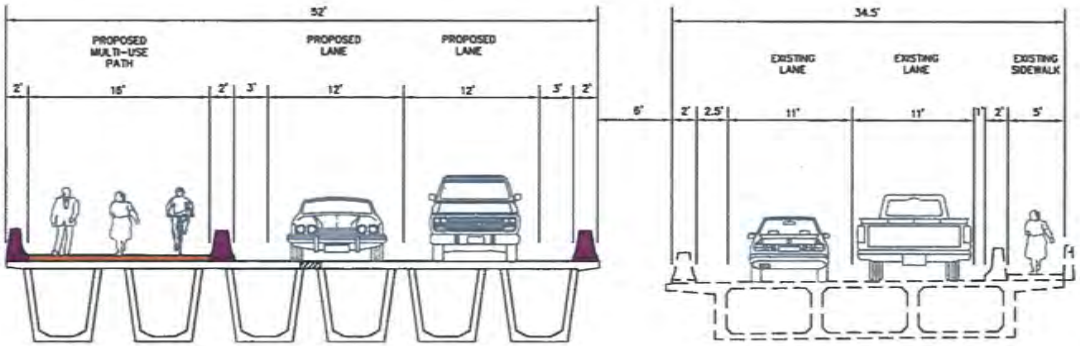
Notes:
1. Cost of Ped & Bike Facilities on the Bridge were estimated proportional to the bridge deck area.
2. Allowance of 15% was added to the bridge cost for 2-stage construction.
3. No separate contingency for the bridge or roadway construction was added.
4. Bridge costs include approx. 5% (of usual bridge cost) for architectural treatments.

EXHIBIT C



ALTERNATIVE 1

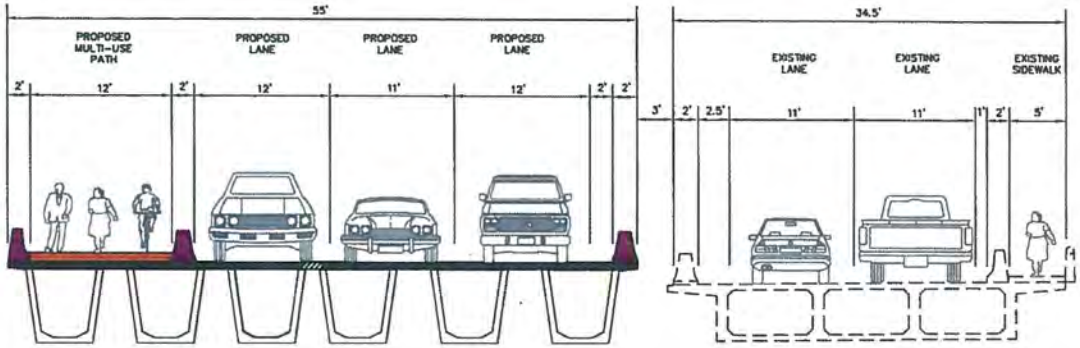
SCALE: 1" = 10'



ALTERNATIVE 2

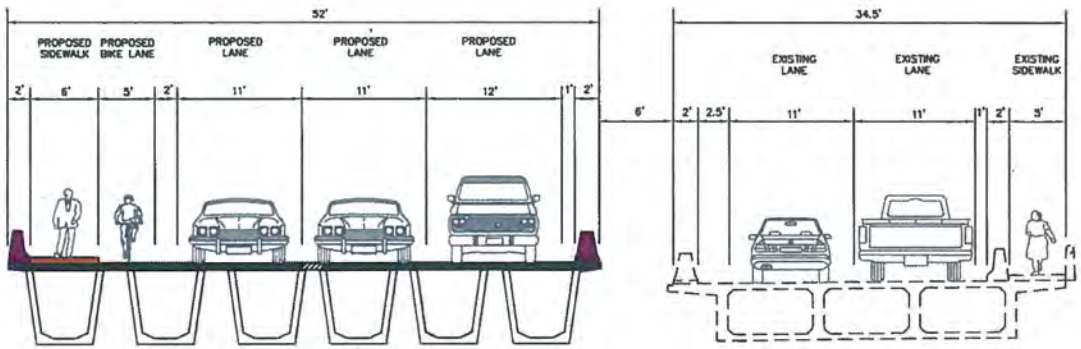
SCALE: 1" = 10'

EXHIBIT C



ALTERNATIVE 1 FUTURE

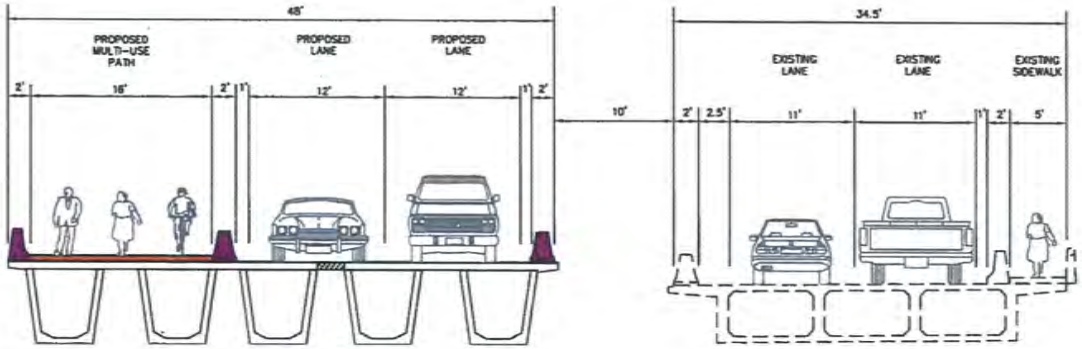
SCALE: 1" = 10'



ALTERNATIVE 2 FUTURE

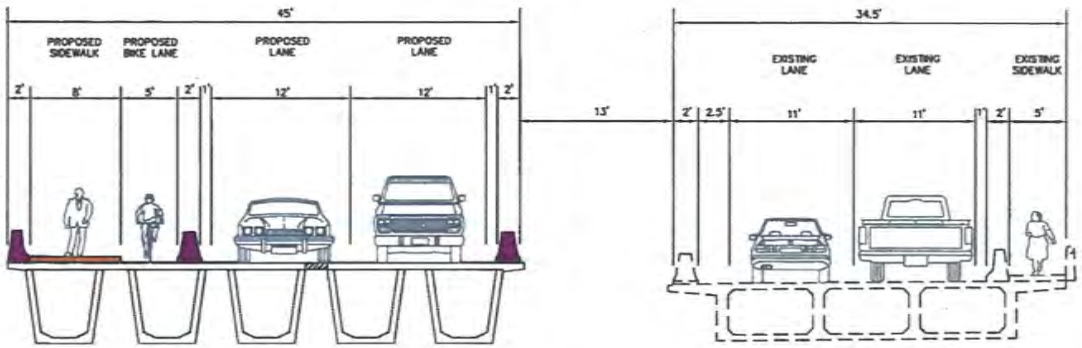
SCALE: 1" = 10'

EXHIBIT C



ALTERNATIVE 3

SCALE: 1" = 10'



ALTERNATIVE 4

SCALE: 1" = 10'

Exhibit D

CITY OF KENMORE
WASHINGTON
ORDINANCE NO. 14-0376

AN ORDINANCE OF THE CITY OF KENMORE, WASHINGTON, AMENDING ORDINANCE NO. 12-0350 TO REVISE THE 2013-2018 SIX YEAR CAPITAL IMPROVEMENT PROGRAM; PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, on November 26, 2012, the City Council adopted Ordinance No. 12-0350, which adopted the 2013-2018 Six-Year Capital Improvement Program ("CIP"); and

WHEREAS, on December 2, 2013, the City Council amended the 2013-2018 CIP when it adopted Ordinance No. 13-0367 to reflect revised amounts of revenue and appropriations at the time of finalization of the budget and CIP; and

WHEREAS, the City Council desires to further amend the 2013-2018 CIP to reflect a change in Transportation Project T-37 relating to the West Sammamish River Bridge Project;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF KENMORE, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. Amendment. The 2013–2018 Capital Improvement Program, as adopted by Ordinance No. 12-0350, and as amended by Ordinance No. 13-0367, is hereby further amended to reflect the adjustments set forth on Exhibit "A," entitled "City of Kenmore, Washington Capital Improvement Program for the Years 2013-2018," attached hereto and incorporated by reference.

Section 2. Severability. Should any section, paragraph, sentence, clause or phrase of this Ordinance, or its application to any person or circumstance, be declared unconstitutional or otherwise invalid for any reason, or should any portion of this Ordinance be preempted by state or federal law or regulation, such decision or preemption shall not affect the validity of the remaining portions of this Ordinance or its application to other persons or circumstances.

Section 3. Effective Date. This Ordinance shall be published in the official newspaper of the City, and shall take effect and be in full force five (5) days after the date of publication.

ADOPTED BY THE CITY COUNCIL AT A REGULAR MEETING THEREOF ON THE 24TH DAY OF FEBRUARY 2014.

CITY OF KENMORE

_____
Mayor David Baker

ATTEST/AUTHENTICATED:

_____
Patty Safrin, City Clerk

Approved as to form:

_____
Rod P. Kaseguma, City Attorney

FILED WITH THE CITY CLERK:
PASSED BY THE CITY COUNCIL:
PUBLISHED:
EFFECTIVE DATE:
ORDINANCE NO.

EXHIBIT A

CITY OF KENMORE, WASHINGTON
CAPITAL IMPROVEMENT PROGRAM
FOR THE YEARS 2013-2018

EXPENDITURES	2013 Proposed	2014 Proposed	2015 Proposed	2016 Proposed	2017 Proposed	2018 Proposed	2013-2018 Totals
PARKS							
P 1 Twin Springs(Portal 44)	$0	$0	$45,000	$360,000	$0	$0	$405,000
P 2 Tolt Pipeline Trail Phase One	120,000	0	0	0	0	0	120,000
P 6 Moorlands Park Improvements	60,000	0	450,000	450,000	0	0	960,000
P 9 Northshore Summit Park	659,000	0	0	0	0	0	659,000
P 10 Park Land Acquisition	0	0	0	0	0	0	0
P 11 Log Boom Park Pedestrian Bridge Replacement	0	95,000	150,000	0	0	0	245,000
P 13 Skate Park Relocation & Improvements	0	20,000	250,000	0	0	0	270,000
P 17 Tolt Pipeline Trail Phase Two	0	0	30,000	190,000	0	0	220,000
P 18 Rhododendron Park Boat Shed & Boardwalk Trail	90,000	392,000	0	0	0	0	482,000
P18a Rhododendron Park Float	73,500	0	0	0	0	0	73,500
P 19 Log Boom Park Waterfront	0	0	30,000	75,000	75,000	1,000,000	1,180,000
P 19a Log Boom Park Float	72,500	0	0	0	0	0	72,500
P 21 Kenmore Village Public Square	50,000	100,000	800,000	0	0	0	950,000
P 22 City Hall Plaza Improvements	0	0	75,000	0	0	0	75,000
P 23 Squires Landing Trail	0	0	0	0	40,000	200,000	240,000
P 24 Sammamish River Boat Launch Restroom	65,000	0	0	0	0	0	65,000
Total Parks	**$1,190,000**	**$607,000**	**$1,830,000**	**$1,075,000**	**$115,000**	**$1,200,000**	**$6,017,000**
TRANSPORTATION							
T 5 68th Ave NE SR522 to Sammamish Slough	$0	$0	$0	$110,000	$320,000	$2,440,000	$2,870,000
T 6 SR 522 West A 61st to 65th	4,428,500	4,865,000	2,000,000	0	0	0	11,293,500
T 7 61st Ave NE & 181st Traffic Signal	1,132,387	0	0	0	0	0	1,132,387
T 8 SR 522 West B 57th to 61st with BGT Wall	0	0	0	410,000	8,285,000	315,000	9,010,000
T 22 Simonds Road-Inglemoor HS Right Turn Lane	25,000	0	70,000	445,000	0	0	540,000
T 26 Wayfinding Signage and Banners	20,000	20,000	20,000	20,000	20,000	20,000	120,000
T 27 Sidewalk Program	174,950	100,000	100,000	100,000	100,000	100,000	674,950
T 31 City Safety Improvements	250,000	0	0	0	0	0	250,000
T 35 Juanita Drive/68th Ave NE Overlay	636,725	0	0	0	0	0	636,725
T 36 City Gateways	75,000	225,000	0	0	0	0	300,000
T 37 West Samm Bridge **	461,000	0	1,270,000	2,280,000	1,140,000	7,630,000	12,781,000
Total Transportation	**$7,203,562**	**$5,210,000**	**$3,460,000**	**$3,365,000**	**$9,865,000**	**$10,505,000**	**$39,608,562**

** This project extends to 2020 with additional budget of $7,680,000

SURFACE WATER							
SW 1 Tributary 0057 Channel Relocation	$0	$889,750	$0	$0	$0	$0	$889,750
SW 2 80th Ave NE Ditch Improvements	0	0	40,000	75,000	0	0	$115,000
SW 3 Juanita Dr NE Ditch Grading Ph 1	75,000	0	0	0	0	0	$75,000
SW 7 NE 187th Street Bypass	467,011	40,000	71,000	0	0	0	$578,011
SW 8 61st Ave NE Sidewalk Embankment Repair	55,000	0	0	0	0	0	$55,000
SW 9 Swamp Creek Regional Basin Study	0	0	0	0	0	0	$0
SW 12 74th Avenue NE Culvert Replacement	0	0	0	0	0	0	$0
SW 13 NE 155th Street Outfall Revision	0	0	50,000	0	0	0	$50,000
SW 16 Arrowhead Drive Conveyance Improvements	0	0	0	106,000	116,100	0	$222,100
SW 17 Little Swamp Creek Relocation Project	0	0	0	0	56,500	50,000	$106,500
SW 19 NE 192nd ST Culvert Replacement	0	20,000	106,000	0	0	0	$126,000
SW 20 Small Works Projects	50,000	50,000	50,000	50,000	50,000	50,000	$300,000
Total Surface Water	**$647,011**	**$999,750**	**$317,000**	**$231,000**	**$222,600**	**$100,000**	**$2,517,361**
TOTAL EXPENDITURES	**$9,040,573**	**$6,816,750**	**$5,607,000**	**$4,671,000**	**$10,202,600**	**$11,805,000**	**$48,142,923**

EXHIBIT A

CITY OF KENMORE, WASHINGTON
CAPITAL IMPROVEMENT PROGRAM
FOR THE YEARS 2013-2018

REVENUES	2013 Proposed	2014 Proposed	2015 Proposed	2016 Proposed	2017 Proposed	2018 Proposed	2013-2018 Totals
Real Estate Excise Tax (Transportation)	$987,387	$290,000	$250,000	$0	$0	$423,750	$1,951,137
Real Estate Excise Tax - Set Aside Sidewalks	174,950	100,000	100,000	100,000	100,000	100,000	674,950
Real Estate Excise Tax - Surface Water	55,000	0	0	0	0	0	.55,000
Transportation Impact Fee Revenue**	442,500	380,000	435,000	277,500	365,000	400,000	2,300,000
Park Impact Fee Revenue	659,000	310,000	45,000	972,345	0	0	1,986,345
Real Estate Excise Tax (Parks)	215,000	197,000	255,000	75,000	115,000	200,000	1,057,000
Kenmore Village Sale	50,000	100,000	800,000	0	0	0	950,000
King County Levy	120,000	0	30,000	27,655	0	0	177,655
Parks Grants	0	0	700,000	0	0	1,000,000	1,700,000
Surface Water Utility Funds	830,511	1,144,750	547,000	231,000	222,600	100,000	3,075,861
King County Flood District Grant	0	150,000	0	0	0	0	150,000
State/Transportation Improvement Board	0	4,100,000	1,100,000	0	2,000,000	0	7,200,000
Federal Grants/Allocations	3,600,000	0	0	0	0	0	3,600,000
Street Fund	661,725	0	0	0	0	0	661,725
Street Fund - West Samm Bridge	86,000	0	0	0	0	0	86,000
Sammamish River Bridge Fund	80,000	0	0	0	0	0	80,000
Other Agencies Reimbursements	12,500	25,000	55,000	222,500	0	0	315,000
Other Grant Funding	900,000	0	0	409,650	205,000	1,916,250	3,430,900
State Transportation Package	0	0	0	55,350	6,035,000	15,000	6,105,350
General Fund	20,000	20,000	20,000	20,000	20,000	20,000	120,000
Strategic Opportunity Fund	146,000	0	0	0	0	0	146,000
Unfunded West Samm Bridge Replacement Resources**	0	0	1,270,000	2,280,000	1,140,000	7,630,000	12,320,000
TOTAL REVENUES	**$9,040,573**	**$6,816,750**	**$4,337,000**	**$4,671,000**	**$10,202,600**	**$11,805,000**	**$48,142,923**

** This project extends to 2020 with additional funding requirements of $7,680,000

West Sammamish River Bridge: Alternative 2

Exhibit E

EXPENDITURES

		2015	2016	2017	2018	2019	2020	TOTAL
City Administration	$650,000	$120,000	$120,000	$120,000	$120,000	$120,000	$50,000	$650,000
Design	$2,570,000	$800,000	$1,500,000	$270,000				$2,570,000
Right of way	$1,210,000	$200,000	$510,000	$500,000				$1,210,000
Construction								$0
bridge	$5,340,000				$2,670,000	$2,670,000		$5,340,000
bridge ped/bike facilities	$2,370,000				$1,185,000	$1,185,000		$2,370,000
approaches	$1,140,000				$570,000	$570,000		$1,140,000
approach ped/bike facilities	$480,000				$240,000	$240,000		$480,000
escalation	$730,000				$365,000	$365,000		$730,000
inspection/engineering	$2,310,000				$1,155,000	$1,155,000		$2,310,000
WSDOT Admin	$400,000	$50,000	$50,000	$50,000	$125,000	$125,000		$400,000
Contingency	$2,800,000	$100,000	$100,000	$200,000	$1,200,000	$1,200,000		$2,800,000
	$20,000,000	$1,270,000	$2,280,000	$1,140,000	$7,630,000	$7,630,000	$50,000	$20,000,000

ESTIMATED REVENUE-CURRENTLY UNFUNDED

	2015	2016	2017	2018	2019	2020	TOTAL
BRAC				6,000,000	6,000,000		12,000,000
PSRC	856,000	1,416,000	512,000				2,784,000
TIB	140,000	357,000	350,000	1,300,000	1,300,000		3,447,000
City Transportation Impact Fees	100,000	200,000	200,000	330,000	330,000	50,000	1,210,000
City REET	174,000	307,000	78,000	0	0	0	559,000
	1,270,000	2,280,000	1,140,000	7,630,000	7,630,000	50,000	20,000,000

SCHEDULE

	2015	2016	2017	2018	2019	2020
Design/Environmental	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2			
ROW		Q2Q3Q4	Q1Q2Q3			
Construction			Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	
closeout						Q1Q2Q3Q4

Exhibit F

CITY OF KENMORE, WASHINGTON
Transportation Impact Fee Fund Projection
For The Years 2013-2020
ASSUME WEST SAMM BRIDGE MATCH AND ELIMINATION OF T5

DESCRIPTION	Actual 2013	Budget 2014	Proposed 2015	Proposed 2016	Proposed 2017	Proposed 2018	Proposed 2019	Proposed 2020
Beginning Cash	$240,536	$416,394	$268,176	$166,034	$179,674	$170,295	$285,212	$401,279
Revenues:								
Interest Earnings	2,157	364	2,682	1,660	1,797	1,703	2,852	4,013
Transp. Impact Fees	421,701	425,918	430,177	434,479	438,824	443,212	443,212	443,212
Total Revenues	$423,858	$426,282	$432,859	$436,139	$440,621	$444,917	$446,067	$447,229
Transfers Out for Roads:								
~~T 5 68th Ave NE SR522 to Samm Slough~~	~~0~~	~~0~~	~~0~~	~~55,000~~	~~115,000~~	~~325,000~~	0	0
T 6 SR 522 West A 61st Ave NE	248,000	562,000	400,000	0	0	0	0	0
T 8 SR 522 West B 57th to 61st with BGT \	0	0	0	0	250,000	0	0	0
T 22 Simonds Rd-Inglemoor HS Right Turn	0	12,500	35,000	222,500	0	0	0	0
T 37 West Samm Bridge	0	0	100,000	200,000	200,000	330,000	330,000	50,000
Subtotal - Transfers for Roads	$248,000	$574,500	$535,000	$422,500	$450,000	$330,000	$330,000	$50,000
Net Income/(Loss)	$175,858	($148,218)	($102,141)	$13,639	($9,379)	$114,917	$116,067	$397,229
Ending Cash	$416,394	$268,176	$166,034	$179,674	$170,295	$285,212	$401,279	$798,508

CITY OF KENMORE, WASHINGTON
REET Fund Projection
For The Years 2013-2020
ASSUME WEST SAMM BRIDGE MATCH AND ELIMINATION OF T5

Exhibit G

DESCRIPTION	[illegible]	[illegible]	Proposed 2015	Proposed 2016	Proposed 2017	Proposed 2018	Proposed 2019	Proposed 2020
Beginning Cash	$1,965,805	$2,078,074	$981,326	$540,940	$391,847	$428,857	$157,722	$374,134
Revenues:								
REET 1	440,943	390,000	393,900	397,839	401,817	405,836	405,836	405,836
REET 2	440,943	390,000	393,900	397,839	401,817	405,836	405,836	405,836
Interest Earnings	12,312	5,573	9,813	5,409	3,918	4,289	1,577	3,741
Total Revenues	$894,198	$785,573	$797,613	$801,087	$807,553	$815,960	$813,248	$815,412
Transfers Out for Parks :								
P 6 Moorlands Park Imp	0	60,000	0	0	0	0	0	0
P 11 Log Boom Park Ped Bridge Repl	0	95,000	75,000	0	0	0	0	0
P 13 Skate Park	0	20,000	75,000	0	0	0	0	0
P 18 Rhody Park Boat Shed & Boardwalk Trail	76,822	95,178	0	0	0	0	0	0
P 19b Log Boom Park Waterfront	0	0	30,000	75,000	75,000	0	0	0
P 22 City Hall Front/Back Improvements	0	0	75,000	0	0	0	0	0
P 23 Squires Landing Trail	0	0	0	0	40,000	200,000	0	0
P 24 Samm River Boat Launch Restroom	23,701	41,299	0	0	0	0	0	0
Transfer Levy to Park Improvement-Tolt	11,306	108,694	0	0	0	0	0	0
Subtotal - Transfers for Parks	111,829	420,171	255,000	75,000	115,000	200,000	0	0
Transfers Out for Roads:								
SR 522 Ph II Slip-lining	0	120,000	0	0	0	0	0	0
~~T5 68th SR522 to Samm Slough~~	~~0~~	~~0~~	~~0~~	~~198,750~~	~~0~~	~~0~~	~~0~~	~~0~~
T6 SR 522 West A 61st to 65th	0	400,000	250,000	0	0	0	0	0
T7 61st Ave & 181st St Signal, Left turn	251,953	235,347	0	0	0	0	0	0
T8 SR522 West B 57th to 61st with BGT Wall	0	0	0	0	0	300,000	0	0
T27 sidewalks	0	274,950	100,000	100,000	100,000	100,000	100,000	100,000
T36 City Gateways	18,147	281,853	0	0	0			
T37 New West Samm Bridge	0	95,000	174,000	307,000	78,000	0	0	0
Street Fund (overlays)	400,000	0	459,000	468,180	477,544	487,094	496,836	506,773
Subtotal - Transfers for Roads	670,100	1,407,150	983,000	875,180	655,544	887,094	596,836	606,773
Transfers Out for SWM:								
SW 8 61st Ave NE Sidewalk Embankment Rep	0	55,000	0	0	0	0	0	0
Subtotal - Transfers for SWM	$0	$55,000	$0	$0	$0	$0	$0	$0
Net Income/(Loss)	$112,269	($1,096,748)	($440,387)	($149,093)	$37,010	($271,135)	$216,412	$208,639
Ending Cash	$2,078,074	$981,326	$540,940	$391,847	$428,857	$157,722	$374,134	$582,773

I:\Admin & Finance\BUDGET\Forecast Models\2014 Update Other FundsREETFeb2014BRIDGE
2/20/2014

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: **CITY OF KENMORE, Lakepointe Blvd West - ROADWAY SCHEDULE**
Corridor Section: West Section, SR 522 to 68th Ave NE
Location: Kenmore, City of

Client: Kenmore, City of
Date: Oct-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

West Section, SR 522 to 68th Ave NE

This project would connect a parking lot of the Lakepointe mixed-use development project with 68th Ave NE.
The roadway section would include two 11' travel lanes, one 18' angled parking lane, and five-foot sidewalks buffered by 18" planter strips.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		**RIGHT OF WAY**				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	41,400	$1,863,000
		RELOCATIONS: BUSINESSES	EA	$150,000	2	$300,000
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	3	$45,000
		RIGHT OF WAY TOTAL				**$2,208,000**
II.		**CONSTRUCTION**				
1		**PREPARATION/GRADING/DRAINAGE**				
	1.1	**PREPARATION**				
		CLEAR & GRUB,DEMO	ACRE	$5,000	1.0	$5,000
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$10	-	$0
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$200,000	1	$200,000
		SAWCUTTING	LF	$3	-	$0
	1.2	**EARTHWORK**				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	1,300	$26,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	2,600	$52,000
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	**STORMWATER MITIGATION**				
		DETENTION AND TREATMENT	SF	$25	41,400	$1,035,000
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	**STORM SEWER**				
		CATCH BASIN TYPE 1	EA	$1,200	9	$10,800
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	860	$30,100
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	860	$38,700
		STRUCTURE EXCAVATION CL. B	CY	$15	1,300	$19,500
2		**STRUCTURE**				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (MSE)	SF	$35	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		**SURFACING**				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	1,100	$121,000
		CRUSHED SURFACING	TON	$25	3,200	$80,000
4		**ROADSIDE DEVELOPMENT**				
		FENCING	LF	$15	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	1.0	$1,200
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$109,700	1	$109,700
		LANDSCAPING	LS	$36,000	1	$36,000
5		**TRAFFIC**				
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$25,000	1	$25,000
		SIGNING	LS	$15,000	1	$15,000
		CURB RAMP	EA	$6,000	8	$48,000
		DRIVEWAY ENTRANCE	EA	$1,000	-	$0
		CURB & GUTTER	LF	$30	1,800	$54,000

Perteet Inc.
425-252-7700 | 1-800-615-0809
2707 Colby Avenue, Suite 900
Everett, Washington 98201

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	**CITY OF KENMORE, Lakepointe Blvd West - ROADWAY SCHEDULE**	Client:	Kenmore, City of
Corridor Section:	West Section, SR 522 to 68th Ave NE	Date:	Oct-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

West Section, SR 522 to 68th Ave NE

This project would connect a parking lot of the Lakepointe mixed-use development project with 68th Ave NE.

The roadway section would include two 11' travel lanes, one 18' angled parking lane, and five-foot sidewalks buffered by 18" planter strips.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	1,000	$30,000
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$193,700	1	$193,700
5.1		**OTHER ITEMS**				
		SURVEYING (2%)	LS	$42,700	1	$42,700
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$20,000		$0
6		**MISCELLANEOUS (10%)**	LS	$217,400	1	$217,400
7		**CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)**				**$2,390,800**
8		**MOBILIZATION (10%)**				
		10% OF ITEM 7	EST	$239,100	1	$239,100
9		**SUBTOTAL (ITEMS 7 & 8)**				**$2,629,900**
10		**SALES TAX**				
		0.0% OF ITEM 9	EST	$0		$0
11		**AGREEMENTS (Utilities, WSP, etc.)**				
			EST	$0	1	$0
12		**SUBTOTAL (ITEMS 9 THRU 11)**				**$2,629,900**
13		**CONSTRUCTION**				
		ENGINEERING (12% OF ITEM 12)	EST	$316,000	1	$316,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$53,000	1	$53,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$2,998,900**
III.		**PRELIMINARY WORK**				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$449,900	1	$449,900
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$150,000	1	$150,000
		CITY STAFF (5.0% OF ITEM 14)	EST	$150,000	1	$150,000
IV.		**TOTAL ESTIMATED COST**				
		(ITEMS I, 14 & III)				**$5,960,000**
V.		**FUTURE ESTIMATED COST**				
			Inflation	**Const. Year**	**Cost Index**	**Future Cost**
		FUTURE COST BASED ON INFLATION RATE	2.26%	2024	2014	**$7,460,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description:	CITY OF KENMORE, Simonds Rd NE Restriping - ROADWAY SCHEDULE	Client:	Kenmore, City of
Corridor Section:	92nd Ave NE to Juanita Dr NE	Date:	Jul-14
Location:	Kenmore, City of	Date of Cost Index:	2014
		Calculated By/Entered By:	RGP
		Checked By:	DCS

92nd Ave NE to Juanita Dr NE

This project would provide dedicated bike lanes on both sides of Simonds Rd NE from 92nd Ave NE to Juanita Dr NE. The bike lanes would be separated from vehicle traffic by two-foot wide painted buffers with crosshatching.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT	SY	$10	-	$0
		REMOVE EXISTING PAINT LINES	LF	$1	10,000	$10,000
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	-	$0
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	-	$0
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	-	$0
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	-	$0
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	-	$0
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	-	$0
		CRUSHED SURFACING	TON	$25	-	$0

Perteet Inc.

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, Simonds Rd NE Restriping - ROADWAY SCHEDULE
Corridor Section: 92nd Ave NE to Juanita Dr NE
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

92nd Ave NE to Juanita Dr NE

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	-	$0
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$4,800	-	$0
		LANDSCAPING	LS	$0	1	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	1	$0
		SIGNING	LS	$7,000	1	$7,000
		CURBS	LF	$20	-	$0
		MOUNTABLE CURB	LF	$25	-	$0
		PAINT LINE	LF	$1	55,000	$55,000
		SIDEWALKS	SY	$30	-	$0
		PAINTED BICYCLE LANE SYMBOL	EA	$60	74	$4,440
		PAINTED TRAFFIC ARROW	EA	$35	74	$2,590
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$8,000	1	$8,000
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$1,800	1	$1,800
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$0	1	$0
6		MISCELLANEOUS (10%)	LS	$8,900	1	$8,900
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$97,730
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$9,800	1	$9,800
9		SUBTOTAL (ITEMS 7 & 8)				$107,530
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$107,530
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$13,000	1	$13,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$3,000	-	$0
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$120,530**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$18,100	1	$18,100
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$6,100	1	$6,100
		CITY STAFF (5.0% OF ITEM 14)	EST	$6,100	1	$6,100
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$160,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2020	2014	**$190,000**

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Perteet Inc.

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, SR 522 Underpass at 67th Ave NE - ROADWAY SCHEDULE
Corridor Section: Intersection of SR 522 & 67th Ave NE
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

Intersection of SR 522 & 67th Ave NE

This project involves constructing a grade separated intersection and underpass beneath SR 522 and the Burke-Gilman Trail. This would allow vehicle and pedestrian traffic to travel north and south on 67th Ave NE, unimpeded by SR 522.

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$60	30,000	$1,800,000
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	1	$150,000
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	1	$100,000
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$2,050,000**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT	SY	$10	-	$0
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$30,000	1	$30,000
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	-	$0
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	13,400	$335,000
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$25	7,800	$195,000
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	5	$6,000
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	1,540	$53,900
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	1,200	$18,000
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$300	8,000	$2,400,000
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (Soil Nail with Cast in Place Facing)	SF	$150	14,700	$2,205,000
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	500	$55,000
		CRUSHED SURFACING	TON	$25	1,600	$40,000

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, SR 522 Underpass at 67th Ave NE - ROADWAY SCHEDULE
Corridor Section: Intersection of SR 522 & 67th Ave NE
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

Intersection of SR 522 & 67th Ave NE

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	1,000	$20,000
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	-	$0
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$325,700	1	$325,700
		LANDSCAPING	LS	$0	1	$0
5		TRAFFIC				
		HAND RAIL	LF	$100	-	$0
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0	1	$0
		SIGNING	LS	$5,000	1	$5,000
		CURBS	LF	$20	1,400	$28,000
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	1,200	$36,000
		CONC. TRUCK APRON	SY	$30	-	$0
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (10%)	LS	$575,300	1	$575,300
5.1		OTHER ITEMS				
		SURVEYING (6%)	LS	$379,700	1	$379,700
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$30,000	1	$30,000
6		MISCELLANEOUS (10%)	LS	$673,800	1	$673,800
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$7,411,400
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$741,200	1	$741,200
9		SUBTOTAL (ITEMS 7 & 8)				$8,152,600
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$8,152,600
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$979,000	1	$979,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$164,000	1	$164,000
14		**CONSTRUCTION TOTAL (ITEMS 12 & 13)**				**$9,295,600**
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$1,394,400	1	$1,394,400
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$464,800	1	$464,800
		CITY STAFF (5.0% OF ITEM 14)	EST	$464,800	1	$464,800
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				**$13,670,000**
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2024	2014	**$17,100,000**

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PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, Yellow Standard Sidewalk Improvements - ROADWAY SCHE
Corridor Section: See Sidewalk Network Map
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
Checked By: DCS

This project involves installing new sidewalks throughout Kenmore, primarily in areas that are currently without pedestrian facilities. The typical roadway section will remain the same as the existing roadway section. The major improvements involve construction of ADA-compliant sidewalks, curb ramps, and street crossings.

See Sidewalk Network Map

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
I.		RIGHT OF WAY				
		RIGHT OF WAY (urban developed)	SF	$100	-	$0
		RIGHT OF WAY (urban undeveloped)	SF	$45	-	$0
		RELOCATIONS: BUSINESSES	EA	$150,000	-	$0
		RELOCATIONS: RESIDENCES	EA	$110,000	-	$0
		CONDEMNATION PROCEDURE	EA	$100,000	-	$0
		ADMINISTRATION (TITLES, APPRAISALS, ETC.)	EA	$15,000	-	$0
		RIGHT OF WAY TOTAL				**$0**
II.		CONSTRUCTION				
1		PREPARATION/GRADING/DRAINAGE				
	1.1	PREPARATION				
		CLEAR & GRUB,DEMO	ACRE	$5,000	-	$0
		REMOVING EXISTING PAVEMENT AND CONCRETE	SY	$10	40,800	$408,000
		REMOVAL STRUCTURES & OBSTRUCTIONS	LS	$270,000	1	$270,000
		SAWCUTTING	LF	$3	38,700	$116,100
	1.2	EARTHWORK				
		ROADWAY EXCAVATION INCL, HAUL	CY	$20	3,700	$74,000
		STRUCTURE EX. CL. A INCL. HAUL	CY	$25	-	$0
		BORROW INCL. HAUL	TON	$20	-	$0
		EMBANKMENT COMPACTION	CY	$2	-	$0
	1.3	STORMWATER MITIGATION				
		DETENTION AND TREATMENT	SF	$6	235,700	$1,414,200
		BIO-RETENTION CELLS	SF	$8	-	$0
	1.4	STORM SEWER				
		CATCH BASIN TYPE 1	EA	$1,200	174	$208,800
		CATCH BASIN TYPE 2	EA	$2,200	-	$0
		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	LF	$35	34,770	$1,216,950
		PLAIN CONC. STORM SEWER PIPE 18 IN. DIAM.	LF	$45	-	$0
		STRUCTURE EXCAVATION CL. B	CY	$15	15,500	$232,500
2		STRUCTURE				
		CONCRETE BRIDGES	SF	$150	-	$0
		CONCRETE BRIDGES WIDENING	SF	$200	-	$0
		PEDESTRIAN BRIDGES	SF	$250	-	$0
		STEEL BRIDGES	SF	$100	-	$0
		BRIDGE ABUTMENT RETROFIT	SF	$150	-	$0
		RETAINING WALLS (Cast in Place)	SF	$65	-	$0
		RETAINING WALLS (MSE)	SF	$35	4,500	$157,500
		BRIDGE REMOVAL	SF	$20	-	$0
		NOISE WALLS	SF	$25	-	$0
3		SURFACING				
		PORTLAND CEMENT CONCRETE	SF	$10	-	$0
		HOT MIX ASPHALT	TON	$110	2,700	$297,000
		CRUSHED SURFACING	TON	$25	14,800	$370,000
4		ROADSIDE DEVELOPMENT				
		FENCING	LF	$20	6,600	$132,000
		SEEDING, MULCHING & FERTILIZING	ACRE	$1,200	0.2	$240
		WETLAND MITIGATION	LS	$55,000	-	$0
		TEMPORARY WATER POLLUTION & EROSION CONTROL (6%)	LS	$466,000	1	$466,000
		LANDSCAPING	LS	$35,000	1	$35,000
5		TRAFFIC				
		GUARD RAIL	LF	$18	-	$0
		CONCRETE BARRIER	LF	$50	-	$0
		SIGNAL SYSTEMS	LS	$0		$0
		ILLUMINATION	LS	$0		$0
		SIGNING	LS	$125,000	1	$125,000
		CURB RAMP	EA	$6,000	95	$570,000
		DRIVEWAY ENTRANCE	EA	$1,000	125	$125,000
		CURB & GUTTER	LF	$30	38,700	$1,161,000

PLANNING LEVEL OPINION OF COST SUMMARY

Project Description: CITY OF KENMORE, Yellow Standard Sidewalk Improvements - ROADWAY SCHE
Corridor Section: See Sidewalk Network Map
Location: Kenmore, City of

Client: Kenmore, City of
Date: Jul-14
Date of Cost Index: 2014
Calculated By/Entered By: RGP
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This project involves installing new sidewalks throughout Kenmore, primarily in areas that are currently without pedestrian facilities. The typical roadway section will remain the same as the existing roadway section. The major improvements involve construction of ADA-compliant sidewalks, curb ramps, and street crossings.

See Sidewalk Network Map

		ITEM	UNIT	ESTIMATED UNIT COST	QTY	COST
		MOUNTABLE CURB	LF	$25	-	$0
		TRUCK APRON CURB	LF	$30	-	$0
		SIDEWALKS	SY	$30	28,400	$852,000
		ITS FOR HOT-LANES	LS	$0		$0
		SC&DI (ITS)	LS	$0		$0
		TRAFFIC CONTROL (4%)	LS	$329,300	1	$329,300
5.1		OTHER ITEMS				
		SURVEYING (2%)	LS	$171,300	1	$171,300
		SPECIAL ITEMS	EST	$0		$0
		UTILITY RELOCATIONS	EST	$50,000	1	$50,000
6		MISCELLANEOUS (10%)	LS	$878,200	1	$878,200
7		CONSTRUCTION SUBTOTAL (ITEMS 1 THRU 6)				$9,660,090
8		MOBILIZATION (10%)				
		10% OF ITEM 7	EST	$966,100	1	$966,100
9		SUBTOTAL (ITEMS 7 & 8)				$10,626,190
10		SALES TAX				
		0.0% OF ITEM 9	EST	$0		$0
11		AGREEMENTS (Utilities, WSP, etc.)				
			EST	$0	1	$0
12		SUBTOTAL (ITEMS 9 THRU 11)				$10,626,190
13		CONSTRUCTION				
		ENGINEERING (12% OF ITEM 12)	EST	$1,276,000	1	$1,276,000
		ENVIRONMENTAL COMPLIANCE (2% OF ITEM 12)	EST	$213,000	1	$213,000
14		CONSTRUCTION TOTAL (ITEMS 12 & 13)				$12,115,190
III.		PRELIMINARY WORK				
		PRELIMINARY ENGINEERING (15.0% OF ITEM 14)	EST	$1,817,300	1	$1,817,300
		ENVIRONMENTAL PERMITS (5.0% OF ITEM 14)	EST	$605,800	1	$605,800
		CITY STAFF (5.0% OF ITEM 14)	EST	$605,800	1	$605,800
IV.		TOTAL ESTIMATED COST				
		(ITEMS I, 14 & III)				$15,150,000
V.		FUTURE ESTIMATED COST				
			Inflation	Const. Year	Cost Index	Future Cost
		FUTURE COST BASED ON INFLATION RATE	2.26%	2024	2014	$18,950,000

The above opinion of cost is a planning level estimate only. It is based on best available information and scope at the time, not on the results of a detailed engineering study, and is supplied as a budgeting guide only. Perteet, Inc. does not guarantee or warrant the accuracy of this planning level estimate.

Signals

Signals for both pedestrians and bicyclists are included in this section. Pedestrian and bicycle detectors and speed trailers are included in this section as well. New signal types have become more prevalent in the last ten years, including the Rectangular Rapid Flash Beacon and the Pedestrian Hybrid Beacon, formerly known as a High Intensity Activated Crosswalk (HAWK) signal. These are included here. Efforts will be made to include any new signals as they become more prevalent.

Flashing Beacon

Flashing beacons are typically used in conjunction with pedestrian crossings to provide an enhanced warning for vehicles to yield to pedestrians. Rectangular rapid flashing beacons (RRFBs) differ from regular flashing beacons in that RRFBs have a rapid strobe-like warning flash, are brighter, and can be specifically aimed (see Figure 25). As a relatively new treatment, RRFBs have not been implemented extensively throughout this country, but are now becoming more prevalent in certain states and cities. The cost to furnish and install a flashing beacon can vary widely, depending on site conditions and the type of device used. The costs shown in the table include the complete system installation with labor and materials.

Figure 25: Rapid Flash Beacon

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Flashing Beacon	Flashing Beacon	$5,170	$10,010	$360	$59,100	Each	16 (25)
Flashing Beacon	RRFB	$14,160	$22,250	$4,520	$52,310	Each	3 (4)

Table 22: Flashing Beacon Cost

Pedestrian Hybrid Beacon

The Pedestrian Hybrid Beacon, otherwise known as the High Intensity Activated Crosswalk (HAWK) signal, is a special type of beacon to warn and control vehicles to allow pedestrians to safely cross a road or highway at a marked midblock crossing location (see Figure 26). Developed by the City of Tucson, Arizona in the 1990s, the pedestrian hybrid beacon is comprised of three signal sections, overhead pedestrian crosswalk signs, pedestrian detectors, and countdown pedestrian signal heads. According to a FHWA study, pedestrian hybrid beacons have a large impact on vehicle yielding rates.[13] As with RRFBs, pedestrian hybrid beacons are typically more expensive to implement and maintain than some devices, but less expensive than full traffic signals.

Figure 26: Pedestrian Hybrid Beacon