MEMORANDUM
CITY OF TUALATIN

TO: Honorable Mayor and Members of the City Council

FROM: Sherilyn Lombos, City Manager

DATE: March 12, 2012

SUBJECT: Work Session Memo for March 12, 2012

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1) ***5:45 p.m. (45 min) – Transportation System Plan and Linking Tualatin Update***
Goals and objectives, an existing conditions report and a preliminary assessment of future conditions have been prepared for the Transportation System Plan. A public outreach plan, goals and objectives, and an existing conditions report have been prepared for the Linking Tualatin project. These documents are being presented to the City Council for review and direction to staff prior to proceeding with next steps in the projects' respective planning processes. Attached is a memo and information for Council's review.

2) ***6:30 p.m. (10 min) – Amicus Brief on Arizona v United States***
The County of Santa Clara is drafting an amicus brief on behalf of cities and counties in Arizona v. United States. The case is the State of Arizona's challenge to the Ninth Circuit's ruling that certain provisions of Arizona's immigration enforcement law are preempted by federal immigration law. The City Attorney will provide some additional information at tonight's work session and then the Council will need to decide whether Tualatin wishes to sign onto the amicus brief.

3) ***6:40 p.m. (15 min) - Council Meeting Agenda Review, Communications & Roundtable.*** This is an opportunity for the Council to review the agenda for the March 12, 2012 Council meeting and take the opportunity to brief the rest of the Council on any issues of mutual interest.

MEMORANDUM
CITY OF TUALATIN

TO: Honorable Mayor and Members of the City Council

THROUGH: Sherilyn Lombos, City Manager

FROM: Cindy Hahn, Associate Planner
Alice Rouyer, Community Development Director

DATE: 03/12/2012

SUBJECT: Review and Recommendation on the Goals and Objectives and Existing Conditions Reports for the Tualatin Transportation System Plan and Linking Tualatin Projects

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ISSUE BEFORE THE COUNCIL:

Goals and objectives, an Existing Conditions Memorandum, and a preliminary assessment of future conditions have been prepared for the Transportation System Plan. A Public Outreach Plan, goals and objectives, and an Existing Conditions Report have been prepared for the Linking Tualatin project. These documents are being presented to the City Council for review and direction to staff prior to proceeding with next steps in the projects' respective planning processes.

POLICY CONSIDERATIONS:

The Council is being asked to consider whether the **goals and objectives** for the Transportation System Plan and Linking Tualatin provide a satisfactory framework and direction for the projects, or whether changes or additions to the goals or objectives for either or both projects are needed.

The Council is also being asked to review the **Existing Conditions Reports** for the Transportation System Plan and Linking Tualatin and provide feedback as to whether they capture correct information and whether any information is left out that should be included.

EXECUTIVE SUMMARY:

Tualatin Transportation System Plan

- The Transportation System Plan **goals and objectives** were developed for review by the Transportation Task Force based on a discussion of transportation values at the December 15, 2011 Task Force meeting, then revised based on comments at the January 19, 2012 Task Force meeting. Exact phrases from the Task Force values discussion were included to ensure consistency. The goals and objectives include seven categories: Access and Mobility, Safety, Vibrant Community, Equity, Economy, Health/Environment, and Ability to be Implemented. The Task Force accepted the goals and objectives at the

February 2 Task Force meeting. (Attachment A includes the Transportation System Plan goals and objectives.)

- The **Existing Conditions Memorandum** for the Transportation System Plan was prepared in draft form in mid-November to early December 2011. An overview of existing conditions was provided to the Transportation Task Force at the December 15 meeting and the memo was made available online for comment on December 30. The online comment period lasted until January 15, 2012, but comments are still being made by a few individuals and these will be addressed as the process proceeds.

  The memo describes the current (2012) transportation system in Tualatin, including existing conditions, opportunities, and deficiencies. The report evaluates the roadway network, public transportation routes and service, bicycle facilities, pedestrian facilities, rail facilities, airports, and pipelines within the project study area. It also describes general land use patterns and major activity centers that generate traffic. The information in the memo serves as the starting point for a discussion by the broader community about the current state of the transportation system in Tualatin. This information will be used to help inform the project ideas and alternatives to be developed in the Transportation System Plan. (Attachment B contains the Transportation System Plan Existing Conditions Memorandum.)

- A **preliminary assessment of future conditions** was presented to the Transportation Task Force at the February 2 meeting. The future conditions analysis helps identify future needs, opportunities, and constraints for circulation and transportation system connections for all transportation modes. The analysis starts with an examination of existing conditions. Community values and opinions on the various modes of travel are gathered to help inform the vision of the future for transportation in the community, and a technical analysis of future population and employment growth assumptions are combined with anticipated future development to provide a picture of future travel demand. Typically, future conditions are forecasted for a planning horizon of 20 years and relate primarily to motor vehicles, however, conditions and connections for other modes (such as pedestrian, bicycle, and transit) are also included. Considering these other modes in addition to motor vehicles helps create a balanced transportation system that serves the entire community. (Attachment C is the PowerPoint that was presented to the Task Force on February 2.)

- The graphic included in Attachment D provides a visual representation of the next steps in the Transportation System Plan process.

Linking Tualatin

- Like the Transportation System Plan project, Linking Tualatin has a robust **Public Outreach Plan**. Staff will summarize this at the Council Work Session.

- The Linking Tualatin **goals and objectives** were developed for review by the Transportation Task Force based on a discussion of transportation values at the December 15 Task Force meeting, and review of goals and objectives for the Southwest Corridor Plan, Tigard High Capacity Transit project, and local plans, particularly Tualatin Tomorrow and the Leveton Industrial Area Plan. Revisions were made based on review and comment at the January 19 and February 23 Task Force meetings. The goals and objectives include six categories: Community Involvement, Economy, Land Use, Transportation Choice and Mobility, Consistency and Coordination, and Implementation. The Task Force accepted the goals and objectives at the February 23 Task Force

meeting. (Attachment E includes the Linking Tualatin goals and objectives.)

Some additional written comments on the goals and objectives were provided after the Feb 23 Task Force meeting; these comments are included in Attachment F.

- The **Existing Conditions Report** for Linking Tualatin was prepared in draft form at the beginning of February 2012. An overview of existing conditions was provided to the Transportation Task Force at the February 23 meeting and the Existing Conditions Report was made available online for comment on February 24. Anyone desiring to comment on the report has been invited to do so by March 8; any comments received after that date will be addressed as the planning process proceeds.

  The Existing Conditions Report provides a concise summary of existing conditions related to land use, transportation, infrastructure, and natural resources for the Tualatin community as a whole and for seven specific focus areas that have been identified. The information presented is focused on key conditions that are relevant to high capacity transit and to the project purpose, and will inform future stages of the Linking Tualatin project. Because existing conditions information at the community level was recently gathered and summarized as part of the Transportation System Plan, that information has been relied upon and incorporated into the Existing Conditions Report for Linking Tualatin where appropriate, including several maps. (Attachment G is the Existing Conditions Report for Linking Tualatin.)

- The graphic included in Attachment H provides a visual representation of the next steps in the Linking Tualatin planning process.

Public Open House and Transit Working Group Meeting

The first meeting of the Transit Working Group was held on February 9, and a public open house was held on February 16. Additional input on existing conditions and goals and objectives related to transit in Tualatin was collected at the Transit Working Group meeting. Information about the goals and objectives and existing conditions for both the Transportation System Plan and Linking Tualatin was presented, and public comment was invited and encouraged at the open house.

DISCUSSION:

Next Steps: Transportation System Plan

On May 1, the Planning Commission will receive a presentation on the **long list of projects/options** for the Transportation System Plan. Council will then be asked to review and discuss these materials at the May 14 Work Session. The list of projects/options will have been compiled based on input received at the Working Group meetings between March 29 and April 16 and reviewed and discussed by the Transportation Task Force prior to presentation to Council.

Next Steps: Linking Tualatin

On April 3, staff will present the **Opportunities and Constraints Analysis**, potential focus area

land use types, and focus area **evaluation criteria** to the Tualatin Planning Commission. Council will then be asked to review and discuss these materials at the April 23 Work Session. The materials will have been reviewed and discussed by both the Transit Working Group and the Transportation Task Force prior to presentation to Council.

RECOMMENDATION:

The Planning Commission received a report on the Transportation System Plan and Linking Tualatin at their March 6 meeting, and was asked to make a recommendation to the City Council on both projects prior to proceeding with next steps in their respective planning processes. Staff will provide a verbal update on the TPC's recommendation at the March 12 City Council Work Session.

Staff recommends that the City Council consider this memo and attachments, and provide direction on the Transportation System Plan and Linking Tualatin prior to proceeding with next steps in their respective planning processes.

Attachments:

A. TSP Goals & Objectives
B. TSP Existing Conditions
C. TSP Future Conditions
D. TSP Process Graphic
E. LT Goals & Objectives
F. J Giunta Comments
G. LT Existing Conditions
H. LT Process Graphic
I. PowerPoint

Tualatin TSP Goals and Objectives

As accepted by the Transportation Task Force at its February 2, 2012 meeting

Goal Category	Goal	Objective
Access and Mobility	Maintain and enhance the transportation system to reduce travel times, provide travel time reliability, provide a functional and smooth transportation system, and promote access for all users.	Improve travel time reliability/ provide travel information for all modes including freight and transit
		Provide efficient and quick travel between point A and B
		Provide connectivity within the City between popular destinations and residential areas
		Accommodate future traffic, bicycle, pedestrian, and transit demand
		Reduce trip length and potential travel times for motor vehicles, freight, transit, bicycles, and walking
		Improve comfort and convenience of travel for all modes including bicycles, pedestrians, and transit users
		Increase access to key destinations for all modes
Safety	Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin.	Address known safety locations, including high crash locations for motor vehicles, bicycles, and pedestrians
		Address geometric deficiencies that could affect safety including intersection design, location and existence of facilities, and street design
		Ensure emergency vehicles are able to provide services throughout the City to support a safe community
		Provide a secure transportation system for all modes
Vibrant Community	Allow for a variety of alternative transportation choices for citizens of and visitors to Tualatin to support a high quality of life and the livability of the community.	Create a variety of safe options for transportation needs including bicycling, pedestrians, transit, freight, and motor vehicles
		Provide complete streets that include universal access through pedestrian facilities, bicycle facilities and transit on some streets
		Support a livable community with family-friendly neighborhoods
		Maintain a small town feel
Equity	Consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities.	Promote a fair distribution of benefits and burdens on different populations within the City (i.e. low-income, transit dependant, minority, age groups) and different neighborhoods and employment areas within the City
		Consider access to transit for all users

Goal Category	Goal	Objective
Economy	Support local employment, local businesses and a prosperous community while recognizing Tualatin's role in the regional economy	Support a vibrant City Center and community, accessible to all modes of transportation
		Support employment centers by providing transportation options to major employers
		Increase access to employment and commercial centers on foot, bike, or transit
		Consider positive and negative effects of alternatives on adjacent residential and business areas
		Accommodate freight movement
		Facilitate efficient access for goods, employees, and customers to and from commercial and industrial lands, including access to the regional transportation network.
Health/Environment	Provide active transportation options to improve the health of citizens in Tualatin. Ensure transportation does not adversely impact public health or the environment.	Provide active transportation options to area schools to reduce childhood obesity
		Promote active transportation modes to support a healthy public and children of all ages
		Provide interconnected networks for bicyclists and pedestrians throughout the City for all age groups
		Consider air quality effects of potential transportation solutions
		Protect park land and create an environmentally sustainable community
		Consider positive and negative effects of potential solutions on the natural environment (including wetlands and habitat areas)
Ability to be Implemented	Promote potential options that are able to be implemented because they have community and political support and are likely to be funded.	Promote fiscal responsibility and ensure that potential transportation system options are able to be funded given existing and anticipated future funding sources
		Evaluate for consistency with existing community, regional, and state goals and policies
		Strive for broad community and political support
		Optimize benefits over the life-cycle of the potential option
		Consider transportation options that make best use of the existing network

Existing Conditions Report

PREPARED FOR: Tualatin Transportation System Plan Project Management Team

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COPIES: Theresa Carr, CH2M HILL
Eryn Deeming Kehe, JLA

DATE: December 30, 2011

PROJECT NUMBER: 427318.A1.05

This memorandum describes the current (2012) transportation system in Tualatin, including existing conditions, opportunities, and deficiencies. The report evaluates the roadway network, public transportation routes and service, bicycle facilities, pedestrian facilities, rail facilities, airports, and pipelines within the project study area. It also describes general land use patterns and major activity centers that generate traffic. The information used to describe the existing system and identify deficiencies in this report came from the City of Tualatin, Washington and Clackamas Counties, the Oregon Department of Transportation (ODOT), Metro, and the consultant team through a site visit on October 12, 2011.

The information in this memo serves as the starting point for a discussion by the broader community about the current state of the transportation system in Tualatin. This information will be used to help inform the project ideas and alternatives to be developed into Tualatin's Transportation System Plan (TSP).

Study Area

The City of Tualatin is located in the southwestern portion of the Portland Metro region, and according to the 2010 US Census has a population of 26,054 people. It is predominantly located within Washington County, though a small section of the City east of I-5 is located in Clackamas County. Figure 1 shows the study area in more detail.

The study area for the Tualatin TSP is comprised of the Tualatin Planning Area Boundary, which includes portions of the Basalt Creek project and the SW Concept Plan boundaries. The Tualatin River is the north boundary of the City west of I-5, with SW Cipole Road and SW 124th Avenue to the west, and SW Helenius and SW Norwood Roads to the south. The eastern boundary follows the west side of I-5 until north of I-205. The City then extends east into Clackamas County east of SW 48th Avenue. The City also includes a section of the Bridgeport Village shopping center on either side of I-5 to approximately SW Rosewood Street in the northeastern quadrant of the City. In addition to the City limits at the edge, there are a handful of areas that are surrounded by the City but not officially incorporated.

Land Use

Introduction

This section provides a general overview of existing and allowed land uses in the City of Tualatin. It is intended to inform the team in identifying how current land uses affect transportation conditions. The City of Tualatin's Zoning and Comprehensive Plan are the same and are codified in the Tualatin Development Code (TDC). The TDC identifies types of development and land uses that are currently allowed within the City. Figure 2 shows land use designations within the City.

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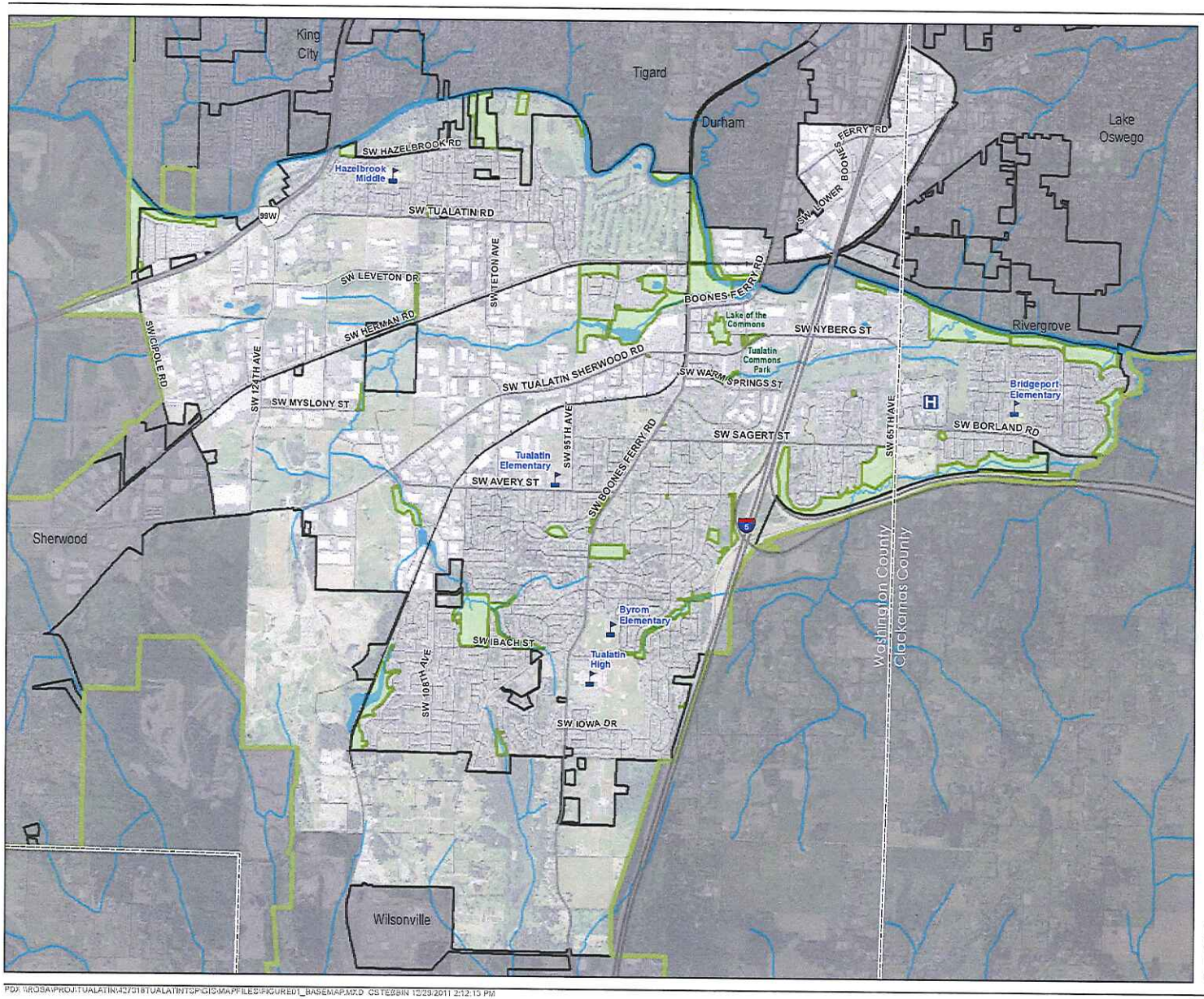
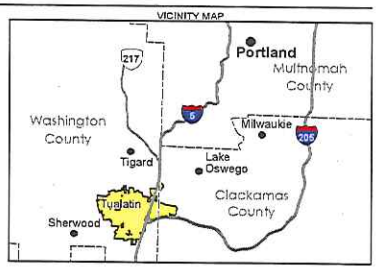


VICINITY MAP



LEGEND

- Study Area
- City Boundaries
- County Boundaries
- Urban Growth Boundary
- Parks
- Schools
- Railroad
- Hospitals

Street System

- Interstate
- Arterial

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FIGURE 1
Base Map
Existing Conditions Analysis
City of Tualatin Transportation System Plan

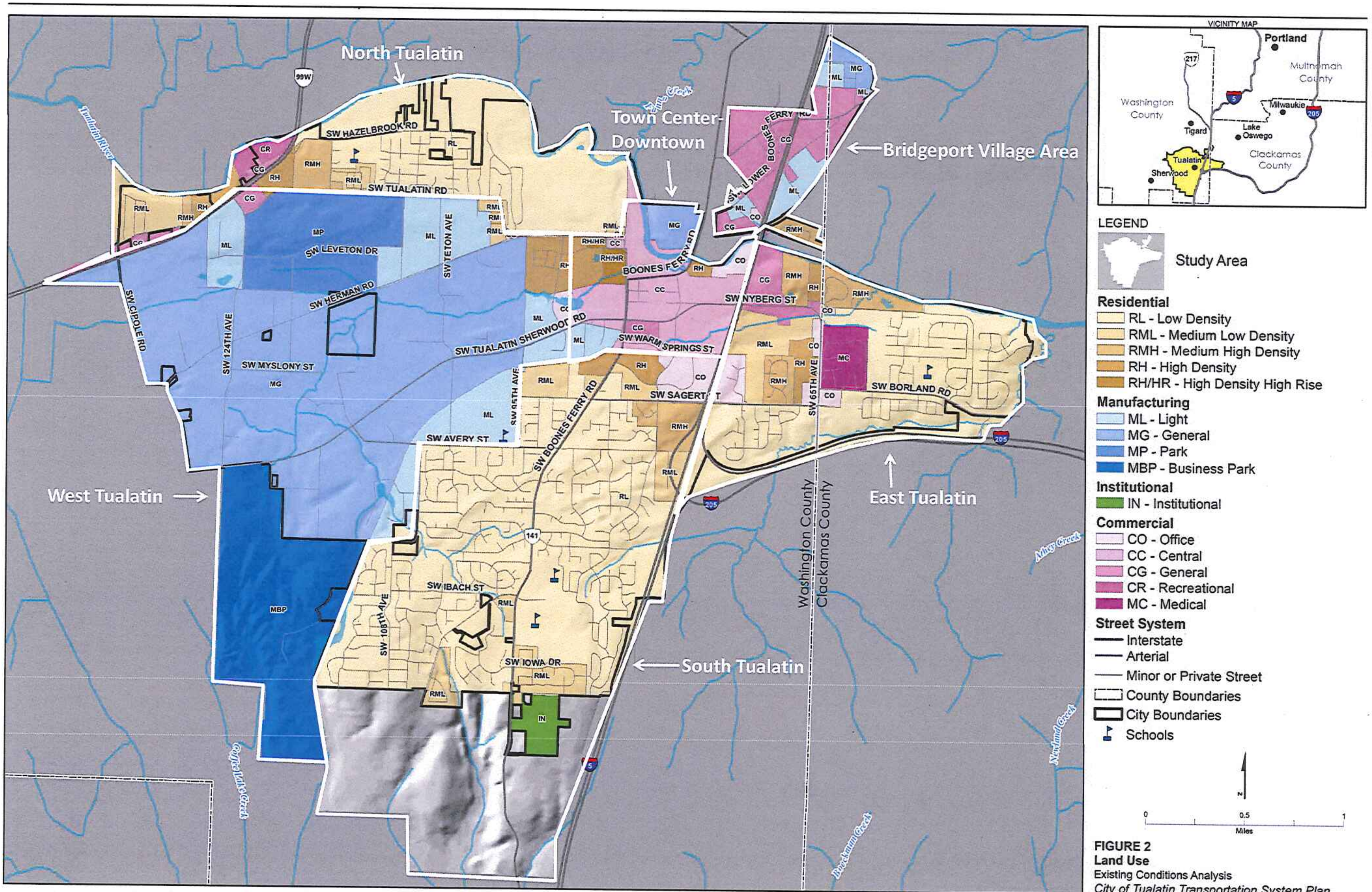


FIGURE 2
Land Use
Existing Conditions Analysis
City of Tualatin Transportation System Plan

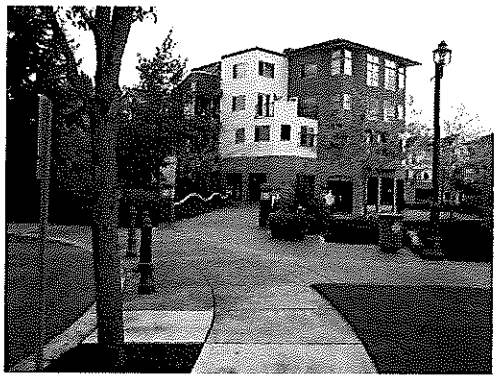
Existing Land Uses

This section provides a general overview of existing and allowed land uses within the City of Tualatin's planning area including the SW Concept Plan and the Basalt Creek Planning area. It is not intended to be comprehensive, but to inform the TSP team in identifying how current land uses affect current transportation conditions. The descriptions and areas below are based on distinct land uses and character within the City and are indicated on Figure 2.

Town Center – Downtown Tualatin

The Town Center Area including downtown Tualatin is centered around SW Nyberg Street west of I-5, bounded by I-5, SW Warm Springs Street, SW 90th Avenue, and SW Tualatin Road. The Town Center Area has the highest density residential areas within Tualatin, though the majority of the area is designated Central Commercial and includes Tualatin Commons and the surrounding businesses along SW Tualatin-Sherwood Road, SW Tonka Street, SW Nyberg Street, SW Boones Ferry Road, and SW Tualatin Road. The Tualatin Community Park is partially within the Town Center Area.

There are a number of shopping centers in the Town Center area, especially along SW Tualatin-Sherwood and SW Nyberg Roads. The businesses are predominantly car-oriented and have large parking lots with fast-food or casual dining restaurants adjacent to the main roadways. Other areas have groups of smaller retail and service-oriented businesses, specifically the area between SW Tualatin-Sherwood Road and SW Warm Springs Street and SW Boones Ferry Road and SW Martinazzi Avenue. The Town Center area also has a couple of hotels, one in the Tualatin Commons area and one further south on SW Warm Springs Street.



Example of mixed use development in the Town Center area

In addition to retail businesses, the Town Center area is also home to many City services including the Tualatin Library, Police Department, City Hall, City administrative offices, and Community Park. The central part of the Town Center area is comprised of the Tualatin Commons, which is oriented towards the lake at the center of the commons. The circular area is surrounded by mixed use development with ground floor retail and upper-story residential development (apartments and condos). There are a number of service and restaurant businesses in the Tualatin Commons, and festivals and community events are held in the Commons. It is the center of the community and provides a gathering place for residents.

North Tualatin

North Tualatin is located north of SW Tualatin Road and includes the section of Tualatin that is northwest of OR 99W. The majority of the area in North Tualatin is low-density residential, with a few areas of medium-high density and high density residential, especially near OR 99W. There are a few mobile home parks north of OR 99W adjacent to SW Pacific Drive and some higher-density residential neighborhoods. There are also a few pockets of recreational commercial and general commercial along OR 99W in North Tualatin. The Tualatin Country Club is located in North Tualatin, along with Jurgens Park and Hazelbrook Middle School.

The major through facility, OR 99W, brings regional traffic through this section of the City, though its location on the edge of town reduces the impact of the regional traffic on the local roads or neighborhoods.

Bridgeport Village Area

There is one section of the City north of the Tualatin River extending along I-5 and SW Bridgeport and SW Lower Boones Ferry Roads. On the west side of I-5is Bridgeport Village, a lifestyle center providing shopping, dining, and entertainment located directly off of exit 290. With approximately 60 businesses located in Tualatin, it is a regional draw. Additionally, there are more businesses south of SW Bridgeport Road including a sporting goods store, jewelry store, and grocery store. This area is designated general commercial. On the east side of I-5 is additional general commercial and some light manufacturing and general manufacturing which includes a shipping distribution center, a few bakery supply businesses, storage, and vehicle repair businesses. There is also a small section of medium-high density residential just east of I-5 and north of the river.

The three study area intersections in this part of Tualatin had the two highest traffic volumes during the traffic count period (I-5 northbound ramps and SW Lower Boones Ferry Road, and I-5 southbound ramps and SW Lower Boones Ferry Road), and the third (SW 72nd Avenue and SW Lower Boones Ferry Road) is in the top third of study area intersections for traffic volumes. Much of the traffic is traveling east-west on SW Bridgeport and SW Lower Boones Ferry Roads to or from the highway, in the afternoon rush hour. Many vehicles are exiting northbound I-5 and turning left towards the shopping center on SW Bridgeport Road. At the I-5 southbound ramps, the traffic counts are very similar – most vehicles are heading either east or west bound, with about the same number of vehicles exiting the highway and turning east or westbound onto SW Lower Boones Ferry Road. The intersection directly adjacent to Bridgeport Village, SW 72nd Avenue/SW Bridgeport Road/SW Lower Boones Ferry Road is a better indicator of afternoon rush hour associated with Bridgeport Village. The majority of vehicles turn off of SW 72nd Avenue towards the I-5 interchange, while similar numbers of westbound vehicles pass through the intersection, and turn left and right towards the shopping areas. This part of Tualatin has one of the four I-5 under- or overcrossings at SW Lower Boones Ferry Road near the shopping center.

The second I-5 interchange in the City is located here, and the roads serve shoppers coming to Bridgeport, but also carry freight for the commercial and manufacturing businesses. There are few local roads - most of the transportation network in this part of Tualatin serves the commercial or manufacturing businesses or provides direct access to the I-5 interchange.

East Tualatin

Example of low density residential in East Tualatin

The eastern segment of Tualatin that is east of I-5 also contains the only part of the City that is within Clackamas County. The County line is approximately SW 65th Avenue between Washington and Clackamas Counties. This area is separated from the rest of the city by the highway, which presents a physical barrier between the eastern and western parts of the City. Two of the four under- or overpasses in Tualatin are located in East Tualatin: SW Nyberg Street near the Town Center area, SW Sagert Street just north of the I-5 and I-205 interchange. This section is also bounded to the south by I-205 and to the north by the Tualatin River.

East Tualatin is a mix of land uses: one of the largest employers in the City - Legacy Meridian Park Medical Center - is located in the area designated Medical Center. There are few areas of commercial office nearby, and a general commercial area east of I-5 on either side of SW Nyberg Road. In addition to these commercial/employment centers, there is some high and medium high density residential. The remainder of East Tualatin is low or medium-low density residential. Bridgeport Elementary School, Browns Ferry Park, Stoneridge Park, and Atfalati Park provide educational and recreational opportunities. The low-density residential areas are similar to the neighborhoods found in southeastern Tualatin, but the high-density areas are characterized by multi-story condo and apartment style housing.

This area attracts a mix of traffic – the commercial, office, and medical center areas are regional attractors, and local residential traffic is more concentrated in areas with high density residential. Connections to the rest of the city are constrained by I-5, the river, and I -205, but there is a regional connection to the east via SW Borland Road.

South Tualatin

This area around SW Boones Ferry Road, between I-5 and SW 95th Avenue and SW 105th/108th Avenues and the railroad, and downtown Tualatin and the southern City limits, is mainly low to medium-low density residential with mostly single-family homes organized in cohesive neighborhoods. Many of the neighborhoods seem to have been developed or subdivided at the same time, and have similar house designs and consistent architecture. Two of the public schools are located in south Tualatin: Tualatin High School, and Byrom Elementary School. Parks in this area include Ibach Park, and Little Woodrose Natural Area, Lafky, Saarinen Wayside, and Koller Wetland parks. The street network is neighborhood-oriented with few through streets, and characterized by cul-de-sacs and curving, low volume and speed streets. Many of the neighborhoods were constructed recently and have sidewalks, curbs and

gutters. There is also a private school campus located south of Norwood Road, which is zoned institutional. South Tualatin also has one of the 4 under or over-crossings of I-5 at Norwood Road.

The transportation system in this part of Tualatin is mainly to serve the neighborhoods; the local streets connect to the arterials to move traffic into and out of the residential areas. The neighborhoods are bicycle and pedestrian friendly in order to accommodate the recreational needs of the families that live in the adjacent houses. Except for the public schools, there are few services or jobs within walking or bicycling range.

West Tualatin

The area between OR 99/OR 99W, SW Tualatin Road and the City limits, and SW 95th Avenue and SW 105th/108th Avenues and the railroad, is designated manufacturing: Light, General, Park, or Business Park. There are some lumber companies, a national window manufacturer, landscaping, equipment and parts machining and a gravel business, among others in this area. The manufacturing designation is characterized by big parcels with large warehouse style buildings. Additionally, Tualatin Elementary School is located at SW 95th Avenue and SW Avery Street.

Example of Manufacturing Building in West Tualatin

These land uses have specific transportation needs; manufacturing businesses are reliant on predictable and consistent deliveries for raw materials and finished goods, making freight accessibility and predictability important. Roads in western Tualatin such as SW Herman Road, SW Tualatin-Sherwood Road, SW 124th Avenue, and OR 99W carry more freight and larger vehicles than other areas within the City. Additionally, the workforce in manufacturing is employed in shifts, and many of the workers leave and arrive in a short time frame, potentially contributing to congestion during shift change times. Due to the large parcels and long distances, the manufacturing land uses are not very pedestrian friendly, though the major roadways do have bicycle lanes.

Demographics

According to the 2005-2009 American Community Survey, the City of Tualatin is fairly similar to the Portland Metro area in terms of household and family size, and in general the population is more likely to have a high school or college degree than the metro area. The median household and family income is also slightly higher than the Portland area and the poverty level of both households and individuals is slightly lower. There are also more children under 18 and fewer adults over 65 in Tualatin when compared to the rest of the region.

Tualatin has a higher percentage of Spanish speakers and Hispanic or Latino residents compared to the Portland Metro area, with approximately 18 percent of the population self-identifying as Hispanic or Latino. A similar percentage of the population speaks Spanish, while approximately 10 percent of the population speaks Spanish with English spoken less than "very well". A higher number of residents within Tualatin rent their homes than own them when compared to the Metro area. Tualatin has grown quickly and attracted residents; approximately 72 percent of current residents moved to the City since 2000.

Commute Characteristics

Tualatin has more jobs in the City than there are workers to fill those jobs, and many of the residents in Tualatin work outside of the City. These commute patterns means that there is congestion and vehicles that are both entering and leaving the city at both the morning and evening peak times. As discussed above in the West Tualatin section, many of the manufacturing jobs tend to be scheduled around shifts, potentially creating congestion for workers leaving and arriving for their shifts within a short amount of time.

The City is home major to companies including Kershaw Knives, Columbia River Knife and Tool, and Novellus Systems, which designs and manufactures equipment for use in semiconductors. The City's largest employer is Legacy Meridian Park Hospital, followed by the United Parcel Service (UPS) and Precision Wire Components. These employers are scattered throughout the City, and are not located in one consolidated employment center. Table 1 lists the top five employers according to number of employees.

TABLE 1
Top five employers in Tualatin

Business Name	Number of Employees	Type of Business
Legacy Meridian Park Hospital	823	Hospital
Novellus Systems, Inc.	650	Manufacturer
United Parcel Service (UPS)	512	Delivery Service
Precision Wire Components	457	Manufacturer
Huntair	360	Manufacturer

Source: City of Tualatin business license information. March 2011 Active Business List

According to the 2010 US Census American Community Survey (ACS) three year estimates, Tualatin is home to approximately 14,800 non-military employees in the labor force, with a 10.3 percent unemployment rate. Workers 16 and older predominantly drive to work alone (77.6 percent), with smaller percentages carpooling (7.4 percent), using public transit (4.2 percent), walking (2.9 percent), or working at home (6.1 percent). Travel time to work varies across the working population. Table 2 below shows the estimated percentage of workers based on their travel time to work.

TABLE 2
Travel Time to Work

Travel Time to Work	Percent
Less than 5 minutes	5%
5 to 9 minutes	17%
10 to 14 minutes	16%
15 to 19 minutes	14%
20 to 24 minutes	13%
25 to 29 minutes	7%
30 to 34 minutes	11%
35 to 39 minutes	4%
40 to 44 minutes	3%
45 to 59 minutes	4%
60 to 89 minutes	3%
90 or more minutes	2%

Source: US Census American Community Survey 3 year estimates. Accessed 11/17/2011.

Roadway System, Geometry and Conditions

Introduction

This section describes the current roadway network within the study area, including functional classification, ownership, geometric conditions, and freight designation. Sections were developed based on information provided from the City's GIS database as well as ODOT's statewide database.

Roadway Classification

Functional classification identifies how a roadway operates within the overall transportation system and defines the character of service it provides. In addition, functional classification defines standards for roadway and right-of-way width, access spacing and pedestrian and bicycle facilities. The City of Tualatin has established a functional classification system for the roadways owned by the City. Table 3 identifies the existing classifications as described in the current City of Tualatin TSP. Functional classifications assessed as part of this TSP include major and minor arterials, and major, minor, and residential collectors, local roadways, freeways, and expressways. Figure 3 shows the roadway classifications in the City of Tualatin.

TABLE 3
City of Tualatin Functional Classification Description

Functional Classification	Description
Freeway	Primary function is to carry high levels of regional vehicular traffic and public transit at high speeds; full access control with access limited to interchanges and street crossings with grade separations; widely spaced access points; serves motorized vehicle traffic only; contains a median.
Expressway - (F)	Primary function is to carry high levels of regional vehicular traffic and public transit at high speeds, but to a lesser extent than freeways; provides a limited number of grade-separated interchanges (preferred) and at-grade intersections; high access control; serves motorized vehicle traffic only; contains a median.
Major Arterial - (Ei) - (Eb&t)	Primary function is to serve both local and through traffic as it enters and leaves the urban area; connects the minor arterial and collector street system to freeways and expressways; provides access to other cities and communities; serves major traffic movements; access control through medians and/or channelization; restricted on-street parking; sidewalks and bicycle facilities required; may allow a right-turn pocket if warranted; will be used by public transit.
Minor Arterial - (Db&t) - (Db&t – Downtown)	Primary function is to serve local and through traffic between neighborhoods and to community and regional facilities; distributes traffic from major arterials to collectors and local streets, higher degree of access than major arterials; trip lengths, traffic volumes, and speeds are lower than on major arterials; sidewalks and bicycle lanes required; likely to be used by public transit.
Major Collector - (Cb&t)	Primary function is to serve local traffic between neighborhoods and community facilities, principal carrier between arterials and local streets; provides some degree of access to adjacent properties, while maintaining circulation and mobility for all users; carries lower traffic volumes at slower speeds than arterials; typically has two to three lanes; may contain some on-street parking; pedestrian and bicycle facilities are required; may be used by public transit.
Minor Collector - (Cb&p) - (Cs&2p) - (Cs&p) - (Cb)	Primary function is to connect neighborhoods with major collector streets to facilitate movement of local traffic; has slower speeds to ensure community livability and safety for pedestrians and bicyclists; on-street pedestrian and bicycle facilities are required; bicycle facilities may be exclusive or street parking is prevalent; shared roadways depending on traffic volumes, speeds, and extent of bicycle travel; may be used by public transit.
Residential Collector - (Cr)	Provides primary routes into residential neighborhoods; carries higher volumes than local streets, but is not intended to serve through traffic; provides direct access to adjacent land uses; characterized by moderate roadway distances and slow speeds, serves passenger cars, public transit, pedestrians, and bicyclists, but not truck traffic; pedestrian facilities are required.
Local Commercial Industrial - (B-CI)	Primary function is to provide direct truck, public transit, and vehicular access to commercial and industrial land uses; characterized by short to moderate roadway distances and slow speeds; offers a high level of accessibility; pedestrian facilities are required.
Local Street - (B-D) - (B)	Primary function is to provide direct access to adjacent land uses; characterized by short roadway distances, slow speeds, and low volumes; offers a high level of accessibility; serves passenger cars, pedestrians, and bicycles, but not trucks; may be used by public transit, pedestrian facilities are required.

Source: City of Tualatin Transportation System Plan 2001.

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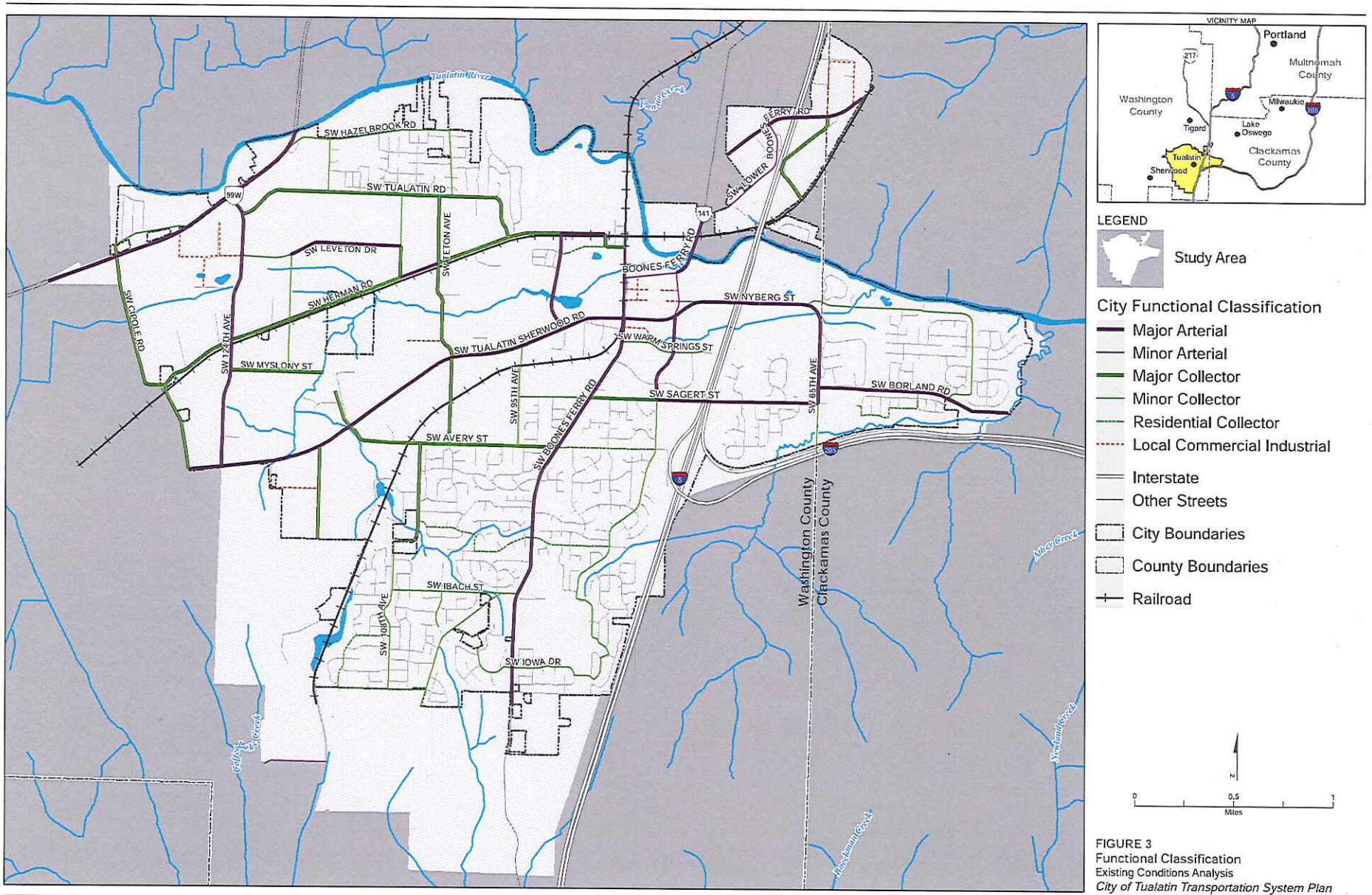

FIGURE 3
Functional Classification
Existing Conditions Analysis
City of Tualatin Transportation System Plan

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Arterials

The primary function of arterial streets is to provide a high degree of vehicular mobility including accommodations for trucks; however, they may also serve a secondary role providing access to individual properties. Typically arterials serve longer and higher speed trips. The nature of arterial streets dictates that their designs typically limit property access and on-street parking to improve traffic capacity for through traffic. Arterial streets are used as primary bicycle, pedestrian, emergency response routes and transit routes.

Example of a major arterial: SW Boones Ferry Road at SW Ibach Street

There are two classifications of urban arterial streets within the City of Tualatin: major arterials and minor arterials. Because major and minor arterials have similar functions, the designs of major and minor arterials are also usually similar, except freeways and expressways. While freeways and expressways are typically classified as major arterials, they have unique geometric criteria that control their design, and highly regulated access controls that limit access to adjacent land uses.

Typical major arterials within the city include: SW Tualatin-Sherwood Road, SW 124th Avenue, and SW Boones Ferry Road from SW Tualatin-Sherwood Road south.

Typical minor arterials within the city include: SW Boones Ferry Road from SW Tualatin-Sherwood Road north, SW Martinazzi Avenue between SW Boones Ferry and Tualatin-Sherwood Roads, SW Borland Road, and SW 65th Avenue.

Collectors

The primary function of collector streets is to assemble traffic from the interior of an area and deliver it to the closest arterial street. Collectors provide for both mobility and access to property and are designed to balance both functions. They usually serve shorter trip lengths and have lower traffic volumes and speeds than arterial streets. Collector streets are also used as important emergency response routes and are frequently used as transit routes.

There are three classifications of collector streets: major collectors, minor collectors and residential collectors. The function of each collector type is progressively less mobility and more land use/access driven from major to residential.

Typical major collectors within the city include: SW Herman Road, SW 105th Avenue, and SW Avery Street.

Typical minor collectors within the city include: SW Ibach Street, SW Martinazzi Avenue south of SW Sagert Street, SW Hazelbrook Road

Typical residential collectors within the city include: SW Blake Street between SW Boones Ferry Road and SW Martinazzi Avenue, SW Alsea Drive, and SW Sagert Street.

Example of a major collector: Avery Street

Ownership

Within the City of Tualatin there are roadways owned by four different agencies; the Oregon Department of Transportation (ODOT), Washington County, Clackamas County, and the City of Tualatin. Typically the higher classified roadways focused on vehicle mobility and throughput are owned by the other agencies such as ODOT, Clackamas County or Washington County. The lower classification arterials, collector streets, and local roadways are typically owned by the City of Tualatin. The breakdown of ownership is shown below.

ODOT

- I-5
- OR 99W (Pacific Highway)
- SW Nyberg Street (in the vicinity of the I-5 and Nyberg Street Interchange)
- SW Boones Ferry Road (between the Tualatin River Bridge and SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (OR 141, in the vicinity of the I-5/Lower Boones Ferry Road Interchange)

Washington County

Major Arterials

- SW 65th Avenue[1]
- SW Bridgeport Road
- SW Nyberg Street (between SW Nyberg and SW Sagert Streets)
- SW Tualatin-Sherwood Road

Minor Arterials

- SW 72nd Avenue
- SW Lower Boones Ferry Road

Major Collectors

- SW Cipole Road

Minor Collectors

- SW 65th Avenue (south of SW Sagert Street)
- SW Grahams Ferry Road
- SW Pacific Drive

Clackamas County

- SW Borland Road
- SW Lower Boones Ferry Road (within Clackamas County)

Maintenance Responsibility

Maintenance responsibility of the roadway infrastructure typically falls to the agency which has jurisdiction or ownership of that roadway. For example, SW Tualatin-Sherwood Road, although located within the City of Tualatin is owned and operated by Washington County and thus maintenance responsibility lies with the County. Some exceptions may occur where two agencies have entered in to a separate agreement for maintenance responsibility. This may be a case by case type agreement or wholesale through the City. The City maintains an agreement with Clackamas County where the City is responsible for all existing traffic control devices and for installing additional traffic control devices, except energized traffic signals, as necessary upon the County roads within City boundaries. There is also an agreement with Washington County that the City will maintain the storm drains on County roads located in the City. All other maintenance responsibilities lie with the owning agency for each roadway.

Freight or Truck Routes

Designated freight and truck routes exist within the project study area. State freight routes and federally designated truck routes that are part of the National Highway System (NHS) are described in the following sections. The City of Tualatin has also designated certain roadway corridors as trucks routes. Typically these routes connect the commercial/industrial districts within the City to major arterials and ultimately OR 99W and I-5.

[1] SW 65th Avenue is located on the border between Washington and Clackamas Counties, though Washington County maintains the roadway.

City of Tualatin Truck Routes

- I-5 (north to south City limits)
- OR 99W (west to north City limits)
- SW 124th Avenue (OR 99W to SW Tualatin-Sherwood Road)
- SW Tualatin Road (SW 124th Avenue to SW Jurgens Avenue)
- SW Herman Road (SW Tualatin Road to SW Cipole Road)
- SW 108th Avenue (SW Tualatin Road to SW Herman Road)
- SW Teton Avenue (SW Tualatin Road to SW Avery Street)
- SW Cipole Road (OR 99W to SW Tualatin-Sherwood Road)
- SW Boones Ferry Road (south City Limits to SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (SW Boones Ferry Road to the northeast City limits)
- SW Tualatin-Sherwood Road (west City limits to the Nyberg Street Interchange)
- SW Avery Street (SW Tualatin-Sherwood Road to SW 95th Avenue)
- SW 105th Avenue (SW Avery Street to SW Moratoc Drive)

Federally Designated Truck Routes

- I 5 (north to south City limits)
- OR 99W (west to north City limits)

The difference between freight and truck routes is the agency that is authorized to make changes (mobility standards, construction, etc) to the routes. Federally designated freight routes need Federal Highway Administration (FHWA) approval while state routes need ODOT and/or local government approval. State freight routes have higher mobility standards than other state highways, but these mobility standards apply to freight routes only. The NHS truck routes also have certain standards, such as truck size, that must be met. In Tualatin, the state/federal freight routes generally correspond with the interstate highway system and the truck routes generally correspond with other major arterials within Tualatin.

Existing Geometry vs. City Design Standards

A high level assessment compared the existing City of Tualatin roadway network against current design standards to identify deficiencies in the system. Roadways were checked for intersection skew angles, spacing and general conformance with the cross section standards including presence of parking, medians and sidewalks.

Existing intersections within the City of Tualatin system conform to this requirement. The standards identify a minimum interior angle of 75° with a preferred angle of 90°. In some cases, intersections with major arterials or collectors occur as slightly smaller angles, which could result in sight distance limitations and increased safety concerns. However, in most cases this occurs at wide intersections that are signalized where sight distance and trailer sweep are better accommodated.

In general, major arterials within the City match the current established design standards. One exception is SW Boones Ferry Road south of SW Warm Springs Street. Although identified as a major arterial in the City's current TSP, the roadway width and section more closely matches a major collector. Another example is portions of SW Herman Road that are identified as major arterial but are not yet improved to City standard and lack curb, sidewalk, etc.

In general the minor arterials within the City have been built out and meet the standards with the exception of overall width, which tends to be slightly narrower than the standard curb-to-curb width. Additionally SW Martinazzi Avenue lacks designated bicycle lanes between SW Sagert Road and SW Boones Ferry Road.

Major collectors within the City generally meet the design standards reviewed. There are some instances where there are no bike lanes on portions of SW Herman Road and SW Teton Avenue. Further, bike lanes are reduced or

eliminated at most intersections due to left turn lanes. Curb-to-curb widths are generally less than the standard (14 feet) due to the reduction in median/center turn lane width.

Minor collectors within the City appear to vary the most from standard. In most cases the roadways lack either bike lanes, on street parking, or both. Some minor collectors are not striped at all, but still do not meet the standard because the overall curb-to-curb is narrower than the accepted width.

Residential collectors in the City generally meet the design standard curb-to-curb width. Residential collectors, like local streets, are typically not striped and therefore individually dedicated cross section elements are difficult to determine, however the overall width appears to generally meet standard.

Based on the review of existing roadway infrastructure against the standards listed above, Table 4 lists high level deficiencies identified in no particular order of priority:

TABLE 4
Identified Deficiencies

Item No.	Roadway Segment or Intersection	Deficiency
1	SW Boones Ferry Road south of SW Tualatin-Sherwood Road	Roadway is listed as Eb&t major arterial to south city limits but is generally a 3-lane section.
2	SW Herman Road at SW Cipole Road	Intersection within a sharp curve on SW Cipole and is at close proximity to an unimproved railroad crossing. Bicycle and pedestrian are not accommodated.
3	SW Herman Road between SW 125th Avenue and SW Cipole Road	Section is 2-lane unimproved with no curbs, sidewalks or bike lanes. Shoulders are extremely narrow.
4	SW Herman Road between SW Teton Avenue to SW Tualatin Road	Section is 2-lane unimproved with no curbs, sidewalks or bike lanes but is listed at Eb&t in current plan. Shoulders are extremely narrow.
5	SW 105th Avenue to SW Blake Street to SW 108th Avenue, south of SW Tualatin-Sherwood Road	This segment of roadway is unimproved 2-lane roadway with sharp curvature and no accommodations for bicycles or pedestrians.
6	SW Borland Road	Roadway is listed as Eb&t major arterial to south city limits but is generally a 3-lane section from SW 65th Avenue east of SW Wilke Road, and then a 2-lane section east to the City limits.
7	SW 65th Avenue	Roadway is listed as Eb&t major arterial to south city limits between SW Nyberg and SW Sagert Streets but is a 3-lane section.

Source: Site visit observations and city-provided Geographic Information System (GIS) data

A listing of streets and the standards assessed including commentary is included in Appendix A for reference.

Traffic Operations

This section describes the motor vehicle environment and operations at key intersections within Tualatin. Areas covered in this section include data collection techniques, intersection operations, travel times on key corridors, and safety analysis.

Data Collection

The project team collected traffic volume counts for 30 study intersections in October 2011 on weekdays during the morning (7am-9am) and afternoon (4pm-6pm) peak periods. In addition, the team took 24-hour counts at 11 locations on key roadways in Tualatin. In addition to intersection and daily volume profiles, the project team collected corridor data related to travel times and speeds during the pm peak period.

Daily Traffic Volumes

Daily traffic volume counts help demonstrate overall travel behavior trends in Tualatin. Table 5 provides bi-directional motor vehicle volumes for each of the 11 locations where 24-hour counts were taken. The team identified the time period with the highest overall bi-directional demand as well. All counts were taken in October 2011 unless noted otherwise.

TABLE 5
Daily Motor Vehicle Traffic Volumes

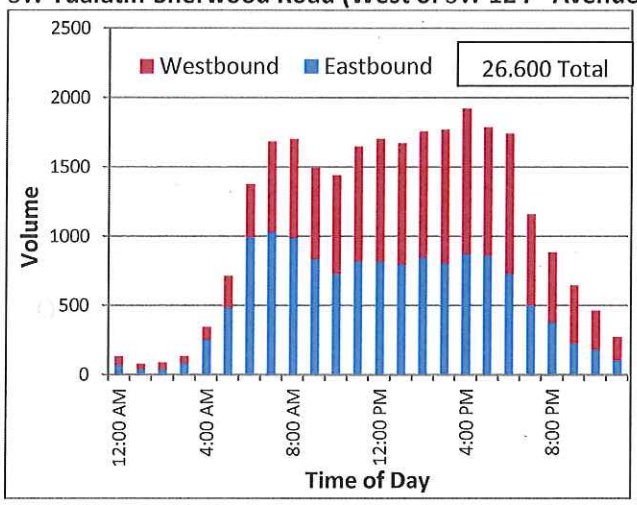
No.	Roadway	Count Location	Daily Volume	Peak Hour
1	SW Tualatin-Sherwood Road	West of SW 124th Avenue	26,600	4pm-5pm
2	SW Nyberg Road*	West of SW 65th Avenue	21,700	5pm-6pm
3	SW Boones Ferry Road	North of SW Ibach Street	16,100	4pm-5pm
4	SW Tualatin Road	East of SW 90th Avenue	14,600	4pm-5pm
5	SW Boones Ferry Road	North of SW Sagert Street	14,300	5pm-6pm
6	SW Lower Boones Ferry Road*	East of SW Childs Road	13,700	5pm-6pm
7	SW Tualatin Road	West of SW 109th Avenue	10,700	5pm-6pm
8	SW Borland Street	East of SW 60th Avenue	10,500	5pm-6pm
9	SW Boones Ferry Road	South of SW Ibach Street	10,400	4pm-5pm
10	SW Bridgeport Road*	West of SW Hazel Fern Road	10,000	12pm-1pm
11	SW Herman Road	West of SW 108th Avenue	7,200	4pm-5pm

SOURCE: Count data collected in October 2011 by All Traffic Data unless noted otherwise.
*Count taken in May 2010 (SW Bridgeport Road & SW Nyberg Road) or March 2010 (SW Lower Boones Ferry Road) by Quality Counts.

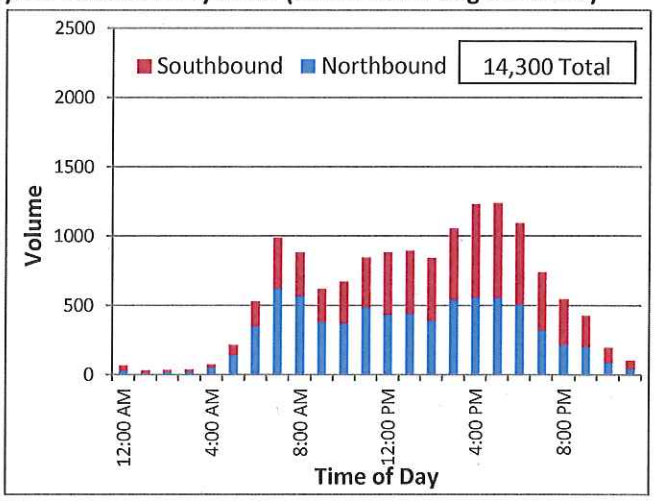
The daily traffic volumes illustrate the relative use of Tualatin's roadways by autos and trucks at various locations within the city. The peak hour demonstrates when during the day there is the highest use of the roads. SW Tualatin-Sherwood and SW Nyberg Roads have the highest traffic volumes, with over 20,000 vehicles per day. The SW Tualatin Road and SW Boones Ferry Road corridors have10,000 motor vehicles daily at multiple locations.

- On most roadways, traffic volumes peak during the morning and afternoon commute periods, with the highest overall volumes occurring between 4pm to 6pm. This profile is known as a "commuter profile" and is representative of most roadways in Tualatin. However, some roadways have a more consistent hourly demand, with a less dramatic increase in demand during the AM and PM peak commute periods. These roadways tend to have more truck traffic, retail trips, or school trips. Figure 4 shows a sample of 24-hour volume profiles for various geographic locations around the city.

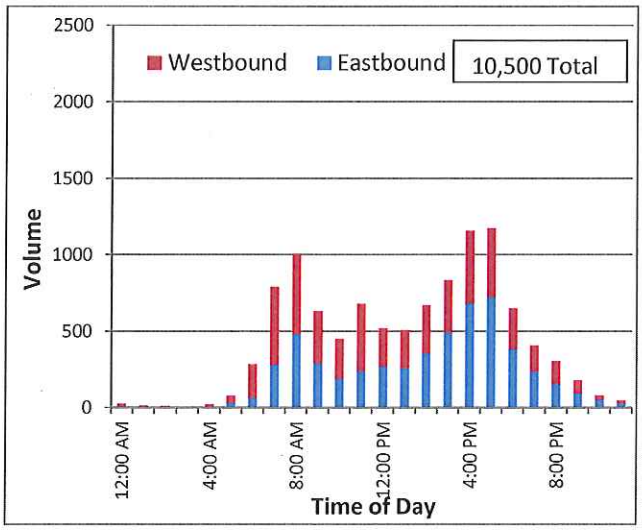
SW **Tualatin-Sherwood Road (West of** SW **124th Avenue)**



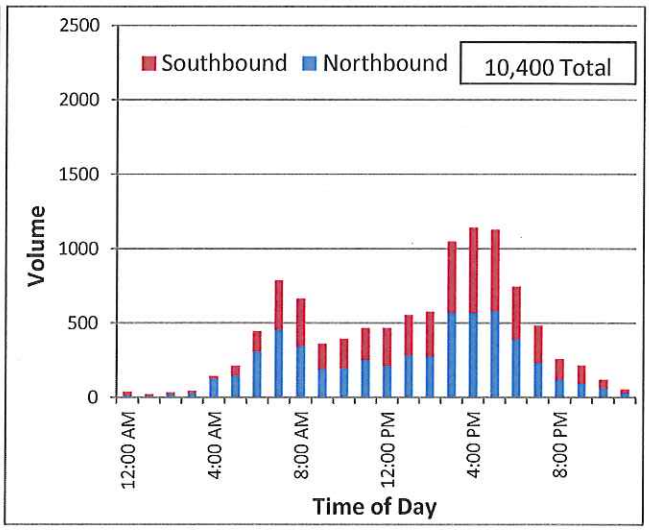
SW **Boones Ferry Road (North of** SW **Sagert Street)**



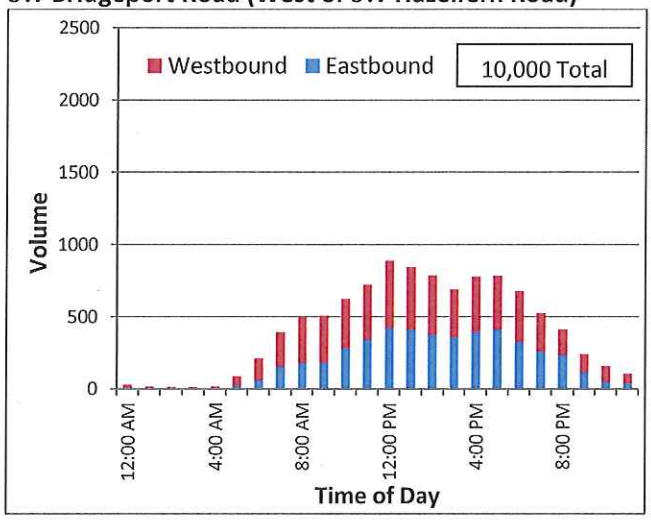
SW **Borland Street (East of** SW **60th Avenue)**



SW **Boones Ferry Road (South of** SW **Ibach Street)**



SW **Bridgeport Road (West of** SW **Hazelfern Road)**



SW **Tualatin Road (West of** SW **109th Avenue)**

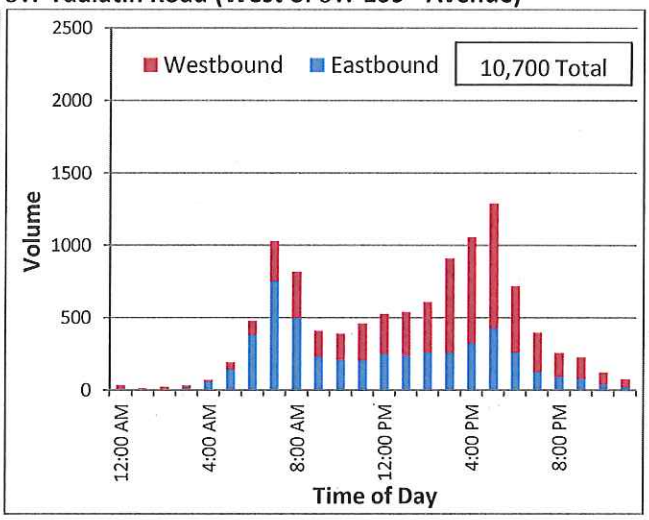


Figure 4: 24-Hour Volume Profiles

Areas with predominantly retail or commercial land uses may experience more traffic during the mid-day. An example of this is SW Bridgeport Road near the Bridgeport Village shopping center, which has a relatively consistent volume profile with peak demand occurring between 12 pm and 1pm.

While SW Tualatin-Sherwood Road has peak periods in line with the commuter profile, the difference between peak and off-peak travel is relatively small, due in part to the high percentage of heavy vehicles (trucks with three or more axles) and trucks. From 8am to 3pm, heavy vehicles make up 15 percent of SW Tualatin-Sherwood Road traffic volume, compared to 8 percent during the pm peak period (4pm to 6pm). Table 6 identifies the percentage of heavy vehicles from four 24-hour classification counts performed for the TSP Update. These percentages are slightly higher than an average road in the Portland Metro area which typically has 2-4 percent heavy vehicles.

TABLE 6
Heavy Vehicle Percentage of Daily Motor Vehicle Traffic

Roadway	Count Location	Heavy Vehicle Percentage
SW Tualatin-Sherwood Road	West of SW 124th Avenue	11.5%
SW Boones Ferry Road	South of SW Ibach Street	8.4%
SW Lower Boones Ferry Road*	East of SW Childs Road	5.4%
SW Nyberg Road*	West of SW 65th Avenue	5.2%

SOURCE: Count data collected in October 2011 by All Traffic Data unless noted otherwise.
*Count taken in May 2010 (SW Nyberg Road) or March 2010 (SW Lower Boones Ferry Road) by Quality Counts.

Intersection Operations

While daily traffic volumes analyses are useful in understanding the general nature of traffic and travel behavior, traffic volume alone does not indicate the street network's ability to carry additional traffic, nor the congestion and delay travelers experience. To create a more complete picture of traffic operations, the project team uses performance measures for intersections based on traffic volumes, control (such as traffic signal, four-way stop, etc.), and roadway geometry.

Performance Measures

Level of service (LOS) and volume-to-capacity (V/C) ratios are two commonly used measures of performance for intersection operations. The measures reflect related yet distinct elements of intersection operations:

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- Volume-to-capacity (V/C) ratio: This measure is a range from 0.0 to 1.0 and represents how full an intersection is with vehicles. The ratio is similar to a percentage, for example, if a glass of water were 75 percent full, it would have a V/C ratio of 0.75. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced.

Design Hour Traffic Volumes

Intersection turn movement traffic counts collected during the am and pm peak periods represent raw data. The Oregon Department of Transportation (ODOT) Transportation Planning and Analysis Unit (TPAU) outlines procedures to take raw data and convert it to represent the 30th highest vehicle hour data. This allows the project team to convert raw data collected at any time during the year to represent data that would be similar to the 30th busiest motor vehicle traffic day of the year for analysis. This does not represent the worst possible traffic day of the year, but represents conditions where the traffic congestion would be better on approximately 80 percent of days.

To convert the raw data to the 30th highest hour, the project team adjusts the raw counts by using a seasonal factor determined by the TPAU Analysis Procedures Manual (APM). The conversion factors are based on the time of year and the type of typical travel. For intersections within the City of Tualatin the project team used a "commuter"

seasonal adjustment factor of 1.03 for October traffic counts[2]. This adjustment factor is supported by automatic traffic recorder data available for similar roadways in the Portland Metro area[3].

In addition to the seasonal factor adjustment, the project team makes balancing adjustments to match volumes between closely spaced intersections and to reflect a consistent overall peak hour for the study area. As a result of these combined adjustments the project team identifies a design hour volume for both the am and pm peak hour.

Jurisdictional Operating Standards

Intersections within the City of Tualatin fall along the jurisdictions previously identified in the Roadway Geometry section of this memo. Each jurisdiction has a distinct set of operating standards depending on the area or type of facility. The City of Tualatin uses a level-of-service standard that is based on the average delay calculated at intersections. The City has decided to use Metro's Regional Transportation Plan Level of Service standards for the Transportation System Planning process.

ODOT and Washington County's standards are based on a volume-to-capacity (V/C) ratio. The V/C ratio uses the most constrained movements at the intersection to calculate the overall intersection V/C ratio. Table 7 outlines the operating standards that will be used for existing and future intersection operations by jurisdiction.

TABLE 7
Intersection Operating Standards by Jurisdiction and Facility

Jurisdiction	Facility	Standard
City of Tualatin	Town Center*	LOS F for peak hour LOS E for ½ hour before and after peak hour
	All Other Areas*	LOS D (signalized) LOS E (unsignalized)
Washington County	General Urban Area	0.99 (first hour) 0.90 (second hour)
	Town Center	0.99 (first hour and second hours)
	Rural Area	0.90 (first and second hours)
ODOT	General Metro Area	0.99 (peak hour)
	Town Center Area	1.10 (peak hour)
	Freeway Ramp Terminals	0.85 (peak hour)
	OR 99W**	0.95 (peak hour)

SOURCE: City of Tualatin 2001 Transportation System Plan and Development Code
Washington County Transportation System Plan, November 2003, Table 5.
1999 Oregon Highway Plan, Table 7

* A volume-to-capacity ratio greater than 1.00 should also be considered to be below the minimum standard, regardless of level of service.

** Oregon 99W is specified as an "area of special concern" between I-5 and SW 124th Avenue, and has a 0.95 minimum acceptable V/C standard. Elsewhere the standard for OR 99W is 0.99 V/C ratio.

Operational Results

The project team analyzed study area intersections using the most current version of the *Highway Capacity Manual (2010)* which uses both the average intersection delay (converted to LOS) and critical V/C ratio calculations. Intersection traffic operations are evaluated using identified design hour (30th highest hour) traffic volumes. Table 8 identifies the am and pm LOS and V/C for each study intersection, as well as the applicable jurisdictional standard for minimum performance.

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2 Based on the ODOT 2011 Seasonal Trend Table, printed 10/27/2011.

3 Similar roadways, with urbanized commuter characteristics, with available automatic traffic recorder data available in Portland Metro included: OR 224 near Johnson Road, TV Highway in Hillsboro, and US 26 through the Vista Ridge Tunnel.

One of the thirty study intersections fail to meet performance standards. The intersection that does not meet performance standards is SW Teton Avenue at SW Tualatin Road. SW Teton Avenue is stop-controlled; while through traffic on SW Tualatin Road is not stopped. This is an intersection under city jurisdiction with the performance standard of LOS E. During the pm peak hour, the northbound left turn operates at LOS F.

TABLE 8
AM and PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	AM LOS	AM V/C	PM LOS	PM V/C
Signalized						
SW 124th Ave & Hwy 99W	ODOT	0.95	C	0.79	C	0.69
SW 124th Ave & SW Tualatin Rd	Tualatin	D	A	0.64	B	0.66
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.48	C	0.53
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.77	C	0.90
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.72	B	0.71
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.75	D	0.79
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.65	C	0.60
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.84	D	0.94
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.87	D	0.91
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.85	D	0.82	D	0.78
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.85	B	0.69	B	0.63
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	C	0.73	D	0.93
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.70	C	0.65
SW Tualatin Rd & SW Herman Rd	Tualatin	D	C	0.80	B	0.59
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.71	B	0.75
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	A	0.46	B	0.62
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	C	0.83	D	0.89
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	Wash. Co	0.99	B	0.68	C	0.76
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.48	C	0.66
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.85	B	0.51	C	0.75
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.85	B	0.52	B	0.74
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.68	C	0.87
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.72	C	0.75
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.71	B	0.70
All-way Stop-control						
SW Martinazzi Ave & SW Avery St*	Tualatin	E	A	0.39	B	0.47
SW Martinazzi Ave & SW Sagert St*[4]	Tualatin	E	D	0.74	D	0.76
SW Teton Ave & SW Avery St*	Tualatin	E	B	0.48	C	0.50
SW 65th Ave & SW Sagert St*[5]	Wash. Co.	0.99	F	0.87	F	0.98

[4] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance is slightly better than reported above.

[5] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the

TABLE 8
AM and PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	AM LOS	AM V/C	PM LOS	PM V/C
*Minor Street Stop-control**						
SW 105th Ave & SW Avery St	Tualatin	E	C	0.31	C	0.24
SW Teton Ave & SW Tualatin Rd	Tualatin	E	C	0.33	F	0.98

SOURCE: Count data collected by All Traffic Data on October 18th (Tuesday) or October 19th (Wednesday) 2011
*LOS and V/C reported for highest delay movement.
BOLD and highlighted dark grey text indicates meet minimum performance standard is not met

Travel Times and Speeds

The project team selected four corridors within Tualatin to gather travel time data during the PM peak period. These travel time corridors were selected on roadways that help connect through and to downtown Tualatin. The corridors selected were SW Tualatin-Sherwood Road/Nyberg Road/65th Avenue/Borland Road (from SW Cipole Road to SW Prosperity Park Road), SW Boones Ferry Road (from SW Durham Road to SW Norwood Road), SW Tualatin Road (from 99W to SW Boones Ferry Road), and the connection of SW Avery Street and SW Martinazzi Road (from SW Tualatin-Sherwood Road to SW Boones Ferry Road). The project team collected travel times and the average speed along the corridors. Table 9 summarizes the overall travel time results for each corridor, while Figure 5 illustrates individual pieces of each corridor at a smaller scale.

TABLE 9
Existing (2011) PM Peak Period (4pm-6pm) Travel Time Data

Corridor	From	To	Posted Speed	Average Speed	Average Travel Time
SW Tualatin-Sherwood Rd	SW Cipole Road	SW Prosperity Park Road	35/45mph	22 mph	12min 32 sec
	SW Prosperity Park Road	SW Cipole Road	35/45mph	10 mph	28 min 32 sec
SW Boones Ferry Road	SW Durham Road	SW Norwood Road	30/35mph	20 mph	10 min 25 sec
	SW Norwood Road	SW Durham Road	30/35mph	18 mph	11 min 31 sec
SW Avery/ SW Martinazzi	SW Tualatin-Sherwood Rd	SW Boones Ferry Road	25/35mph	16 mph	8 min 58sec
	SW Boones Ferry Road	SW Tualatin-Sherwood Rd	25/35mph	15 mph	9 min 14 sec
SW Tualatin Road	Hwy 99W	SW Boones Ferry Road	35mph	24 mph	5 min 52 sec
	SW Boones Ferry Road	Hwy 99W	35mph	24 mph	5 min 59 sec

SOURCE: All Traffic Data, November 2011

The travel time runs along the corridors help identify congested areas on major roadways beyond signalized intersections. Based on the travel time runs, a level-of-service for the roadways can be calculated from the travel speed. To best serve travel with reliable travel times on a corridor, it is best to have corridors at a level-of-service D or better during peak travel times. This indicates a minor level of congestion on a corridor. When LOS for a corridor starts to reach levels of E and F it is an indication that the corridor (as well as the intersections typically) is reaching saturated conditions and users will frequently be going slow, or waiting through multiple signal cycles to get through the intersection.

relatively small volume on the left turn movement. Because of this approximation, actual performance is slightly better than reported above.

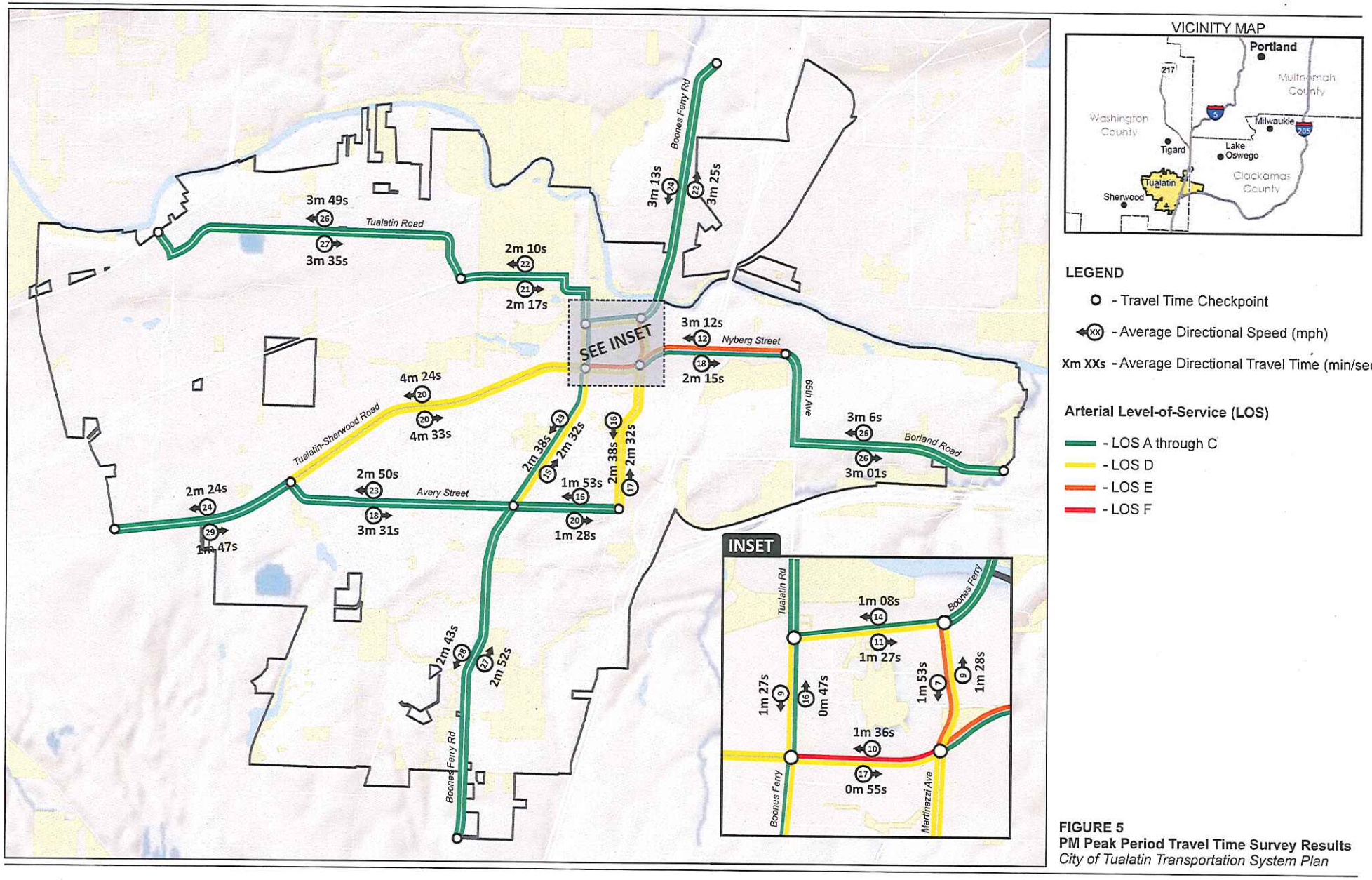

FIGURE 5
PM Peak Period Travel Time Survey Results
City of Tualatin Transportation System Plan

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Results from the travel time runs indicate that SW Tualatin Road, major portions of SW Boones Ferry Road, and the combination of SW Avery Street/ SW Martinazzi Road tend to operate at a LOS D or better during the PM peak period. SW Tualatin-Sherwood Road typically has delays near the I-5 interchange area, and westbound from the downtown core. In addition, the downtown area where all four corridors surveyed interact with one another typically has some level of congestion.

Safety

Safety Analysis

The project team evaluated the crash history for the City of Tualatin for the three year period of January 1, 2008 through December 31, 2010.[6] In addition, the team reviewed Safety Priority Indexing System (SPIS) data, which is the ranking system for collision locations based on crash rates, from Washington County and ODOT to determine if any SPIS intersections were within the City of Tualatin. Key findings from the crash data analysis are summarized below and Figure 6 shows all collision data.

- Over the three year time frame, one fatality occurred when a driver lost control, crashing into a tree and fence, while traveling on Grahams Ferry Road near SW Sitka Court. Two other fatalities occurred on I-5.
- Half of all collisions resulted in injury while the other half resulted in property damage only (PDO).
- The majority of the crashes were intersection or congestion related. These included rear-end (58 percent) and turn movement (24 percent) type crashes. In the case of rear-end crashes, the cause was often cited as "following too close". The cause for turn movement type crashes were most often cited as being "failure to yield" or "disregarding a traffic signal".
- The number of reported crashes coincides with the daily changes in traffic volume, with peaks during the morning and evening commute hours, particularly between 7:00-8:00 a.m. and from 3:00-4:00 p.m.
- The majority (64 percent) of crashes occurred under clear, dry and daylight conditions.
- The majority (61 percent) of crashes occurred on (or at intersections on) Tualatin-Sherwood Road, Nyberg Road, and Boones Ferry Road.

In addition to the intersection collisions, Figure 7 shows the average annual crashes per mile for the major through streets and average number of crashes per year for each of the major intersections. This figure also identifies the locations of all of bicycle or pedestrian crashes during the study time frame. Many of these crashes occurred along the busy major streets.

Both Washington County and ODOT rank their high accident SPIS locations based on an indexing formula that identifies potentially hazardous locations. Within the City of Tualatin there are three locations that rank within the top 50 SPIS sites in Washington County: SW Tualatin-Sherwood Road/ SW Boones Ferry Road, SW Tualatin-Sherwood Road/ SW Martinazzi Avenue, and SW Bridgeport Road/ SW 72nd Avenue. Eight other intersections are included in Washington County's list of top 262 SPIS sites. ODOT has identified five SPIS locations within the City: SPIS locations for both ODOT and Washington County are illustrated in Figure 7.

Intersection Analysis

The project team calculated intersection crash rates for the arterial to arterial intersections and for Washington County SPIS intersections. Table 10 below shows the results of the crash rate analysis. An intersection crash rate is a measure of the frequency of crashes compared to the total motor vehicle traffic volume (this measures exposure to the crash risk). The rate is measured in crashes per one million entering vehicles. Typically rates of 1.0 crashes per million entering vehicles are considered higher than normal and the intersection becomes a candidate for additional investigation.

[6] Source: Oregon Department of Transportation Crash Reporting Database, received October 2011.

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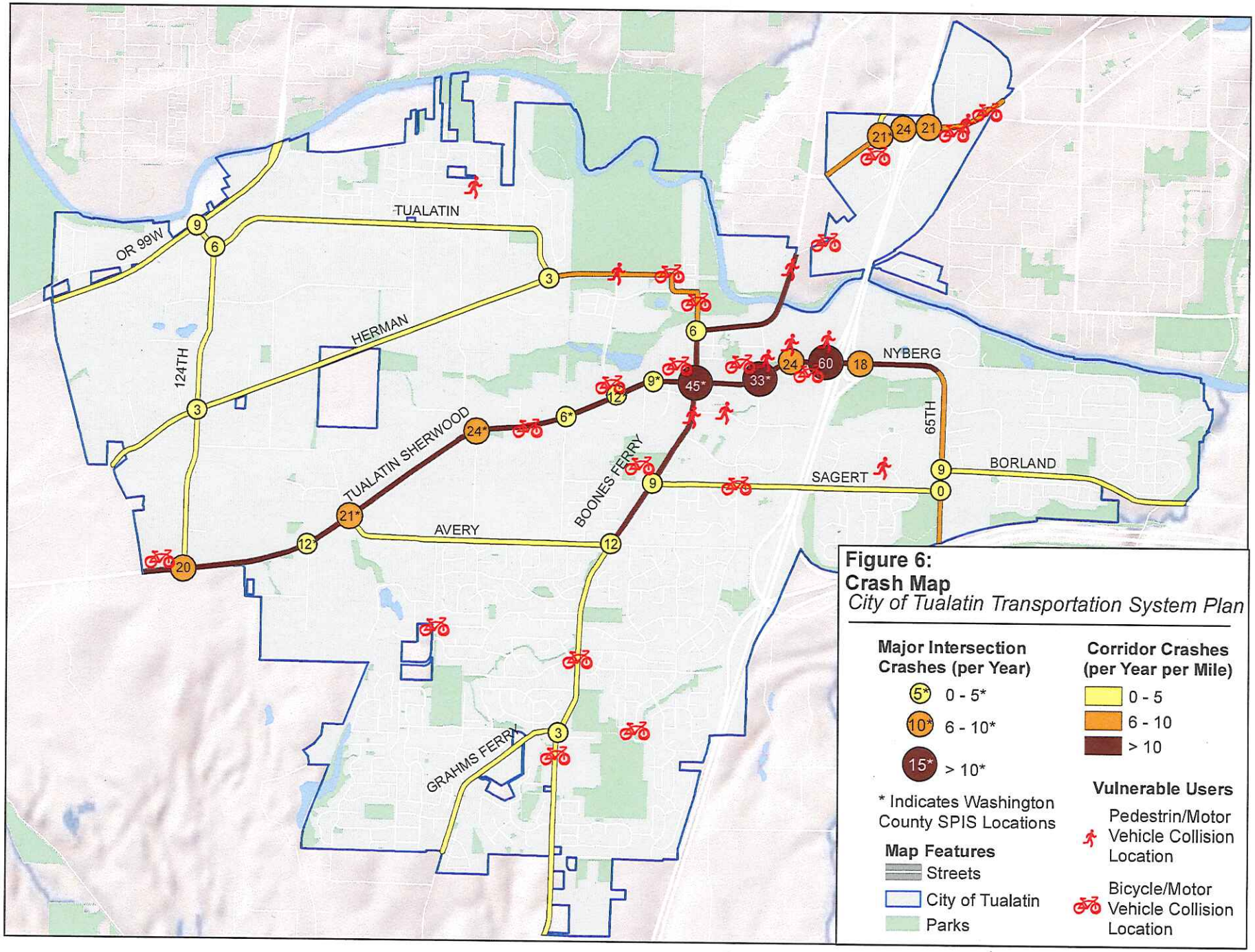

TUALATIN
OR 99W
HERMAN
124TH
TUALATIN SHERWOOD
AVERY
BOONES FERRY
GRAHMS FERRY
NYBERG
65TH
SAGERT
BORLAND
9
6
3
6
45*
33*
24
60
18
9*
12*
6*
24*
21*
12
20
9
0
21*
24
21
3
Figure 6:
Crash Map
City of Tualatin Transportation System Plan
Major Intersection Crashes (per Year)
5* 0 - 5*
10* 6 - 10*
15* > 10*
* Indicates Washington County SPIS Locations
Map Features
Streets
City of Tualatin
Parks
Corridor Crashes (per Year per Mile)
0 - 5
6 - 10
> 10
Vulnerable Users
Pedestrin/Motor Vehicle Collision Location
Bicycle/Motor Vehicle Collision Location

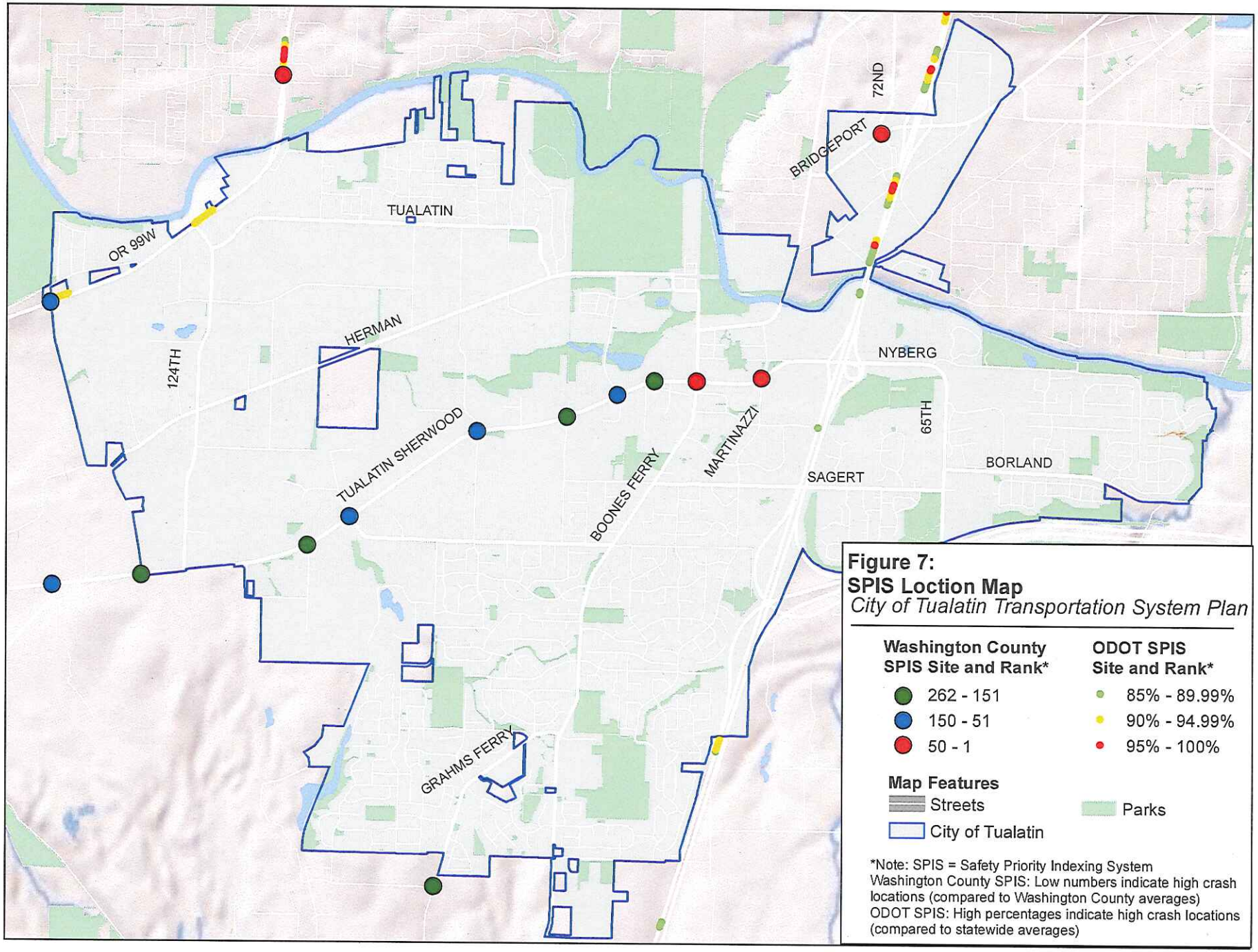

TUALATIN
OR 99W
HERMAN
124TH
TUALATIN SHERWOOD
BOONES FERRY
MARTINAZZI
GRAHMS FERRY
BRIDGEPORT
72ND
NYBERG
65TH
SAGERT
BORLAND
Figure 7:
SPIS Loction Map
City of Tualatin Transportation System Plan
Washington County SPIS Site and Rank*
262 - 151
150 - 51
50 - 1
ODOT SPIS Site and Rank*
85% - 89.99%
90% - 94.99%
95% - 100%
Map Features
Streets
City of Tualatin
Parks
*Note: SPIS = Safety Priority Indexing System
Washington County SPIS: Low numbers indicate high crash locations (compared to Washington County averages)
ODOT SPIS: High percentages indicate high crash locations (compared to statewide averages)

TABLE 10
Intersection Crash Rates between January 1, 2008 and December 31, 2010

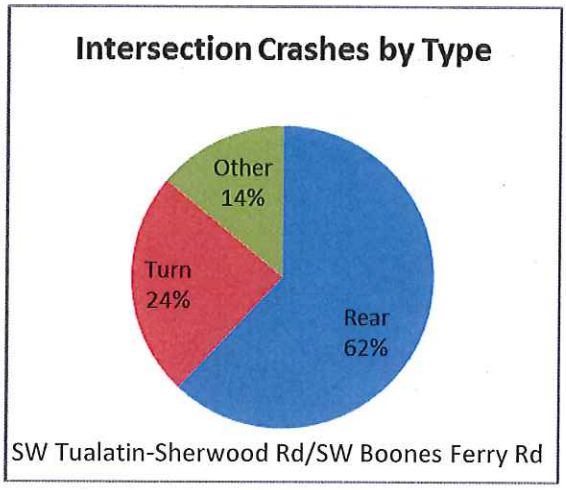
Intersection	Crashes	Annual Average Daily Traffic	Crash Rate (Crashes per million entering vehicles)	Washington County SPIS Site?
Hwy 99W/SW SW 124th Ave	9	30500	0.27	
SW Herman Rd/SW 124th Ave	3	11250	0.24	
SW Tualatin Rd/SW 124th Ave	6	16750	0.33	
SW Bridgeport Rd/SW 72nd Ave/SW Lower Boones Ferry Rd	21	39400	0.49	Yes
SW Lower Boones Ferry Rd/I-5SB	24	47500	0.46	
SW Lower Boones Ferry Rd/I-5NB	21	47750	0.40	
SW Tualatin Rd/SW Boones Ferry Rd	6	25700	0.21	
SW Avery St/SW Boones Ferry Rd	12	21000	0.52	
SW Sagert St/SW Boones Ferry Rd	9	19350	0.42	
SW Nyberg St/I-5SB	**58**	**45550**	**1.16**	
SW Nyberg St/I-5NB	18	31900	0.52	
SW Tualatin-Sherwood Rd/SW Boones Ferry Rd	**50**	**39650**	**1.15**	**Yes**
SW Tualatin-Sherwood Rd/ SW Avery St/SW 112th Ave	21	21350	0.90	Yes
SW Tualatin Rd/SW Herman Rd	3	19300	0.14	
SW Tualatin-Sherwood Rd/SW 89th Ave	9	26900	0.31	Yes
SW Tualatin-Sherwood Rd/SW 90th Ave	12	27050	0.41	Yes
SW Tualatin-Sherwood Rd/SW 95th Ave	6	21430	0.26	Yes
SW Tualatin-Sherwood Rd/SW Teton Ave	24	26500	0.83	Yes
SW Tualatin-Sherwood Rd/SW 115th Ave	12	24600	0.45	Yes
SW Tualatin-Sherwood Rd/SW 124th Ave	20	22200	0.82	
SW Tualatin-Sherwood Rd/SW Martinazzi Ave	33	41650	0.72	Yes
SW Tualatin-Sherwood Rd/SW Nyberg St	24	44700	0.49	
SW 65th Ave/SW Sagert St	0	16250	0.00	
SW Boones Ferry Rd/SW Ibach St	3	19400	0.14	
SW 65th Ave/SW Borland Rd	9	21300	0.39	

Source: ODOT, October 2011
Bold text indicates intersections with a crash rate over 1.0

Within the City of Tualatin, there were two locations (SW Tualatin-Sherwood Rd/ SW Boones Ferry Rd and SW Nyberg St/ I-5 SB) where the crash rate exceeded 1.0 crashes per million entering vehicles. The project team investigated both of these intersections further to identify potential patterns.

SW Tualatin-Sherwood Rd/SW Boones Ferry Rd

Between 2008 and 2010, 50 crashes were recorded at the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, which has an average annual crash rate of 1.15 crashes per million entering vehicles. No fatalities were recorded at this location, less than one-half of the crashes (46 percent) resulted in injury, and the remainder of the crashes were recorded as property damage only.



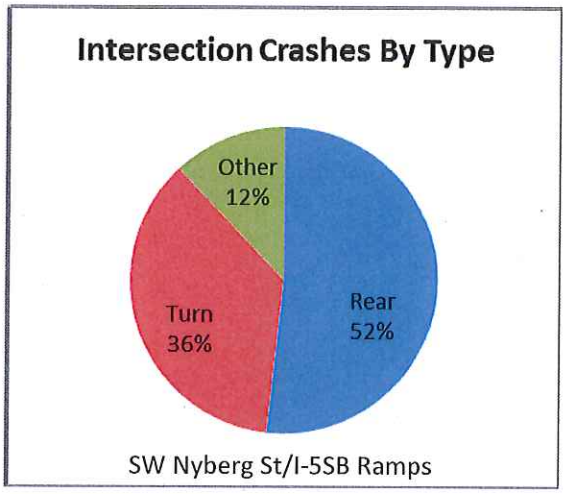
SW Tualatin-Sherwood Rd/SW Boones Ferry Rd

Further analysis revealed that the majority of the crashes were either rear-end or turn movement related. This type of crash pattern is typically seen at congested signalized intersections where vehicles are likely to be stopped or moving slowly due to the traffic signal. The primary cause for the rear-end type crashes was recorded as following too close. The cause for the turn movement crashes was indicated as being a result of not yielding the right of way. Both of these causes are symptoms of congested conditions as well as impatient, aggressive, or inattentive drivers.

There was one bike crash reported at this intersection over the three year analysis time period. The crash occurred during clear daylight hours and was caused by a norhtbound right turning motorist. Driver innattetion may have been a contribution factor in this crash, which resulted in injury to the bicyclist.

SW Nyberg St/I-5 SB Ramps

At the intersection of SW Nyberg Street/I-5 Southbound Ramps, 58 crashes were recorded between 2008 and 2010. The average annual crash rate at this intersection was 1.16 crashes per million entering vehicles. No fatalities were recorded at this location and one-half of the crashes (50 percent) resulted in either an injury or a property damage only crash.



SW Nyberg St/I-5SB Ramps

Further analysis revealed that the majority of the crashes were either rear-end or turn movement type crashes. Similar to the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, congestion at this signalized intersection may contribute to crashes. The proportion of turn movement crashes to rear end high crashes at this location is higher than the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, which was to be expected, given the higher proportion of turning vehicles to vehicles traveling straight through the intersection.

Over the three year time period, there were two bike crashes and one pedestrian crash recorded at this intersection, each resulting in injury to the bicyclist or pedestrian. All three of these crashes occurred during dark conditions by southbound right turning vehicles. Illumination levels and/or driver innattetion at the intersection may have contributed to these crashes. Conflicts may result when southbound right-turning vehicles attempt to turn on red while westbound through travelers (incuding bicyclists) attempt to stay in the far right travel lane where the additional (third) westbound through lane is added west of the intersections.

Bicycle

Introduction

This section describes the current bicycle network and usage at key intersections within Tualatin, and covers existing shared roadways, shoulder bikeways, bike lanes, multi-use paths, and facility conditions. Bicycling is an inexpensive and important mode of transportation that provides health benefits and reduces stress. When considering bicycle connections it is important to focus on shorter trips, typically trips less than three miles in length, and to consider key destinations, such as schools, services, and commercial areas.

Bicycle Facilities and Amenities

Bicyclists use a variety of facilities within the City of Tualatin. These are briefly described below.

- **Bike Lanes:** Bike lanes are portions of the roadway that are striped and stenciled specifically for bicycle travel. The typical width of bike lanes is 5 feet, but when the road is narrow, lanes can be as narrow as 4 feet. Bike lanes are most appropriate on higher volume and speed streets to separate travel modes. Bike lanes comprise a substantial portion of the bicycle facilities in Tualatin. The city defers bike lane width standards to the most recent AASHTO Guide for the Development of Bicycle Facilities and the Oregon Bicycle and Pedestrian Plan. Standards include a 4 foot minimum on a roadway with no curb and gutter, and 5 foot minimum when adjacent to parking or a curb.

Example of a bike lane on SW Martinazzi Avenue

Example of a signed shared roadway

- **Shared Roadway:** Shared roadways are roads where bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are low speed (25mph or less) and low traffic volumes (3,000 vehicles per day or fewer) roads. Shared roadways are often signed, and are designated bicycle routes, providing links to other bicycle facilities (e.g. bicycle lanes) or designating a preferred route through a community. Shared roadways can also include signs that highlight specific information such as travel time or distance to popular destinations. There are a number of shared roadways in Tualatin, but they are primarily in the southern residential area of the city.

- **Multi-use Paths:** A multi-use path is an off-street route that is shared with bicycles, pedestrians, and other non-motorized users. Paths are typically recreationally focused, but can also serve as a commuting corridor. These paths are meant to provide a lower stress environment than a roadway for users by separating motor vehicles and bicyclists. The multi-use paths in Tualatin are located primarily to the north next to the Tualatin River and public parks.

Example of a multi-use path in Tualatin Community Park

- **Cycle Track:** While not currently found in the City of Tualatin, a cycle track provides a separate facility for bicycles, and is physically separated (usually raised or lowered) from both pedestrians and motor vehicles.

Other bicycle amenities besides those described above can provide an inviting environment to help encourage riders to use the existing bicycle facilities, including areas to store/secure bicycles at destinations. Bike parking and storage is typically provided in either a bicycle rack or a storage locker.

Existing Facilities

In general, the bicycle network in the City of Tualatin consists of on-street bike lanes ranging in width from 4 to 6 feet. There are a number of shared roadway facilities, usually on lower volume streets within and around residential neighborhoods. Multi-use paths are found near parks and schools, and are mostly in the north portion of the city along the Tualatin River. Figure 8 shows the existing bike network by facility type, including planned facilities. Additionally, data from Metro includes areas that are labeled "Caution areas" which include streets with narrow lanes, high traffic, and/or sharp curves.

Much of the City has bicycle facilities. However, there are a few gaps in the system. Many of these gaps have been identified as a planned improvement; the following list includes planned facilities where applicable:

Gaps with Planned Facilities

- SW Herman Road – from SW Teton Avenue approximately 1,000 to the east (planned)
- SW Norwood Road – from SW Boones Ferry Road to SW 84th Avenue (planned)
- SW Ibach Court – from SW Boones Ferry Road to SW Martinazzi Ave (planned)
- Tualatin River Greenway Trail:
    - From SW 84th Avenue to just east of SW 65th Avenue (planned)
    - From SW 55th Avenue to approximately SW Canal Road (planned)
    - From SW Boones Ferry Road to SW Cheyenne Way (planned)
    - West of SW Cheyenne Way to eastern City boundary – some segments built (planned)
- Interstate 5 multi-use path:
    - From SW Boones Ferry Road to SW Avery Street (planned)
    - From SW 80th Avenue to SW Norwood Road (planned)

Gaps without planned facilities

- SW 95th Avenue – from SW Sagert Street north to SW Tualatin-Sherwood Road
- SW 112th Avenue – from cul-de-sac end north to SW Myslony Street
- SW Blake Street – from SW 105th Avenue to SW 108th Avenue
- SW Martinazzi Avenue – from SW Warm Springs Street to SW Boones Ferry Road
- SW Wilke Road – from SW Borland Road to SW 50th Avenue
- SW 80th Avenue – from SW Avery Lane to I-5 multi-use path

Many of the gaps with no planned facilities are less than ¼ mile in total distance.

High Bicycle Activity Locations

The study team collected activity data at 30 intersections during both the morning (7am-9am) and afternoon (4pm-6pm) rush hour on a typical weekday. These activity data included bicycle counts, indicating intersections with high bicycle volumes.

The data indicated that both the morning and afternoon rush hours have fewer than ten bicycles traveling through any one intersection during the corresponding peak hours. Of the top ten intersections with bicycle activity, five of those were along the Tualatin-Sherwood corridor connection to the I-5 interchange at SW Nyberg Street. Table 11 provides a list of the top ten intersections and the bicycle count.

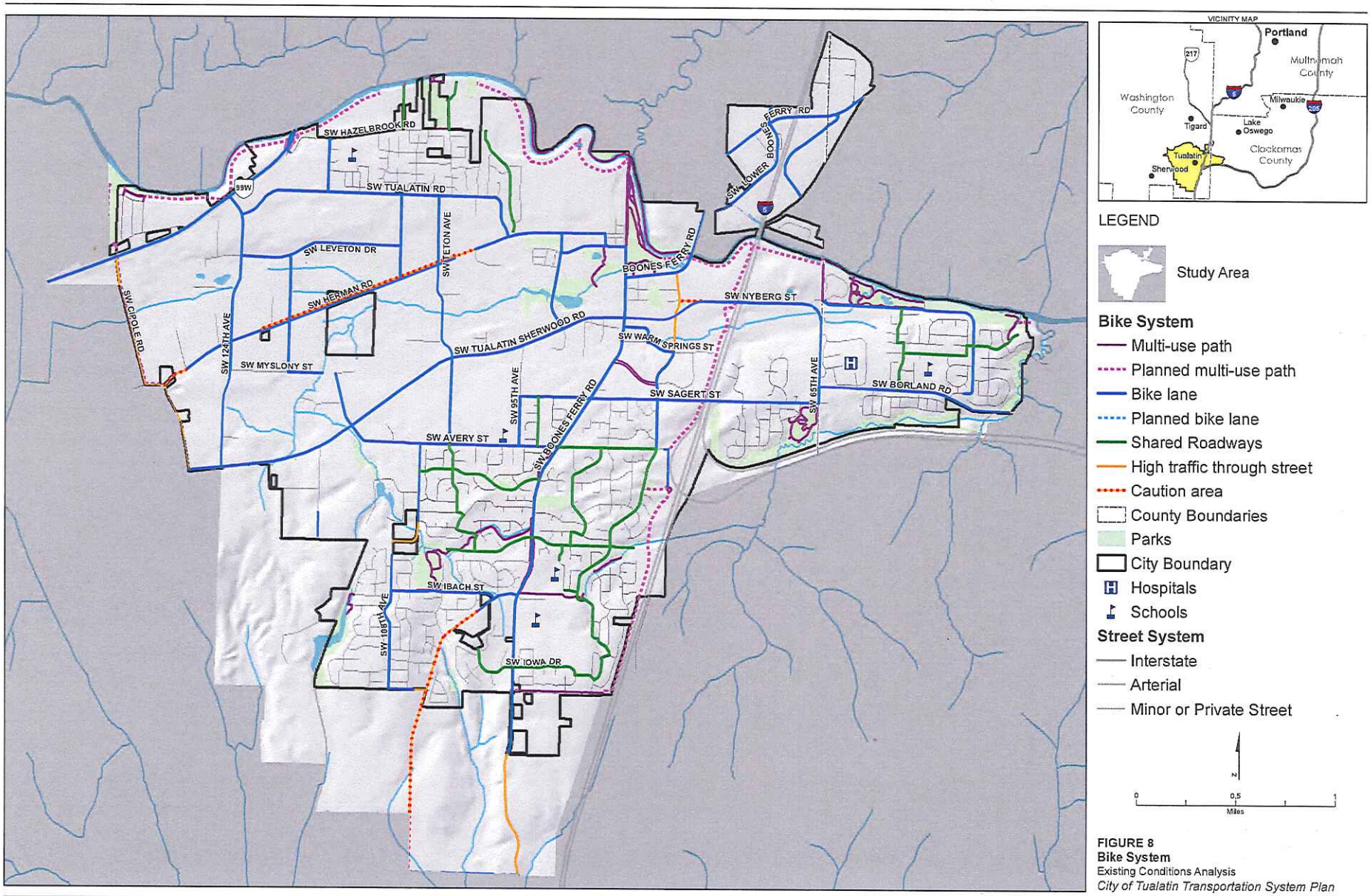


FIGURE 8
Bike System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

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TABLE 11
Top Bicycle Activity Intersections by Morning and Afternoon Peak Hours

Intersection	AM Peak Hour	PM Peak Hour	Total Activity
SW Martinazzi Ave/SW Tualatin-Sherwood Rd	5	5	10
SW Boones Ferry Rd/SW Tualatin-Sherwood Rd	4	5	9
SW 65th Ave/SW Borland Rd	6	2	8
SW Boones Ferry Rd/SW Lower Boones Ferry Rd	3	5	8
SW Teton Ave/SW Avery St	3	5	8
I-5 SB Ramps/SW Nyberg St	2	5	7
I-5 NB Ramps/SW Nyberg St	2	5	7
SW Boones Ferry Rd/SW Avery St	2	5	7
SW 124th Ave/SW Tualatin-Sherwood Rd	3	3	6
SW Teton Ave/SW Tualatin-Sherwood Rd	3	3	6

SOURCE: Count data collected by All Traffic Data on October 18th (Tuesday) 2011

In addition to the count data collected at study area intersections, bicycle usage along sections of the multi-use path on the Tualatin River Greenway Trail was previously collected as part of the *Intertwine Trail Use Snapshot*. This report reviewed multi-use trail users at three locations; two were in the City of Tualatin. The following are some of the relevant bicycle user findings.

The multi-use trail has approximately 150 daily users, with slightly higher use on the weekends. Annually, approximately 55,350 bicyclists use the multi-use trail. Almost two-thirds of bicyclists are male (65 percent). Bicycle use makes up 16 percent of the overall use of the trail system. The trail is used primarily for pleasure/ exercise (80 percent of respondents), while the other 20 percent use the trail for going to/from school or work. Users typically access the trail by biking or walking (83 percent), but 17 percent of users access it by car.

Bike Needs

The City of Tualatin enjoys a robust bicycle network with minor gaps (less than ¼ mile in general). Needs and gaps within this system are summarized below:

- **Difficult left turn maneuvers –** Along wider roadways that have bike lanes (four lanes or wider) it is difficult to traverse from the bike lane on the right to make a left turn at intersections. Many riders choose to dismount their bicycle and use the sidewalk system to cross the street via a crosswalk. A few current examples of this occurrence are the intersections of SW Martinazzi Avenue/SW Nyberg Street and SW Lower Boones Ferry Road/SW 72nd Avenue/SW Bridgeport Road.

- **Constrained environment –** At some locations the bike lanes narrow to four feet on roadways with high vehicle volumes making it a less desirable environment for cyclists. This occurs in areas like SW Lower Boones Ferry Road where it passes beneath I-5.

- **Difficult areas with low bike visibility –** Some of the roadways have vehicle right turns that cross over existing bike lanes into a separate right turn pocket. Bike lanes at these locations are only indicated by dashed white lines.

Narrow bike lanes in constrained areas at SW Lower Boones Ferry Road interchange

Additional visibility for bicycles could be made through a colored pavement on the bicycle lane highlighting where bicycles are likely to be present. This occurs on SW Boones Ferry Road northbound, and on SW 90th Avenue at SW Tualatin-Sherwood Road.

- **Obstacles within the bike lane –** There are currently some obstacles within bike lanes that affect bicycles. One example is drainage grates located in the bike lane with the grating parallel to the bicycle travel direction. Bicycle wheels could get caught in these grates. Another obstacle is rail lines over bike lanes. The preferable bike lane crossing over a rail line would be at a 90 degree angle. Less than 90 degree angles can catch bike wheels when bicyclists travel across the rail tracks.

- **Gaps in the network** – Gaps in the network (identified on the previous page) do not provide continuity to or connectivity to the network, which can be discouraging for riders. In some areas bike lanes do not extend all the way to intersections making it potentially hazardous for cyclists.

Bicycle crossing on Teton

High Crash Locations

Between January 1, 2008 and December 31, 2010 there were 17 reported crashes involving bicycles within the City. All of these crashes resulted in an injury to the bicyclist, and most occurred on dry roadway surface (16 out of 17 crashes) in daylight conditions. Many of the crashes were also result of a vehicle turning maneuver, and most occurred at intersections.

Pedestrian System

Introduction

This section describes the current pedestrian facility network within the study area, including sidewalks, roadway shoulders, accessways, multi-use paths, and facility conditions. The pedestrian system serves all types of pedestrians and different types of pedestrian trips. This section will document the different types of facilities and identify needs. Figure 9 shows the pedestrian system within the City.

Sidewalks, Multi-Use Pathways, Crosswalks, and Pedestrian Signals

Sidewalks

Sidewalks are located along roadways, sometimes directly adjacent to the curb or separated from the road by landscaping or a planter strip. They are hard surfaced, usually concrete or asphalt. Sidewalks should also be free of utility poles, sign posts, fire hydrants, vegetation and removable objects such as trash cans. According to the Tualatin Development Code, sidewalks are required on both sides of all fully developed major and minor arterial streets within the City. Major collector, minor collector, residential collector, local commercial industrial, and local streets are required to have some kind of pedestrian facilities. Sidewalk standards are included in Table 12 below:

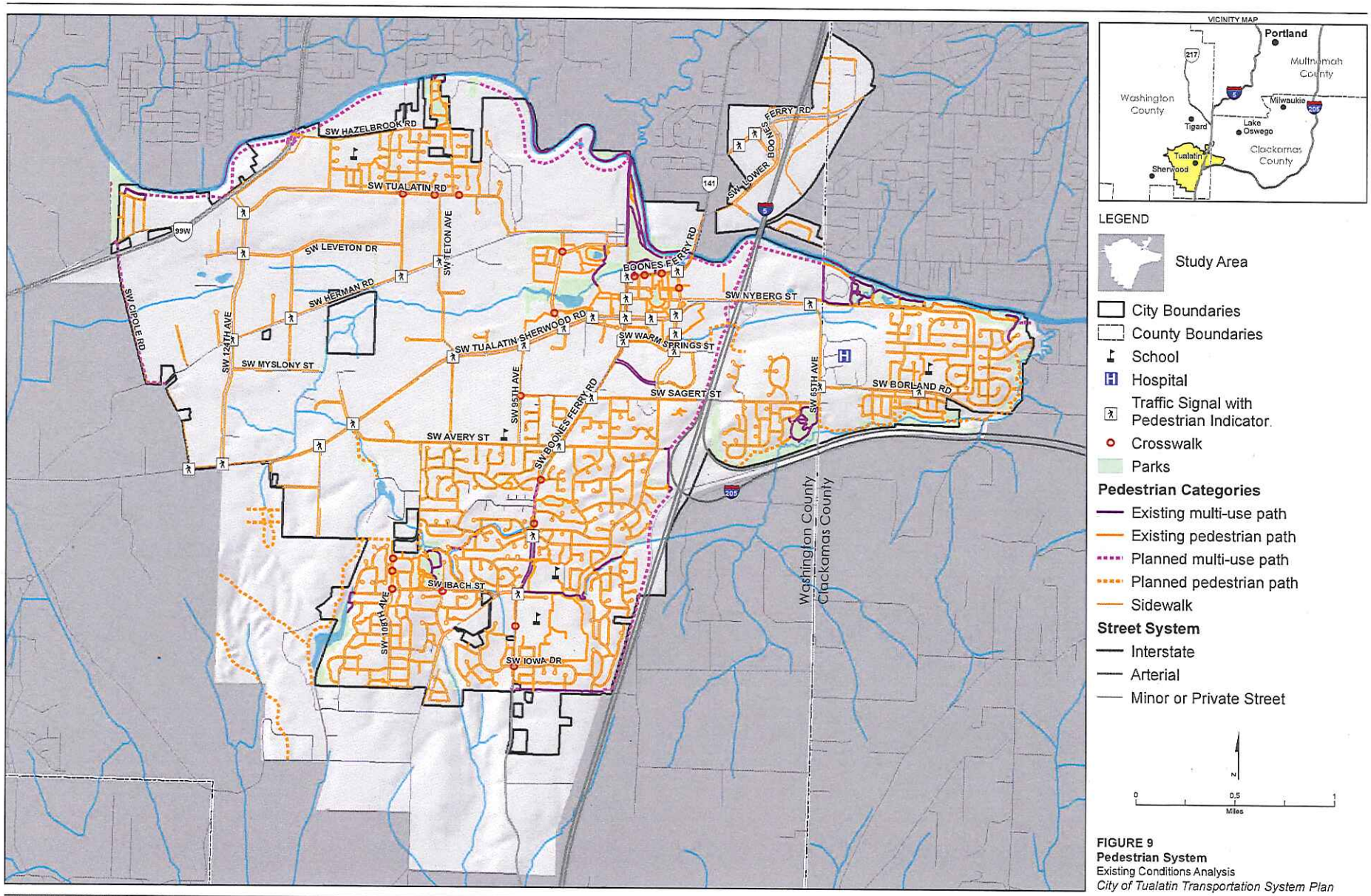

FIGURE 9
Pedestrian System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

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TABLE 12
Sidewalk Standards

Street Classification	Required Sidewalk Width
Expressway	8-10 feet
Major Arterial	6-8 feet
Minor Arterial	8-10 feet
Minor Arterial (downtown) – includes tree well	12 feet
Major, Minor, and Residential Collector	6-8 feet
Local Commercial Industrial	6 feet
Interim Local Commercial Industrial	5 feet
Local street (downtown) – includes a tree well	10 feet
Local Street	5 feet

Source: Tualatin Development Code

Many of the arterial and collector streets within Tualatin have sidewalks, with the notable exception of SW Herman Road between SW Tualatin Road and SW Teton Avenue, and between SW 125th Court and SW Cipole Road. There is a paved/gravel shoulder on the south side of the road, and on the north side there is a drainage ditch directly adjacent to the roadway, making it impossible for pedestrians or those in mobility devices to walk along the north side of the road. There is a new sidewalk on the north side of the street starting just east of Teton Avenue and extending to SW 125th Court, but not along the full length of the road through the City. Other arterials such as SW Tualatin Road, SW Tualatin-Sherwood Road, and SW Boones Ferry Road have sidewalks on both sides, though in places the sidewalks may be narrower than City standards, discussed above in the roadway system section.

No sidewalks exist on SW 108th/105th Avenues


SW Blake Street and SW 105th Avenue lack of shoulder

Sidewalks in Tualatin are wide and well maintained in areas where there are likely to be pedestrians: the Tualatin Commons and downtown Tualatin, immediately adjacent to all five public schools, and the four park and ride facilities.

There are a number of local roads with sidewalks on only one side, including SW 105th Avenue south of SW Siletz Drive, where there is a narrow sidewalk on the east side of the street, but no pedestrian facility on the west side. South of SW Paulina Drive, where SW 105th Avenue curves to connect to SW 108th Avenue via SW Blake Street there are no sidewalks and no shoulder for pedestrians. The speed limit is signed at 30 miles per hour, and there are few other connections for pedestrians in the area. The roadway is signed to warn drivers that pedestrians are present, but there is little room for both vehicles and pedestrians on the roadway.

Much of the residential development within Tualatin consists of subdivisions that were generally built at the same time, ranging from the 1960s to the 2000s. Most have sidewalks, with the exception of:

- The neighborhood built in the 1970s just west of the Tualatin Country Club including:
  - SW Cheyenne Way

  - SW Shawnee Trail
  - SW Pawnee Path
  - SW Chippewa Trail
- The neighborhood built in the 1960s and 1970s west of Little Woodrose Natural Area along SW Killarney and Cherry Lanes, and
- The mobile home park north of OR 99W near SW 122rd Terrace.


Pedestrian in bike lane on Sagert Street overpass

These neighborhoods generally have wide and/or curving streets that provide a visual cue for drivers to slow down. Additionally, they are not connected to the surrounding roadway network and do not have through traffic which keeps vehicle speeds and volumes low.

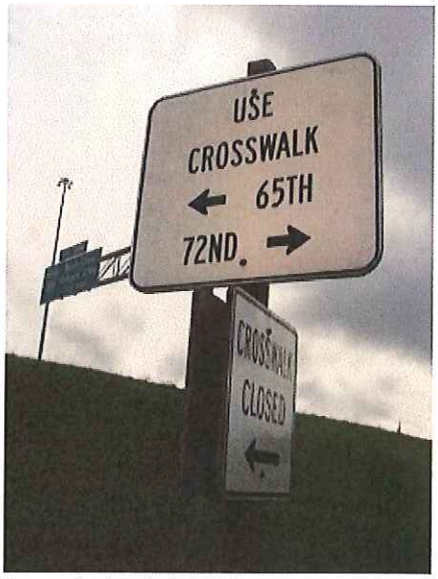
In areas that have sidewalks, especially neighborhoods built in the 1970s and 1980s; the sidewalks can be narrow with barriers for pedestrians including light poles, trees, mailboxes, and movable objects such as trash cans. Fixed barriers can make a sidewalk inaccessible for those in mobility devices, and those with disabilities such as blindness to safely use the sidewalk.

Sidewalk Needs

There are a number of sidewalk gaps on arterials and collector streets. These include:

- SW Herman Road between SW Tualatin Road and SW Teton Avenue, and between SW 125th Court and SW Cipole Road
- SW Grahams Ferry Road on the north side between SW Ibach Street and the Church of Jesus Christ of LDS, and on the south side between the church and just north of SW Sitka Court.
- Sections of SW Boones Ferry Road:
  - On the west side just south of SW Iowa Drive to the southern City limits
  - On the east side, approximately two blocks north of the City limits to the southern City limits
  - On the west side from approximately Tualatin High School south to the southernmost crosswalk associated with the school, approximately two blocks north of SW Iowa Drive
- SW Blake Street between SW 105th and 108th Avenues
- SW 105th Avenue between SW Paulina Drive and SW Blake Street
- SW Sagert Street overpass over I-5 from just west of the overpass to SW 72nd Avenue


Narrow sidewalk blocked by trash can – Boones Ferry Road



Crosswalk closed sign at Lower Boones Ferry Road and I-5 off-ramp

Sidewalks that do not meet current City standards on the arterials and collectors should be studied to determine if there is a need to improve sidewalks to standard.

SW Nyberg Street has a sidewalk on the north side only, but the pedestrian crossings over the highway ramps can be intimidating, and the sidewalks under I-5 at SW Lower Boones Ferry Road require out of direction travel for pedestrians due to closed crosswalks.

Multi-Use Pathways

Multi-use pathways are used by a variety of users including pedestrians, bicyclists, runners, and those using mobility devices. Pathways may be paved or graveled, and are often wider than a sidewalk and are separated from roadways.

There are a number of planned and existing multi-use, off street paths within the City. Many of the parks have multi-use paths, and some extend into adjacent commercial or residential areas. Multi-use paths in Tualatin are paved, concrete, or gravel, or in the case of sections of the Tualatin River Greenway, are built as a boardwalk.

Multi-use paths can provide a pleasant off-street alternative for pedestrians. Most of the paths within Tualatin are meant for recreational use – they do not connect residential areas to commercial or job centers. While there are plans for a regional interconnected network of off-street paths, the current system is fragmented and limited to areas near parks or schools.

According to the Intertwine Trail Use Snapshot from Oregon Metro, approximately 4,675 people use the Tualatin River Greenway path a week, most are pedestrians walking for pleasure or exercise. Approximately 70 percent of pedestrians access the trail by car. An interconnected system of trails would allow more people to access the paths by foot from their homes or places of business.

Asphalt path in Tualatin Community Park

Gravel path in Jurgens Park

Boardwalk in Browns Ferry Park – Tualatin River Greenway

Concete path in Tualatin Community Park

Multi-use Pathway Needs

There is currently only one exclusive bicycle or pedestrian crossing over the Tualatin River through the Tualatin Community Park, though two future pedestrian and bicycle bridges are planned but are not yet built: one near Jurgens Park on the west side of the City, the other near Browns Ferry Park on the east side. A bicycle and pedestrian bridge just outside the City's eastern boundary is planned to be part of the Tonquin Trail. There is a need for an interconnected network of pathways throughout the system. This would allow bicyclists and pedestrians to travel to destinations and potentially use the paths for work or other trips in addition to recreation.

Crosswalks

Crosswalks are striped areas on a road that indicate to both pedestrians and motorists that pedestrians are likely to cross a roadway. There are a number of forms of crosswalks, the most common of which are two parallel lines from one side of the street to the other. Other types of crosswalks include the "ladder" or "zebra" crossings that are a series of hash marks across the roadway. Crosswalks can also be a street design element and painted or stamped designs can be added to mimic brick or pavers to further differentiate the crosswalk from the roadway.

There are a number of crosswalks in the City, notably in the commercial areas and near public schools. Major intersections have crosswalks and walk indicators at the signals. Residential crosswalks are located near public schools, parks, or transit stops.

The crosswalks near the WES station at SW Boones Ferry Road and the access into the park and ride lot and at SW Boones Ferry and SW Tualatin-Sherwood Roads have clearly delineated, stamped and painted pavement to indicate where pedestrians are to cross. There are also audible signals at both intersections for vision impaired pedestrians that indicate the street names and when to cross.

SW Boones Ferry Road and WES crosswalk near Park and Ride entrance

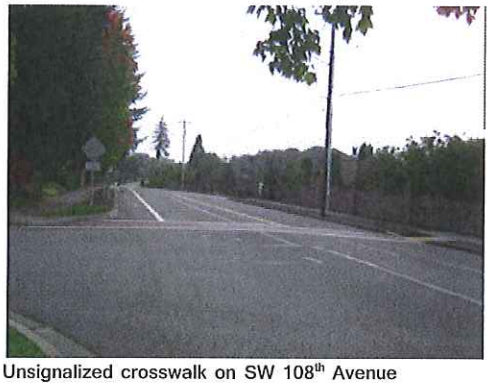
Park and ride entrance crosswalk

Additionally, there are crossings at unsignalized intersections including:

- SW Iowa Drive and SW Boones Ferry Road
- SW Ibach Street and SW 103rd Avenue
- SW Ibach Street and SW 108th Avenue
- SW Willow Street and SW 108th Avenue
- SW 95th Avenue and SW Sagert Street
- SW Seneca Street and SW Martinazzi Avenue

There are several mid-block crossings on lower volume streets, usually to connect neighborhoods and schools. A few mid-block crossings in the City include:

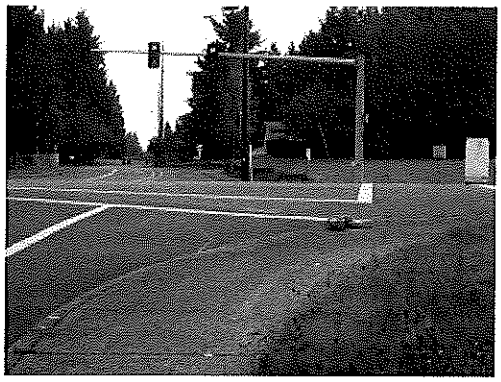
- SW Boones Ferry Road just south of the entrance to the Tualatin High School parking lot and includes a pedestrian island
- SW 108th Avenue between SW Willow and Ibach Streets
- Two on SW Boones Ferry Road between SW Tualatin Road and SW Martinazzi Avenue



Unsignalized crosswalk on SW 108th Avenue

Crosswalk Needs

There are a number of concerns with pedestrian safety at crosswalks, and community members have indicated that better lighting or flashing lights at crosswalks, especially those that see heavy pedestrian usage or are mid-block would help improve safety and drivers would be more aware of pedestrians at these locations.


SW Avery Street and SW Boones Ferry Road intersection wide turning radius

A number of crosswalks at intersections are not pedestrian-friendly because of a wide turning radius built to accommodate trucks, especially on routes that are frequented by trucks including SW Tualatin-Sherwood Road and SW Lower Boones Ferry Road near Bridgeport Village. This occurs at off and on-ramps to I-5 and at a few intersections in the City including:

- SW Avery Street and SW Boones Ferry Road
- SW Lower Boones Ferry Road, SW Bridgeport Road, and SW 72nd Avenue
- SW65th Avenue and SW Lower Boones Ferry Road
- SW Boones Ferry Road and SW Martinazzi Avenue
- SW Tualatin-Sherwood Road and SW Martinazzi Avenue
- SW Sagert Street and SW Martinazzi Avenue
- SW Tualatin Road and SW Boones Ferry Road
- SW Tualatin-Sherwood Road and SW Boones Ferry Road
- SW Warm Springs Street and SW Boones Ferry Road
- SW Sagert Street and SW Boones Ferry Road
- SW Tualatin-Sherwood Road and SW Avery Street
- SW Tualatin-Sherwood Road and SW 115th Avenue
- SW Tualatin-Sherwood Road and SW 124th Avenue
- SW Herman Road and SW 108th Avenue
- SW Sagert Street and SW 65th Avenue

The wider turning radius allows larger vehicles to turn right easily, but increases vehicle turning speeds, increases the distance that pedestrians need to cross in the intersection, and decreases pedestrian visibility at these intersections when compared to a more right-angle intersection.

Pedestrian Signals

Pedestrian signals are similar to traffic signals, but are only activated when a pedestrian is present to activate the signal. The majority of the time the signal is unlit until a pedestrian is present, and then a red light or a blinking yellow light activates. There are also traffic signals that indicate when pedestrians should cross in addition to controlling vehicle traffic. Depending on the signal programming, the pedestrian signal may automatically indicate when pedestrians should cross, or the signal may need to be activated by a pedestrian. Many of the study area intersections in Tualatin have pedestrian signals, some are automatic, and some are pedestrian-activated. There are no dedicated pedestrian signals within the City of Tualatin.

Pedestrian Signal Need

Some community members have expressed concern for crossings where the light is too short for a pedestrian to cross the entire length of the intersection, specifically in the downtown area and at SW Sweek and SW Tualatin Roads. Other community concerns include issues that the pedestrian light does not work unless it is specifically

activated by a pedestrian. The intersection of SW Avery Street and SW Tualatin-Sherwood Road was specifically cited as a location where the pedestrian signal does not work unless it is activated.

High Pedestrian Activity Locations

The study team collected activity data at 30 intersections during both the morning and afternoon rush hour. These activity data included pedestrian counts, indicating intersections with high pedestrian volumes. The intersection with the most pedestrian traffic is SW Boones Ferry Road and SW Ibach Street, which is close to both Byrom Elementary School and Tualatin High School. In the afternoon, most of the pedestrians are crossing from the school to the residential areas west and north of the schools. The next highest intersections for pedestrians are in the downtown area near the Tualatin Commons: SW Martinazzi Avenue and SW Boones Ferry Road and SW Martinazzi Avenue and SW Tualatin-Sherwood Road are near transit stops and city services. Additionally, many people who work in the Tualatin Commons area park in the City parking lots, and likely cross at these intersections to get to and from their cars.

High Crash Locations

Between January 1, 2008 and December 31 2010, there were eight reported crashes involving a pedestrian, four of which were on SW Boones Ferry Road. All of the pedestrian crashes resulted in an injury to the pedestrian, and five of the crashes occurred in dark or low-light conditions such as dusk or dawn. For three of the crashes, the pedestrian was illegally in the roadway, while five crashes were attributed to the vehicle failing to yield for pedestrians. Most of the pedestrian crashes occurred when a passenger car was turning (six out of the eight crashes), and most of the crashes occurred during dry conditions. The reported crashes are included in Table 13 below:

TABLE 13
Pedestrian Crashes by Location

Primary Street	Secondary Street/Intersection	Weather	Light	Cause	Vehicle movement
SW Apache Dr	SW Boones Ferry Rd	Clear	Daylight	Failure to Yield	Right turn
SW Boones Ferry Rd	SW Warm Springs St	Clear	Daylight	Failure to Yield	Left turn
SW Boones Ferry Rd	SW Lower Boones Ferry Rd	Cloudy	Dusk	Pedestrian in roadway	Left turn
SW Boones Ferry Rd	SW Warm Springs St	Rain	Dark – no street lights	Pedestrian in roadway	Straight
SW Boones Ferry Rd	SW Nyberg Rd	Rain	Dark – no street lights	Failure to Yield	Left turn
SW Nyberg Rd	Southbound exit at Nyberg St	Clear	Dark with street lights	Failure to Yield	Right turn
SW Nyberg Road	SW Tualatin-Sherwood Rd	Clear	Daylight	Motorized wheelchair - Pedestrian in roadway	Straight
SW Tualatin Rd	SW 90th Ave	Rain	Dawn	Failure to Yield	Left turn

Source – ODOT 2011

Public Transit

Introduction

Public transportation serves a vital function for residents and businesses/employers of Tualatin. It provides a choice for residents who have a car and wish to not use it at all times, serves as a primary means of transportation for those who have mobility limitations and cannot travel any other way, and it provides options for residents who do not have a car and who wish to travel further than is feasible on a bicycle or on foot. Approximately 60 percent of transit trips within Tualatin are likely to be commuting trips, with the remaining trips likely to be used for shopping, recreation, or

other purposes.[7] Transit riders who access the TriMet or South Metro Area Regional Transit (SMART) systems in Tualatin can connect to other services and travel throughout the Portland metropolitan region and Salem.

Public transportation in the City of Tualatin is provided primarily by TriMet, with some service provided by the SMART district. TriMet serves Tualatin with five bus lines, Westside Express Service (WES) commuter rail, and paratransit. SMART serves Tualatin with one bus line (to Wilsonville).

Existing Service

The following paragraphs describe existing bus, commuter rail, paratransit, and shuttle service in Tualatin. Figure 10 depicts the locations of bus lines and WES.

Bus Lines

- **TriMet Bus line 12 (Barbur/Sandy Blvd)** connects Gresham to Sherwood via downtown Portland. Bus line 12 does not serve the center of Tualatin, but it serves OR-99W as it passes through the City of Tualatin in the city's western edge. Bus line 12 operates every 30 minutes in Tualatin between approximately 5:00 am and 10:00 am; then operates every hour between 11:00 am and 3:00 pm; then returns to 30 minute service between 3:00 pm and 6:00 pm.
- **TriMet Bus line 36 (South Shore)** provides weekday service between Lake Oswego and Tualatin and provides continued service during rush hour to Portland city center. It originates at the Tualatin Park and Ride and provides service to Lake Oswego Transit Center approximately every 30 minutes between 6:00 am and 10:00 am, and approximately every 60-120 minutes between 11:40 am and 6:00 pm. Bus line 36 provides two services per weekday that continue to SW 6th and Burnside in Portland City Center; these are currently scheduled to depart Tualatin Park and Ride at 6:58 am and 7:29 am.
- **TriMet Bus line 37 (Lake Grove)** connects Lake Oswego and Tualatin via SW Lower Boones Ferry and Boones Ferry Roads. It operates approximately every 90 minutes on weekdays between 7:00 am and 6:00 pm and connects the Lake Oswego Transit Center and the Tualatin Park and Ride.
- **TriMet Bus line 38 (Boones Ferry Road)** connects Tualatin and Portland city center via Lake Oswego and SW Portland. It originates at the Tualatin Park and Ride provides service every 30-40 minutes between 6:00 am and 8:30 am, and between 3:30 pm and 5:30 pm. Line 38 does not operate on Saturdays or Sundays.
- **TriMet Bus line 76 (Beaverton/Tualatin)** connects Beaverton to Tualatin and passes through Durham, Tigard, and Washington Square. It originates at the Meridian Park Hospital main stop, connects to the Tualatin Park and Ride, the Tigard Transit Center, the Washington Square Transit Center, and the Beaverton Transit Center. Service is provided approximately every 30 minutes from 5:40 am to 6:40 pm, then every hour from 7:30 pm to 9:30 pm.
- **TriMet Bus Line 94 (Sherwood/Pacific Highway)** connects Sherwood, King City, Tigard, Burlingame and Portland City Center. It travels along Pacific Highway, but does not have a stop within the City of Tualatin. This line is a commuter-oriented express bus with service only on weekdays heading towards Portland between 5:50 am to 7:40 am and heading towards Sherwood between 3:05 pm to 6:35 pm.
- **TriMet Bus line 96 (Tualatin/I-5)** connects Tualatin's Commerce Circle with downtown Portland via I-5. It originates at the 10100 Block on SW Commerce Circle and connects to the Tualatin Park and Ride before continuing on directly to downtown Portland. Bus line 96 provides service approximately every 30 minutes between approximately 5:30 am and 10:00 am, and between 2:30 pm and 9:00 pm.
- **SMART Line 2X – Barbur** on SMART travels from the Wilsonville WES station to the Barbur Transit Center with a stop at the Tualatin Park and Ride. Service is provided approximately every 30 minutes between 5:00 am to 10:00 am, every hour from 10:00 am to 2:00 pm, and every 30 minutes from 2:30 pm to 7:30 pm. Figure 11 shows SMART line 2X.

[7] American Public Transportation Association *2010 Fact Book*.

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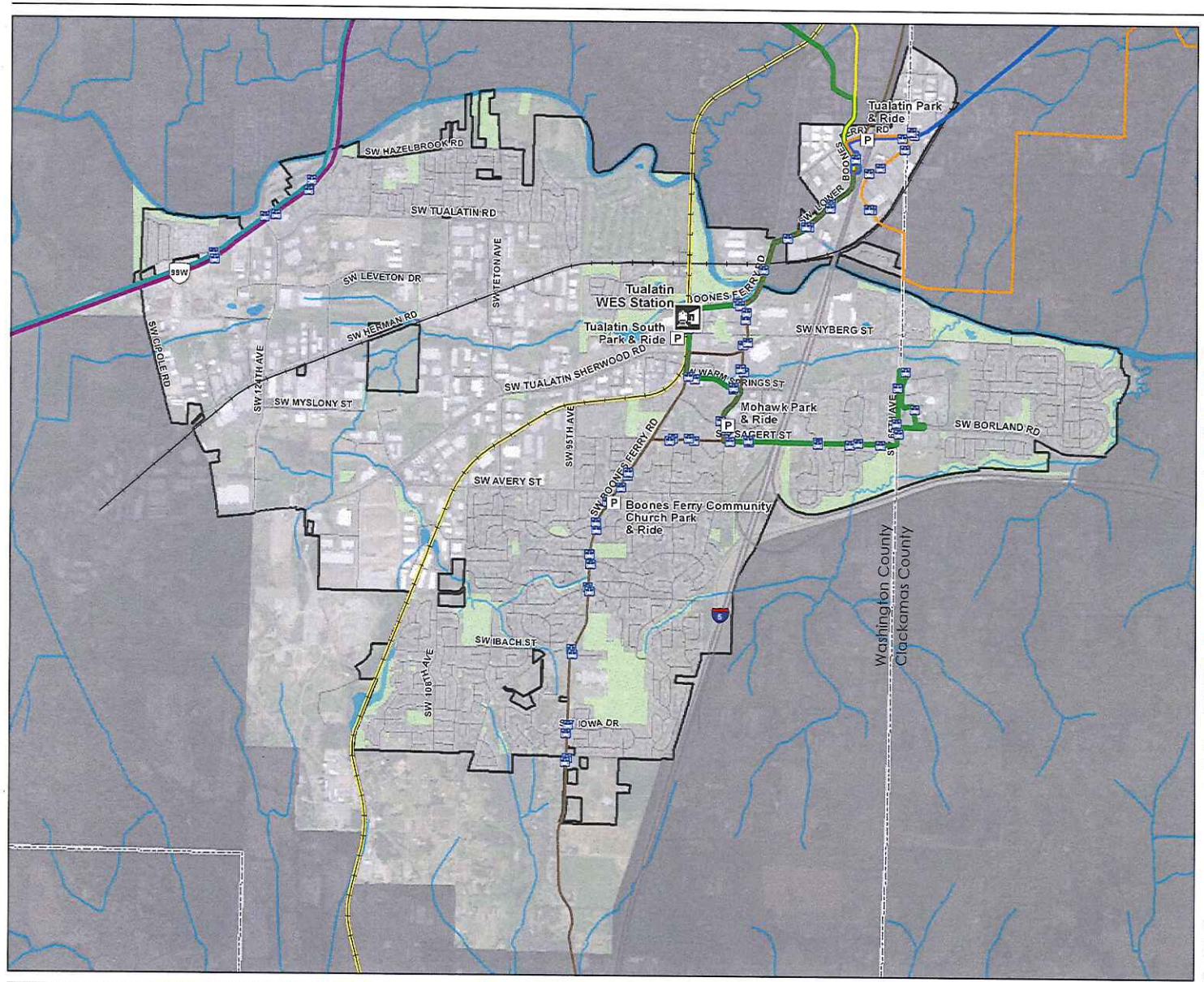

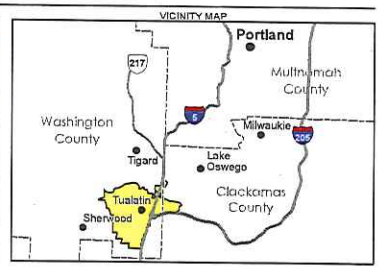

LEGEND

Study Area

Bus Lines

- Line 12
- Line 36
- Line 37
- Line 38
- Line 76
- Line 94
- Line 96
- WES (Westside Express Service)
- Bus Stop
- WES Stop
- Park and Rides
- Railroad
- Parks
- Streams
- Rivers and Water Bodies
- City Boundaries
- County Boundaries

Street System

- Interstate
- Arterial
- Minor or Private Street

N

0 0.5 1
Miles

FIGURE 10
Public Transit System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

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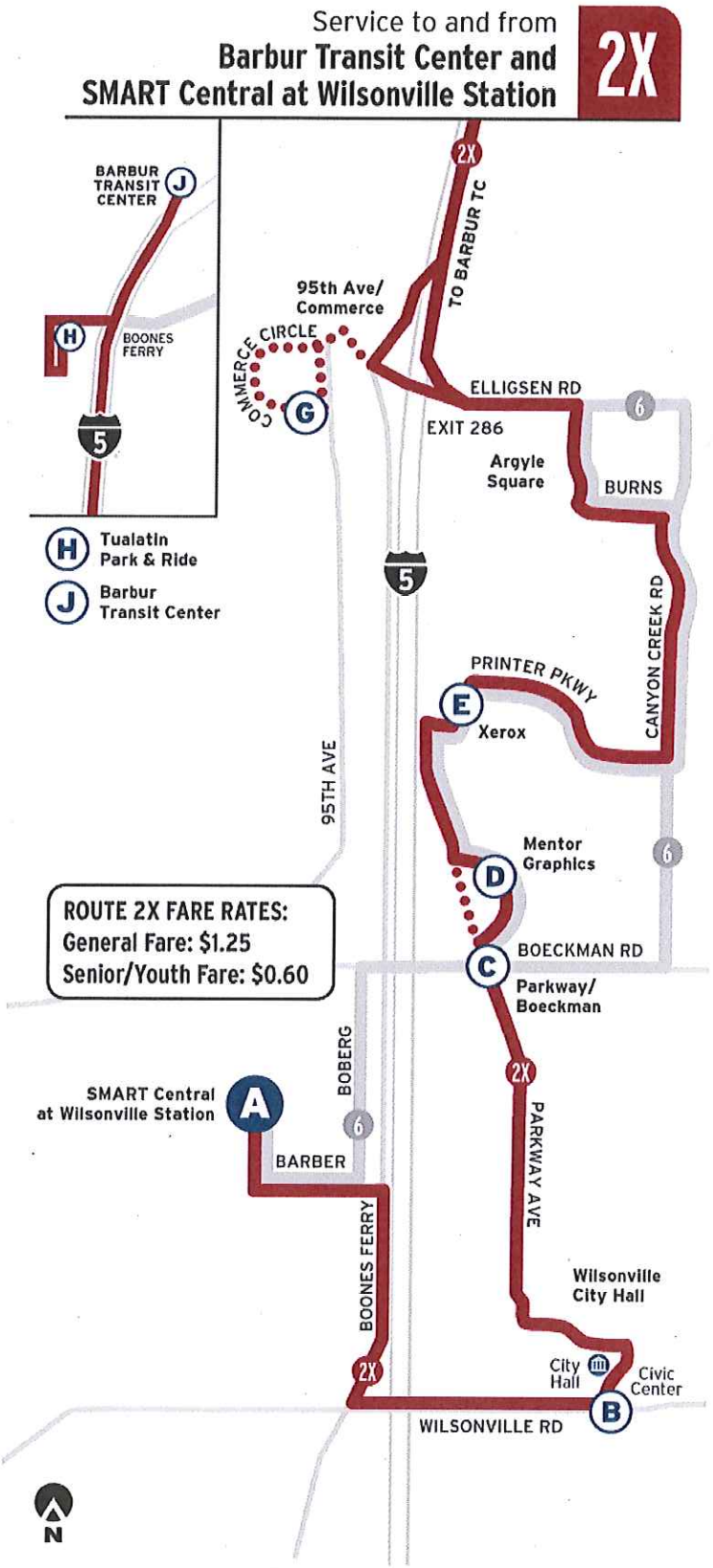
Figure 11 SMART Route 2X in Tualatin



TriMet's service area includes three zones which determine the price per ride. Tualatin lies within zone 3. As of November 2011, the cost of an all-zone (zone 3) ticket on TriMet is $2.40, youth tickets are $1.50, and honored citizen tickets (seniors, people with disabilities, and people on Medicare) are $1. Tickets are valid for two hours. If the return trip is made within the two hour period, there is no additional charge.

A regular, one-way fare on SMART costs $1.25 as of November 2011. The fare is $0.60 for seniors, persons with disabilities, youth, and persons on Medicare.

Commuter Rail

TriMet's Westside Express Service (WES) commuter rail connects the Westside suburbs of the Portland metropolitan area. It includes stops in Beaverton, Tigard, Tualatin, and Wilsonville. WES trains stop at the Tualatin station in the northbound direction (towards Beaverton) every half hour on weekdays between 5:30 am and 9:00 am, and between 3:30 pm and 7:00 pm. WES trains stop at the Tualatin station in the southbound direction (towards Wilsonville) every half hour on weekdays between 6:09 am and 9:39 am, and between 4:16 pm and 7:46 pm. WES does not operate on Saturdays or Sundays. As of November 2011, the cost of a ticket on WES is $2.40. Youth tickets are $1.50 and tickets for honored citizens are $1. WES, bus, and MAX tickets can be used interchangeably between those three modes.

Paratransit

TriMet's LIFT paratransit service is available within the City of Tualatin. LIFT is a shared-ride program for eligible people who cannot use regular, fixed-route service due to a disability or health condition. LIFT operates from 4:30 am – 2:30 am all days of the week and services all areas of the TriMet service boundary, which encompasses the majority of the Portland metropolitan region. The cost per ride of using LIFT is $1.85 in November 2011.

Tualatin Shuttle

The Tualatin Chamber of Commerce operates a free service on weekdays to connect passengers from TriMet bus stops and WES to businesses in Tualatin. The shuttle operates from 5:00 am to 9:30 am and from 2:00 pm to 6:00 pm. It is oriented towards commuters coming from outside of Tualatin. The shuttle offers one pickup in downtown Portland at 5:30 am.

Limitations of Existing Transit Service

It is likely that most residents of Tualatin do not rely solely on transit service to meet their transportation needs, because most people in Tualatin do not live within walking distance (one-quarter mile) of a transit stop, and because transit is not provided at frequent intervals during all hours of the day. TriMet does not provide transit service within all areas of the city and on all major corridors. There is no transit service provided on SW Tualatin-Sherwood Road or SW Tualatin Road, and many residents in the western portion of the city live over a mile from the nearest transit line. Residents who do live near a bus line are not served by transit at regular intervals during the day. Because of the limitations of service during off-peak hours, non-commuting trips may be more difficult to complete using transit in Tualatin.

Existing Transit Facilities

TriMet provides amenities at bus stops and park and ride facilities. Bus stops and park and ride facilities are described in detail in the sections below.

Bus Stops

Bus stops in the City of Tualatin vary by the number of amenities provided. Sixty-seven bus stops out of a total of 79 within the city include a sign only. The remaining 12 include a shelter with a posted schedule. The facilities available at bus stops can have an impact on how many people use them; people generally prefer using stops where a shelter and lighting are provided, particularly during the winter months. Other facilities provided at the larger stops include seating and bike parking. Approximately half of the bus stops in Tualatin include lighting from street lights, but fewer than a third have shelters.

Bus lines 76 and 96 have the most stops with shelters and lighting within the City of Tualatin. With the exception of the Tualatin Park and Ride, bus lines 36 and 37 do not have any stops within the City of Tualatin that contain a shelter. Bus line 12 only has one stop within the City of Tualatin that has a shelter. This is consistent with ridership information for each bus line (provided below) – the largest numbers of riders use bus lines 76 and 96.

Appendix B provides detail on bus stops within the City of Tualatin on TriMet routes. SMART does not maintain separate bus stops in Tualatin; the line 2X-Barbur stops at the Tualatin Park and Ride, which is maintained by TriMet.

Bus stop with sign only


Bus stop with shelter

Park and Rides

There are four park and ride lots within the City of Tualatin. They are depicted graphically on Figure 10. All four park and rides have seen less use, on average, in 2011 than they did in 2010.[8]

- The **Tualatin Park and Ride** is the largest park and ride lot within the City of Tualatin, and is located at SW 72nd Avenue and SW Bridgeport Road in the northern part of the City north of the Tualatin River and downtown. It has 466 total vehicle spaces and is open all days. It is served by bus lines 36 (South Shore), 37 (Lake Grove), 38 (Boones Ferry Road), 76 (Beaverton/Tualatin), 96 (Tualatin/I-5), and SMART 201Barbur. Covered bike racks and bike lockers are available at this location, and there are two bus shelters along SW Lower Boones Ferry Road. This park and ride is easily accessed from I-5. On average, this park and ride has been 83 percent full in 2011.


Tualatin Park and Ride


Mohawk Park and Ride

- The **Mohawk Park and Ride** is located at SW Mohawk Street and SW Martinazzi Avenue about a half mile south of the Tualatin Commons and downtown Tualatin. It has 232 total vehicle spaces and is open all days. It is served by bus lines 76 (Beaverton/Tualatin) and 96 (Tualatin/I-5).It also has covered bike racks and one covered bus stop. On average, this park and ride has been 22 percent full in 2011.

[8] Source: TriMet Operated P&R Facilities (Fall 2010-2011 Comparison)

- The **Tualatin South Park and Ride** is the newest park and ride in the City, and is located at 18955 SW Boones Ferry Road just west of the Tualatin Commons and downtown. It is open all days and provides bike parking with lockers and covered racks. It has 147 total vehicle spaces. It is served by WES and bus line 76 (Beaverton/Tualatin). The main focus of the park and ride is the WES service; the parking lot and pedestrian and bicycle amenities are oriented towards the train station, but there are covered bus stops for both north and southbound passengers on SW Boones Ferry Road. The park and ride is broken up into different lots, one is directly west of the WES stop, and one is further south along SW Boones Ferry Road. On average, this park and ride has been 24 percent full in 2011.


Tualatin South Park and Ride


Boones Ferry Community Church Park and Ride

- The **Boones Ferry Community Church Park and Ride** is the smallest park and ride in the City of Tualatin. It is open Monday through Friday only, and provides 20 vehicle spaces. There are no bike parking facilities at this location It is located at 20500 SW Boones Ferry Road and is served by bus line 96 (Beaverton/Tualatin). The bus stops are located along SW Boones Ferry Road, but riders need to cross either SW Avery Street to access the northbound bus stop, or SW Boones Ferry Road to access the southbound stop. For the southbound stop, riders must walk out of direction to the traffic signal to legally cross SW Boones Ferry Road from the driveway of the Park and Ride. Neither of the bus stops have a shelter, but there is a sign and a bus pull-out to indicate the bus stop. There are also no sidewalks along the driveway from the parking lot to the sidewalk along SW Boones Ferry Road. On average, this park and ride has been 10 percent full in 2011.

Transit Ridership

Ridership on TriMet varies greatly by bus line and by time of day. Bus lines 76 and 96 have the most ridership within the City of Tualatin, followed by WES. Table 14 provides average ridership on each TriMet service in Tualatin. The passenger boardings and alightings (when a passenger gets off the bus or train) statistics provided are for passengers that board or alight at a stop within the Tualatin city limits.

Bus lines in Table 14 with similar counts of boardings and alightings, including bus lines 12, 36, and 38 in the AM and PM peak, 76 in the AM peak and weekend, and 96 in the AM peak indicate that passengers are likely to be using transit round-trip. Disparate counts of boardings and alightings, such as bus line 37 in the AM peak, 38 on average weekdays, 76 in the PM peak, 96 in the AM and PM peak, and WES indicate that passengers may use another form of transportation for part of the trip.

TABLE 14
Average Transit Ridership on TriMet in the City of Tualatin in Spring 2011

Service	Average Total Weekday		Average Weekday AM peak (6-9 am)		Average Weekday PM Peak (4-7 pm)		Average Saturday		Average Sunday	
	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings
Bus line 12 (Barbur/Sandy Blvd)	66	66	17	13	15	18	38	38	27	25
Bus line 36 (South Shore)	18	21	9	8	4	8	-	-	-	-
Bus line 37 (Lake Grove)	26	25	10	5	5	8	-	-	-	-
Bus line 38 (Boones Ferry Road)	27	19	15	10	7	7	-	-	-	-
Bus line 76 (Beaverton/ Tualatin)	504	576	114	119	112	139	416	423	259	263
Bus line 96 (Tualatin/ I-5)	603	591	423	114	88	379	-	-	-	-
WES	229	212	111	81	113	130	-	-	-	-

Note: cells in black with no information indicate lines that do not operate on Saturday or Sunday

Source: TriMet Spring 2011 Passenger Survey

Transit Travel Times

The average in-vehicle transit travel times between the Tualatin South Park and Ride and key regional destinations on the west side of the Portland metropolitan region are as follows:[9]

- **From Tualatin South Park and Ride to Downtown Portland at SW Jefferson and 10th**: 21-26 minutes via bus line 96 (Tualatin/I-5)
- **From Tualatin South Park and Ride to Wilsonville Central**: 10 minutes via WES
- **From Tualatin South Park and Ride to Washington Square Transit Center**: 12-24 minutes via bus line 76 (Beaverton/Tualatin)
- **From Tualatin South Park and Ride to Lake Oswego Transit Center:** 15 minutes via bus line 37 (Lake Grove)
- **From Tualatin South Park and Ride to Beaverton Transit Center**: 17 minutes via WES (from Tualatin South Park and Ride to Beaverton TC WES Station)or 35-48 minutes via bus line 76 (Beaverton/Tualatin)

Total transit travel times are comprised of the in-vehicle times listed above, plus time for walking or driving to the station and time for waiting for the bus or WES to arrive. The total travel time for the trips listed above is likely 10-15 minutes longer than listed, depending on the specific origin of the user's trip. Because TriMet and SMART buses travel in general purpose traffic lanes, transit travel times can vary based on traffic conditions.

Given the typical amount of time it may take to find parking in downtown Portland, the total time for taking transit is likely similar to that of using a private vehicle. Although the in-vehicle travel times for trips to Wilsonville, Washington Square, Lake Oswego, and Beaverton are likely to be similar for transit and private vehicles, the total travel time of using transit to any of those destinations is in general longer than driving in a private vehicle. Therefore, the primary trips that are likely to attract non-transit dependent users are commuting trips to Beaverton or downtown Portland.

[9] Source: www.trimet.org, schedules by transit line.

Freight Rail, Pipeline, Waterway, Airport

Introduction

This section describes current freight rail, pipeline, waterways, and airport facilities within the study area, including depots, at-grade crossings (for freight rail), and facility needs. Figure 12 shows freight rail and pipelines in the City.

Freight Rail

Portland and Western Railroad (PNWR) currently owns and operates two freight rail lines in Tualatin: one that runs mostly north-south, which is shared by the WES described in the Transit section, and one that runs east-west along Herman Road. The east-west line carries one train daily in each direction, and the north south has two trains daily in each direction. There are a number of public road railroad crossings in the City, all of which are gated:

- SW Tualatin Road (at two locations)
- West terminus of SW Nyberg Street/entrance to shopping center
- SW Tualatin-Sherwood Road
- SW 95th Avenue
- SW Teton Avenue (at two locations)
- SW Avery Street
- SW Cipole Road
- SW 124th Avenue
- SW 118th Avenue
- SW 90th Avenue
- SW Boones Ferry Road

In addition to these public roadway crossings, there are a number of driveways or private roads that cross the railroad tracks. These crossings are not signalized, but are stop-controlled. Freight trains have the right of way at all intersections.

The railroad tracks pass through the manufacturing areas in west Tualatin, creating the potential for companies to use rail for freight shipping, but there are not currently any depots or stops in the City. PNWR does not currently have plans to increase their freight service through Tualatin.

A freight train on the north-south railroad alignment near Tualatin Community Park

Pipeline

There is one gas transmission pipeline within the City which roughly follows SW Boones Ferry Road in the far north, crossing underneath I-5 south of SW Bridgeport Road, and continuing to the southern city limits along SW Boones Ferry Road. Additionally, there is a gasoline pipeline that is included in the SW Concept Plan area, which is also included in our study area.

Waterways

The Tualatin River is the only waterway within the study area. The river starts in the Coast range, and ends at the Willamette River in West Linn. The Tualatin River is not navigable from the Willamette due to impassible areas and a diversion dam near SW Borland Road in West Linn. Recreational canoeing and kayaking is allowed on the Tualatin River and can be accessed from Browns Ferry Park, Tualatin Community Park, Jurgens Park, and at the 99W Bridge at SW Hazelbrook Road. A motorboat launch is located at Tualatin Community Park.

Airport

There are no airports within the Tualatin City limits. There are, however, a number of airports within 30 miles: Aurora State Airport, the Portland Hillsboro Airport, and the Portland International Airport. Only Portland International provides scheduled passenger service.

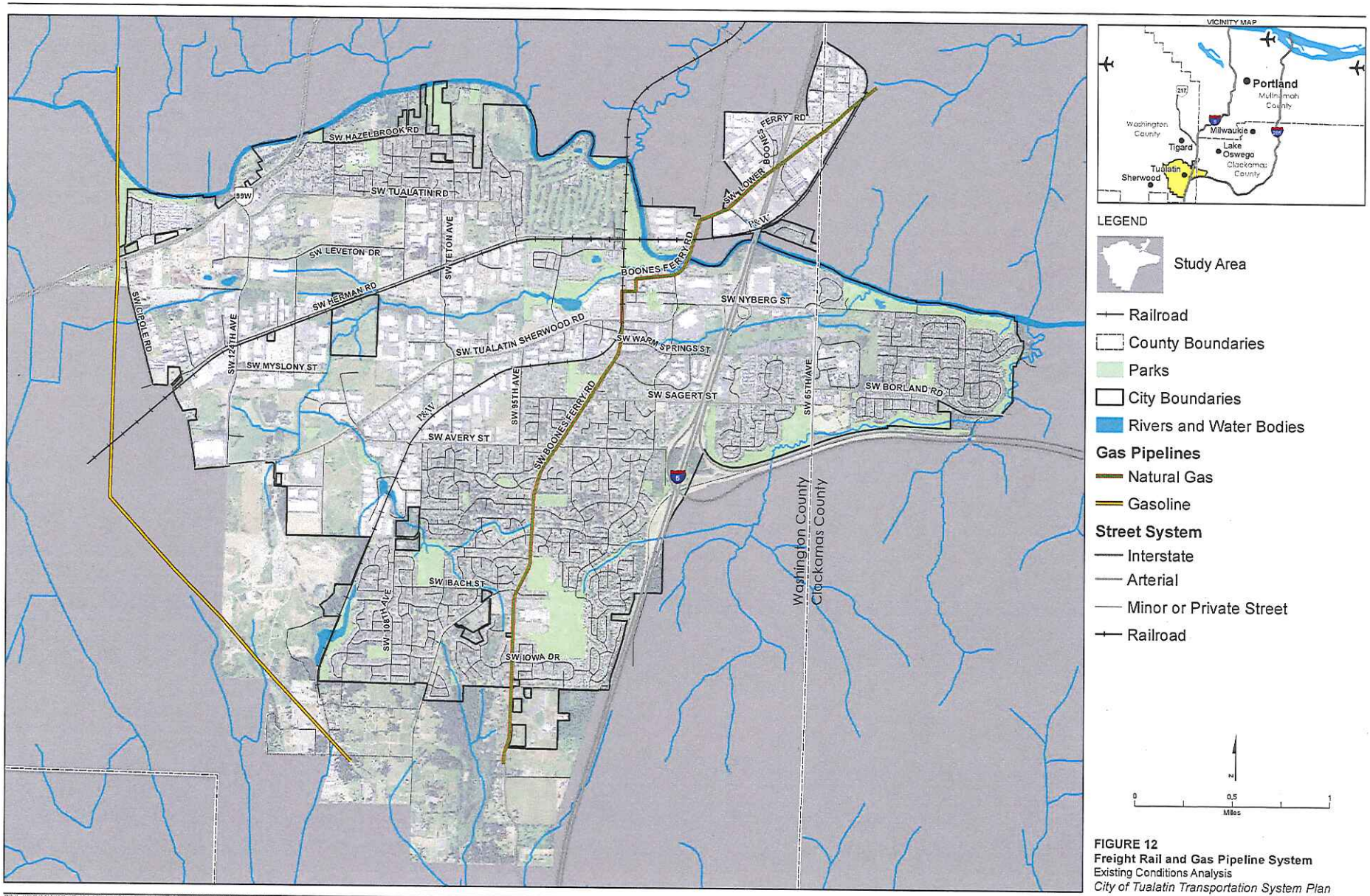


FIGURE 12
Freight Rail and Gas Pipeline System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

CH2MHILL

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Appendix A: Roadway Standards Assessment

Street Name	Classification	Abbreviation	Truck Route?	Skew Angle	Intersection Spacing	Median?	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Curb to Curb Width	Comments
SW 120TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	M	N/A	M	
SW 63RD AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	D	M	N/A	D	N/A	G	N/A	D	Tight skew, less than standard number of lanes, gaps in sidewalk
SW 65TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	D	N/A	G	N/A	D	Less than standard number of lanes, gaps in sidewalk
SW 84TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-D	NO	M	M	N/A	M	N/A	M	N/A	M	
SW ITEL ST	LOCAL COMMERCIAL INDUSTRIAL	BC-I	NO	M	M	N/A	M	N/A	M	N/A	M	
SW MANHASSET DR	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW NYBERG ST	LOCAL COMMERCIAL INDUSTRIAL	B-D	YES	M	M	N/A	M	N/A	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW ROSEWOOD AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	M	N/A	D	Curb to curb width less than standard
SW SENECA ST	LOCAL COMMERCIAL INDUSTRIAL	B-D	YES	M	M	N/A	M	N/A	M	N/A	M	
SW TONKA RD	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	M	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW 124TH AVE	MAJOR ARTERIAL	Eb&t	YES	M	M	M	M	M	M	N/A	M	
SW 90TH AVE	MAJOR ARTERIAL	Eb&t	NO	M	M	M	P	M	M	N/A	D	
SW BOONES FERRY RD	MAJOR ARTERIAL	Eb&t	YES	M	M	P	P	P	P	N/A	D	Narrow or curb tight sidewalk, no planter
SW HERMAN RD	MAJOR ARTERIAL	Eb&t	YES	D	M	P	P	G	G	N/A	D	Gaps in sidewalk and bike lane. Narrow median
SW LEVETON DR	MAJOR ARTERIAL	Eb&t	NO	M	M	P	M	M	M	N/A	P	Median width less than standard
SW MARTINAZZI AVE	MAJOR ARTERIAL	Eb&t	NO	P	M	M	M	G	P	N/A	D	Gaps in bike lane throughout and lack of planter strip
SW SAGERT ST	MAJOR ARTERIAL	Eb&t	NO	M	M	D	P	P	P	N/A	D	Gaps in sidewalk and bike lane across I-5 bridge
SW TUALATIN RD	MAJOR ARTERIAL	Eb&t	NO	M	M	M	D	M	P	N/A	P	Does not meet number of travel lanes for this class
SW 108TH AVE	MAJOR ARTERIAL	Eb&t	YES	M	M	P	D	M	P	N/A	P	Median is narrow. Sidewalks are curb tight with no planter.
SW BOONES FERRY RD	MINOR ARTERIAL	Db&t-D	YES	M	M	P	M	P	M	N/A	P	Section and bike lane narrow/removed at Tualatin River Bridge
SW MARTINAZZI AVE	MINOR ARTERIAL	Db&t-D	NO	M	M	D	M	D	P	N/A	P	No bike lane or planter near downtown core
SW TUALATIN RD	MINOR ARTERIAL	Db&t-D	YES	D	M	M	M	P	P	N/A	P	Narrow bike lane, 1/2 street sidewalk, some tight skews
SW 105TH AVE	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	Narrow bike lanes and sidewalk. No median.
SW 115TH AVE	MAJOR COLLECTOR	Cb&t	NO	P	M	P	P	P	P	N/A	P	Street only 1/2 built. Likely all M after property develops
SW 65TH AVE	MAJOR COLLECTOR	Cb&t	NO	M	M	N/A	M	P	P	N/A	P	Section altered at intersection. Sidewalk and Bike Lanes do not exist
SW AVERY ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	No median. Bike and sidewalk curb tight and narrow.
SW BLAKE ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	P	D	D	N/A	D	No sidewalk, bike lane or median. Narrow travel lanes
SW HERMAN RD	MAJOR COLLECTOR	Cb&t	YES	D	M	P	P	P	P	N/A	P	Gaps in bike lane and 1/2 street sidewalk due to rail.
SW MCEWAN RD	MAJOR COLLECTOR	Cb&t	NO	M	M	P	M	P	P	N/A	P	Gaps in bike lane and sidewalk. No median.
SW MYSLONY ST	MAJOR COLLECTOR	Cb&t	NO	M	M	P	P	P	P	N/A	P	Street only 1/2 built. Likely all M after property develops
SW SAGERT ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	Narrow bike lanes and curb tight sidewalk narrow sidewalk
SW TETON AVE	MAJOR COLLECTOR	Cb&t	YES	M	M	P	M	P	M	N/A	P	Narrow or missing median. Gaps in bike lane.
SW TUALATIN RD	MAJOR COLLECTOR	Cb&t	YES	M	M	P	M	M	M	N/A	P	Gaps in median width provided.

Street Name	Classification	Abbreviation	Truck Route?	Skew Angle	Intersection Spacing	Median?	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Curb to Curb Width	Comments
SW 103RD AVE	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	M	M	M	P	
SW 108TH AVE	MINOR COLLECTOR	Cb	YES	M	M	N/A	M	M	M	P	P	Intermittent parking provided
SW 115TH AVE	MINOR COLLECTOR	Cb	NO	M	M	P	M	M	M	D	P	narrow median and lack of parking
SW 118TH AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW 50TH AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW 95TH PL	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	P	P	P	P	narrow bike lane, no planter, parking south of Avery only
SW BLAKE ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	D	D	D	P	no parking, sidewalk or bike lanes
SW GRAHAMS FERRY RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	1/2 developed. Likely all M after developments
SW HAZELBROOK RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	Partially developed. Likely all M after developments
SW HELENIUS RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	Partially developed. Likely all M after developments
SW IBACH ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW IOWA DR	MINOR COLLECTOR	Cs&2p	NO	M	M	N/A	M	M	M	M	M	
SW JURGENS AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow or gaps in bike lane
SW LEVETON DR	MINOR COLLECTOR	Cb	NO	M	M	P	M	M	M	D	P	Narrow median. No street parking
SW MARTINAZZI AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	M	M	
SW NYBERG LANE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow bike lane or gaps
SW NYBERG ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow bike lane or gaps
SW SAGERT ST	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	M	M	M	M	
SW STONO DR	MINOR COLLECTOR	Cs&p	NO	M	M	N/A	M	M	M	M	P	full c-c width north provided
SW WARM SPRINGS ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	D	P	D	P	1/2 street sidewalk, no street parking, narrow bike or gap
SW WILKE RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	D	P	no street parking, sidewalk and bike lane gaps
SW 112TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	roadway not completed to Helenius
SW 56TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW 99TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW ALSEA DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW AVERY ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW BLAKE ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW COQUILLE DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	Narrow at intersection
SW HELENIUS RD	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	roadway not completed to 112th
SW MARILYN RD	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW PAULINA DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW PORT ORFORD ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	P	Narrow c-c width
SW SAGERT ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	P	Narrow c-c width
SW SWEEK DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	

M – Meets standard
P – Partially meets standard
D – Does not meet standard
G – Gap in feature

Appendix B: Bus Stops within the City of Tualatin

STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
	Bus line 12: Barbur/Sandy Blvd				
4292	SW Pacific Hwy & SW Hazelbrook Rd	12	W	no	no
4260	SW Pacific Hwy & SW 124th Ave	12	W	no	no
4300	SW Pacific Hwy & SW Pacific Dr	12	W	no	no
4301	SW Pacific Hwy & SW Pacific Dr	12	E	no	no
4316	SW Pacific Hwy & SW 124th Ave	12	E	no	yes
4293	SW Pacific Hwy & SW Hazelbrook Rd	12	N	yes	yes
	Bus line 36: South Shore				
3821	7100 Block SW McEwan Rd	36	N	no	no
3820	SW McEwan Rd & NW Book Deposit	36	N	no	yes
3824	SW McEwan Rd & SW 65th Ave	36	N	no	yes
7879	Tualatin Park & Ride	36	N	yes	yes
9045	SW Lower Boones Ferry Rd & SW McEwan Rd	36	E	no	yes
3819	17900 Block SW McEwan Rd	36	W	no	yes
3822	7100 Block SW McEwan Rd	36	S	no	no
	Bus line 37: Lake Grove				
12852	SW Lower Boones Ferry Rd & SW 65th Ave	37	W	no	no
7879	Tualatin Park & Ride	37	N	yes	yes
13195	SW Lower Boones Ferry & SW McEwan Rd	37	E	no	no
	Bus line 38: Boones Ferry Road				
7880	Tualatin Park & Ride	38	All	yes	yes
	Bus line 76: Beaverton/Tualatin				
7880	Tualatin Park & Ride	76	All	yes	yes
558	18000 Block SW Lower Boones Ferry Rd	76	W	no	yes
514	SW Lower Boones Ferry Rd & SW Childs Rd	76	W	no	yes
495	18200 Block SW Boones Ferry Rd	76	S	no	yes
13078	SW Boones Ferry Rd & SW Martinazzi Ave	76	W	no	yes
13079	SW Boones Ferry Rd & SW Nyberg St	76	S	yes	no
13080	SW Warm Springs St & SW Boones Ferry Rd	76	E	no	yes
13081	SW Warm Springs St & SW Martinazzi Ave	76	E	no	no
8274	SW Martinazzi Ave & SW Mohawk St	76	S	no	yes
8506	SW Sagert St & SW Martinazzi Ave	76	E	no	no

STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
4999	7800 Block SW Sagert St	76	E	no	yes
5003	SW Sagert St & SW 72nd Ave	76	E	no	yes
5002	SW Sagert St & SW 70th Ave	76	E	no	yes
5001	SW Sagert St & SW Wampanoag Dr	76	E	no	yes
7839	SW 65th Ave & SW Borland Rd	76	N	no	yes
3868	Meridian Park Hospital Main Stop	76	N	yes	yes
3867	Meridian Park Hospital Rd & SW 65th Ave	76	N	no	no
8944	19500 Block SW 65th Ave	76	S	yes	yes
8279	SW 65th Ave& SW Borland Rd	76	S	no	yes
8281	SW Sagert St & SW 68th Ave	76	W	no	yes
8282	SW Sagert St & SW 72nd Ave	76	W	no	yes
8283	7800 Block SW Sagert St	76	W	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	76	N	yes	yes
13082	SW Warm Springs St & SW Martinazzi Ave	76	W	no	yes
13083	SW Warm Springs St & SW Boones Ferry Rd	76	W	no	no
13084	SW Boones Ferry Rd & SW Seneca St	76	N	yes	yes
13085	SW Boones Ferry Rd & SW Martinazzi Ave	76	E	no	yes
7880	Tualatin Park & Ride	96	All	yes	yes
	Bus line 96: Tualatin/I-5				
558	18000 Block SW Lower Boones Ferry Rd	96	W	no	yes
514	SW Lower Boones Ferry Rd & SW Childs Rd	96	W	no	yes
495	18200 Block SW Boones Ferry Rd	96	S	no	yes
3779	SW Martinazzi Ave & SW Seneca St	96	S	no	yes
5004	SW Sagert St & SW 86th Ave	96	E	no	yes
8278	SW Sagert St & SW Tillamook Ct	96	E	no	yes
9026	SW Martinazzi Ave & SW Tualatin-Sherwood Rd	96	S	no	yes
8252	SW Martinazzi Ave & Martinazzi Square	96	S	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	96	N	yes	yes
8274	SW Martinazzi Ave & SW Mohawk St	96	S	no	yes
8276	SW Sagert St & SW Tillamook Ct	96	W	no	yes
8788	SW Sagert St & SW 86th Ave	96	W	no	yes
501	SW Boones Ferry Rd & SW Apache Dr	96	S	no	yes
9352	SW Boones Ferry Rd & SW Avery St	96	S	no	yes
563	SW Boones Ferry Rd & SW Siletz Dr	96	S	no	yes
535	SW Boones Ferry Rd & SW Killarney Ln	96	S	no	yes
500	SW Boones Ferry Rd & SW Alsea Dr	96	S	no	yes

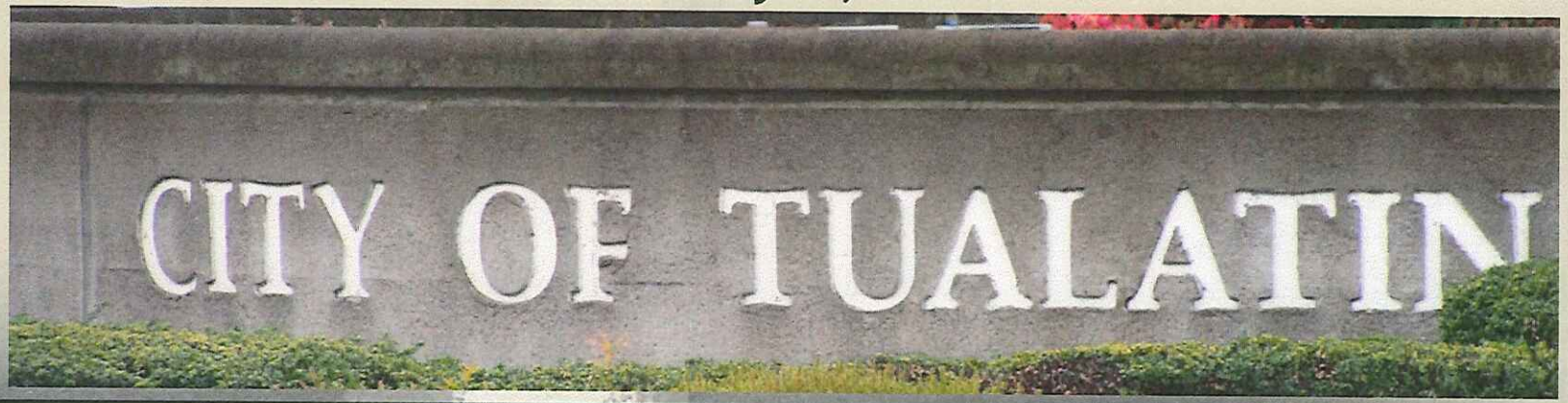
STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
530	SW Boones Ferry Rd & SW Ibach St	96	S	no	no
9512	SW Boones Ferry Rd & SW Iowa Dr	96	S	no	yes
542	SW Boones Ferry Rd & SW Norwood Rd	96	S	no	yes
543	SW Boones Ferry Rd & SW Norwood Rd	96	N	no	yes
9511	SW Boones Ferry Rd & SW Iowa Dr	96	N	no	yes
531	SW Boones Ferry Rd & SW Ibach St	96	N	no	yes
510	SW Boones Ferry Rd & SW Blake St	96	N	no	yes
503	SW Boones Ferry Rd & SW Arapaho Rd	96	N	no	yes
562	SW Boones Ferry Rd & SW Siletz Dr	96	N	no	yes
9353	SW Boones Ferry Rd & SW Avery St	96	N	no	yes
502	SW Boones Ferry Rd & SW Apache Dr	96	N	no	yes
5004	SW Sagert St & SW 86th Ave	96	E	no	yes
8278	SW Sagert St & SW Tillamook Ct	96	E	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	96	N	yes	yes
8249	SW Martinazzi Ave & Martinazzi Square	96	N	yes	yes
8250	SW Martinazzi Ave & SW Tualatin-Sherwood Rd	96	N	no	yes
3778	SW Martinazzi Ave & SW Boones Ferry Rd	96	N	yes	yes
570	SW Lower Boones Ferry Rd & SW Boones Ferry Rd	96	E	no	yes
513	SW Lower Boones Ferry Rd & SW Childs Rd	96	E	no	yes
537	18000 Block SW Lower Boones Ferry Rd	96	E	no	yes
7879	Tualatin Park & Ride	96	All	yes	yes
13069	Tualatin WES Station	WES	N/S	yes	yes
	WES Commuter Rail				
13069	Tualatin WES Station	WES	N/S	yes	yes

Source: www.trimet.org

City of Tualatin

Virtual Tour of Future Conditions

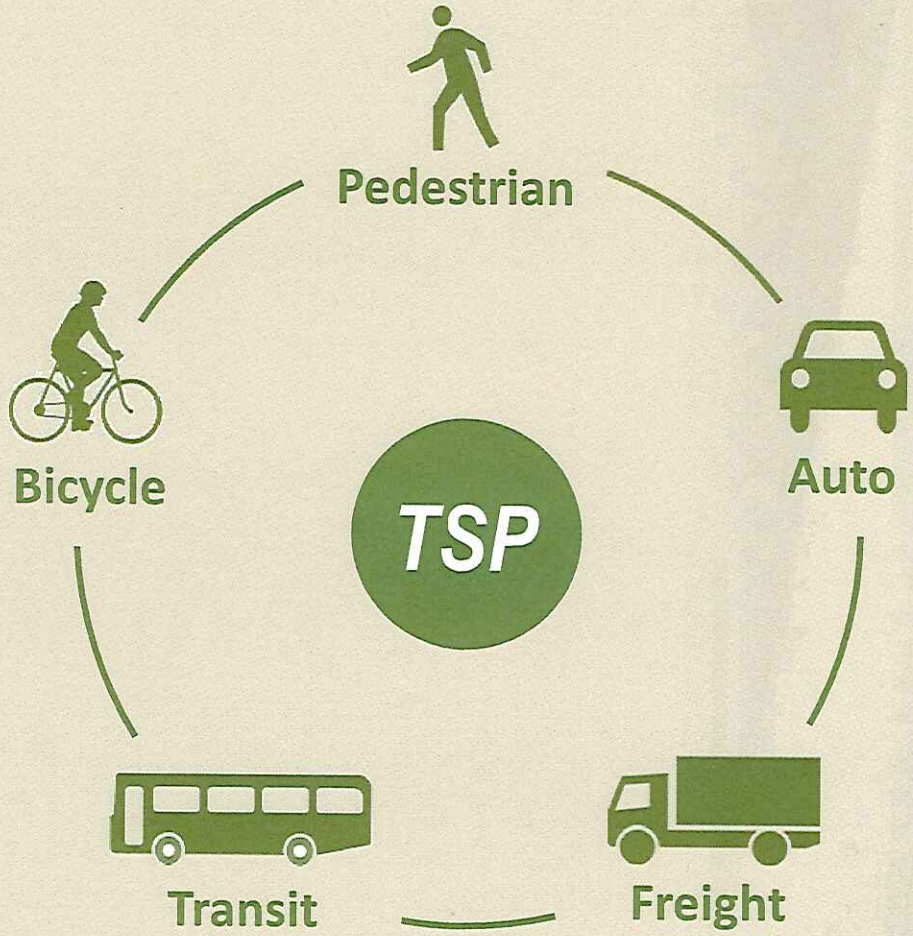
Presentation to
Tualatin Transportation Task Force
February 2, 2012



What is Future Conditions?

- Assessment of conditions by mode in 2035
- Identifies future needs, opportunities, and constraints for all modes of travel
- Incorporates future planned land uses and expected projects/improvements
- Balances community needs with infrastructure needs
- Helps prioritize identified improvements

Major Elements of Future Conditions

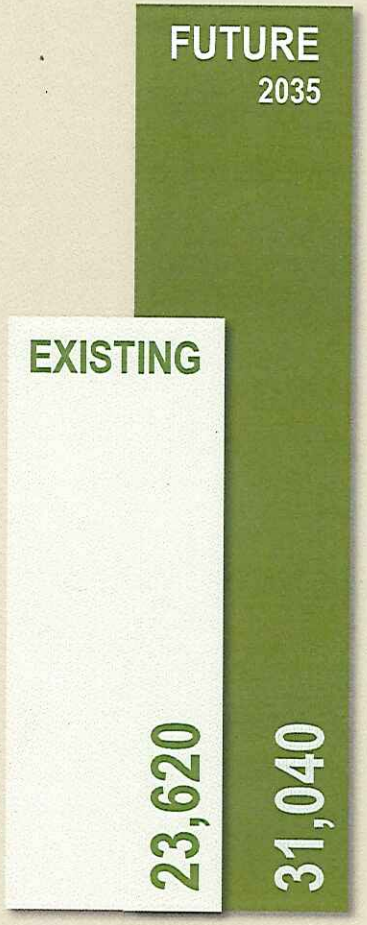


- Mode Choice
- Land Use
- Future improvements
- Future forecasting
- Community values and inputs
- Prioritization

Land Use Overview

9%

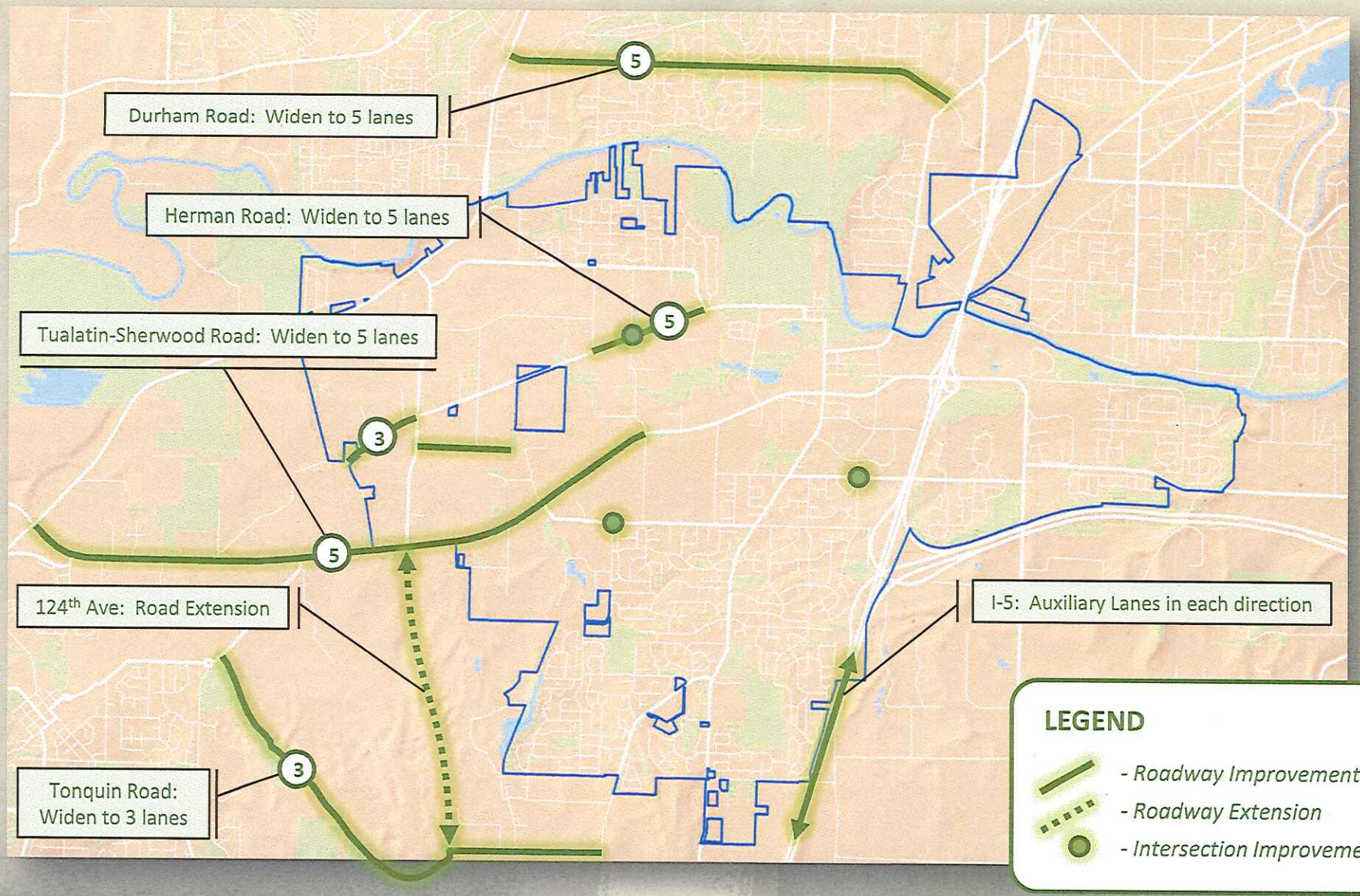
Projected Housing Growth



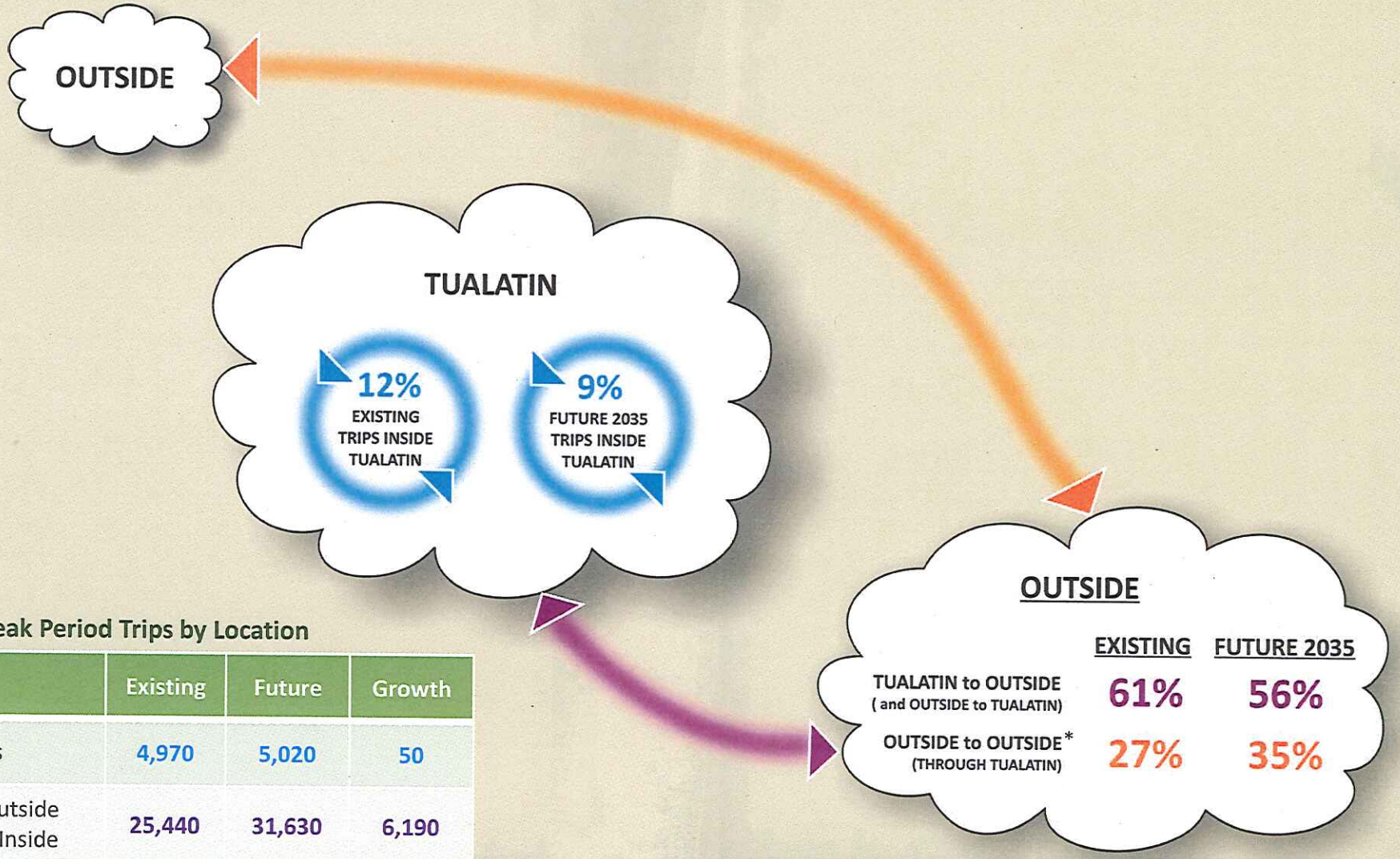
31%

Projected Employment Growth

Assumed Future 2035 Roadway Projects



PM Peak Period Motor Vehicle Trip Activity

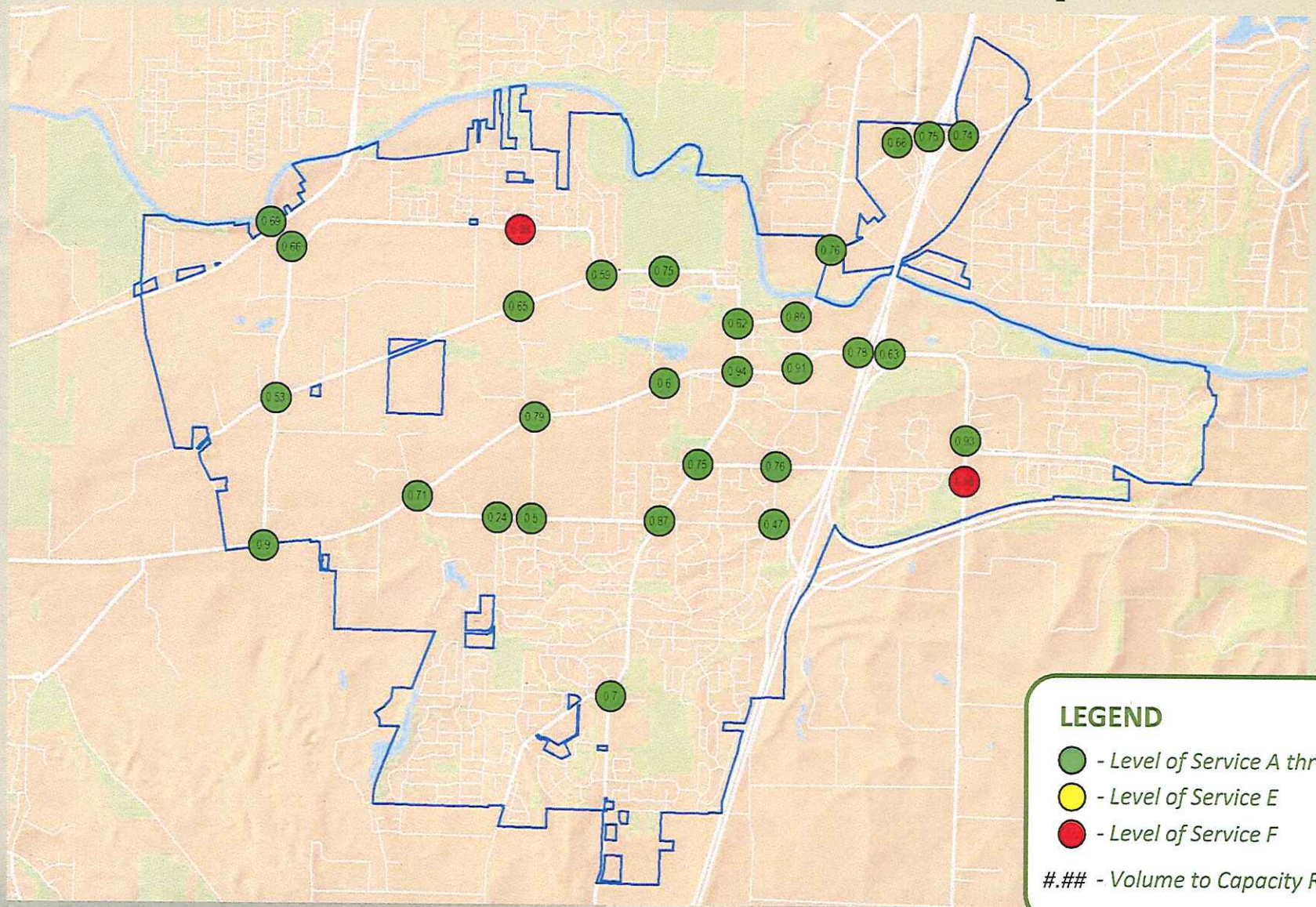


Total PM Peak Period Trips by Location

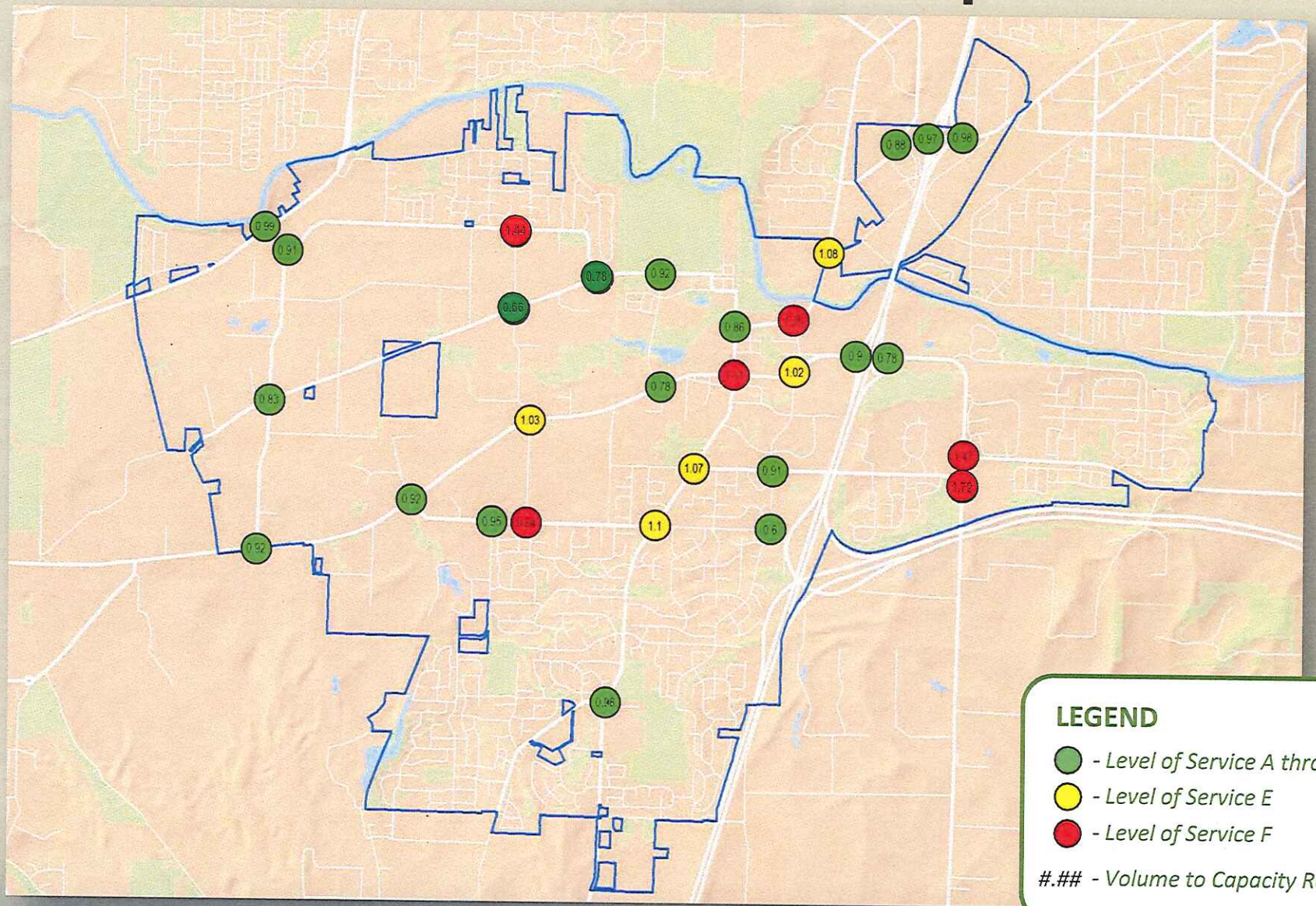
	Existing	Future	Growth
Inside Trips	4,970	5,020	50
Inside to Outside Outside to Inside	25,440	31,630	6,190
Outside to Outside	11,080	19,570	8,490

*Excludes through trips on I-5 and 99W

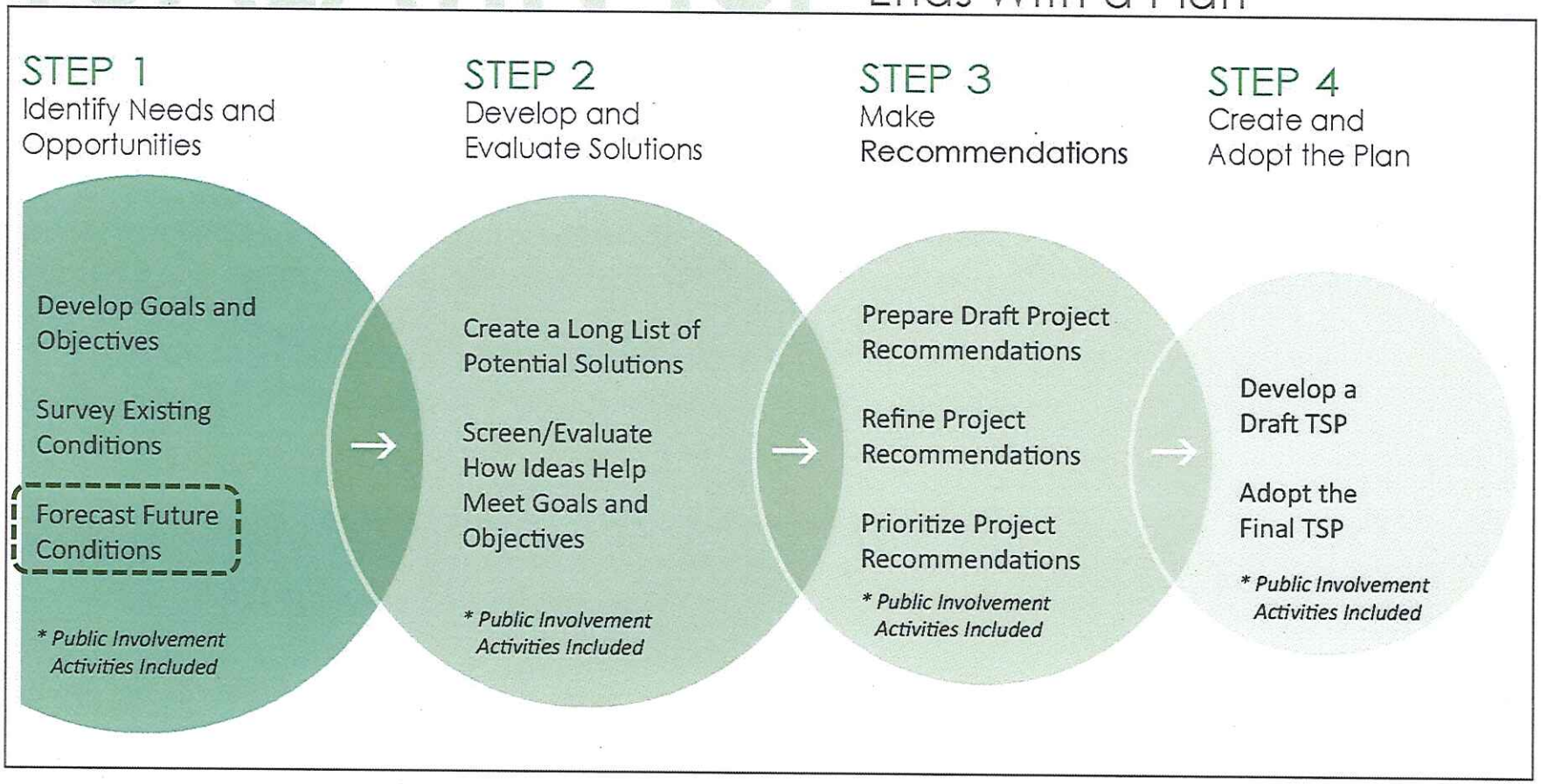
Existing PM Peak Intersection Operations



2035 PM Peak Intersection Operations



TUALATIN TSP How Today's Work Ends With a Plan

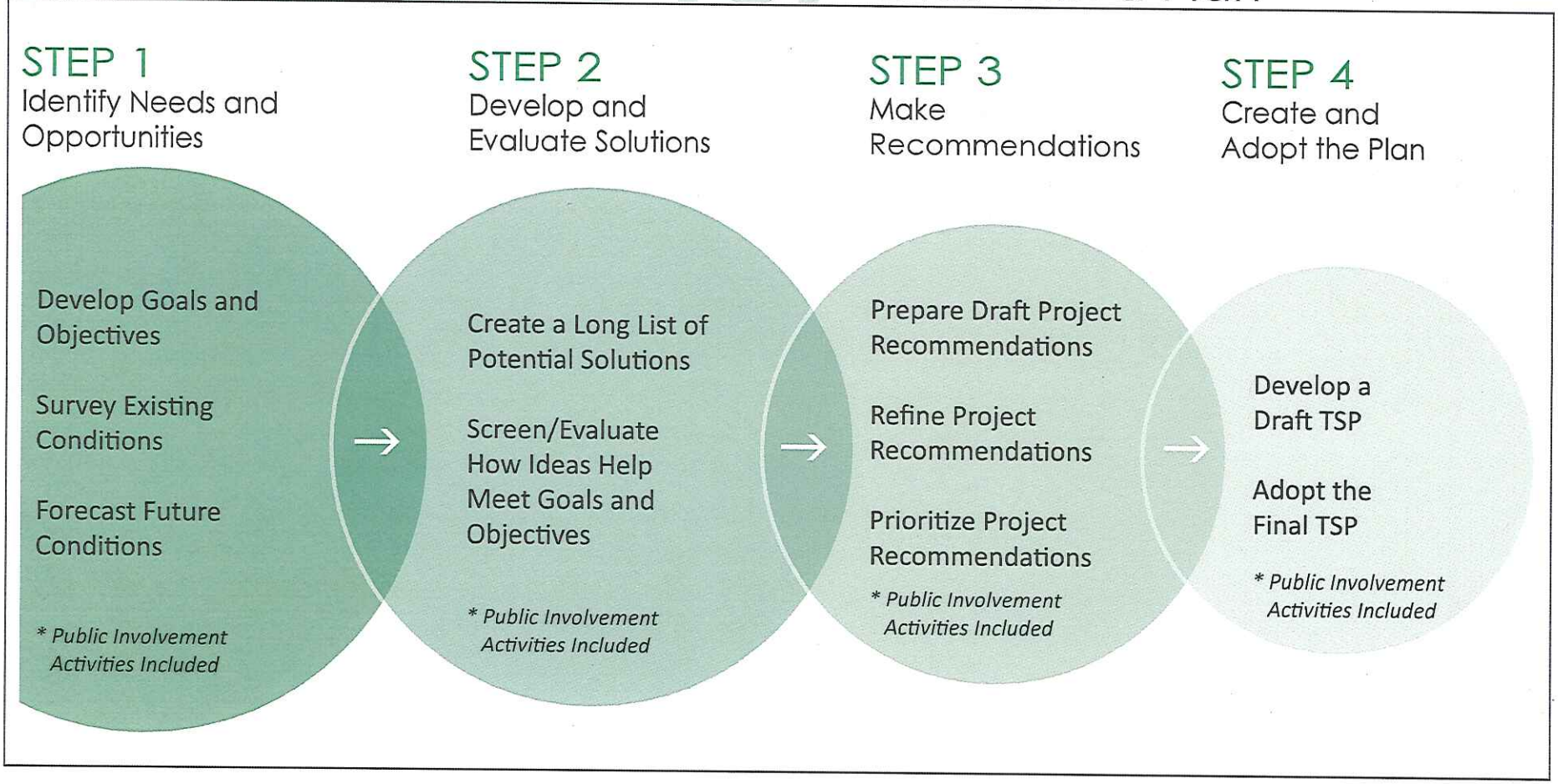


Vision → Reality

The Adopted Tualatin Transportation System Plan (TSP):

- Creates a vision for Tualatin's future as it relates to transportation
- Establishes our community's priorities so we know what should be done first
- Helps the City of Tualatin get funding and build projects

TUALATIN TSP How Today's Work Ends With a Plan



Vision → Reality

The Tualatin Transportation System Plan (TSP):

- Creates a vision for Tualatin's future as it relates to transportation
- Establishes our community's priorities so we know what should be done first
- Helps the City of Tualatin get funding and build projects

Project Goals and Objectives

Goal 1 – Community Involvement. Provide meaningful opportunities for citizens to be involved in the Linking Tualatin planning process, including those most directly affected by the outcomes, as well as the community at large.

Objectives

- Involve major employers, other business owners, institutions and business groups that will benefit from enhanced transit linkages to employment areas.
- Inform and involve the city's Citizen Involvement Organizations and other established community groups.
- Provide a variety of tools to allow all citizens of Tualatin the opportunity to learn about and participate in the planning process, including at events or locations they already attend and through the project Task Force and Transit Working Group.
- Reach out to people and groups that have not traditionally been involved in local planning processes.

Goal 2 – Economy. Enhance transit connections for employers and employees to strengthen Tualatin's economy.

Objectives

- Work with local employers, business groups and institutions to identify transit-related improvements that enhance services to Tualatin's businesses, build the local economy, and save businesses, employees and residents' time and money.
- Create transit connections that provide linkages to and support for other employers in the region and the regional economy.
- Recommend land use patterns that will result in higher levels of employment and efficiency for local businesses.

Goal 3 – Land Use. Develop land use plans for focus areas that support future use of transit as part of a multi-modal, convenient, safe, and well-connected transportation system and enhance community vitality and livability.

Objectives

- Create plans that support existing and planned future industrial/manufacturing, commercial, retail, institutional and other employment uses, including schools and medical facilities.
- Build on and incorporate objectives from existing community or neighborhood plans, including providing access to commercial and retail services and adequate community facilities and services for residents and workers.

- Create opportunities for a complementary or supportive mix of land uses in focus areas, where appropriate, while minimizing conflicts between uses.
- Preserve the identity and values of single-family neighborhoods while enhancing local transit service to them.
- Foster types and patterns of development that are conducive to bicycling and walking and will support future high capacity and other transit use and help create healthy, livable employment areas and neighborhoods.
- Incorporate sustainable development and design practices in proposed land use planning recommendations for focus areas.

Goal 4 – Transportation Choice and Mobility. Provide a full range of safe, efficient transportation options within and between transit focus areas, and to other parts of the city and region, particularly linkages between transit and other modes of transportation, including bicycling, walking and driving.

Objectives

- Implement transportation projects identified in the city's Transportation System Plan, particularly those that increase transit use and reduce travel times.
- Improve transit connections and services between residential neighborhoods and focus areas, including east-west connections.
- Strengthen Tualatin's linkages with the regional transit system (bus, rail, etc.), creating safe, reliable transit service and connections within the city and to other parts of the region for residents, workers and visitors.
- Improve the ability to access transit services by people walking, bicycling and driving.

Goal 5 – Consistency and Coordination. Coordinate with regional partners to leverage regional resources, while building on and furthering local planning and other community objectives.

Objectives

- Assess consistency with state and regional policies, goals and objectives, including those for the Southwest Corridor Plan, in Linking Tualatin.
- Ensure consistency between Linking Tualatin and other local plans and planning processes, including citywide and local area plans.
- Protect natural resources and promote sustainability, livability and social equity.

Goal 6 – Implementation. Develop common sense, cost-effective and efficient tools and strategies to ensure implementation of project recommendations.

Objectives

- Identify and prioritize needed public and private investments that will help enhance transit facilities and services and stimulate transit ridership in focus areas.

- Develop a phasing plan that provides for a realistic and timely approach to improving transit and related facilities and services.
- Revise or establish city plans, policies or regulations needed to allow for or encourage transit use and investment.

CINDY HAHN

From: Jan Giunta [jan.giunta@gmail.com]
Sent: Friday, February 24, 2012 5:00 PM
To: CINDY HAHN; Alice Rouyer; 'Eryn Deeming Kehe'
Cc: 'J. Michael Riley'; JoelleDavis; KathyNewc@aol.com
Subject: Linking Tualatin Goals and Objectives

Follow Up Flag: Follow up
Flag Status: Flagged

I appreciate your willingness to allow me to suggest additions to the Draft Goals and Objectives. I appreciate that we now have a process where all the alternates can now present their ideas through their appropriate Task Force rep. Thanks for allowing this, as the result is that more ideas will be put into the mix-and that seems to be a good result. This may slow the process a tad, but I believe that is a small price to pay.

Because land use and economy are different categories, and because our industrial area is pretty much zoned the way it will be (land use will not change dramatically), I would like to see some language added to Economy concerning the neighborhoods.

Suggested Language: Please chime in with your edits!!

Goal 2 Economy at the end of the goal add: while preserving and protecting the identity, values, and livability of residential neighborhoods.

Perhaps add additional language at the end of Objective 1, "...and resident's time and money", and that enhance and protect the livability of residential neighborhoods.

And THANKS to each of you for your patience with me Thursday evening-I know I was taxing and I apologize. I just felt really strongly about language being added to the Economy section, and could not suggest the wording under the format being used for the group. I was obviously frustrated, and I again, apologize.

Jan Giunta

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Home: 503-612-9170

Linking Tualatin

Existing Conditions Report

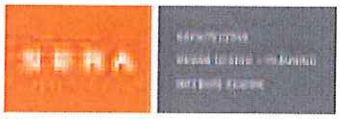
February 21, 2012

LINKING Tualatin

Prepared by:

Angelo planning group

In association with:



DKS Associates
TRANSPORTATION SOLUTIONS

JOHNSON REID
LAND USE ECONOMICS

CH2MHILL

CRITERION PLANNERS

City of Tualatin
OREGON

METRO

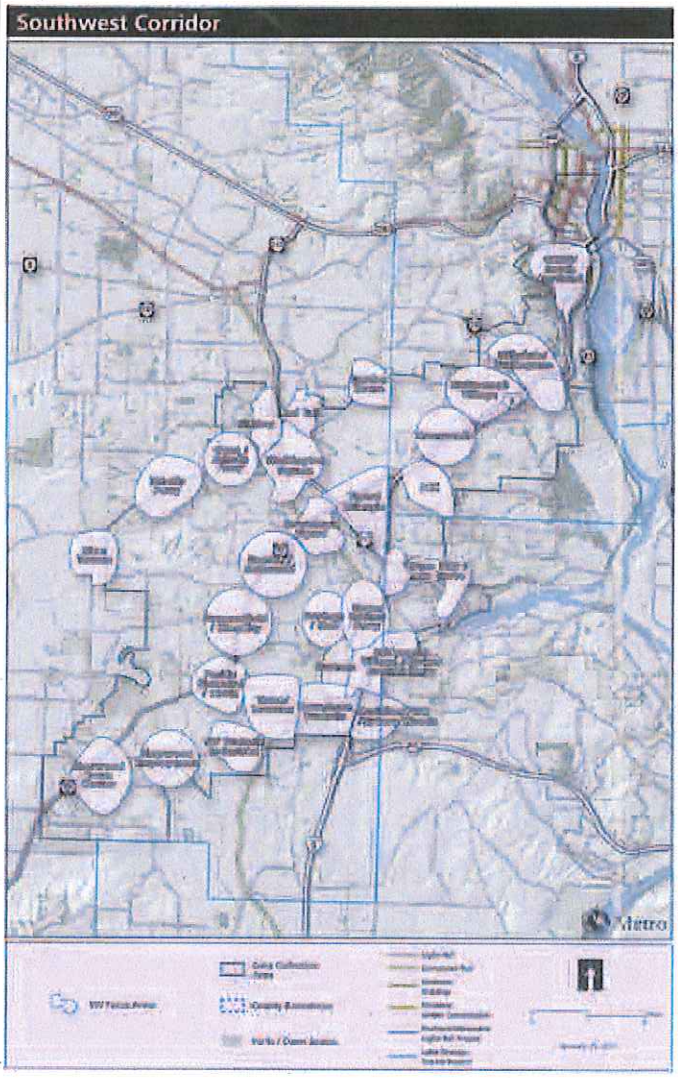
1. Introduction

Project Background and Purpose

Linking Tualatin addresses concerns raised by people who live or work in Tualatin about local transit not reaching most of the city's employment centers. Through this study, the city will bring together community members, local business owners, and employees to find ways to help increase transit use, as well as walking and biking to work, in the future. While local transit service is important, many people also need improved transit connections to the rest of the Portland Metropolitan region. Linking Tualatin will try to meet this need by recommending future high capacity transit options such as bus rapid transit, commuter rail, light rail, enhanced local bus, or parking and congestion management.

Because Linking Tualatin is part of a regional transit planning effort called Southwest Corridor Plan (SW Corridor Plan), it focuses primarily on transit use in the corridor that includes Barbur Boulevard/OR 99W and I-5 (see Figure 1). The SW Corridor Plan will integrate multiple efforts by cities in this corridor, including preparation of local land use plans; actions and investments that support livable communities; a corridor refinement plan to identify transportation improvements; and a transit alternatives analysis to define the best mode and alignment of high capacity transit — likely bus rapid transit or MAX light rail — to serve the corridor.

Figure 1. Southwest Corridor Plan Area



Source: Metro

The city has identified a preliminary set of focus areas, most of which are located in key employment or commercial areas in the city and are located within the SW Corridor planning area. These include the downtown, Meridian Park Hospital, Leveton, Teton, Tualatin-Sherwood Road/124th Avenue, Bridgeport Village and industrial areas south of OR 99W. Existing residential neighborhoods are not the primary focus of the Linking Tualatin Plan and no changes in land uses in those areas are expected as part of the plan. However, improving transit connections, including local transit service, for Tualatin residents and visitors is very important and will be considered in this project and in the city's Transportation System Plan (TSP) Update, which is also currently underway.

Linking Tualatin will identify needed investments in transportation facilities, including sidewalks, bicycle paths, roads or transit facilities or services in specific areas in the city over the next 10 to 20 or more years. Those investments will give people who live and/or work in Tualatin better access to businesses and other destinations. Possible changes in land use in specific focus areas also could affect the types and character of future businesses or other uses in those areas. However, the city does not expect to recommend any changes to land uses in established residential areas.

The Linking Tualatin planning process includes a number of steps, including:

- identifying specific locations in Tualatin called "focus areas" that are well-suited to transit;
- evaluating existing and potential future land use patterns in those areas;
- recommending potential changes in land use or improvements to roads, sidewalks or bicycle facilities to improve potential transit use there; and
- recommending other investments or strategies to improve transit services and better connect commuters and workers to jobs in Tualatin.

Report Overview

The purpose of this report is to provide a concise summary of existing conditions related to land use, transportation, infrastructure, and natural resources for the Tualatin community as a whole and for the specific focus areas that have been identified by the city. The information presented is focused on key conditions that are relevant to high capacity transit and to the project purpose. This summary provides a baseline of information about the community and the focus areas that will inform future stages of the Linking Tualatin project.

Because existing conditions information at the community level was recently gathered and summarized as part of the Tualatin TSP update, that information has been relied upon and incorporated into this document where appropriate, including a number of maps.

2. Community Overview

Land Use

Existing land use in Tualatin largely mirrors the community's planning district designations, shown on Figure 2 on page 4. Commercial areas in Tualatin are primarily located in the city's downtown and in the Bridgeport Village area, with smaller commercial areas along OR 99W and in East Tualatin. West Tualatin is primarily industrial. East Tualatin, North Tualatin, and South Tualatin are primarily residential neighborhoods with some community and institutional uses. Additional detail on the existing land uses within the focus areas is provided in Sections 6 through 12.

Demographics

The city of Tualatin had an estimated population of 26,700 residents in 2011, residing in 9,976 households. This is an average of 2.66 people per household. Table 1 displays the past trends and projected trends for population and income in the city.

Table 1. Household & Income Trends, City of Tualatin

POPULATION, HOUSEHOLDS, FAMILIES, AND YEAR-ROUND HOUSING UNITS					
	2000 (Census)	2011 (Est.)	Growth Rate 00-11	2016 (Proj.)	Growth Rate 11-16
Population	22,791	26,705	1.5%	28,635	1.4%
Households	8,651	9,976	1.3%	10,774	1.6%
Families	5,809	6,688	1.3%	7,203	1.5%
Housing Units	9,218	10,642	1.3%	11,506	1.6%
Household Size	2.62	2.66	0.1%	2.65	-0.1%
PER CAPITA AND AVERAGE HOUSEHOLD INCOME					
	2000 (Census)	2011 (Est.)	Growth Rate 00-11	2016 (Proj.)	Growth Rate 11-16
Per Capita ($)	26,455	29,970	1.1%	30,583	0.4%
Median HH ($)	57,856	60,514	0.4%	60,886	0.1%
Average HH ($)	69,611	79,659	1.2%	80,732	0.3%

SOURCE: PSU Population Research Center, Claritas Inc., Johnson Reid LLC

From 2000 to 2011, the population grew at an annual rate of 1.5%, basically equal to the growth rate of the Portland Metro region as a whole. The state grew at 1.1% per year during that period. In the next five years, the population in Tualatin is expected to grow at a somewhat slower 1.4% annually.

The median household income in Tualatin, at $60,500 in 2011, is higher than the statewide median household income of roughly $46,500. The annual growth in the median income has been slightly positive, though slower than income growth in the region as a whole. Like most of the state, the community saw average incomes drop during the recent recession, though they are now rising again.

Figure 2. Community Overview: Land Use

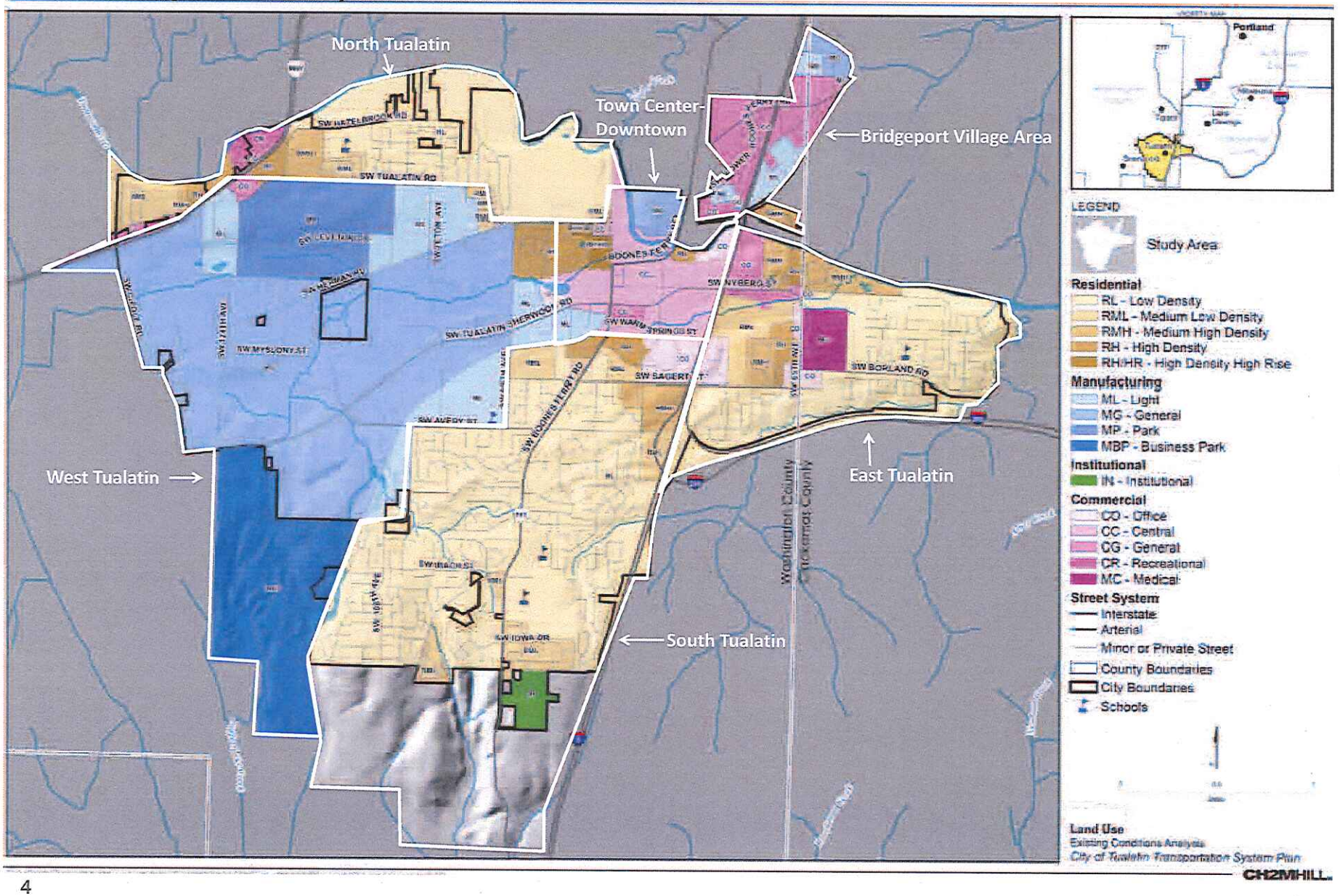
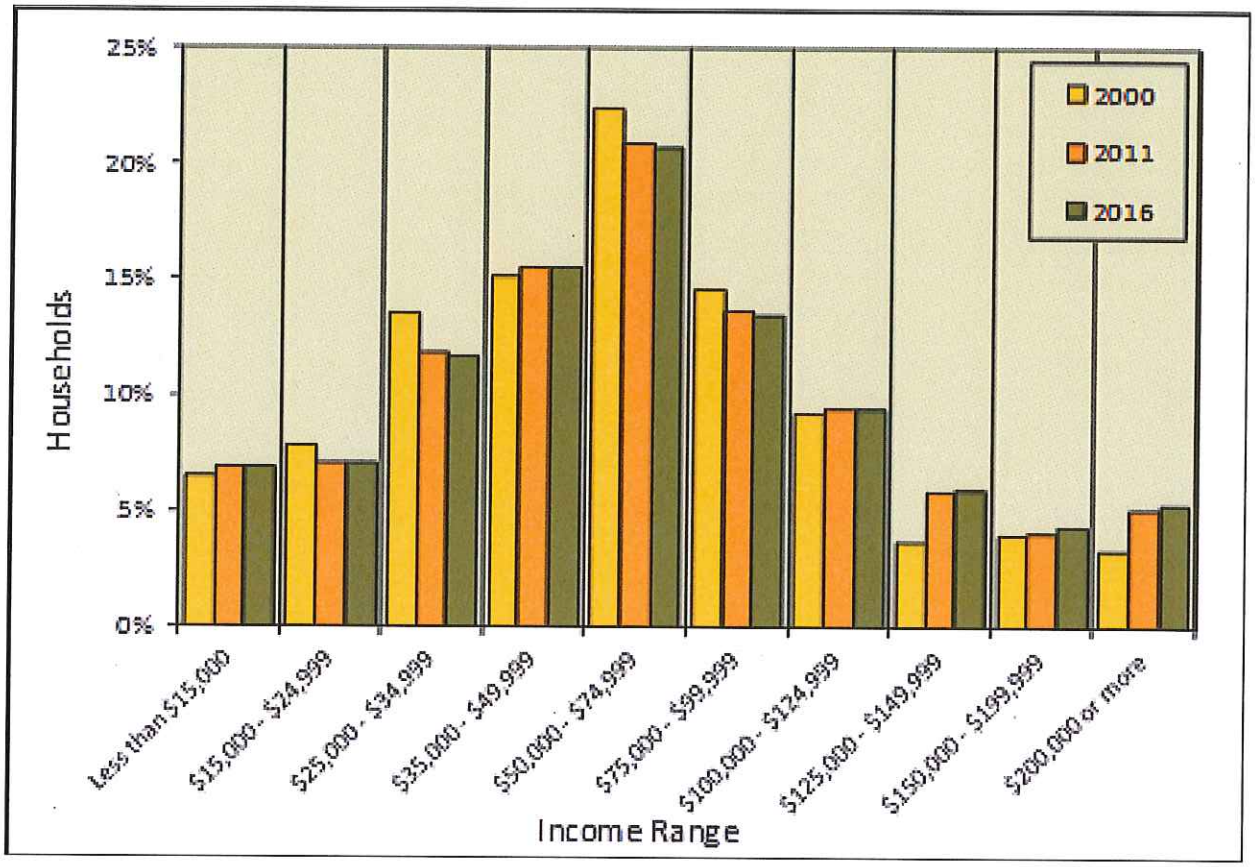


Figure 3. Households By Annual Income, City of Tualatin



SOURCE: Claritas Inc., Johnson Reid LLC

Figure 3 shows the distribution of households by annual income in 2000 and 2011, and projected to 2016. The figure shows that Tualatin's incomes have remained concentrated in the middle of the income range over the decade. The largest share of households are in the $50,000 to $75,000 per year range, though this cohort is shrinking in relation to the higher income cohorts as average incomes grow with inflation. While higher incomes are projected to become a greater share of the total, the bulk of households are expected to remain in the $35,000 to $100,000 range.

According to the 2005-2009 American Community Survey, Tualatin's population is younger (more children under 18 and fewer adults over 65) and better educated (more likely to have a high school or college degree) than the Portland Metro area as a whole. Tualatin also has a higher percentage of Spanish speakers and Hispanic or Latino residents than the region average, with approximately 18 percent of the population self-identifying as Hispanic or Latino. A similar percentage of the population speaks Spanish, while approximately 10 percent of the population speaks Spanish with English spoken less than "very well".

Employment

Data from the U.S. Census Bureau and Oregon Employment Department indicate that there are currently 20,570 jobs in the city of Tualatin (projected forward from 2009 data), compared to

approximately 14,800 non-military employees in the labor force (according to 2010 US Census American Community Survey three year estimates). The number of jobs in the city is roughly twice the number of households in the city, in contrast to roughly 1.2 jobs per household countywide. The city constitutes roughly 9% of Washington County employment, despite representing 5% of the county's population. This indicates that Tualatin functions as a key employment center in the south Metro area.

Major employers located in Tualatin include Kershaw Knives, Columbia River Knife and Tool, and Novellus Systems, which designs and manufactures equipment for use in semiconductors. The city's largest employer is Legacy Meridian Park Hospital, followed by the United Parcel Service (UPS) and Precision Wire Components. The Tigard-Tualatin School District is another of the city's largest employers. These employers are scattered throughout the city, and are not located in one consolidated employment center, as shown on Figure 4. However, a significant number of employers are located in the focus areas identified later in this report.

Table 2 presents employment data for the city of Tualatin from the US Census for the years 2002 to 2009. Unlike the Portland Metro region, Tualatin gained jobs between 2002 and 2009, despite the serious recession. Overall, the city gained employment at a rate of 1% per year during that period, with some sectors gaining and others losing. Retail, Information, and Financial Activities saw positive growth, along with the public sector. Surprisingly, the Census found a net gain of construction jobs, despite the harshness of the current downturn on this industry.

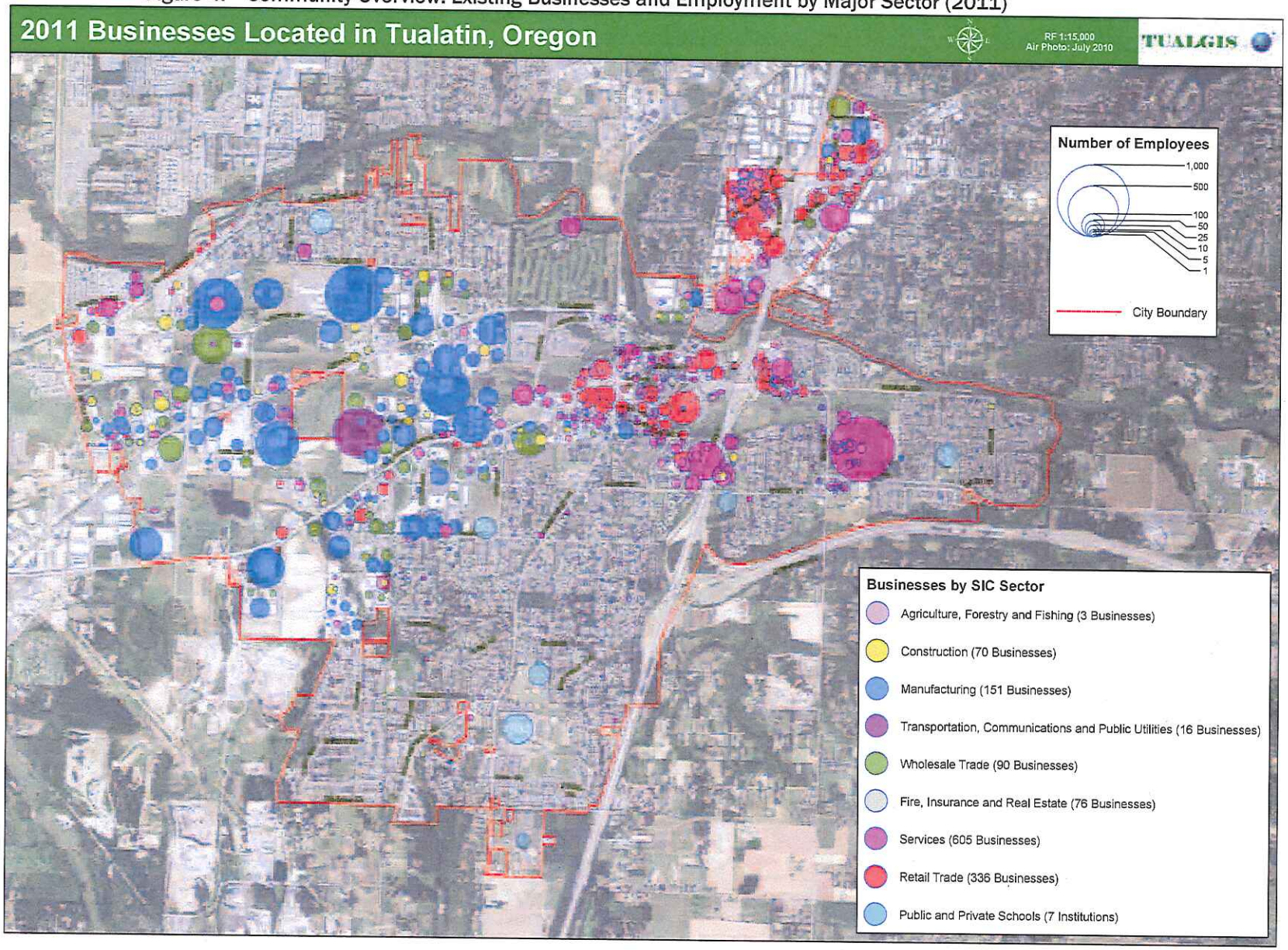
Table 2. Employment Trends By Industry, City of Tualatin, 2002 - 2009

Industry	2002	2009		Ann. Growth
	Employment	Employment	% of Total	2002 - 2009
TOTAL NONFARM EMPLOYMENT	18,700	20,332	100%	1%
Construction	1,610	1,675	8%	1%
Manufacturing	4,858	4,758	23%	0%
Wholesale Trade	2,282	2,055	10%	-1%
Retail Trade	1,491	2,818	14%	10%
Transportation, Warehousing, Utilities	1,275	588	3%	-10%
Information	292	542	3%	9%
Financial Activities	575	1,081	5%	9%
Professional & Business Services	2,493	2,307	11%	-1%
Educational & Health Services	2,048	2,434	12%	2%
Leisure & Hospitality	1,013	1,337	7%	4%
Other Services	633	529	3%	-3%
Government	130	208	1%	7%

SOURCE: U.S Census, Oregon Employment Department, Johnson Reid LLC

According to the 2010 US Census American Community Survey (ACS) three year estimates, workers 16 and older in Tualatin predominantly drive to work alone (77.6%), with smaller percentages carpooling (7.4%), using public transit (4.2 percent), walking (2.9%), or working at home (6.1%). Travel time to

Figure 4. Community Overview: Existing Businesses and Employment by Major Sector (2011)



work varies, with 38% spending less than 15 minutes getting to work, 34% spending 15 to 30 minutes, and the remaining 27% spending more than 30 minutes.

Market Overview

The city of Tualatin can expect continued growth in all of the major land use categories: Residential, Retail, Office and Industrial. As Tualatin and the rest of the region face economic, political, and environmental constraints to boundary expansion, infill and redevelopment will play a key part in the future growth of the city. Tualatin features many large, vacant, and developable parcels for employment use.

The lower rents achievable in the suburban environment will limit some of the development types that the market is likely to bring to the area. However, in an environment where most existing uses are single-story with ample surface parking, significant increases in density can be achieved while still relying on "low-rise" construction to control costs. Two- to three-story buildings, perhaps with higher building coverage, and reduced parking and other design considerations can greatly increase the intensity of land use, without necessitating the higher construction costs of concrete and steel mid-rise buildings.

Table 3 presents the 20-year demand for different land uses types in Tualatin. The healthy overall demand in the larger market area provides flexibility in planning for the focus areas. This demand will not all be captured in the focus areas, but represents the larger pool of demand from which the focus areas can draw.

Table 3. Projected Demand by Land Use, City of Tualatin

Land Use Category	New Space Demanded - 2011 - 2031								
	Base Scenario		Acreage	High Growth		Acreage	Low Growth		Acreage
Ownership Residential	1,971	units	na	2,130	units	na	1,810	units	na
Rental Residential	623	units	na	670	units	na	570	units	na
Retail/Commercial	444,900	sf	40.9	480,000	sf	44.1	409,310	sf	37.6
Office	665,800	sf	50.9	719,000	sf	55.0	612,540	sf	46.9
Industrial Total	4,275,700	sf	446.2	4,617,000	sf	481.8	3,933,650	sf	410.5
Warehouse/Distribution	*2,802,800*	*sf*	292.5	*3,027,000*	*sf*	315.9	2,578,580	*sf*	269.1
General Industrial	*827,300*	*sf*	86.3	*893,000*	*sf*	93.2	761,120	*sf*	79.4
Tech/Flex Space	*645,600*	*sf*	67.4	*697,000*	*sf*	72.7	593,950	*sf*	62.0

[1] High and low growth scenarios represent base case +/- 8% growth respectively.

[2] Acreage based on the following FAR assumptions: Retail .25 FAR; Office .3 FAR; Industrial .22 FAR

SOURCE: Johnson Reid, LLC

3. Transportation System Overview

This section provides a brief summary of the transportation networks within the Linking Tualatin study area, including roadways, rail, bicycle, pedestrian, and transit systems.

Road Network

The city of Tualatin provides a functional classification designation for all roadways in the city's network. Those classifications identify how a roadway operates within the overall transportation system and defines the character of service it provides. In addition, functional classification defines standards for roadway and right-of-way width, access spacing and pedestrian and bicycle facilities. Key roadways that are located within the Linking Tualatin focus areas are shown on Figure 5 on page 11 and highlighted below, along with a description of their functional classification.

Freeways

The primary function of a freeway is to carry high levels of regional traffic and public transit at high speeds. Access on freeways is limited to interchanges and street crossings with grade separations; access points are widely spaced. Freeways are intended to serve motorized vehicle traffic only and typically contain a median. I-5 travels north-south along the eastern edge of Tualatin and is the only freeway serving the focus areas identified for Linking Tualatin.

Arterials

The primary function of arterial streets is to provide a high degree of vehicular mobility, including accommodations for trucks; however, they may also serve a secondary role providing access to individual properties. Typically arterials serve longer and higher-speed trips. Arterial streets generally have limited access and no on-street parking in order to allow capacity for through traffic. Arterial streets are also used as primary bicycle, pedestrian, emergency response routes and transit routes.

The arterials that are most directly relevant to Linking Tualatin are:

- SW Tualatin Sherwood Road - a major arterial that runs east-west through Tualatin
- SW Boones Ferry Road - a major arterial that runs north-south through Tualatin
- SW 124th Avenue - a major arterial that runs north-south along the western edge of Tualatin
- OR 99W - a major arterial that runs along the northwest corner of Tualatin
- Lower Boones Ferry Road - a minor arterial that travels through Bridgeport Village and connects to SW Boones Ferry Road.

Collectors

The primary function of collector streets is to assemble traffic from the interior of an area and deliver it to the closest arterial street. Collectors provide for both mobility and access to property, and are designed to balance both functions. They usually serve shorter trip lengths and have lower traffic volumes and speeds than arterial streets. Collector streets are also used as important emergency response routes and are frequently used as transit routes. There are three classifications of collector streets: major collectors, minor collectors and residential collectors. The function of each collector

type is progressively less mobility and more land use/access driven from major to residential. Key collectors serving the focus areas in Linking Tualatin include:

- SW Herman Road - a major collector that travels east-west and connects to OR 99W via SW 124th Avenue
- SW Tualatin Road - major collector in northern Tualatin that connects to OR 99W
- SW Teton Avenue - a major collector that provides a north-south connection through the center of the study area
- SW Avery Street - major collector providing an east-west connection to SW Boones Ferry Road
- SW 108th Avenue, SW Ibach Street, and SW Iowa Drive - minor collectors that provide connections in the southern residential area of Tualatin

Freight Routes

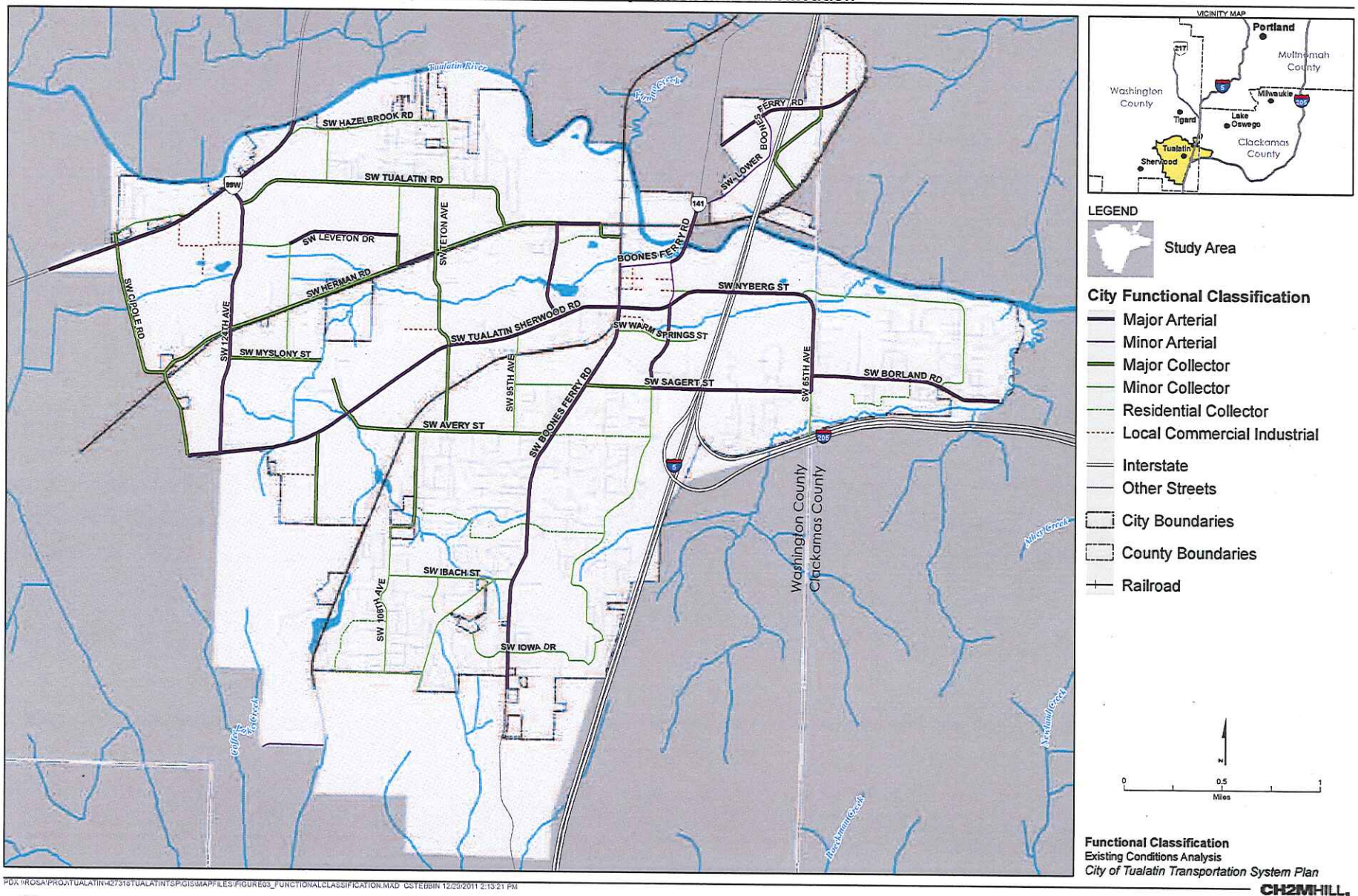
The City of Tualatin has also designated certain roadway corridors as freight and truck routes. Typically these routes connect the commercial/industrial districts within the city to major arterials and ultimately OR 99W and I-5. Designated truck/freight routes within the Linking Tualatin study area include:

- I-5 (north to south City limits)
- OR 99W (west to north City limits)
- SW 124th Avenue (OR 99W to SW Tualatin-Sherwood Road)
- SW Tualatin Road (SW 124th Avenue to SW Jurgens Avenue)
- SW Herman Road (SW Tualatin Road to SW Cipole Road)
- SW 108th Avenue (SW Tualatin Road to SW Herman Road)
- SW Teton Avenue (SW Tualatin Road to SW Avery Street)
- SW Cipole Road (OR 99W to SW Tualatin-Sherwood Road)
- SW Boones Ferry Road (south City Limits to SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (SW Boones Ferry Road to the northeast City limits)
- SW Tualatin-Sherwood Road (west City limits to the Nyberg Street Interchange)
- SW Avery Street (SW Tualatin-Sherwood Road to SW 95th Avenue)
- SW 105th Avenue (SW Avery Street to SW Moratoc Drive)

Rail Corridors

Portland and Western Railroad (PNWR) currently owns and operates two freight rail lines in Tualatin: one that runs mostly north-south, which is shared by the WES commuter rail line, and one that runs east-west along SW Herman Road (these are shown on Figure 5). The east-west line carries one train daily in each direction, and the north-south has two trains daily in each direction. There are a number of public road railroad crossings in the city, all of which are gated.

Figure 5. Transportation System Overview: Roadway Functional Classification



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Source: Technical Memorandum #5: Existing Conditions Report, Prepared by CH2M Hill December 30, 2011

Transit System

Public transportation in Tualatin is provided primarily by TriMet, with some services provided by the South Metro Area Regional Transit (SMART) system. In the vicinity of the Linking Tualatin study area, transit consists of bus lines that serve the Tualatin and Mohawk Park & Ride facilities, bus lines along SW Boones Ferry Road, and the Westside Express Service (WES) commuter rail line, as shown on Figure 6. Most of the bus lines provide connections between Tualatin and other cities (Portland, Gresham, Sherwood, Lake Oswego, Tigard, Beaverton, etc.).

The Tualatin Chamber of Commerce also provides the Tualatin Shuttle, a weekday service intended primarily for employment purposes. The Chamber works with local employers to increase transportation options within the city and to decrease traffic congestion. Monday through Friday, the Tualatin Shuttle provides commuters a shuttle service between various TriMet stops, WES Commuter Rail and businesses in Tualatin. Shuttle hours are between 5:00 am to 9:30 am, and again from 2:00 pm to 6:00 pm. Starting at 5:30 am, the first pick up in the morning is in downtown Portland, allowing commuters to reach Tualatin before the bus service starts. All remaining service is in the Tualatin area, providing commuters with a link between TriMet and local businesses. The shuttle operates as a dial-a-ride service so the route varies depending on the needs of users. The shuttle is funded by a Job Access and Reverse Commute (JARC) grant that is intended to serve low income populations for employment purposes. It currently serves about 85 people per day and has limited capacity to serve more.

In addition, Metro coordinates (through Enterprise Rideshare) a vanpool program that runs a regular vanpool from Gateway to Bridgeport Village. The vanpool departs from Gateway Park & Ride at 7:30 a.m., makes a stop at Clackamas Town Center, and arrives in Tualatin at 8:15 a.m. In the afternoon, the van departs Tualatin at 5:00 p.m. and returns to Gateway Park & Ride at 5:50 p.m.

Transit service within many of the Linking Tualatin focus areas is limited. There is no transit service available on SW Tualatin Sherwood Road, for example, and most residents in the western part of the city live over a mile from the nearest transit stop. Because of the limitations of service during off-peak hours, non-commuting trips may be more difficult to complete using transit in Tualatin. A more detailed summary of transit service within the focus areas is provided in the descriptions of the focus areas in Sections 6 through 12 of this report.

Pedestrian Network

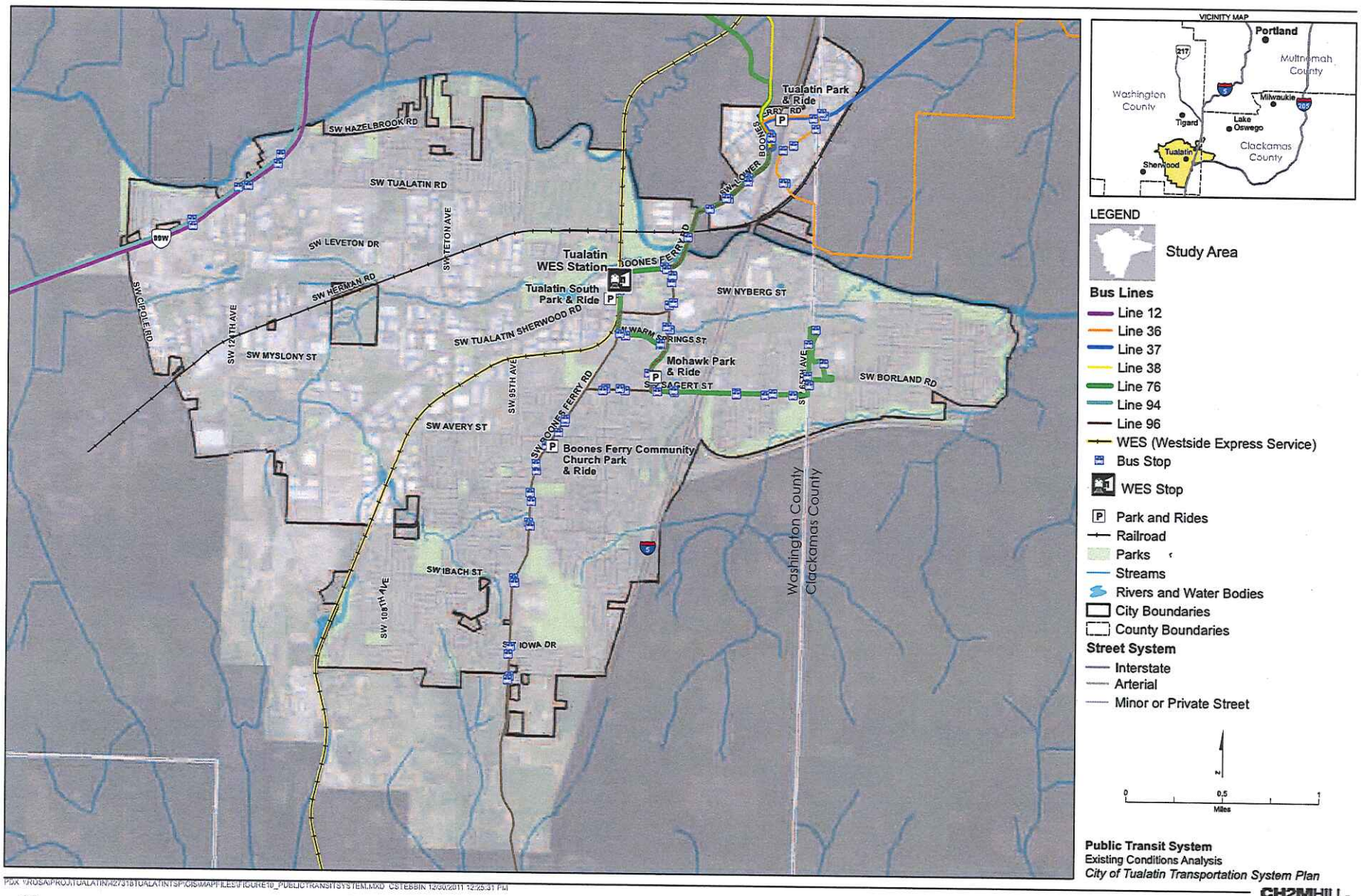
The pedestrian network in the Linking Tualatin study area is comprised primarily of sidewalks along streets, either directly adjacent to the curb or separated by a planting strip. Pedestrian facilities are identified for each focus area in Sections 6 through 12 of this report.

Bicycle System

There are a variety of bicycle facilities that currently facilitate bike travel through the Linking Tualatin study area. Those facilities include:

- **Bike lanes.** Bike lanes are portions of the roadway that are striped and stenciled specifically for bicycle travel. The typical width of bike lanes is 5 feet, but when the road is narrow, bike lanes can

Figure 6. Transportation System Overview: Transit Network



Source: Technical Memorandum #5: Existing Conditions Report, Prepared by CH2M Hill December 30, 2011

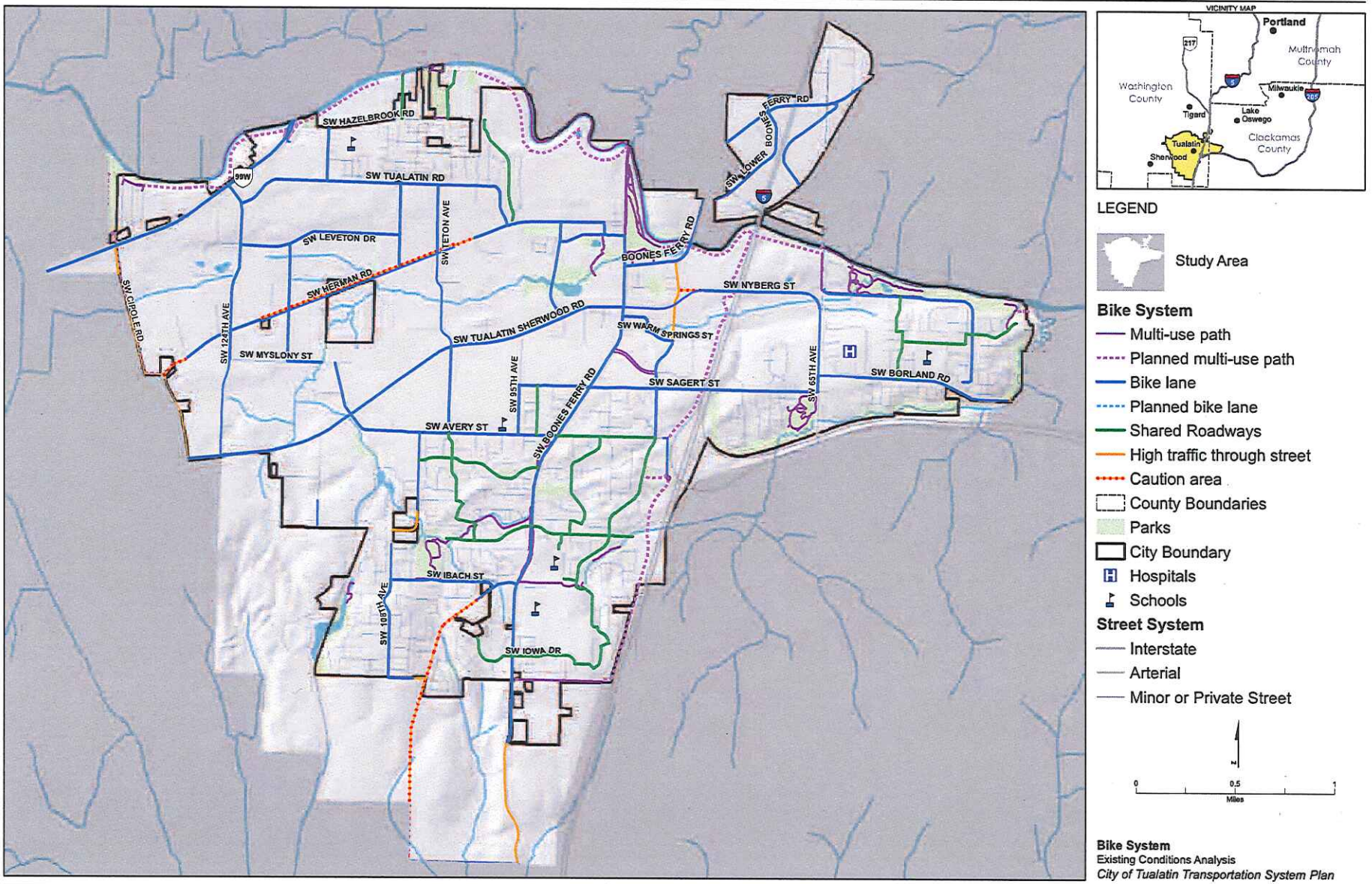
be as narrow as 4 feet. Bike lanes are most appropriate on higher volume and speed streets to separate travel modes.

- **Shared roadways.** Shared roadways are roads where bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are low speed (25mph or less) and low traffic volume (3,000 vehicles per day or fewer) roads. Shared roadways are often signed, and are designated bicycle routes, providing links to other bicycle facilities (e.g. bicycle lanes) or designating a preferred route through a community.
- **Multi-use path.** A multi-use path is an off-street route that is shared with bicycles, pedestrians, and other non-motorized users. Paths are typically recreationally focused, but can also serve as a commuting corridor. These paths are meant to provide a lower stress environment than a roadway for users by separating motor vehicles and bicyclists. The multi-use paths in Tualatin are located primarily to the north next to the Tualatin River and public parks.

The majority of the bike network within the Linking Tualatin study area is made up of bike lanes along arterial and collector streets, as shown on Figure 7. A network of shared roadway facilities exists in the southern residential area of Tualatin, along with a multi-use path in the vicinity of SW Ibach Street and SW Boones Ferry Road.

While the bicycle network is fairly complete, there are some identified gaps in the system, many of which are listed as planned improvements in the recent TSP update. Those improvements include completing bike lanes along SW Herman Road and constructing the Tualatin River Greenway Trail and the I-5 multi-use trail.

Figure 7. Transportation System Overview: Bicycle Network



Source: Technical Memorandum #5: Existing Conditions Report, Prepared by CH2M Hill December 30, 2011

4. Policy Framework

There are a number of state, regional and local regulatory documents that provide a policy framework for the Linking Tualatin process. As the transit "focus areas" are developed for Linking Tualatin and land uses, densities and other implementation elements are identified, consistency and coordination with these existing documents will be necessary. The policy framework will be used throughout the Linking Tualatin process as a decision-making tool and will assist in developing proposed amendments to local planning documents and making findings of compliance for eventual adoption of the Linking Tualatin plan.

A thorough review of relevant regulatory documents was conducted as an initial step in this project; those documents were summarized in a memorandum dated January 20, 2012. The following table provides a quick reference tool that lists all reviewed documents and the type of information they contain that is relevant to the Linking Tualatin process. Of particular importance are those documents that identify specific projects, land uses, or transportation corridors that may be impacted by the Linking Tualatin Plan. The project team will need to reference these documents throughout the planning process to ensure conflicts are not created.

Table 4. Plan & Regulatory Document Summary

Policy/Regulatory Document	Linking Tualatin Plan Relevance				
	Contains Relevant Policies	Contains Applicable Design or Performance Standards	Establishes Process or Coordination Requirements	Identifies Specific Projects, Land Uses, or Corridors	Contains Implementation Guidance or Requirements
State Plans and Regulations					
Oregon Highway Plan	✓	✓			
Oregon Bicycle and Pedestrian Plan	✓	✓			
Transportation Planning Rule			✓		
Regional Plans and Regulations					
Metro 2035 Regional Transportation Plan	✓			✓	✓
Going Places Map - Regional HCT System Plan				✓	
Metro High Capacity Transit Plan				✓	✓
High Capacity Transit System Expansion Policy			✓		✓
Southwest Corridor Plan	✓			✓	
Metro Community Investment Strategy: State of the Centers					✓
Metro TOD Strategic Plan			✓	✓	✓

Policy/Regulatory Document	Linking Tualatin Plan Relevance				
	Contains Relevant Policies	Contains Applicable Design or Performance Standards	Establishes Process or Coordination Requirements	Identifies Specific Projects, Land Uses, or Corridors	Contains Implementation Guidance or Requirements
Metro Urban Growth Management Agreement, Title 6	✓				✓
Local Plans and Regulations					
Clackamas County TSP	✓			✓	
Washington County Capital Improvement Program				✓	
Washington County 2020 Transportation Plan	✓			✓	
City of Tualatin Comprehensive Plan	✓				
City of Tualatin TSP	✓			✓	
City of Tualatin Development Code		✓			✓
City of Tualatin Greenway Development Plan				✓	
Tualatin Tomorrow Community Vision and Strategic Action Plan	✓				
Leveton Tax Increment Plan				✓	
Hedges Creek Wetlands Master Plan				✓	
Northwest Concept Plan				✓	
Southwest Concept Plan				✓	
Town Center Plan				✓	

5. Focus Areas Overview

A preliminary set of Focus Areas were identified by the city in collaboration with its regional partners during an early phase of the project. These are locations in Tualatin with a concentration of workers, residents, or visitors, or a mix of housing and businesses, such as in downtown Tualatin, that might be linked to future high capacity transit. They are also located generally within the boundaries of the Southwest Corridor Planning Area (shown in Figure 1 on page 1). Their locations and boundaries will be refined based on community feedback as the study progresses.

The working set of Focus Areas is shown in Figure 8. For the purposes of describing existing conditions in the Focus Areas, in some places Focus Areas have been grouped together. The following sections of this report summarize existing conditions using the following Focus Areas and clusters of Focus Areas:

- Bridgeport Village
- Meridian Park & Nyberg Woods
- Downtown Tualatin
- Teton / Leveton & 108th / Herman Road
- Pacific Financial & 124th
- Southwest Industrial
- SW Tualatin Concept Plan Area[1]

For each focus area, information is summarized and illustrated for the following factors:

- Existing development, including major employers and institutions;
- Designated land use, based on Community Planning Districts;
- Residential density,[2] employment density,[3] and density of neighborhood amenities;[4]
- Development opportunities and constraints including market conditions and undeveloped land;
- Key roadways and traffic issues, including high collision locations[5] and congested intersections[6];
- Transit lines and stops; and
- Pedestrian facilities, including sidewalks, multi-use paths, cross-walks, and traffic signals.

1 This area is outside the Southwest Corridor Planning Area and may not ultimately be identified as a Focus Area; however, it is a potentially significant future employment area and important to assess as part of this project.

2 Measured in the net density of people per acre within one-quarter mile. (Source: ESRI business analyst, courtesy of Metro.)

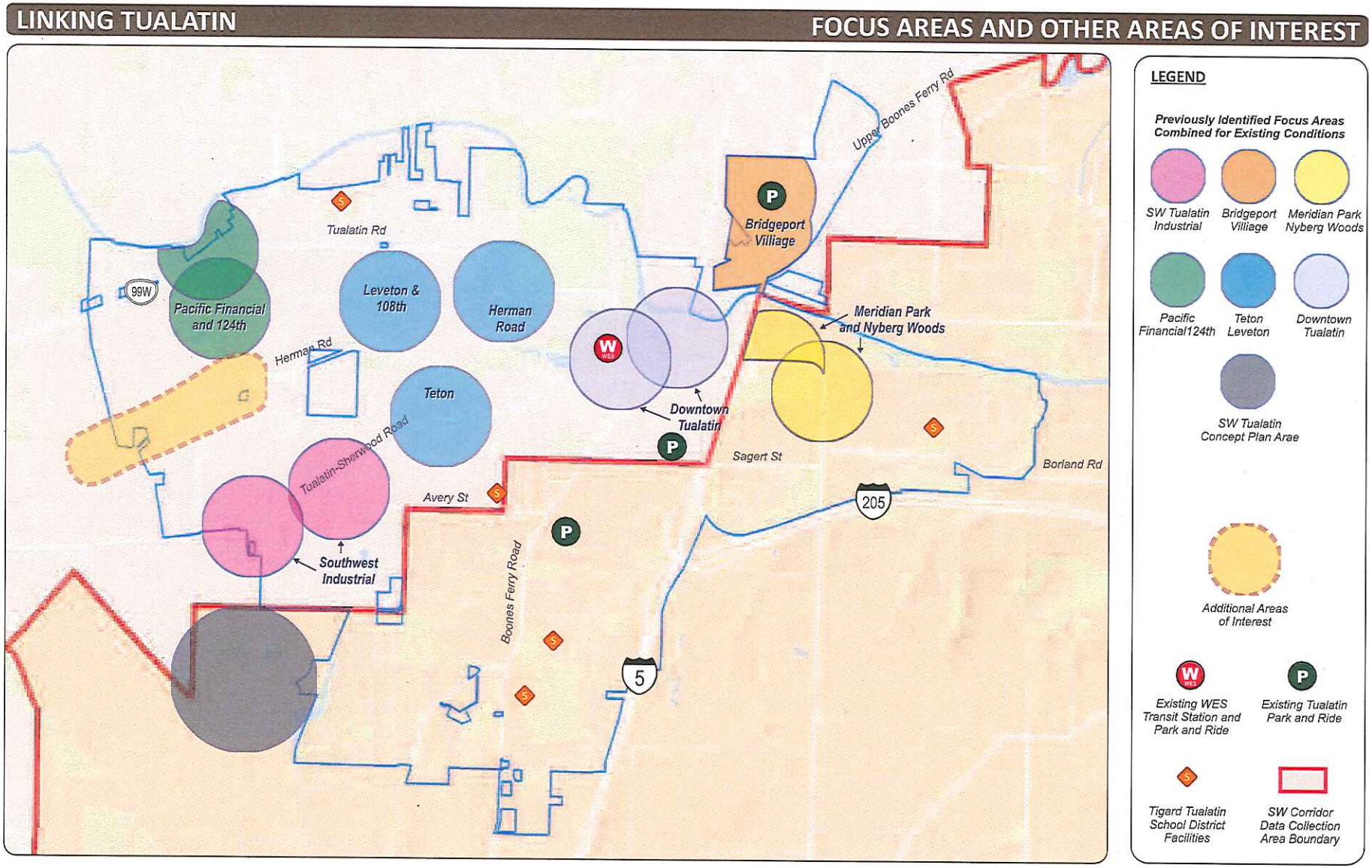
3 Employment density is the net employment density measured in employees per acre within one-quarter mile. (Source: ESRI business analyst, courtesy of Metro.)

4 Neighborhood amenities are private businesses and include bakeries, bars, bike shops, bookstores, brewpubs, child care facilities, cinemas, clothing stores, coffee shops, department stores, dry cleaners, fitness gyms, grocery stores, music stores, restaurants, and specialty snack and beverage retailers. (Source: ESRI business analyst, courtesy of Metro.)

5 High collision locations include those identified in Washington County's Safety Priority Indexing System (SPIS), which is the ranking system for collision locations based on crash rates, and those with more than 6 major collisions per year.

6 Congested intersections are defined for the purposes of this report as those with a volume to capacity (v/c) ratio of 0.90 or greater. The v/c measure is a range from 0.0 to 1.0 and represents how full an intersection is with vehicles. The ratio is similar to a percentage, for example, if a glass of water were 75 percent full, it would have a V/C ratio of 0.75. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced.

Figure 8. Focus Areas Overview



6. Bridgeport Village

Overview and Existing Development

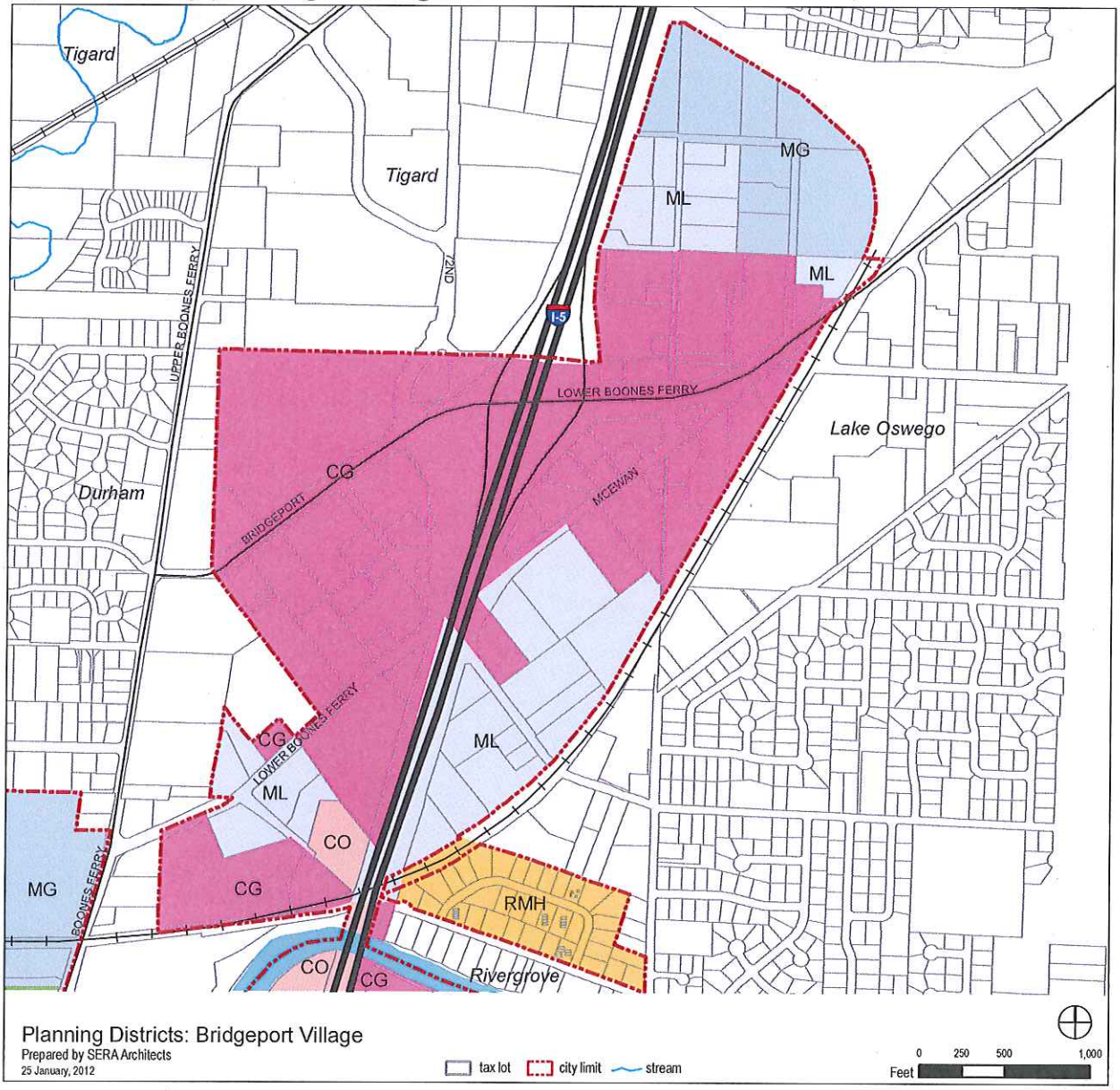
The Bridgeport Village area is a major commercial center and retail destination for the region. West of I-5 and north of Bridgeport Road is Bridgeport Village, a lifestyle center providing shopping, dining, and entertainment with major national retailers. Businesses south of Bridgeport Road include a sporting goods store, jewelry store, and grocery store. East of I-5 are commercial and light industrial businesses including shipping distribution, bakery supply, storage, and vehicle repair. To the east and west are residential neighborhoods in Durham and Lake Oswego. River Grove Elementary school in Lake Oswego and Durham City Hall are both nearby. There is little undeveloped land in this area.

Figure 9. Bridgeport Village Existing Development

Designated Land Uses

Most of the Bridgeport Village area is designated as General Commercial Planning District (CG). Part of the area around the Bridgeport Village shopping center is designated with a Mixed Use Commercial Overlay District (MUCOD; not shown on map). Smaller areas are designated as Light Manufacturing and General Manufacturing (MG). There is also a small amount of land designated as Office Commercial CO). The dominant CG planning district is intended to provide areas suitable for a full range of commercial uses, including automobile/service-oriented businesses located along the freeway and major arterials. Because of the visibility to large numbers of passing motorists, site and structure design are emphasized. The MUCOD also allows residential uses.

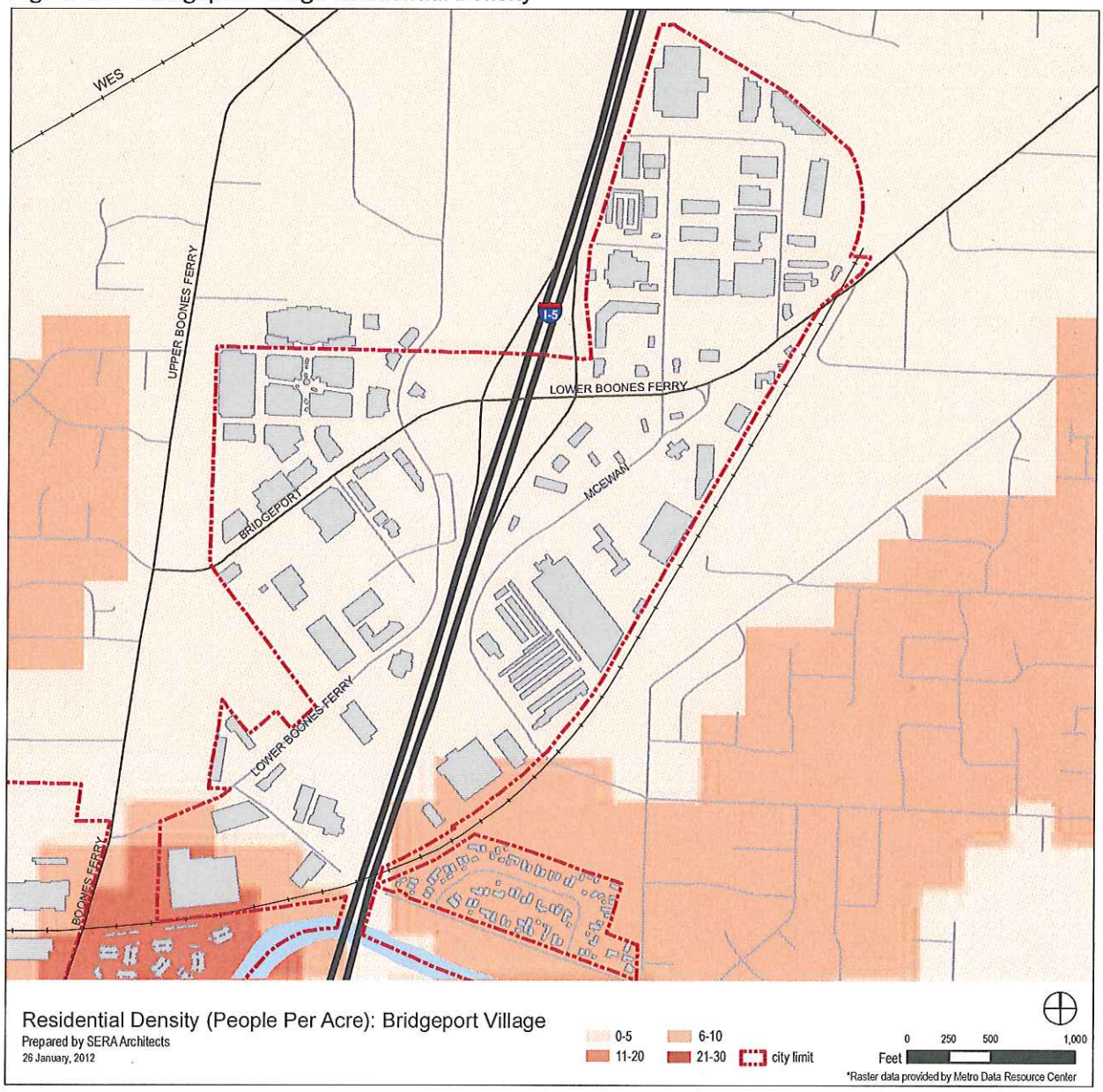
Figure 10. Bridgeport Village Planning Districts



Residential Density

Because Bridgeport Village is primarily intended for and developed with commercial businesses, the residential density is very low. The adjacent single-family neighborhoods in Durham and Lake Oswego to the east and west have moderate residential density, while the Tualatin neighborhoods to the south have moderate to high residential density (these neighborhoods are covered in the Downtown Tualatin focus area summary). In addition, a high-density residential development is planned in this area (just outside Tualatin city limits in Durham), with over 300 apartments.

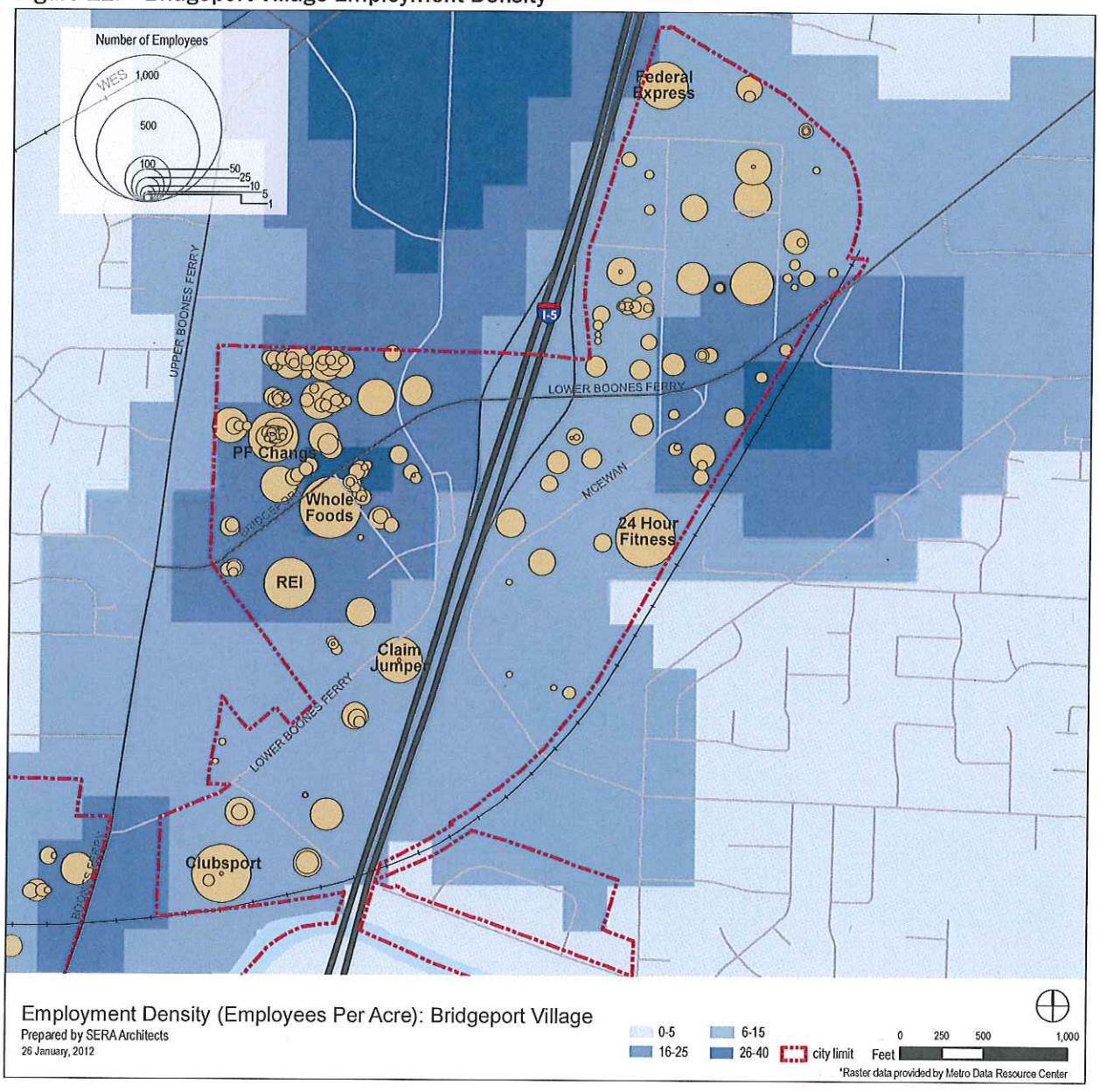
Figure 11. Bridgeport Village Residential Density



Employment Density

In contrast to the residential density, employment density in the Bridgeport Village area is moderate to high. The largest employers in the area include Fed Ex, 24 Hour Fitness, Claim Jumper, REI, Whole Foods, PF Chang's, and ClubSport, although there are many smaller employers in the area as well.

Figure 12. Bridgeport Village Employment Density



Neighborhood Amenities

The very high concentration of neighborhood amenities in the Bridgeport Village area reflects the concentration of shops, restaurants, and services that make up the shopping center and surrounding development. This area provides amenities and services both to the surrounding neighborhoods and to the entire region.

Figure 13. Bridgeport Village Neighborhood Amenity Density

Development Opportunities and Constraints

The Bridgeport Village area is dominated by the shopping center itself. As a mall with regional draw, this relatively new center has been very successful and has encouraged development of other retail properties in the immediate area. However, the area also has a significant amount of older mostly single-story office parks on the east side of I-5 and to the north of the mall in Tigard. To the west of the mall is a low-density residential area.

This area is largely built-out, though some development opportunities remain. Due to the success of Bridgeport Village, the freeway access, and the proximity of affluent communities, this area should continue to draw new retail and office employers and support the City's highest commercial lease rates. This area is likely to attract additional retail development as the economy improves. Rising values in the area may incentivize the redevelopment of older low-rise office and light industrial properties to the north of the mall. Estimated upper pricing levels are shown in Table 5 below. Retail rates are higher than in any other Focus Area.

Table 5. Estimated Upper Pricing Levels - Bridgeport Village

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$12/sf/yr
Warehouse	$5/sf/yr
Office	$23/sf/yr
Retail	$28/sf/yr
Residential rent	$1.25/sf/yr
Home Pricing (for sale)	$160/sf

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Similarly, the success of the mall should support more intensive residential development (mostly the west, buffered from the freeway) if appropriate parcels are available. At least one future residential development is already planned in this area (just outside Tualatin city limits in Durham), with over 300 apartments wrapped around structured parking with retail and live/work units fronting on Boones Ferry Road. The amount of current development and lack of vacant, properly zoned parcels may be a challenge to additional intensive new development in this area. Viable near-term development forms, absent public policy changes or incentives, are identified in Table 6 below.

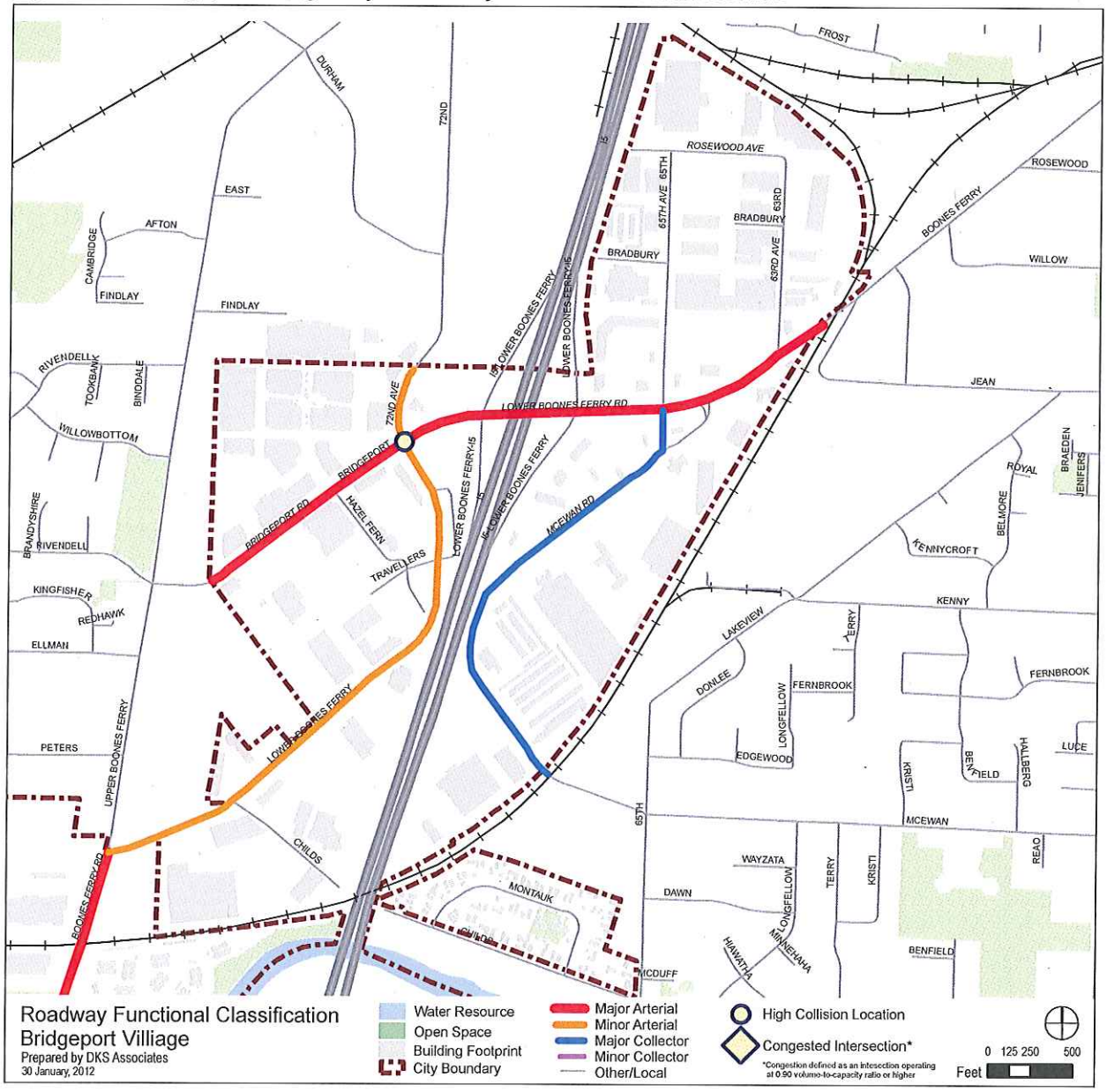
Table 6. Viable Near-to-Mid-Term Development Forms - Bridgeport Village

Land Use	Likely Development Forms
Industrial	N/A
Office	3-4 story
Retail	Single story, or below mixed use
Rental Housing	2-3 story
For-Sale Housing	2-3 story, townhome
Parking	Surface, or mall-related structured

Key Roadways

Traffic in Bridgeport Village is served primarily by I-5 and two arterials: SW Lower Boones Ferry Road and SW Bridgeport Road. Because of the dominance of commercial and retail uses in this focus area, traffic volumes along SW Bridgeport Road are relatively consistent throughout the day, peaking between 12:00-1:00 pm. By comparison, SW Lower Boones Ferry Road displays a more typical commuter profile, with peak traffic occurring at 5:00 pm. There are no major congestion issues in this area; however, the intersection of SW Lower Boones Ferry and Bridgeport Road is a high collision intersection. There have also been a number of reported bicycle/vehicle crashes along this arterial corridor from 2008 through 2010.

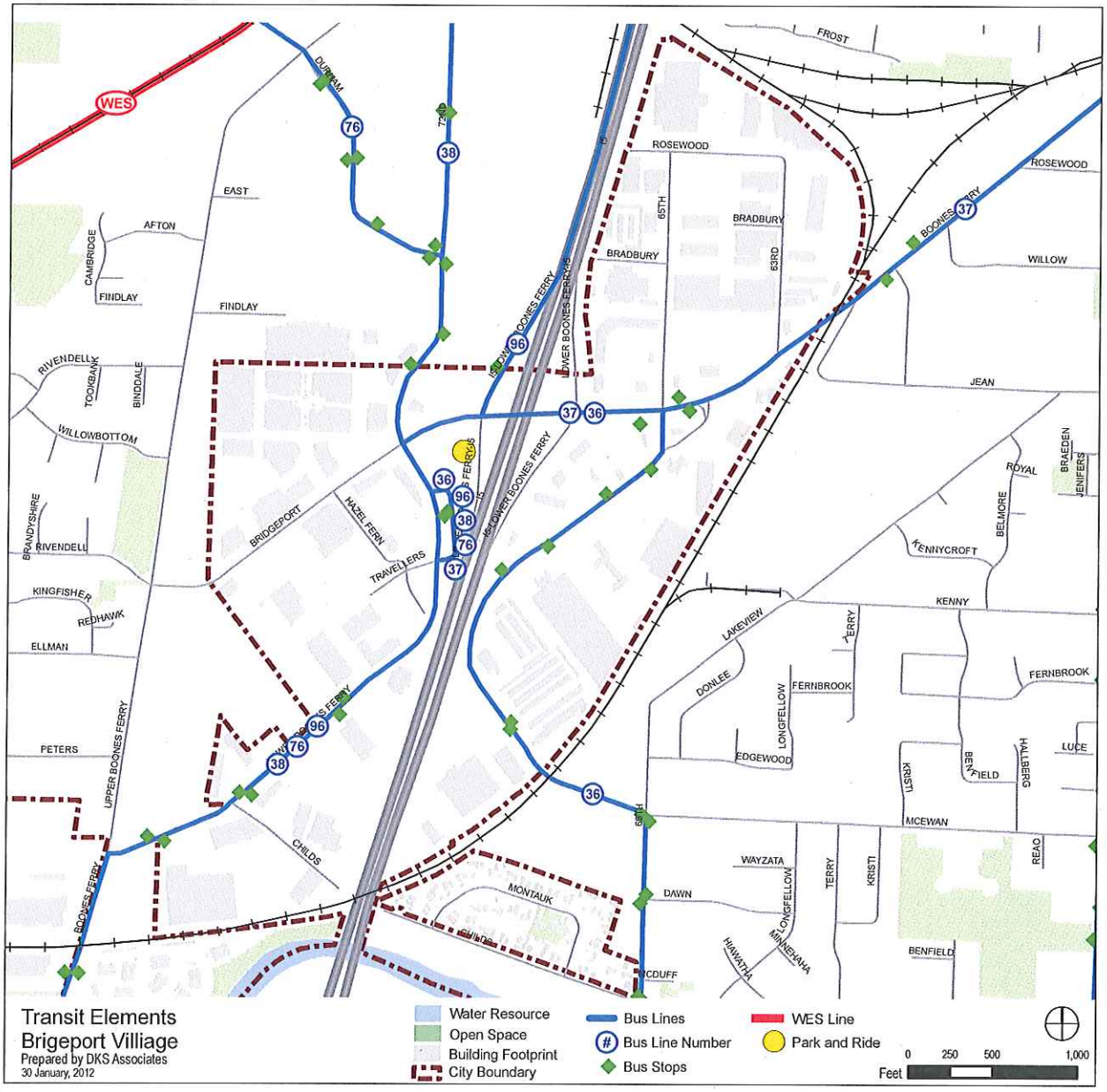
Figure 14. Bridgeport Village Major Roadways and Problem Intersections



Transit Service

The Bridgeport Village area is served by TriMet bus lines 36, 37, 38, 76 and 96 and the Tualatin Park & Ride facility. These routes provide connections to downtown Portland, Lake Oswego, Beaverton, Durham, Tigard, and Washington Square. Service intervals range from 30-120 minutes on weekdays, with the most frequent service during peak commute times. In addition, the SMART Line 2X travels from the Wilsonville WES station to the Barbur Transit Center with a stop at the Tualatin Park & Ride approximately every 30 minutes during peak travel times. The area is also served by a vanpool program operated by Metro and Enterprise Rideshare that provides weekday shuttle service between Gateway Park & Ride and Bridgeport Village during peak commute times and dial-a-ride service.

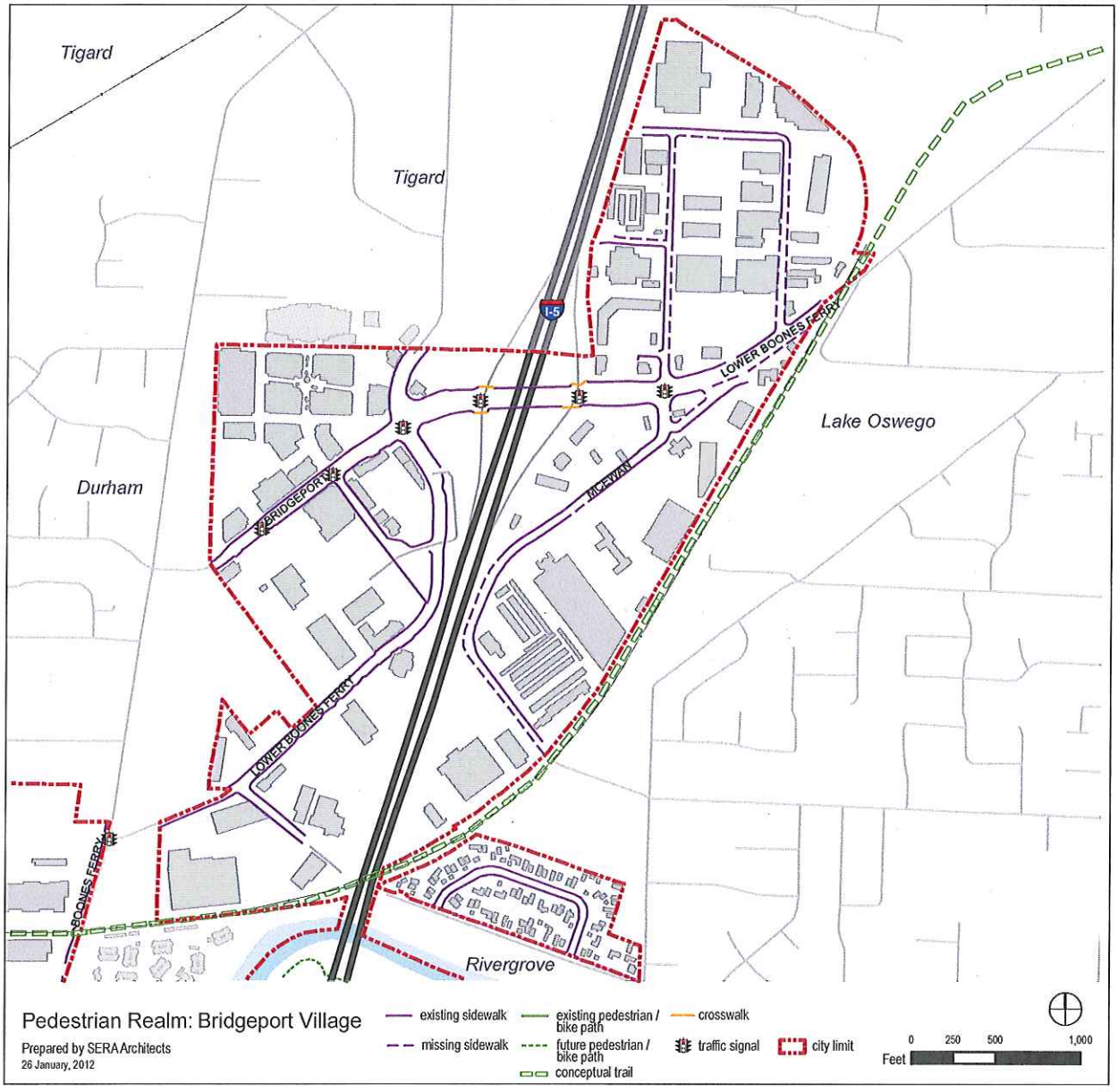
Figure 15. Bridgeport Village Transit Service



Pedestrian Facilities

Most of the major roadways in the Bridgeport Village area have sidewalks, though some of the smaller roadways and those internal to the commercial developments do not. The block sizes in this area are fairly large, and there are major roadways that may create obstacles for pedestrians, including I-5 and Lower Boones Ferry Road. The presence of traffic signals roughly every 500 feet along Lower Boones Ferry Road makes it easier for pedestrians to cross; however there are not crosswalks at all of the signals, which could make crossing less safe for pedestrians, especially the elderly and disabled. The conceptual alignment of the Surf to Turf trail would run along the eastern and southern edge of this area.

Figure 16. Bridgeport Village Pedestrian Facilities



Summary of Key Facts

- Major commercial center and retail destination for the region with moderate to high number of employees per acre.
- Wide array of national retailers as well as smaller retail and service businesses
- Few residents in area but surrounded by residential neighborhoods in the communities of Durham and Lake Oswego
- Most of area is designated as General Commercial use with smaller areas are designated for light manufacturing general manufacturing uses with little undeveloped land
- Low number of residents per acre, while areas to the south have higher concentrations of residents
- Very high concentration of neighborhood amenities, including concentration of shops, restaurants, and services
- Area should continue to draw new retail and office employers and add jobs as the economy improves, with some redevelopment north of mall likely
- Transportation features include:
  - » Served by Interstate 5, Lower Boones Ferry Road and Bridgeport Road with no major congestion problems and one high collision intersection
  - » Served by TriMet bus lines 36, 37, 38, 76 and 96 and the Tualatin Park & Ride facility, which provide connections to Lake Oswego, downtown Portland, Beaverton, Durham, Tigard, and Washington Square; also served by South Metro Area Regional Transit (SMART) Line 2X (WES), Metro vanpool program, and dial-a-ride service
  - » Most major roadways have sidewalks and future multi-use path to downtown planned but major roads and large block sizes create challenges for pedestrians

7. Meridian Park & Nyberg Woods

Overview and Existing Development

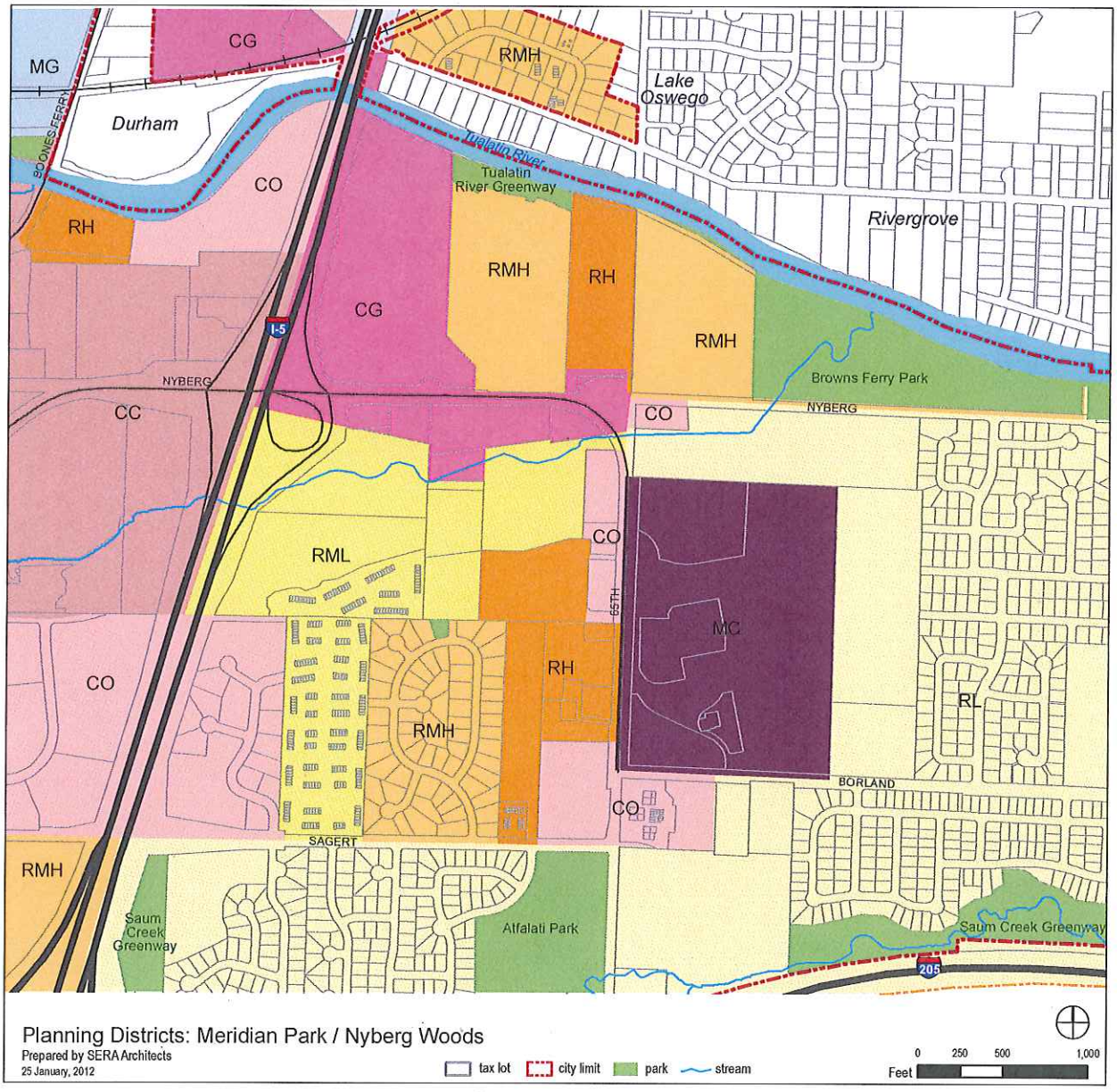
The Meridian Park/Nyberg Woods area has a mix of multi-family residential development, commercial/ office, and institutional uses, including Legacy Meridian Park Hospital and a private school. There are several parks and natural resources, including the Tualatin River; Brown's Ferry, Atfalati, and Stoneridge parks; the Tualatin River and Saum Creek Greenways; and a broad floodplain/wetland south of Nyberg Street / Nyberg Lane. There is undeveloped land east and north of the hospital, north of I-205 east of Atfalati Park, and a few vacant parcels north of Sagert Road just east of I-5.

Figure 17. Meridian Park & Nyberg Woods Existing Development

Designated Land Uses

This focus area contains a broad mix of commercial and residential designations. The commercial designations, located primarily on the west half of the focus area, include Central Commercial (CC), General Commercial (CG), and Office Commercial (CO). These designations vary in their emphasis on scale; the CO district is intended for professional office uses that are compatible with adjacent residential areas. The CC district promotes pedestrian-friendly development in the downtown retail core, while the CG district allows those activities that are not as appropriate for neighborhoods or the central downtown area. The eastern half of the focus area provides for a range of residential densities surrounding a Medical Center Planning District (MC).

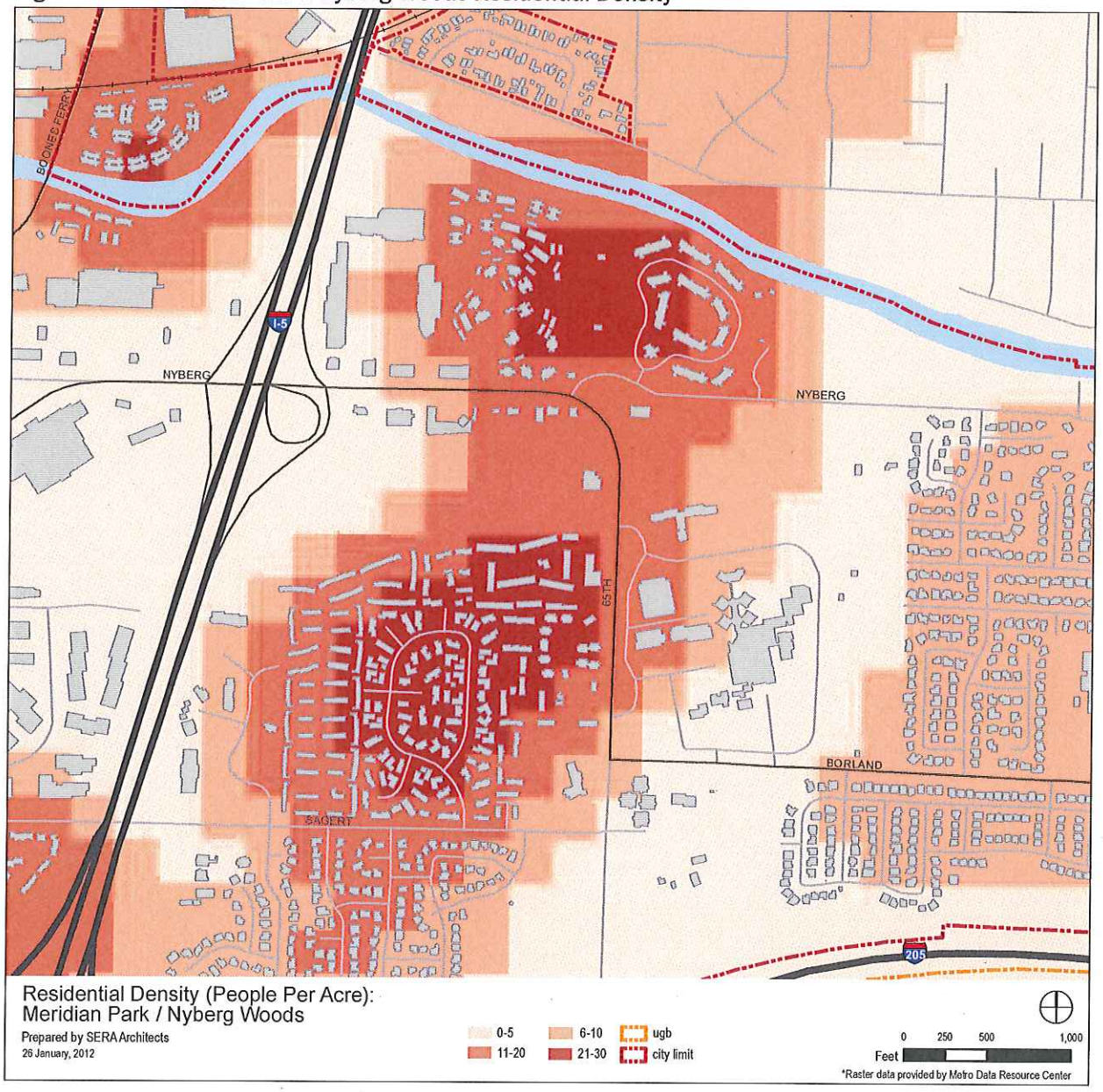
Figure 18. Meridian Park & Nyberg Woods Planning Districts



Residential Density

The Meridian Park / Nyberg Woods area has relatively high residential densities due to the presence of several fairly large multi-family developments. The single-family neighborhoods to the east have a moderate residential density

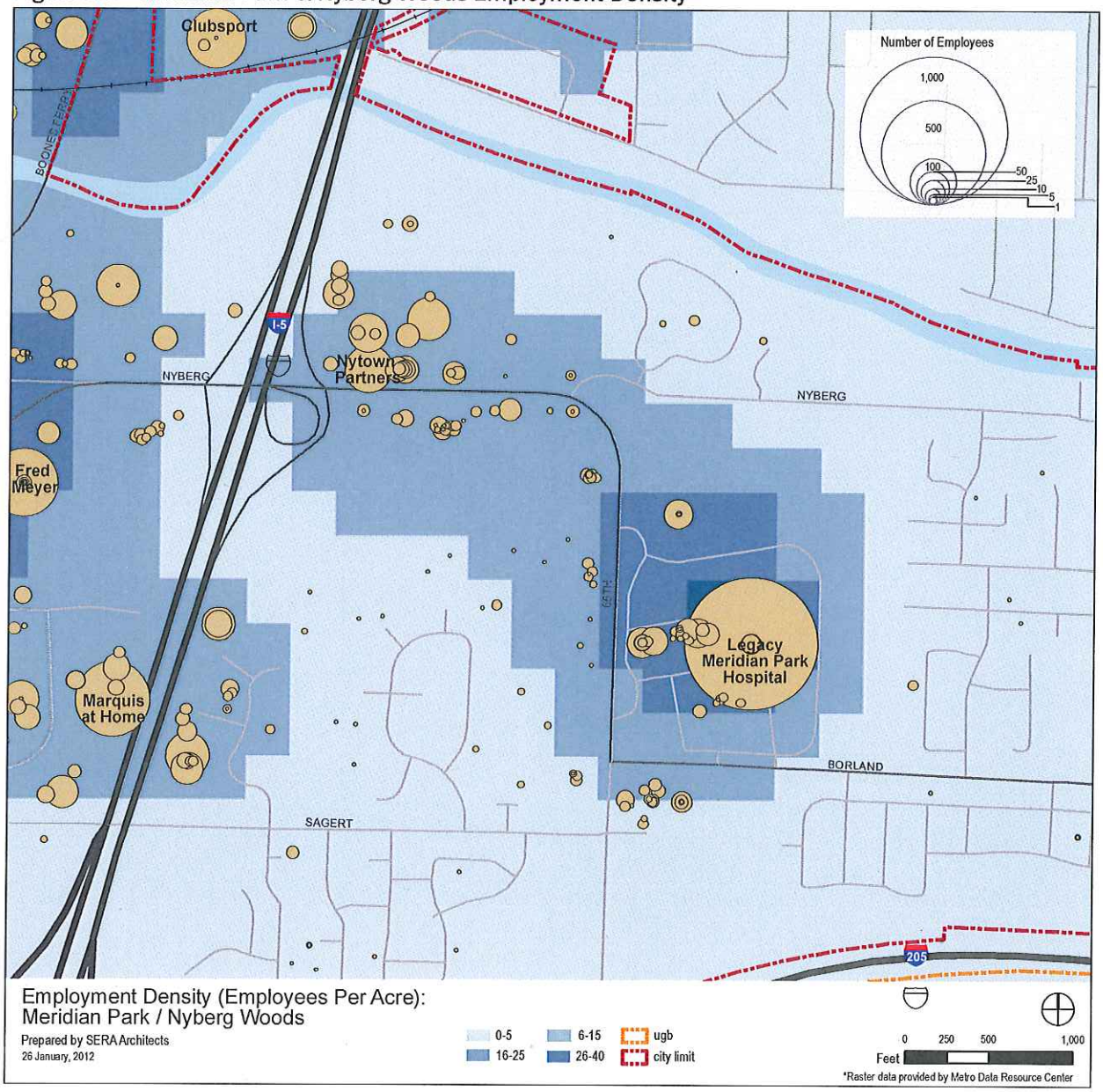
Figure 19. Meridian Park & Nyberg Woods Residential Density



Employment Density

The Meridian Park / Nyberg Woods area has pockets of moderate to high employment density along SW 65th Avenue. The highest employment concentration is around the Legacy Meridian Park Hospital, but there are other smaller employers along SW 65th Ave and near the I-5 / Nyberg Street interchange.

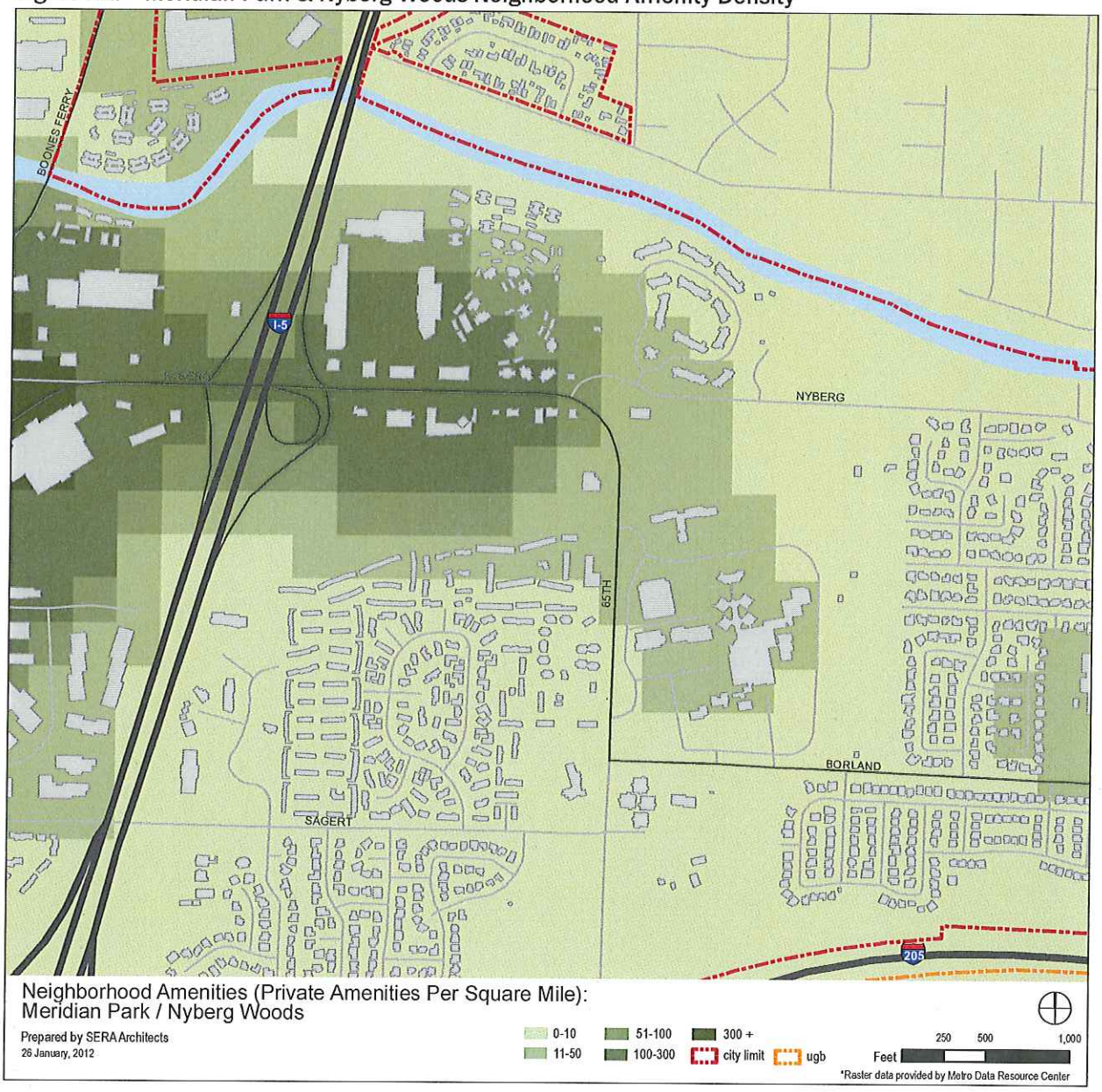
Figure 20. Meridian Park & Nyberg Woods Employment Density



Neighborhood Amenities

There is a moderate cluster of neighborhood amenities near the I-5 / Nyberg Road interchange in the Meridian Park / Nyberg Woods area. There are lower concentrations of amenities near the hospital, and virtually nothing in the surrounding residential developments.

Figure 21. Meridian Park & Nyberg Woods Neighborhood Amenity Density



Development Opportunities and Constraints

This area has a significant concentration of existing retail along Nyberg Road, medical office space at the Legacy Meridian Park Hospital campus and residential development in the surrounding area.

There are multiple larger garden apartment complexes in this area, and much of the land is zoned for medium-high density residential use. Some large developable parcels remain to the south and east of the medical center.

This focus area is likely to remain a strong location for the established uses. Retail will do best on Nyberg Street, close to the freeway interchange. The medical center will continue to draw medical office users to the adjacent areas. Multi-family apartment development is the most likely use of other large vacant parcels, not directly adjacent to the medical center. The Meridian Park area also features large available sites for new office development.

Estimated upper pricing levels are shown in Table 7 below. Office rents and residential rents and home prices are higher than in the other focus areas.

Table 7. Estimated Upper Pricing Levels - Bridgeport Village

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$10/sf/yr
Warehouse	$5/sf/yr
Office	$24/sf/yr
Retail	$25/sf/yr
Residential rent	$1.35/sf/yr
Home Pricing (for sale)	$170/sf

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Viable near-term development forms, absent public policy changes or incentives, are identified in Table 8 below.

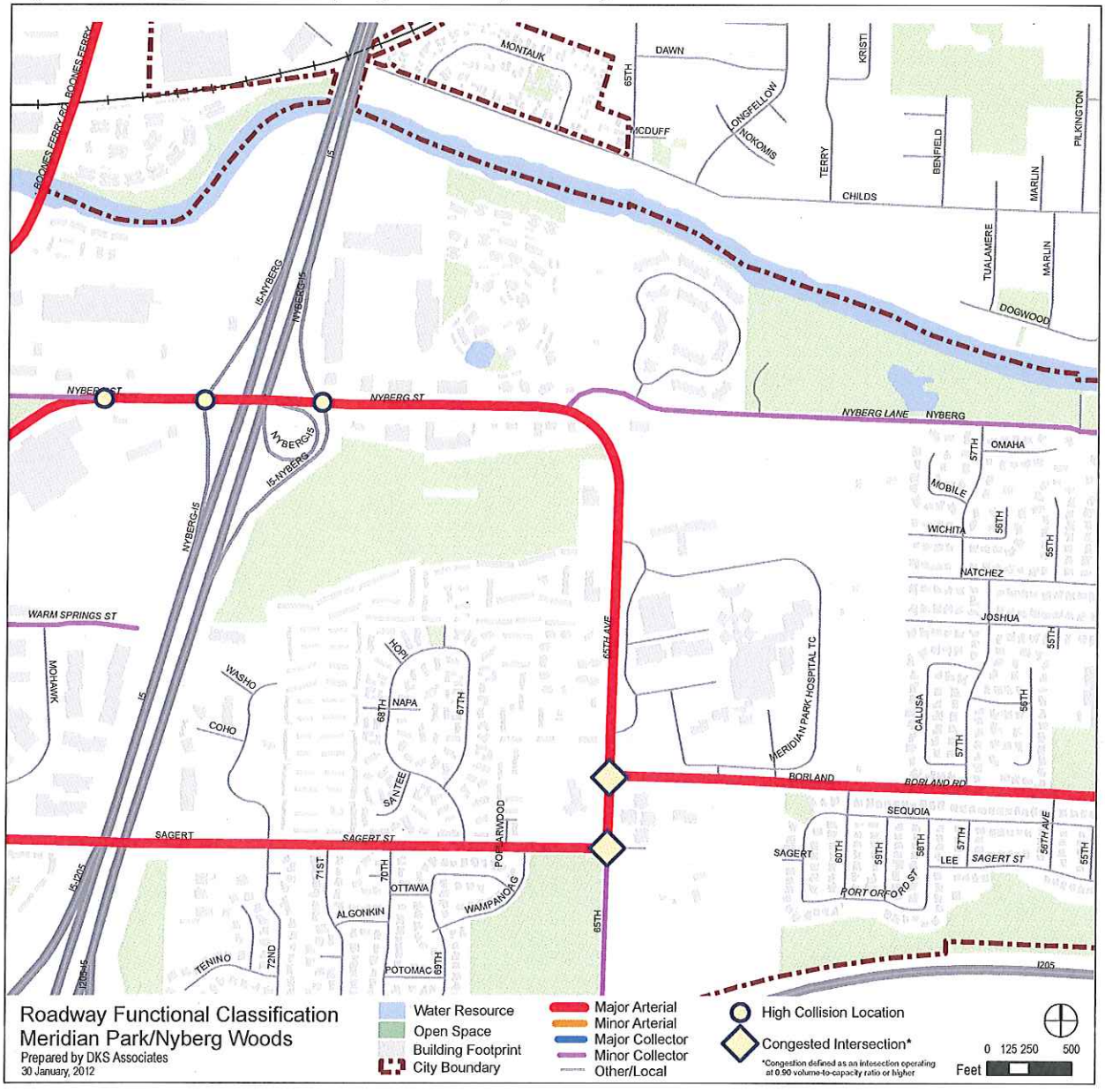
Table 8. Viable Near-to-Mid-Term Development Forms - Bridgeport Village

Land Use	Likely Development Forms
Industrial	N/A
Office	3-4 story
Retail	Single story
Rental Housing	2-3 story
For-Sale Housing	Detached or townhome
Parking	Surface, or hospital-related structured

Key Roadways

SW Nyberg Street, SW Sagert Street, and SW Borland Road serve as the primary east-west arterials through this focus area, with SW 65th Avenue providing a north-south connection between them. Although SW Borland Road and SW 65th Avenue are designated major arterials, they are generally three lanes through this focus area. The two major intersections along SW 65th Avenue (at Sagert Street and Borland Road) are considered congested. There are several intersections along SW Nyberg Street leading into Downtown Tualatin that are designated as high collision areas. There was one pedestrian/vehicle crash reported along SW Sagert Street from 2008 through 2010.

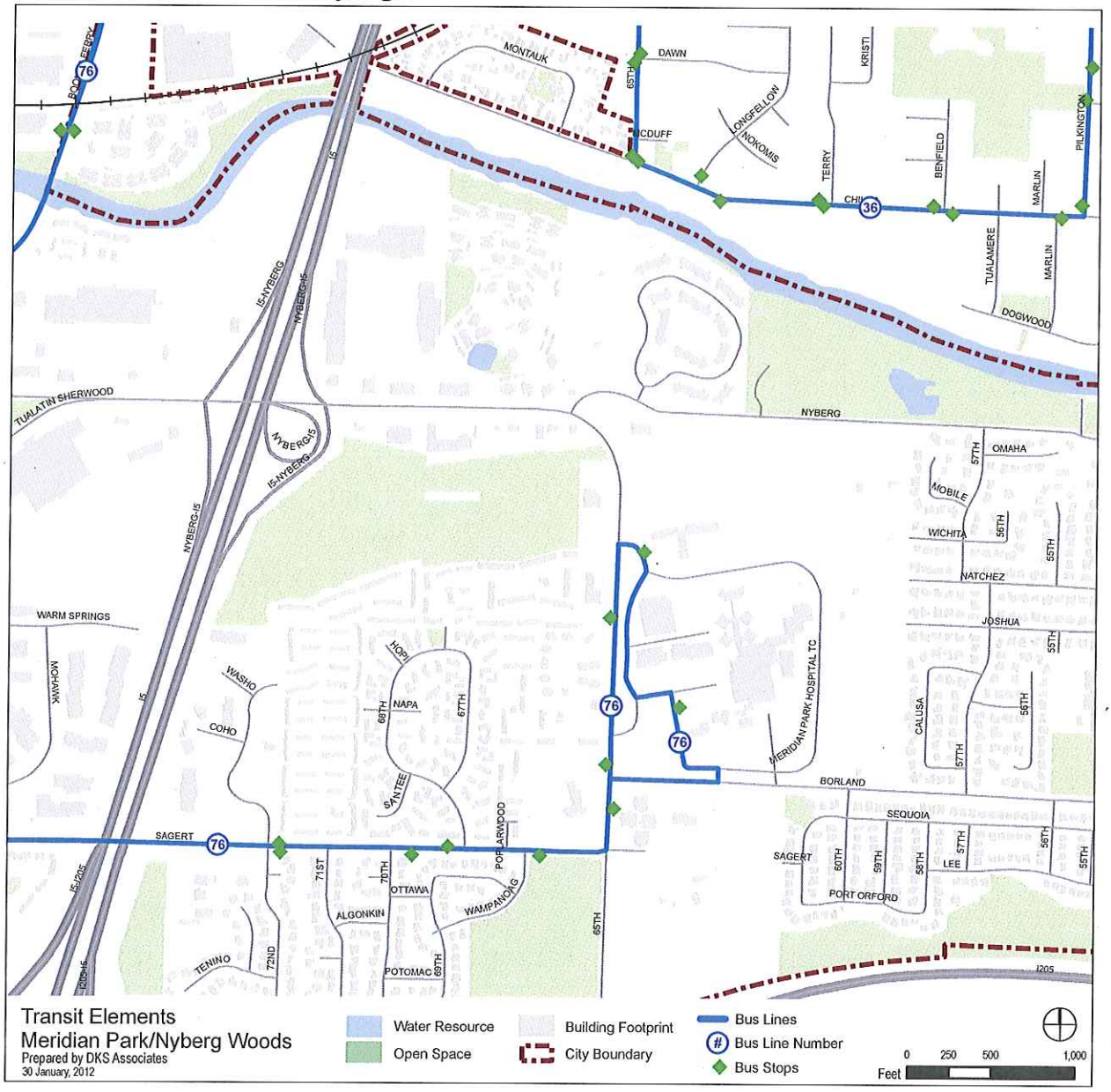
Figure 22. Meridian Park & Nyberg Woods Key Roadways and Problem Intersections



Transit Service

Transit in this focus area is limited to TriMet bus line 76. Line 76 connects Tualatin to Beaverton via Durham, Tigard, and Washington Square and provides service every 30 minutes during weekday commute times. (Line 36 serves Rivergrove north of the Tualatin River but does not cross into Tualatin, nor is there pedestrian access to the line from the Tualatin side of the river.) This area is also served by the Tualatin Shuttle dial-a-ride service.

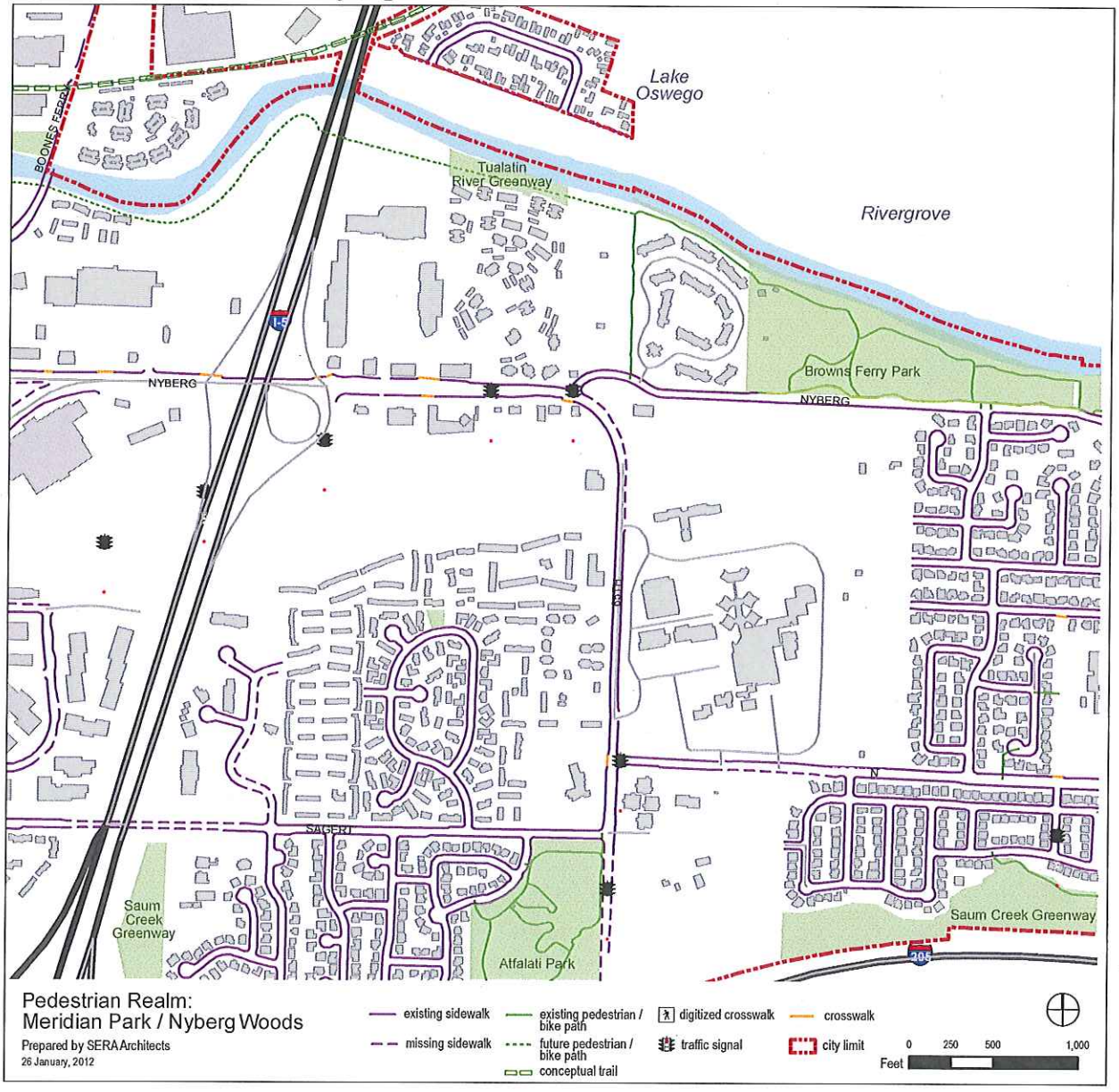
Figure 23. Meridian Park & Nyberg Woods Transit Service



Pedestrian Facilities

While there is fairly good sidewalk coverage in the Meridian Park / Nyberg Woods area, especially within the residential neighborhoods, there are gaps in the sidewalks on several of the major roads, including 65th, Sagert, and Borland. The street network is somewhat discontinuous in this area due to the prevalence of internally-focused developments. There are traffic signals at the major roadway intersections, many with cross-walks, making it easier for pedestrians to cross and travel along the major roadways. Existing multi-use paths in this area include recreational paths within Browns Ferry and Atfalati Parks as well as short connections in residential subdivisions. A planned trail along the Tualatin River will further enhance pedestrian connections to other parts of the city.

Figure 24. Meridian Park & Nyberg Woods Pedestrian Facilities



Summary of Key Facts

- Mix of multi-family residential development, commercial/office, and institutional uses, including Legacy Meridian Park Hospital and two private schools.
- Includes several parks and natural resources, including the Tualatin River; Brown's Ferry, Atfalati, and Stoneridge parks; the Tualatin River and Saum Creek Greenways; and a broad floodplain/ wetland south of Nyberg Road.
- Relatively high concentration of housing due to the presence of several fairly large multi-family developments with more traditional single-family neighborhoods to the east.
- Highest employment concentration is around the Legacy Meridian Park Hospital, with other smaller employers along SW 65th Ave and near the I-5 / Nyberg Road interchange.
- Contains a broad mix of commercial and residential land use designations.
- Includes a moderate cluster of neighborhood amenities near the I-5 / Nyberg Road interchange, with lower concentrations of amenities near the hospital and very few in the surrounding residential developments.
- Area is likely to remain a strong location for the established uses, including retail and residential, as well as new office uses near Meridian Park.
- Undeveloped land is located east and north of the hospital, north of I-205 east of Atfalati Park, and a few vacant parcels north of Sagert Road just east of I-5.
- Transportation features include:
  - » SW Nyberg Street, SW Sagert Street, and SW Borland Road serve as primary east-west arterials, with SW 65th Avenue providing a north-south connection between them; intersections along SW 65th Avenue (at Sagert Street and Borland Road) are considered congested.
  - » Served by TriMet bus lines 36 and 76, with service varying from every 30-120 minutes, and dial-a-ride service.
  - » Pedestrian facilities include fairly good sidewalk coverage in the Meridian Park / Nyberg Woods area, especially within the residential neighborhoods, as well as several multi-use paths. Constraints include sidewalk gaps on major roads, including 65th, Sagert, and Borland and a somewhat discontinuous street network.

8. Downtown Tualatin

Overview and Existing Development

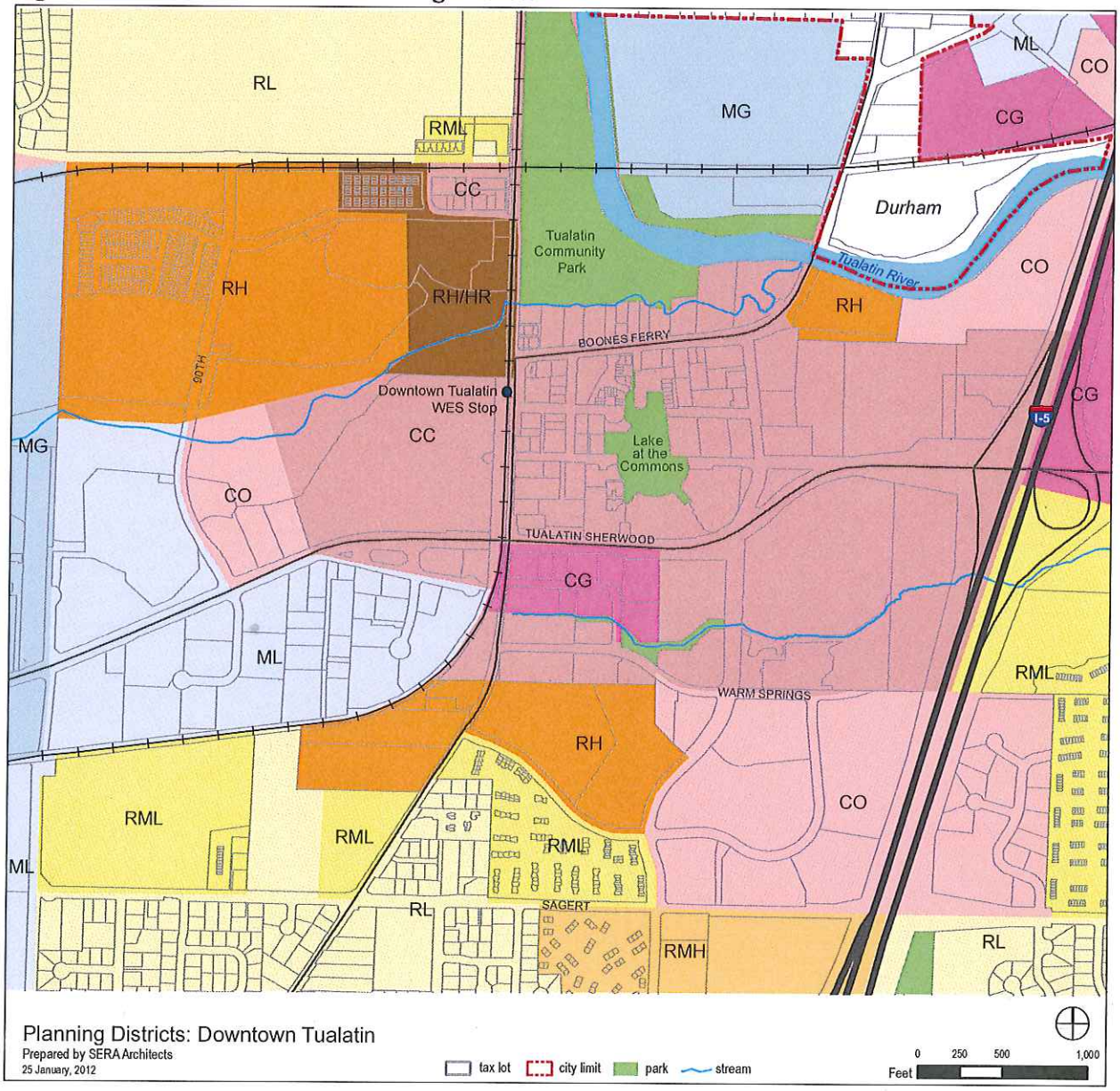
Downtown Tualatin is home to an array of commercial businesses as well as key civic institutions. There are a number of shopping centers along Tualatin-Sherwood and Nyberg Roads (predominantly car-oriented with large parking lots); other areas have smaller retail and service businesses. Tualatin Commons has a lake surrounded by mixed use (retail and multi-family residential) development. The downtown also has a few hotels. Many City services are located downtown, including the library, Police Department, City Hall, City administrative offices, and Community Park. The Tualatin River runs along the northern edge of downtown, and there is a floodplain/wetland area adjacent to Fred Meyer. Most of the land is developed; however, there is vacant land adjacent to the river near I-5.

Figure 25. Downtown Tualatin Existing Development

Designated Land Uses

The Downtown Tualatin focus area has a variety of land use designations. Generally speaking, the downtown core is zoned Central Commercial (CC), which is intended to provide a full range of retail, professional and service uses of the kind usually found in downtown areas patronized by pedestrians. Office Commercial Planning Districts (CO) are adjacent to the downtown core on three sides. High density residential areas (RH) serve as a buffer between the lower density residential areas (RML and RL) on the periphery of downtown and the commercial/office areas. The manufacturing districts (ML and MG) are intended for industrial uses that are compatible with adjacent commercial and residential uses, but may transition to commercial or mixed use over time (based on the 2005 Town Center Plan).

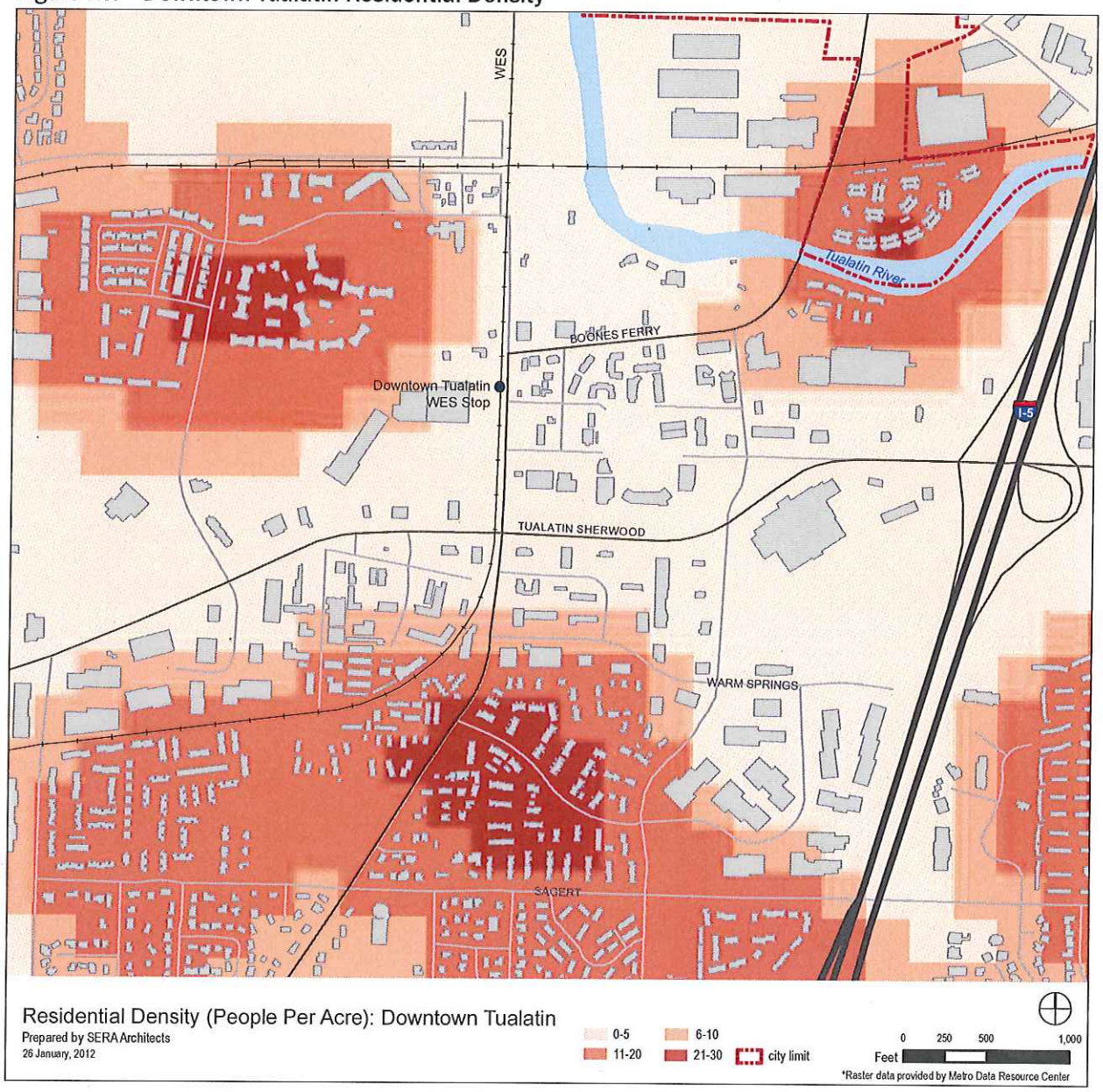
Figure 26. Downtown Tualatin Planning Districts



Residential Density

The heart of Downtown Tualatin is primarily commercial, with little residential development (the small but high density Tualatin Commons residential / mixed use development does not show up on the map below); however, the surrounding neighborhoods have moderate to high residential density due to the prevalence of multi-family development.

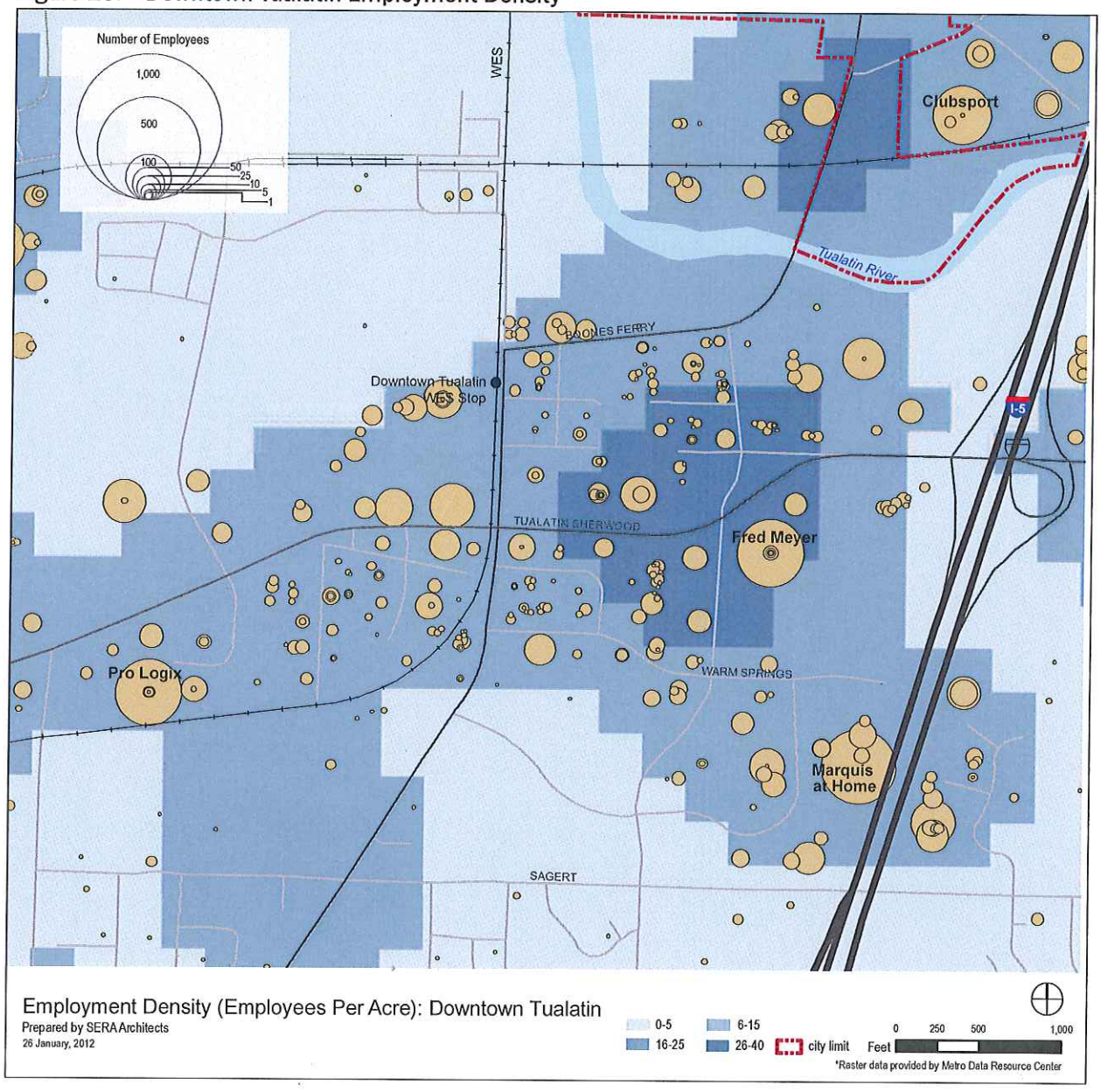
Figure 27. Downtown Tualatin Residential Density



Employment Density

Employment density in Downtown Tualatin is greatest at the heart of downtown, but there are also clusters of businesses along the major roadways. Major employers in the area include Fred Meyer, Marquis at Home (which is moving to a new location at the site of the Tualatin Elementary School), and Pro Logix, but there are numerous smaller businesses in the area as well. The City's offices are also located downtown, but are not shown below because the data reflects only businesses that obtain a license from the city.

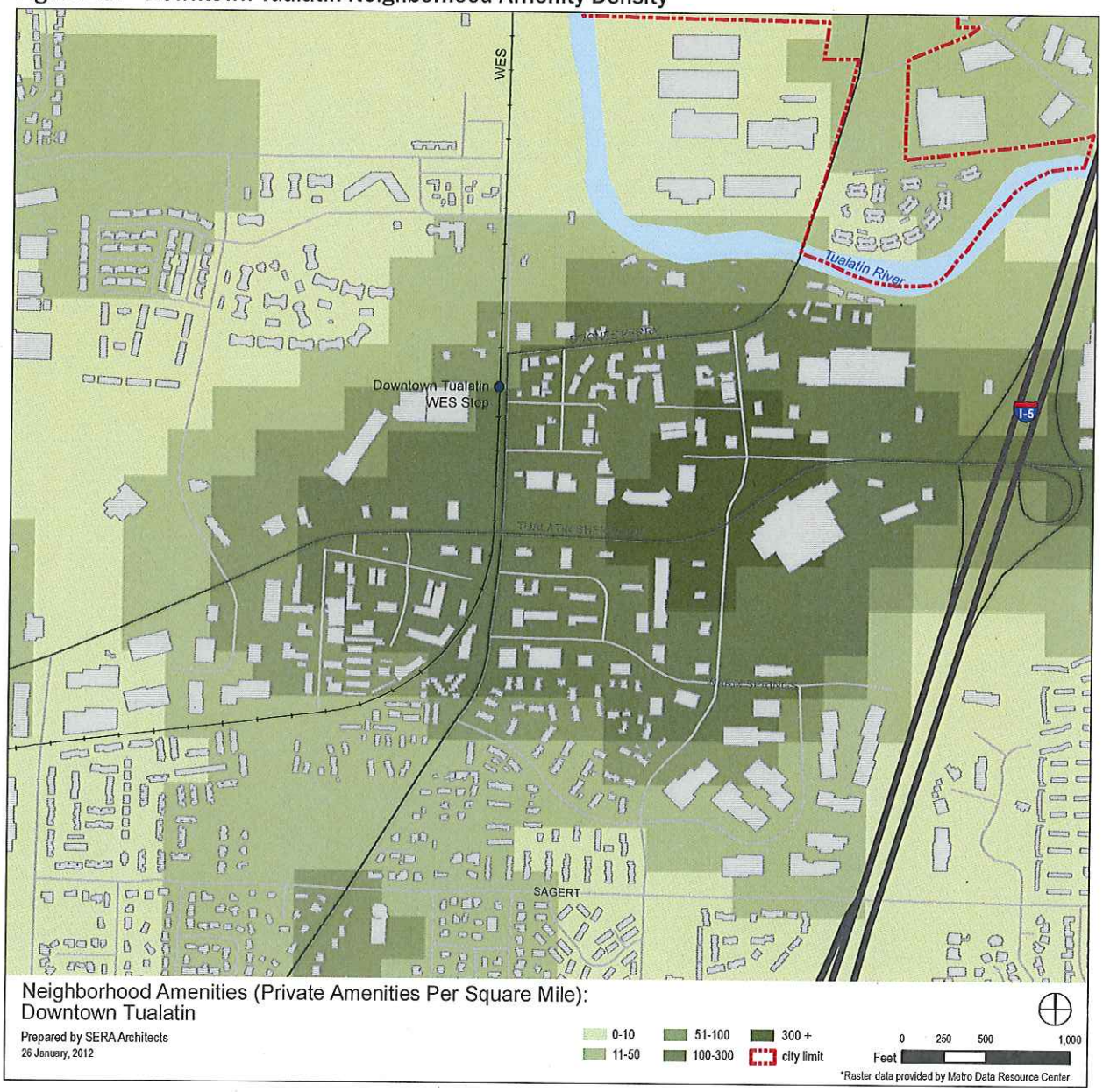
Figure 28. Downtown Tualatin Employment Density



Neighborhood Amenities

Downtown Tualatin provides a high density of neighborhood amenities at the downtown core. There are also some amenities in and around the neighborhoods surrounding the downtown. The presence of the Fred Meyer south of Tualatin-Sherwood Road contributes significantly to the neighborhood amenities, allowing downtown residents as well as those from around the city to meet daily needs.

Figure 29. Downtown Tualatin Neighborhood Amenity Density



Development Opportunities and Constraints

Being the traditional center of the city, this focus area has the greatest physical concentration of smaller office and retail space. It features good access from a variety of large arterials streets which both make it easily accessible, but also somewhat isolated. The residential presence is limited, however there are residential neighborhoods roughly a half mile to the south, as well as residential development to the north and west..

The Downtown area faces the challenge found in many traditional suburban downtowns, which is to reestablish a sense of place after decades of competition from other parts of the city. However, due to the concentration of smaller users and finer-grained parcel sizes, this focus area may be one of the better suited for a station area format over time. Office development in the downtown is likely to consist of smaller office projects due to the fragmented parcels of land, with the exception of a limited number of larger parcels.

Estimated upper pricing levels are shown in Table 9 below. Residential rents and home prices are lower than in the other focus areas.

Table 9. Estimated Upper Pricing Levels - Downtown Tualatin

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$12/sf/yr
Warehouse	$6/sf/yr
Office	$20/sf/yr
Retail	$20/sf/yr
Residential rent	$1.10/sf/yr
Home Pricing (for sale)	$130/sf

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Viable near-term development forms, absent public policy changes or incentives, are identified in Table 10 below.

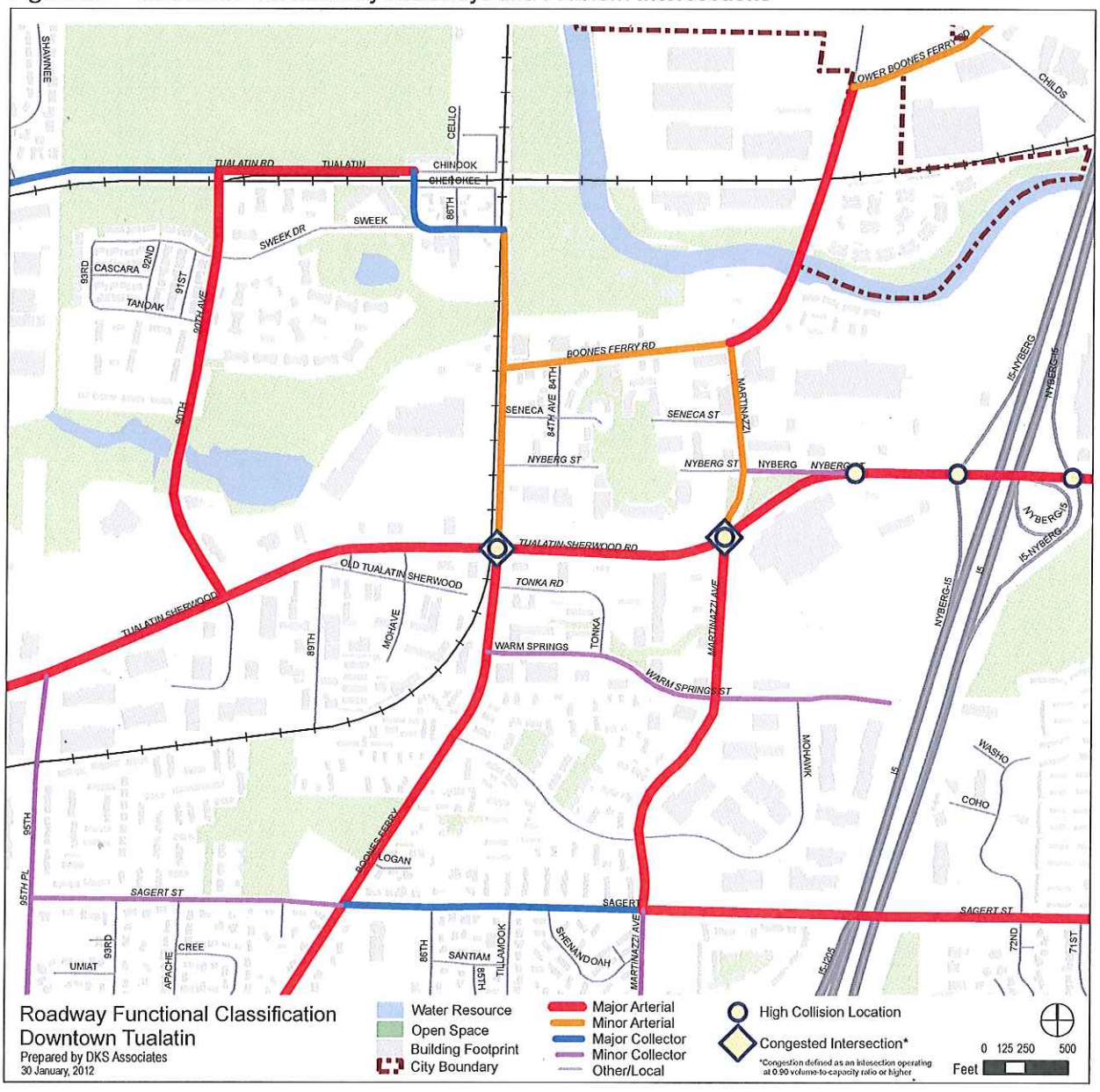
Table 10. Viable Near-to-Mid-Term Development Forms - Downtown Tualatin

Land Use	Likely Development Forms
Industrial	N/A
Office	3-4 story
Retail	Single story, or below mixed use
Rental Housing	2-3 story
For-Sale Housing	2-3 story, townhome
Parking	Surface, or tuck-under

Key Roadways

East-west traffic through this focus area is served primarily by SW Tualatin Sherwood Road, with several intersecting north-south arterials. Traffic volumes along SW Tualatin Sherwood Road tend to have typical commuter patterns, although the difference between peak and off-peak demands is relatively small. With the exception of the intersection at SW 90th Avenue, most major intersections along SW Tualatin Sherwood Road are considered congested and/or high collision intersections. In addition, several bicycle/vehicle and pedestrian/vehicle crashes have been reported along this stretch of SW Tualatin Sherwood Road from 2008 through 2010.

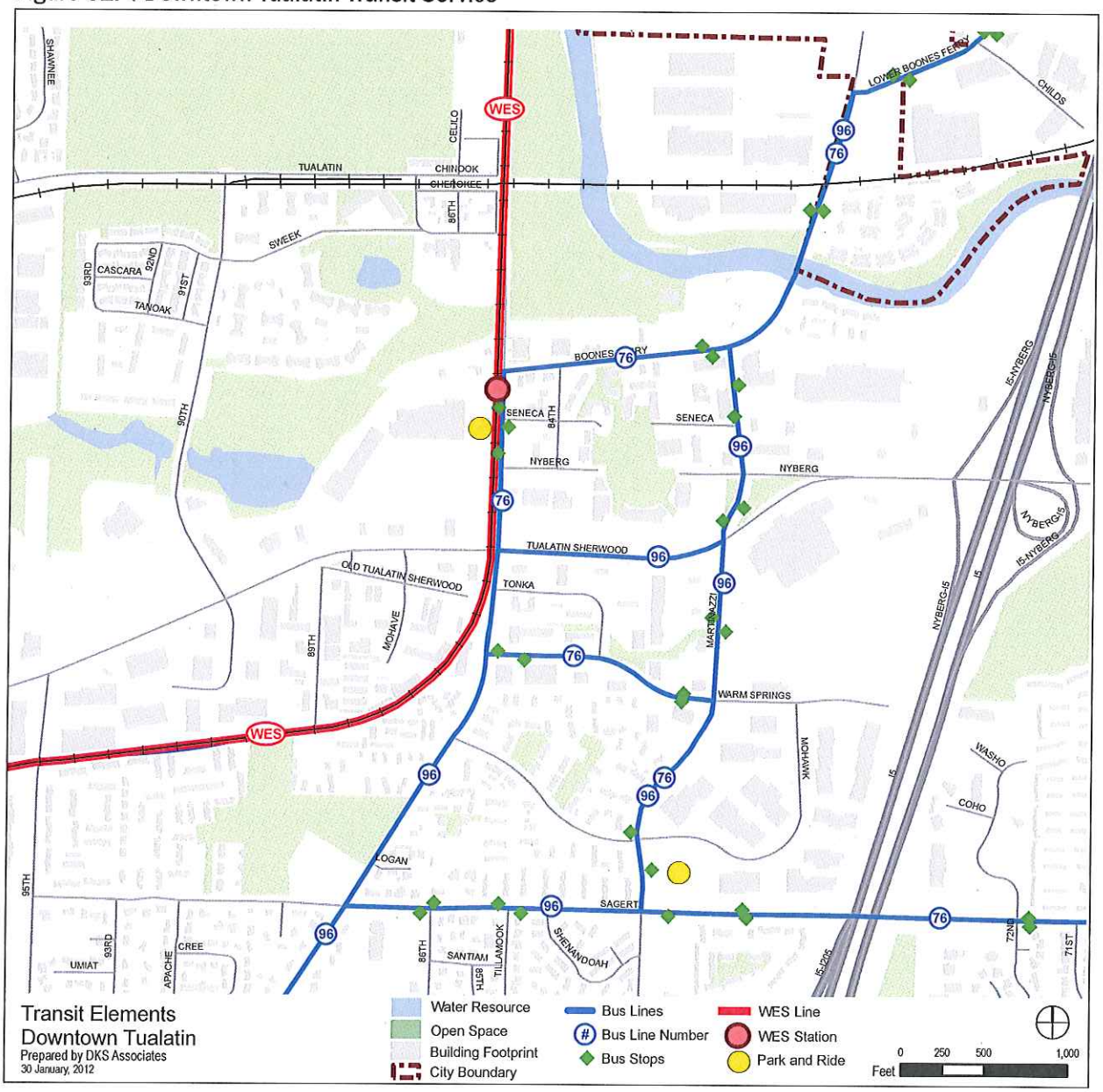
Figure 30. Downtown Tualatin Key Roadways and Problem Intersections



Transit Service

Downtown Tualatin is served by TriMet bus lines 76 and 96 and by the Westside Express Service (WES) commuter rail. Line 76 connects points in downtown Tualatin with Beaverton and provides service every 30 minutes during weekday commute times. Line 96 connects Commerce Circle with downtown Portland via I-5 and provides service approximately every 30 minutes during peak travel times. WES commuter rail connects Tualatin with Beaverton, Tigard and Wilsonville and provides service at approximately 30-minute intervals during weekday commute times. This area is also served by the Tualatin Shuttle dial-a-ride service.

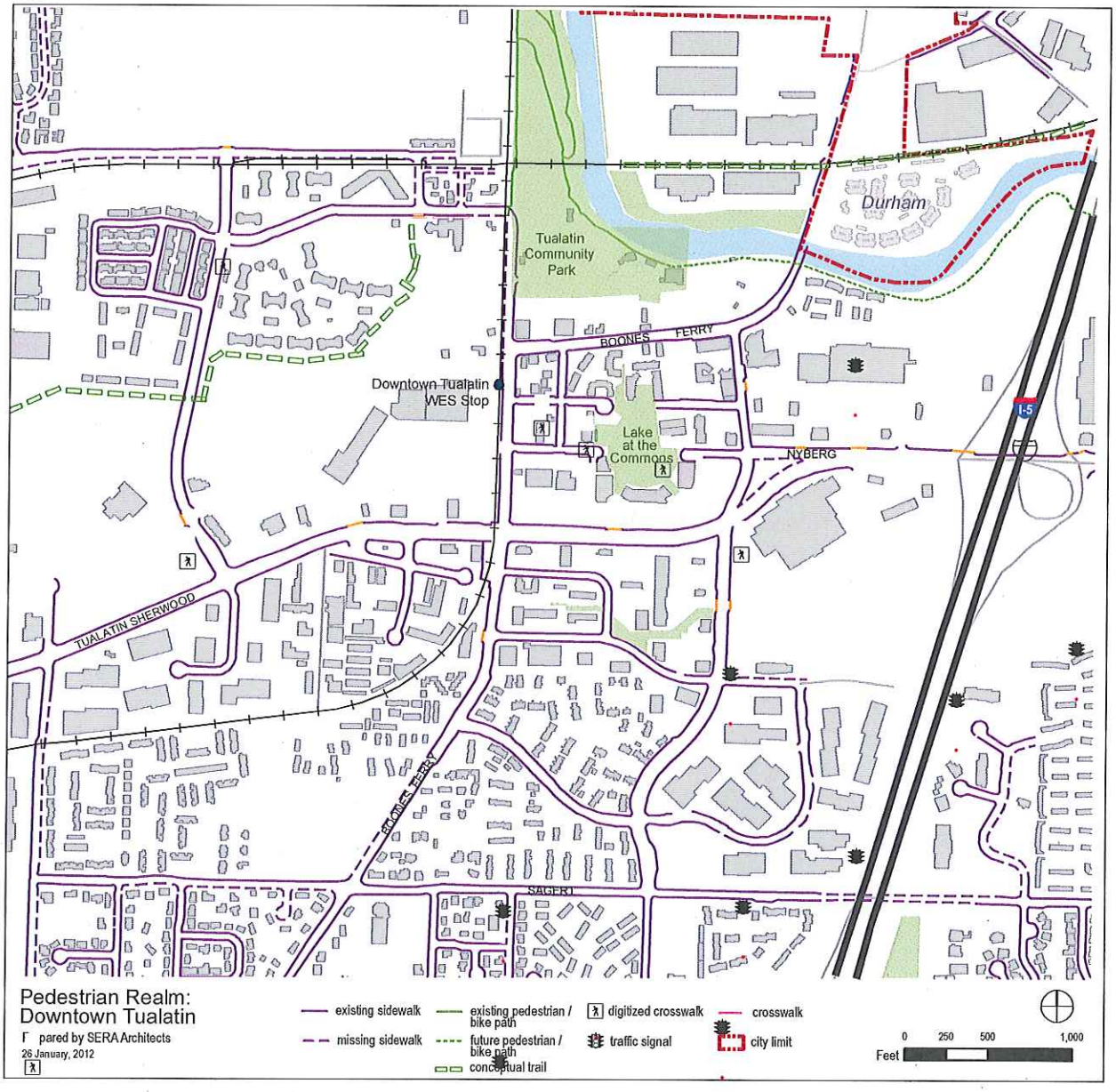
Figure 31. . Downtown Tualatin Transit Service



Pedestrian Facilities

Downtown Tualatin has a relatively dense network of pedestrian facilities, including both sidewalks and multi-use paths. There are traffic signals at most of the major intersections, and there are digitized crosswalks in a number of locations. There are some gaps in the pedestrian network on the southern edge of downtown along Sagert Road. The block size is smaller than in other areas of the city and off-street trails provide alternate routes in several places where streets connections are not available. A planned trail along the Tualatin River will further enhance pedestrian connections to other parts of the city. The conceptual alignment of the Tonquin Trail runs along the stream on the west side of downtown between Herman Road and Tualatin-Sherwood Road.

Figure 32. Downtown Tualatin Pedestrian Facilities



Summary of Key Facts

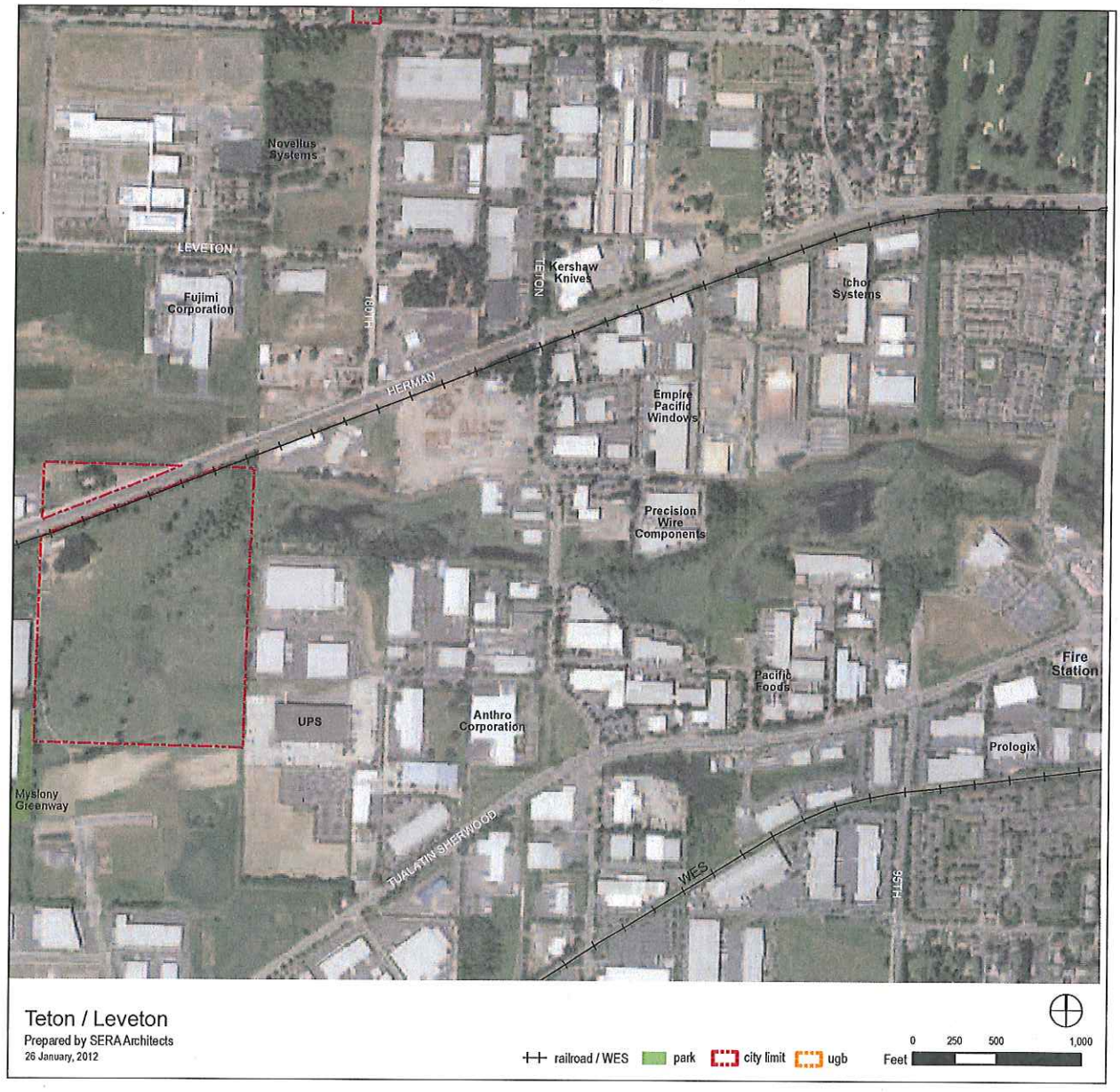
- Home to an array of commercial businesses as well as key civic institutions such as the public library and city hall.
- Includes several parks and natural features, including the Tualatin Community Park, Lake at the Commons, the Tualatin River and a floodplain/wetland area just west of I-5 adjacent to the Fred Meyer.
- Contains a variety of land use designations, ranging from low-density residential to commercial to general manufacturing, with the downtown core designated as a central commercial area.
- Few residents in the heart of Downtown Tualatin but surrounding neighborhoods have moderate to high concentrations of residents, including several multi-family developments.
- Concentration of employment is greatest at the heart of downtown, but clusters of businesses also are located along the major roadways.
- Major employers in the area include Fred Meyer, Marquis at Home, and Pro Logix, with numerous smaller businesses also in the area.
- High concentration of neighborhood amenities in the downtown core with some amenities also in and around the neighborhoods surrounding the downtown.
- Area features good access from a variety of large arterials streets, making it easily accessible, but also somewhat isolated.
- Transportation features include:
  - » East-west traffic flows primarily on SW Tualatin Sherwood Road, with several intersecting north-south arterials; most major intersections considered congested and/or high collision locations.
  - » Served by TriMet bus lines 76 and 96 and by the Westside Express Service (WES) commuter rail.
  - » Area includes relatively dense network of pedestrian facilities, including both sidewalks and multi-use paths. Planned trails will further enhance pedestrian connections to other parts of the city.
  - » Some gaps in the pedestrian network on the southern edge of downtown along Sagert Road.

9. Teton / Leveton & 108th / Herman Road

Overview and Existing Development

The Teton/Leveton area is home to an array of industrial and commercial businesses. There is a wetland/floodplain that runs through the middle of this area. There is significant vacant land both north and south of Leveton Road as well as southwest of UPS.

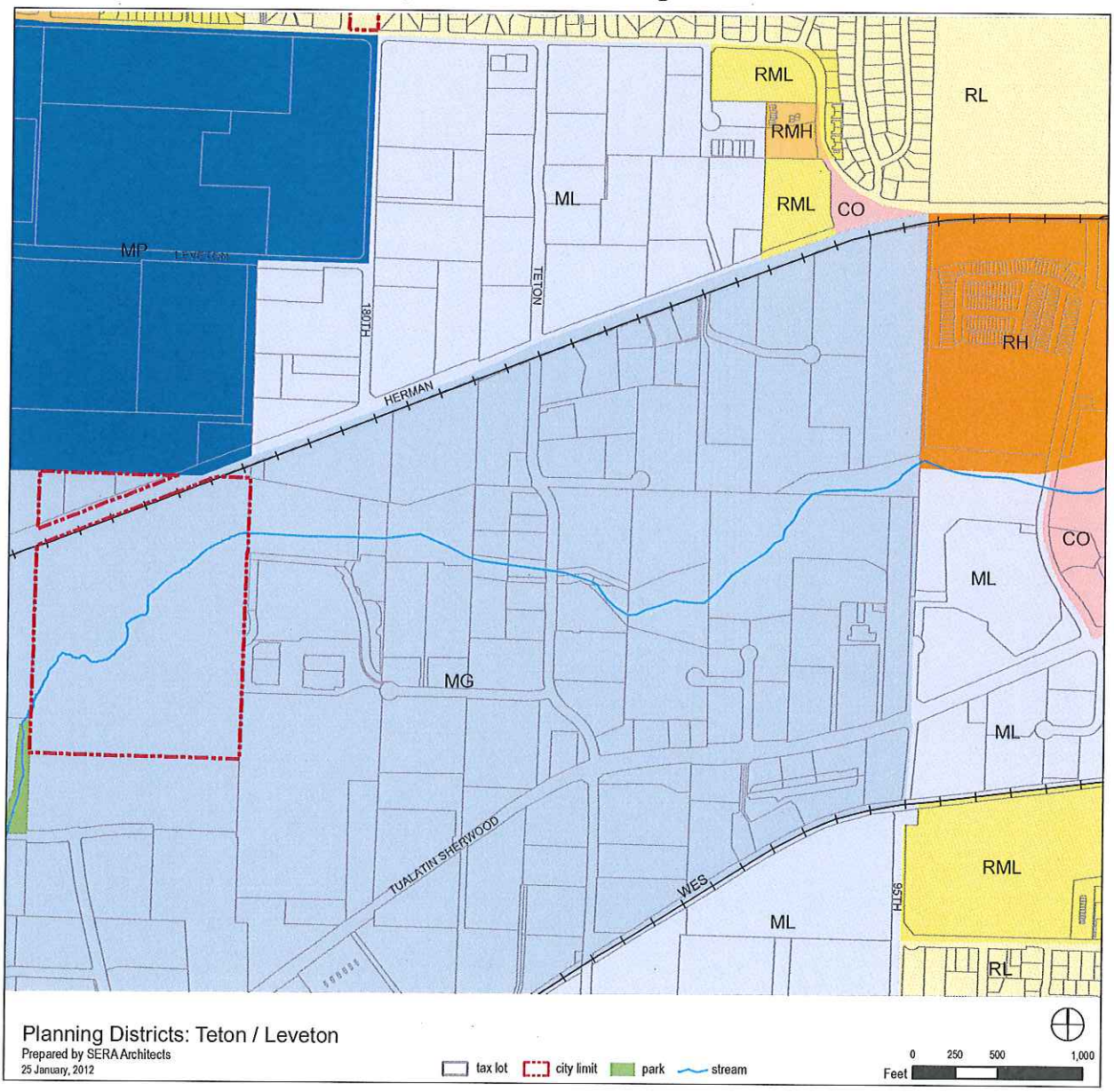
Figure 33. Teton / Leveton & 108th / Herman Road Existing Development



Designated Land Uses

The Teton-Leveton focus area is predominately zoned for manufacturing and includes three designations: Light Manufacturing (ML), General Manufacturing (MG), and Manufacturing Park (MP) Planning Districts. All three districts provide for some level of manufacturing and industrial use and associated retail sales. The ML district is limited to those activities that will be more compatible with adjacent commercial and residential than manufacturing activities in the MG district. The MP district emphasizes development of modern, large-scale specialized manufacturing and related uses and research facilities, and provides a campus-like setting. The eastern edge of this focus area also abuts some high and medium-low density residential areas.

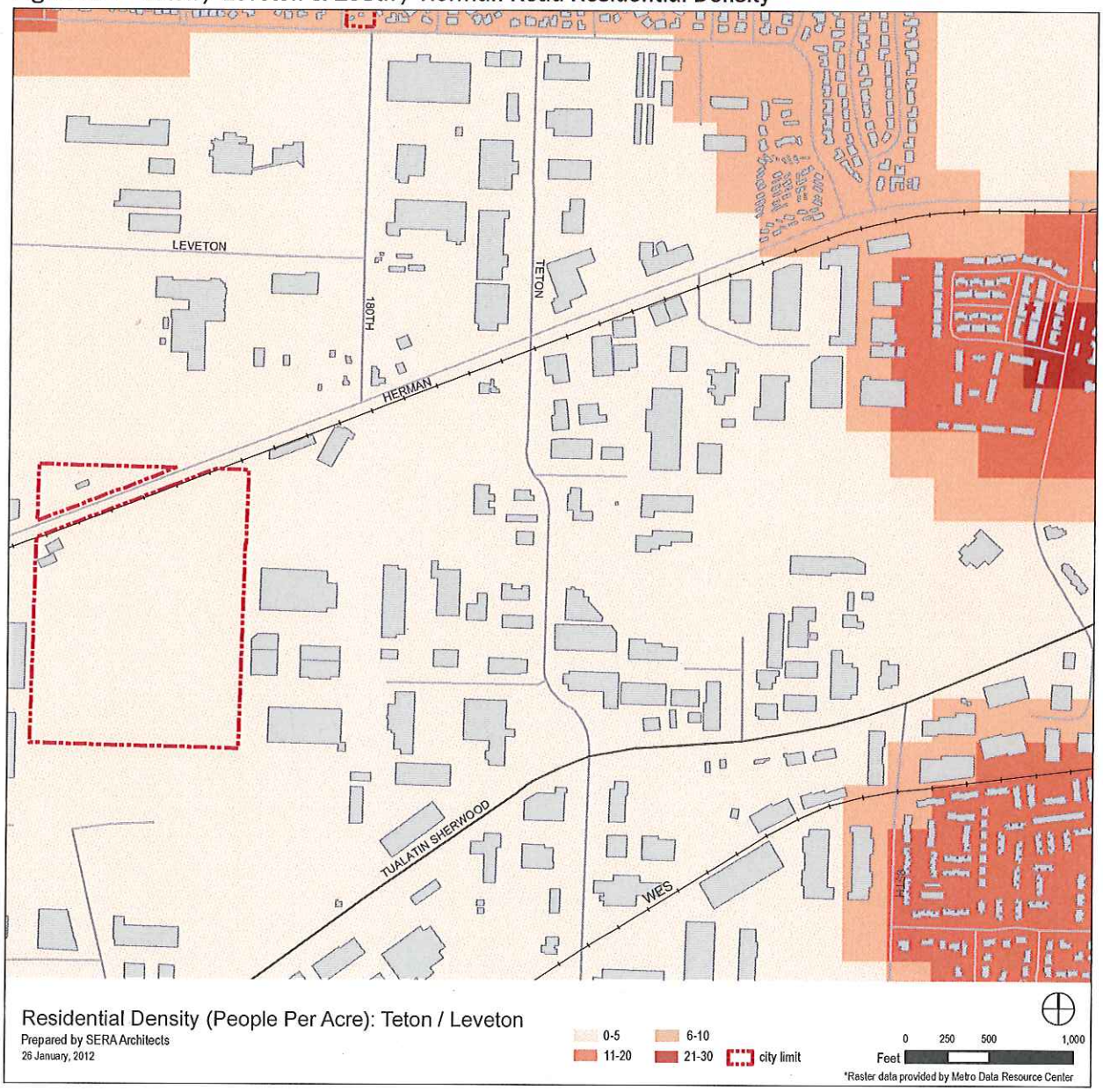
Figure 34. Teton / Leveton & 108th / Herman Road Planning Districts



Residential Density

There is little residential density in the central part of the Teton / Leveton area since it is largely zoned for and developed with commercial/industrial uses. There are moderately dense residential neighborhoods to the east where there are multi-family developments and low to moderate residential density to the north where there is a single-family neighborhood.

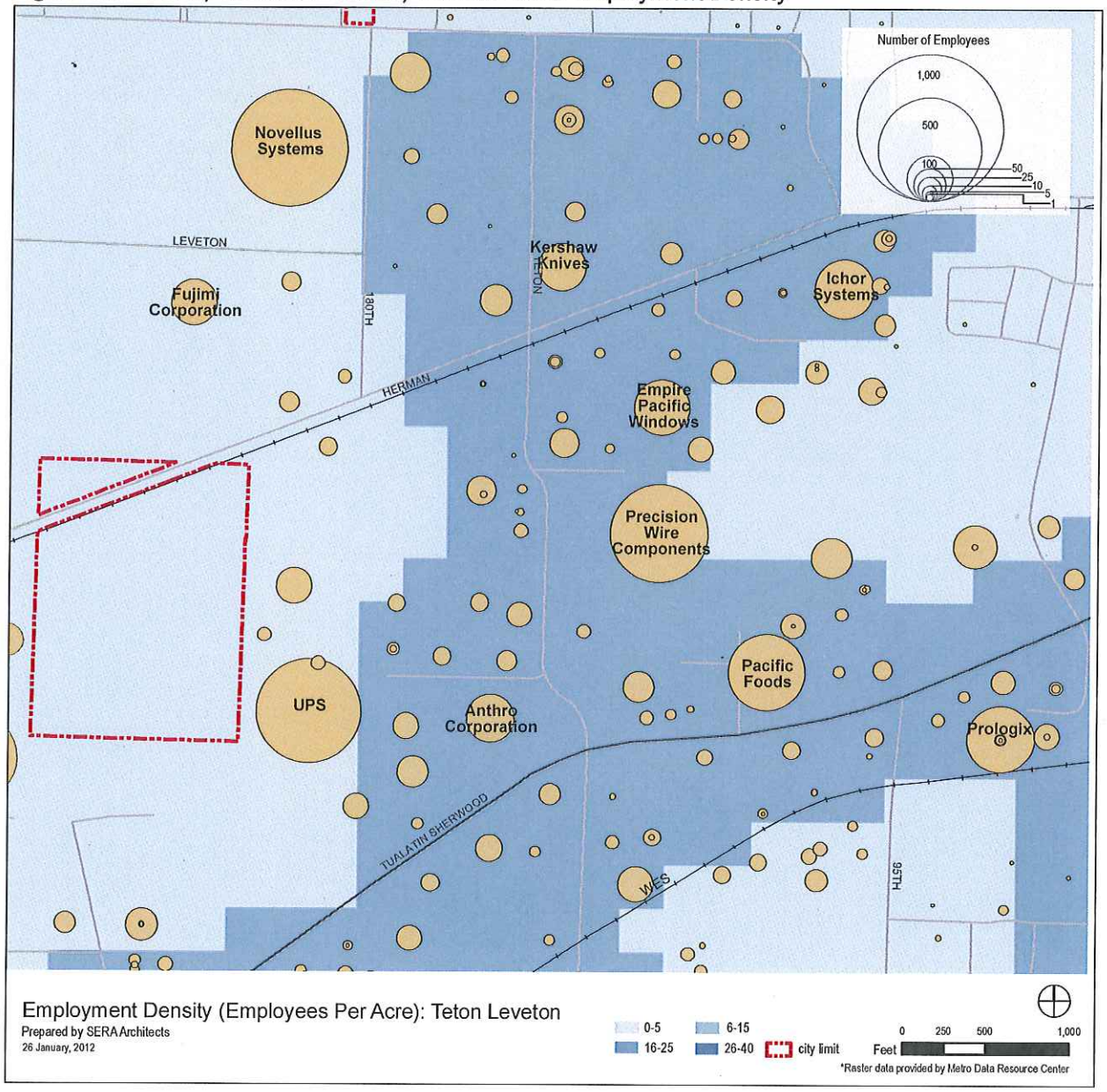
Figure 35. Teton / Leveton & 108th / Herman Road Residential Density



Employment Density

Employment density in the Teton / Leveton area is relatively low despite the number of major employers in the area. This is likely due to the suburban industrial nature of the development. Major employers include Novellus Systems, Kershaw Knives, Ichor Systems, Fujimi Corporation, Empire Pacific Windows, Precision Wire Components, Pacific Foods, UPS, Anthro Corporation, and Prologix, although there are also quite a few smaller employers in the area.

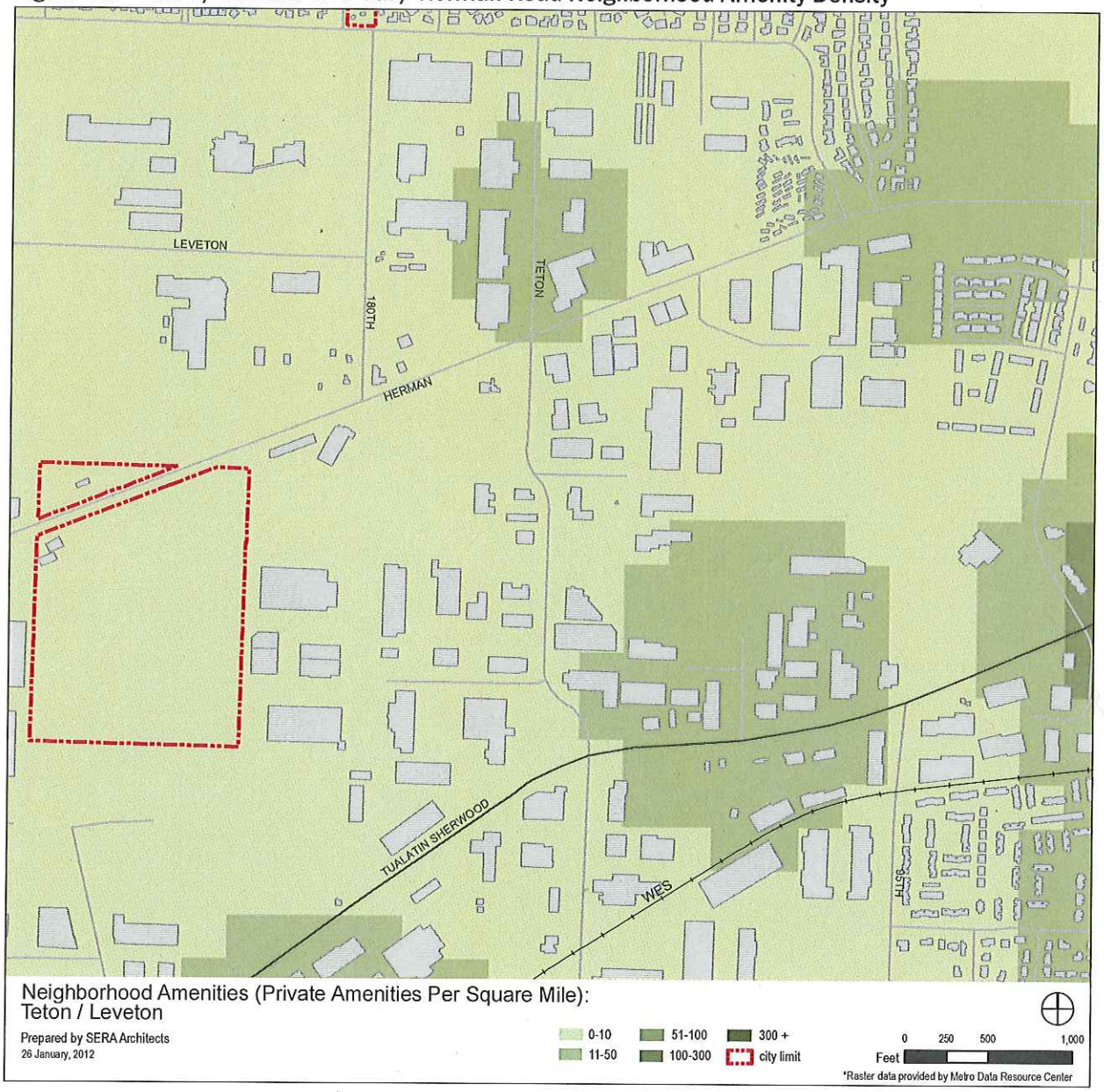
Figure 36. Teton / Leveton & 108th / Herman Road Employment Density



Neighborhood Amenities

There are few neighborhood amenities in the Teton / Leveton area. This is unsurprising given the nature of the businesses in the area and the relatively low density overall. Employees and residents in this area may have to travel to other parts of the city to meet their daily needs, to go out for a meal, etc.

Figure 37. Teton / Leveton & 108th / Herman Road Neighborhood Amenity Density



Development Opportunities and Constraints

From a market perspective, the western industrial areas of Tualatin are largely similar. They offer substantively the same location attributes to prospective industrial and office users.

As an employment zone, the area has many advantages. It is characterized by many active businesses, as well as large developable parcels for new businesses. It has generally excellent access to I-5 and OR 99W. The types of smaller support businesses and suppliers which are common around larger manufacturers are already in place. As the Portland Metro area faces a constrained supply of large industrial parcels, Tualatin offers an ample supply.

Estimated upper pricing levels are shown in Table 11 below. Office and retail rents are lower than in the other focus areas.

Table 11. Estimated Upper Pricing Levels - Teton / Leveton

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$12/sf/yr
Warehouse	$6/sf/yr
Office	$18/sf/yr
Retail	$18/sf/yr
Residential rent	N/A
Home Pricing (for sale)	N/A

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Viable near-term development forms, absent public policy changes or incentives, are identified in Table 12 below.

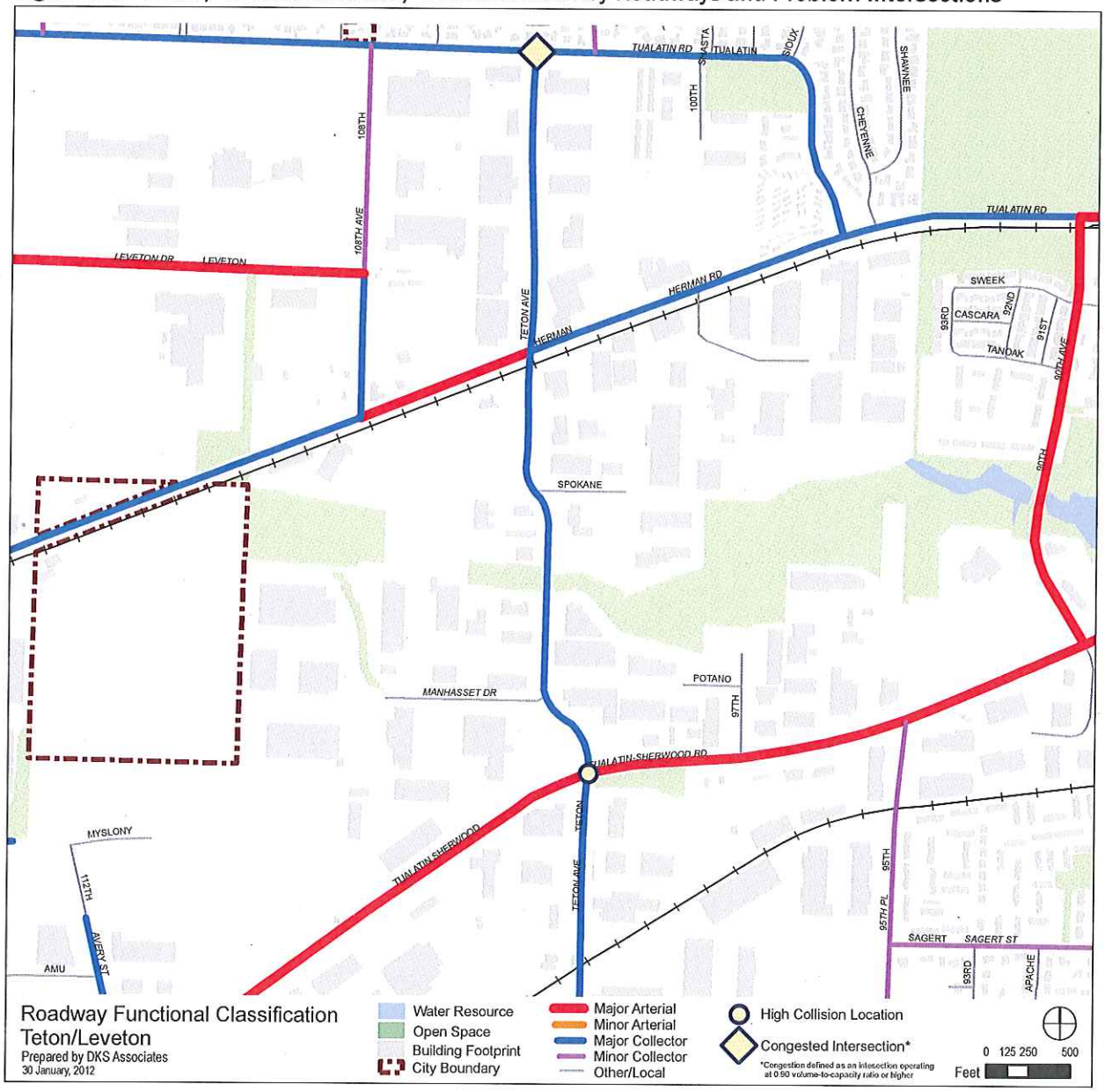
Table 12. Viable Near-to-Mid-Term Development Forms - Teton / Leveton

Land Use	Likely Development Forms
Industrial	1 story workspace, 2-story office space
Office	3-4 story
Retail	Single story
Rental Housing	N/A
For-Sale Housing	N/A
Parking	Surface

Key Roadways

East-west traffic through this area is primarily served by SW Tualatin Sherwood, SW Tualatin, and SW Herman Roads, with SW Teton Avenue providing a north-south connection between them. Due to the amount of industrial and manufacturing activity in this area, all of those roads are considered designated truck routes by the city. The SW Tualatin Road/Teton Avenue intersection is highly congested - it is the only intersection in the city that currently fails to meet the city's traffic operations standards. The SW Tualatin Sherwood Road/Teton Avenue intersection is a high collision area, and there was one bicycle/vehicle crash recorded along this stretch of SW Tualatin Sherwood Road from 2008 through 2010.

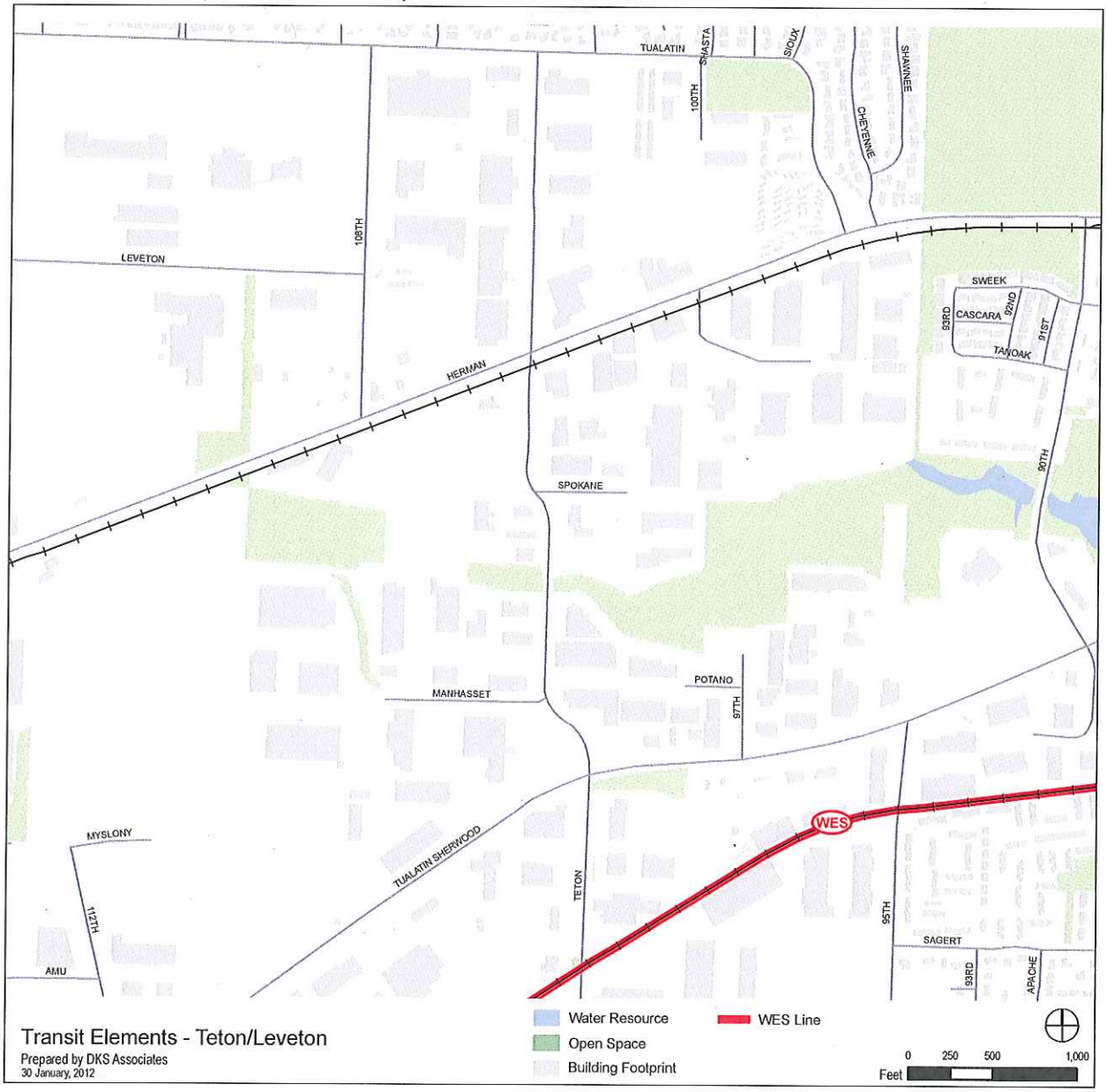
Figure 38. Teton / Leveton & 108th / Herman Road Key Roadways and Problem Intersections



Transit Service

TriMet does not provide fixed route bus service within the Teton-Leveton focus area. The WES commuter rail line travels through the area, but there is no station stop located within the focus area boundary. There are no TriMet bus routes that travel through this focus area. This area is served by the Tualatin Shuttle dial-a-ride service.

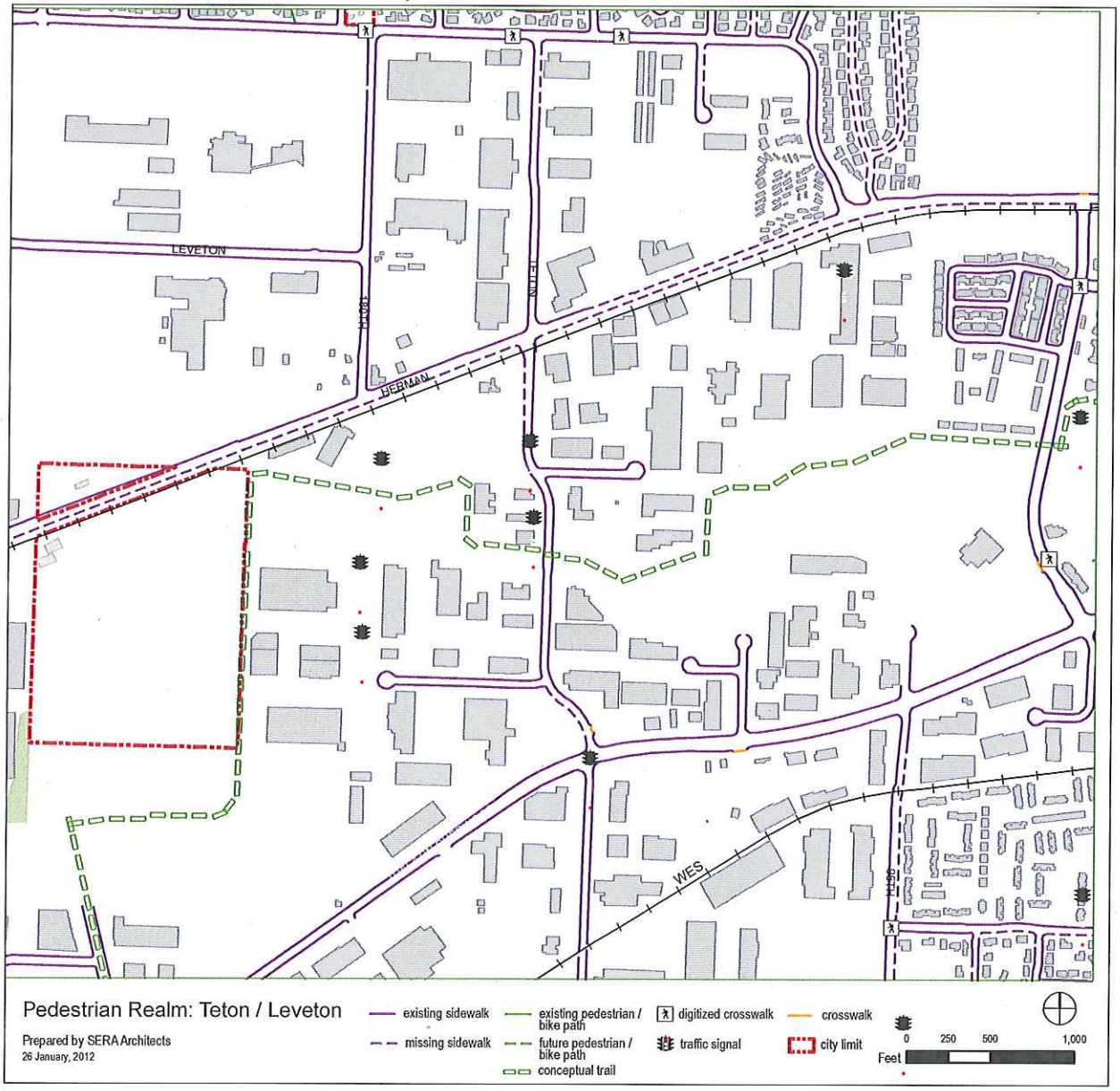
Figure 39. Teton / Leveton & 108th / Herman Road Transit Service



Pedestrian Facilities

The block size in the Teton / Leveton & 108th / Herman Road area is quite large and there are few off-street trails to provide additional connections for pedestrians and cyclists. There are sidewalks along Tualatin-Sherwood Road, but not along much of Herman Road. There are also gaps along some of the side streets in the area. There are traffic lights at most of the major intersections in the area; however, because they are spaced fairly far apart, the opportunities to cross the major roads are relatively few and far between. The conceptual alignment of the Tonquin Trail runs through the center of this area between Herman Road and Tualatin-Sherwood Road along a stream corridor.

Figure 40. Teton / Leveton & 108th / Herman Road Pedestrian Facilities



Summary of Key Facts

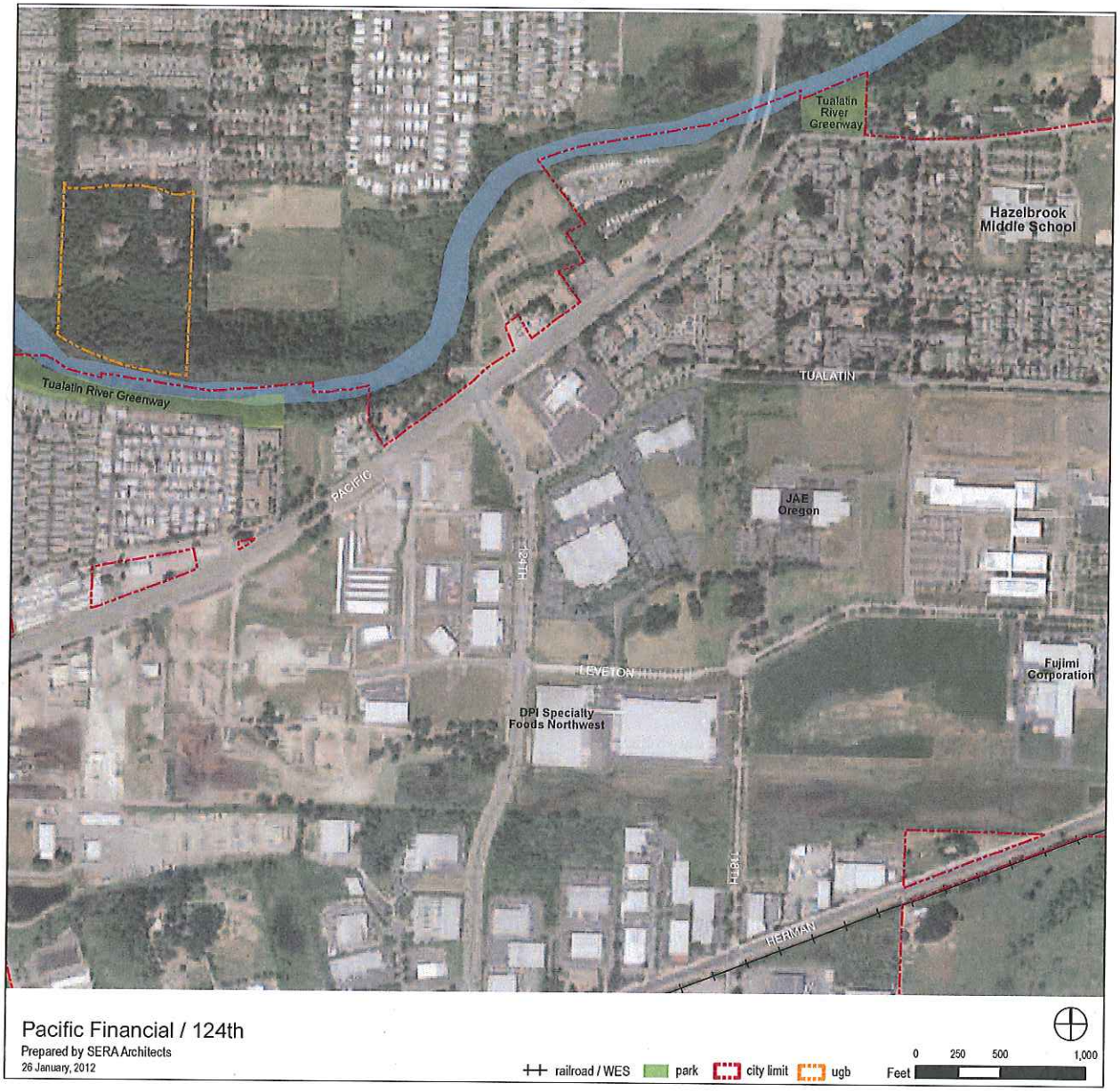
- Home to an array of industrial and commercial businesses.
- Wetland/floodplain runs through the middle of this area.
- Predominately designated for manufacturing including light and general manufacturing and manufacturing parks.
- Few residents in the area, given the predominance of employment uses but neighborhoods to the east include higher concentrations of housing.
- Significant number of employers, including Novellus Systems, Kershaw Knives, Ichor Systems, Fujimi Corporation, Empire Pacific Windows, Precision Wire Components, Pacific Foods, UPS, Anthro Corporation, and Prologix plus other smaller employers. However, average number of employees per acre is relatively low given land use patterns.
- Relatively few neighborhood amenities in the area with day-to-day shopping and other non-employment needs met in other areas.
- Area has many advantages as an employment zone, including many active businesses, large developable parcels for new businesses, and generally excellent access to I-5 and OR 99W; can help meet future regional need for large industrial parcels of land.
- Transportation features include:
  - » SW Tualatin-Sherwood Road, Tualatin, and Herman Roads serve as primary east-west raods, with SW Teton Avenue providing a north-south connection between them, all of which are considered designated truck routes; SW Tualatin Road/Teton Avenue intersection is considered highly congested and SW Tualatin Sherwood Road/Teton Avenue intersection is a high collision area.
  - » No TriMet transit service; dial-a-ride service operated by Chamber of Commerce provide services to major employers.
  - » Sidewalks located along major roads; challenges for pedestrians and bicyclists include very large block sizes, few off-street trails and intersections and cross-walks spaced quite far apart.

10. Pacific Financial & 124th

Overview and Existing Development

This area is developed with a mix of industrial and commercial businesses to the south and some residential areas to the north. The commercial and industrial areas are generally sited on large lots with ample parking. The residential is primarily multi-family. Hazelbrook Middle School is located in the northeast corner of this area. There is a wetland/stream corridor running through this area between Herman Road and Leveton Drive. There is significant vacant land between Tualatin Road and Leveton Drive, as well as just south of Leveton Drive.

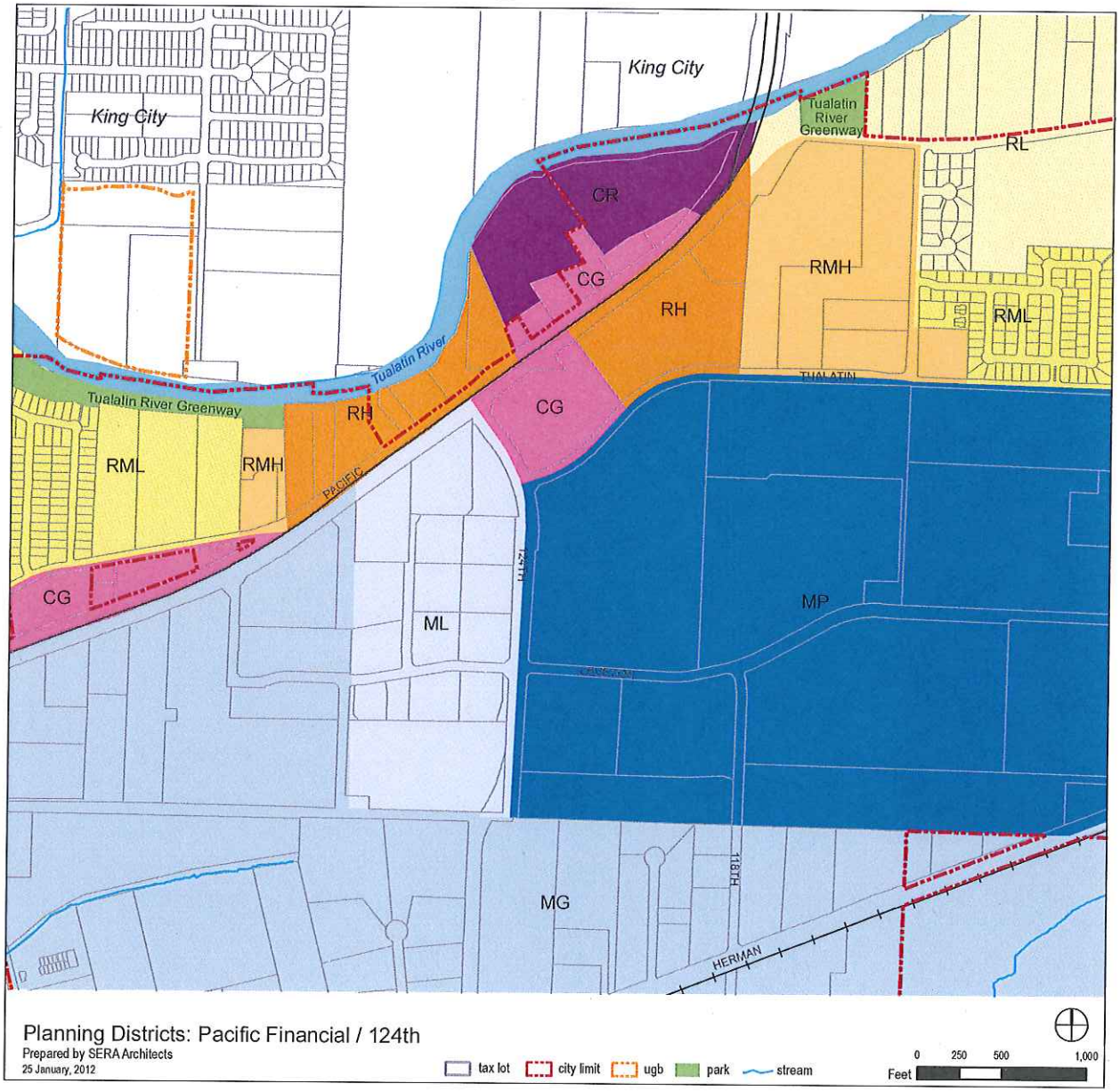
Figure 41. Pacific Financial & 124th Existing Development



Designated Land Uses

The predominant designation in this focus area is Manufacturing Park Planning District (MP), which is intended to provide for development and protection of modern, large-scale specialized manufacturing and related uses and research facilities. The district provides an aesthetically attractive working environment with park or campus like grounds, attractive buildings, ample employee parking and other amenities appropriate to an employee oriented activity. There is also a large amount of land designated for light and general manufacturing (ML and MG) which provide for a wide range of manufacturing, and some industrial, activities. General commercial (CG) and medium to high density residential designations (RMH and RH) are located along Pacific Highway.

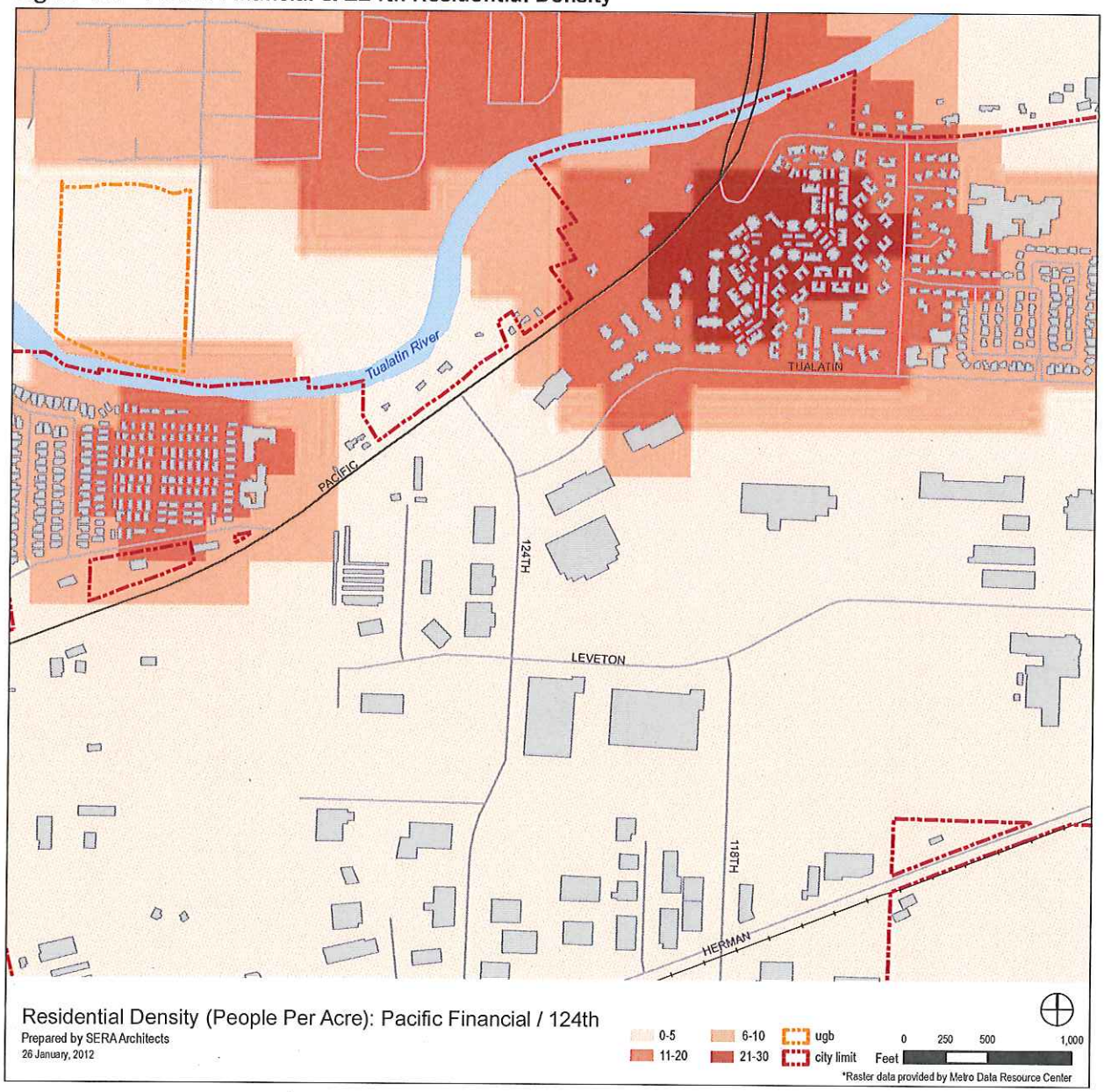
Figure 42. Pacific Financial & 124th Planning Districts



Residential Density

The northern part of the Pacific Financial / 124th area has pockets of moderate to high residential density, ranging from 11 to 30 persons per acre, where there are fairly large multi-family developments. These are bordered by single-family neighborhoods at a lower density of 6 to 10 persons per acre. The commercial/industrial areas have few or no residents.

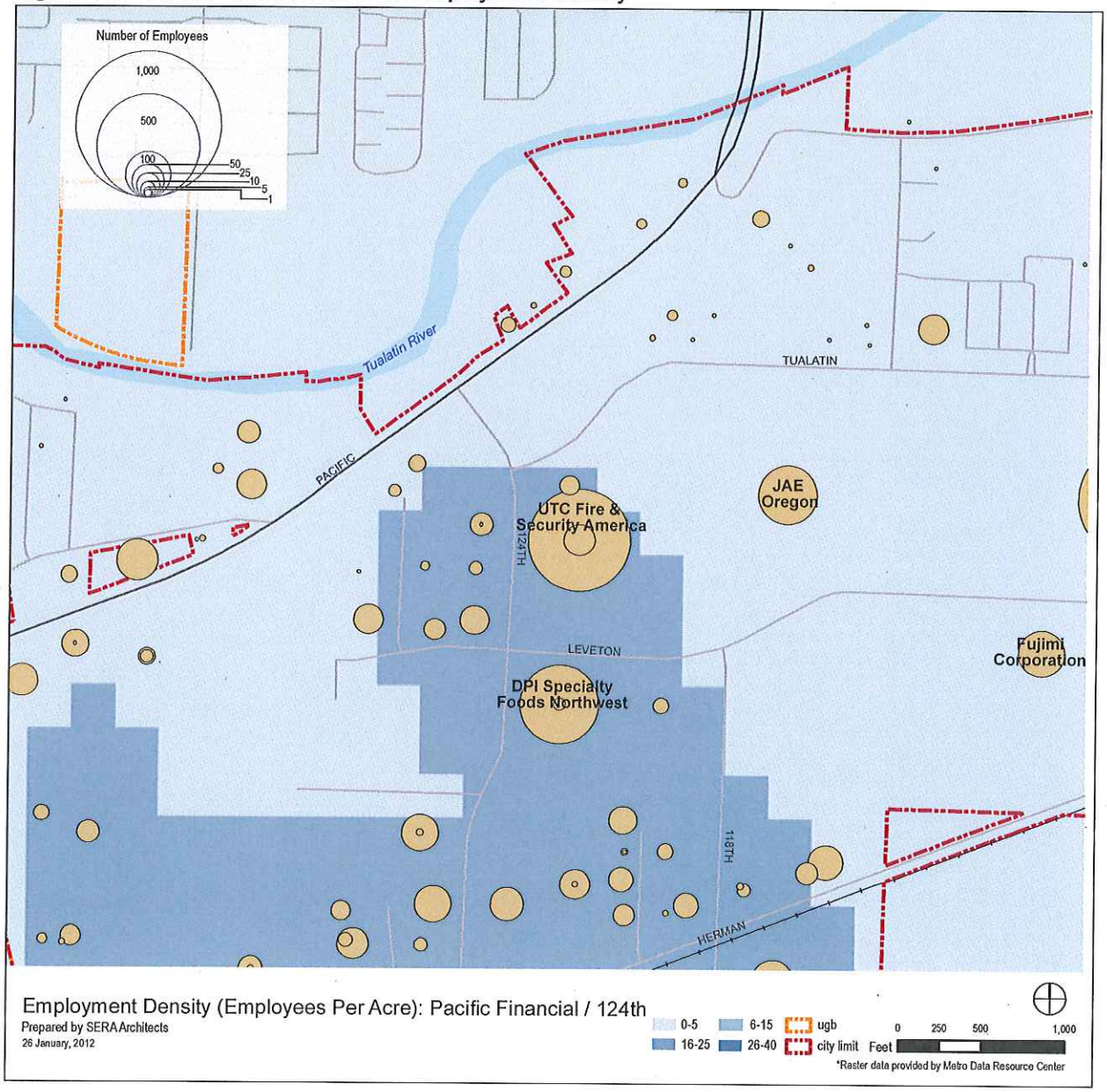
Figure 43. Pacific Financial & 124th Residential Density



Employment Density

There are several major employers in the Pacific Financial / 124th area, including JAE Oregon and DPI Specialty Foods Northwest (UTC Fire & Security - America has closed the location shown on the map since the data shown on the map was last updated). There are also scattered small to moderate sized employers along OR 99W and along Herman Road. Overall, however, the employment density in this area is fairly low due to the large amount of vacant land and low density development style of the existing development.

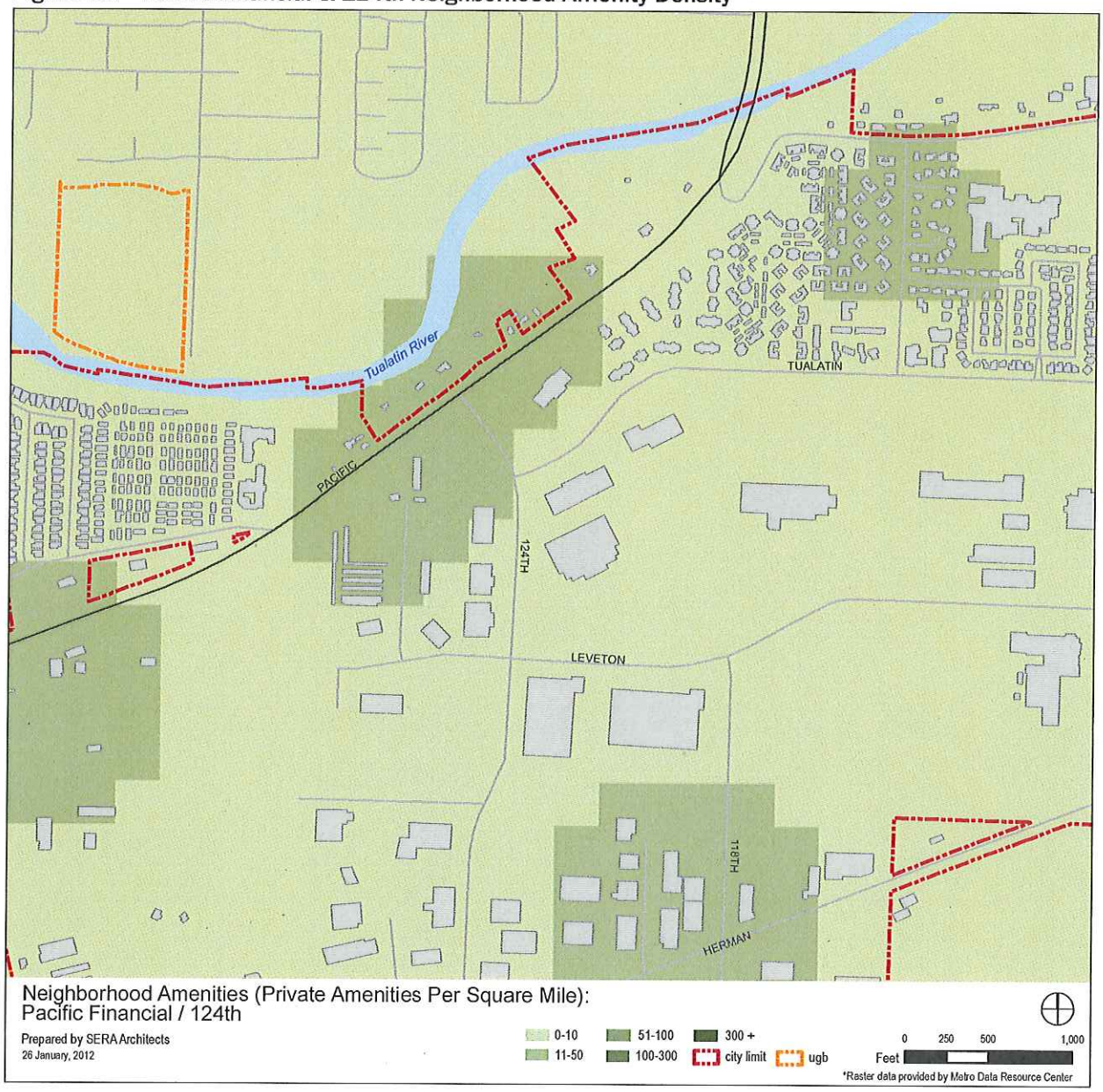
Figure 44. Pacific Financial & 124th Employment Density



Neighborhood Amenities

There are few neighborhood amenities in the Pacific Financial / 124th area. This is unsurprising given the nature of the businesses in the area and the relatively low density overall. Employees and residents in this area may have to travel to other parts of the city to meet their daily needs, to go out for a meal, etc.

Figure 45. Pacific Financial & 124th Neighborhood Amenity Density



Development Opportunities and Constraints

The Pacific Financial/ 124th subarea shares the advantages of the rest of the industrial area for attracting employment uses. It also features residentially and commercially zoned land, and is the one focus area located on OR 99W. There is a concentration of multi-family housing located to the northeast of the 124th/99W intersection.

Estimated upper pricing levels are shown in Table 13 below.

Table 13. Estimated Upper Pricing Levels - Pacific Financial / 124th

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$12/sf/yr
Warehouse	$6/sf/yr
Office	$22/sf/yr
Retail	$22/sf/yr
Residential rent	$1.20/sf/yr
Home Pricing (for sale)	$160/sf

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Viable near-term development forms, absent public policy changes or incentives, are identified in Table 14 below.

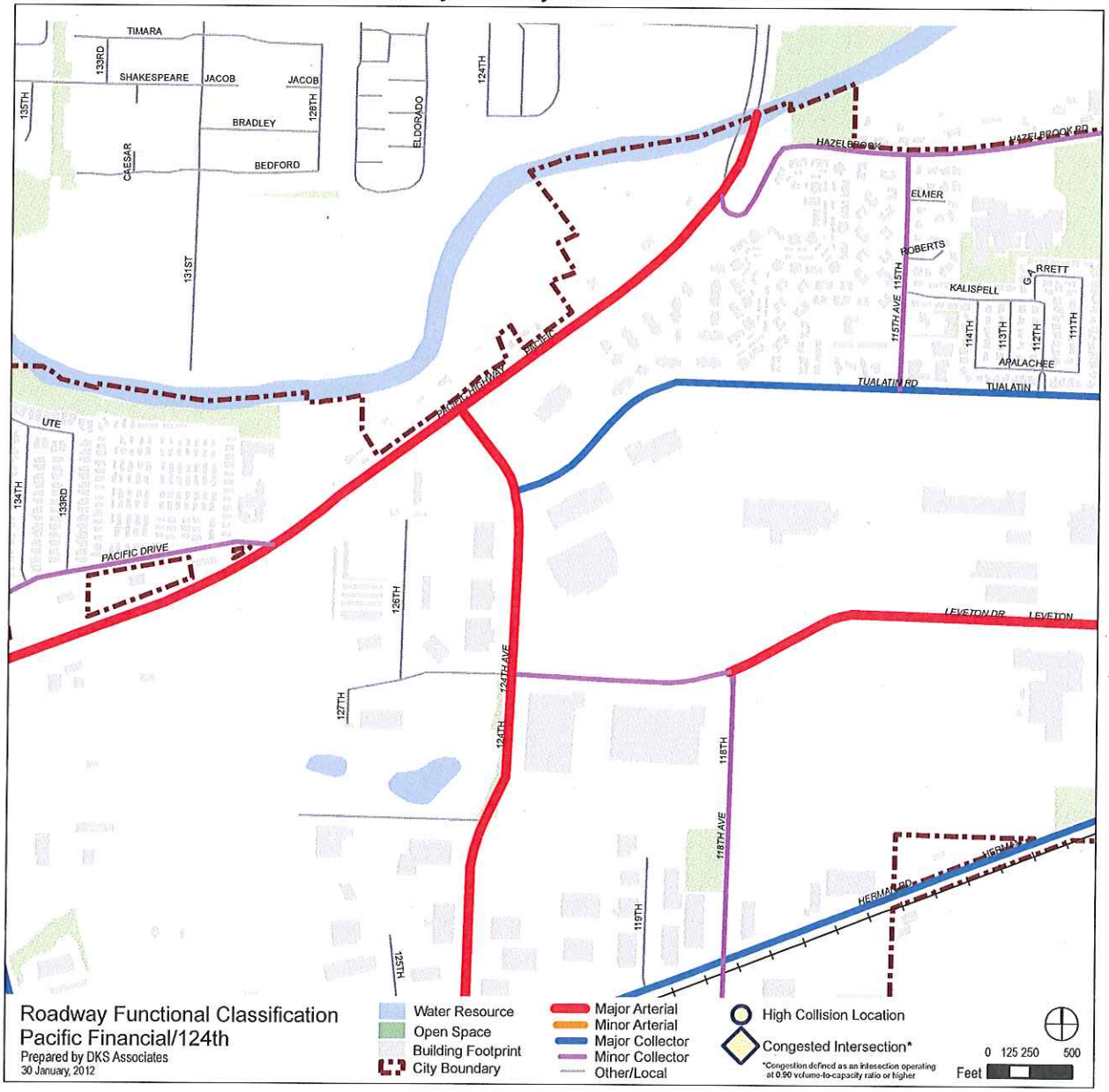
Table 14. Viable Near-to-Mid-Term Development Forms - Pacific Financial / 124th

Land Use	Likely Development Forms
Industrial	1 story workspace, 2-story office space
Office	3-4 story
Retail	Single story
Rental Housing	2-3 story
For-Sale Housing	2-3 story, townhome
Parking	Surface

Key Roadways

SW 124th Avenue provides the primary north-south connection through this focus area and ultimately connects OR 99W (Pacific Highway) with SW Tualatin Sherwood Road. It also connects to SW Herman Road, which is an important collector for the industrial and manufacturing activities in this area. For that reason, both SW 124th Avenue and SW Herman Road are designated as truck routes by the city (OR 99W is also considered a federal truck route through this area). Traffic volumes are relatively low along SW 124th Avenue when compared with other arterial streets in Tualatin. There are no high collision areas or congested intersections identified in this focus area, and no non-vehicle crashes reported from 2008 through 2010

Figure 46. Pacific Financial & 124th Key Roadways and Problem Intersections



Transit Service

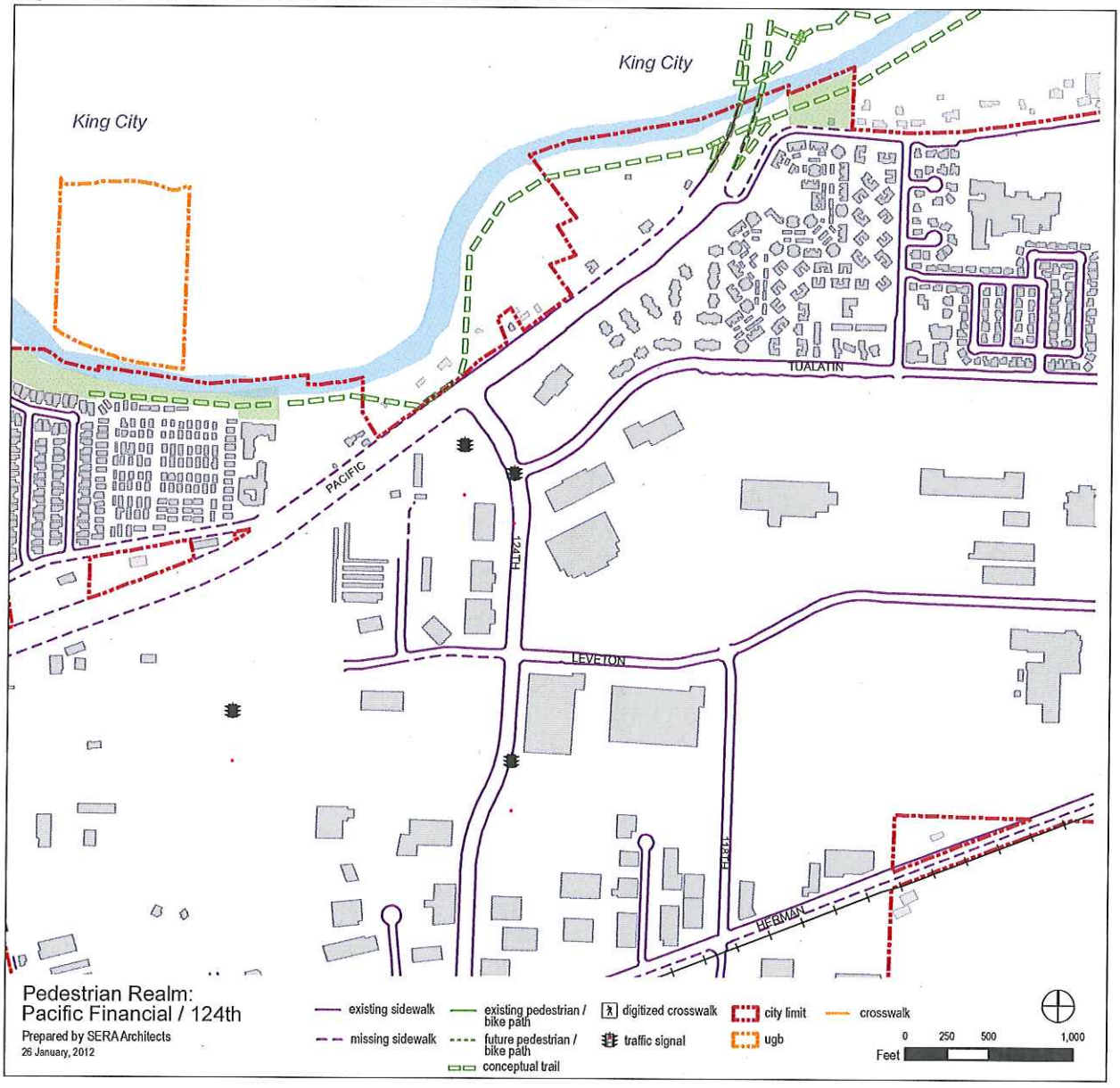
There are two TriMet bus lines located in this focus area: line 12 and line 94. Line 12 connects Gresham to Sherwood via downtown Portland; it does not serve the center of Tualatin, but serves OR 99W as it passes through the city's western edge. Line 12 operates every 30-60 minutes depending on the time of day. (TriMet has proposed altering this line so that it a new local service would run between Sherwood and Tigard, requiring a transfer to Line 12.) Line 94 connects Sherwood, King City, Tigard, Burlingame and Portland City Center. It travels along Pacific Highway, but does not have a stop within the city of Tualatin. This line is a commuter-oriented express bus with service only on weekdays. This area is also served by the Tualatin Shuttle dial-a-ride service.

Figure 47. Pacific Financial & 124th Transit Service

Pedestrian Facilities

There are significant gaps in the pedestrian network in the Pacific Financial / 124th focus area. Much of OR 99W / Pacific Highway lacks sidewalks on one or both sides, and Herman Road has sidewalks on just one side in this area. The roadway network has large blocks with no off-street trails to provide alternative connections for bicycles and pedestrians. The major intersections have traffic signals but not cross-walks, and they are spaced far enough apart in many cases that crossing the major roads could be difficult for pedestrians. A planned trail along the Tualatin River will enhance connections to other parts of the city, but there are no planned trails within the developed part of the focus area. However, there are roadway connections planned west of 124th that will have sidewalks.

Figure 48. Pacific Financial & 124th Pedestrian Facilities



Summary of Key Facts

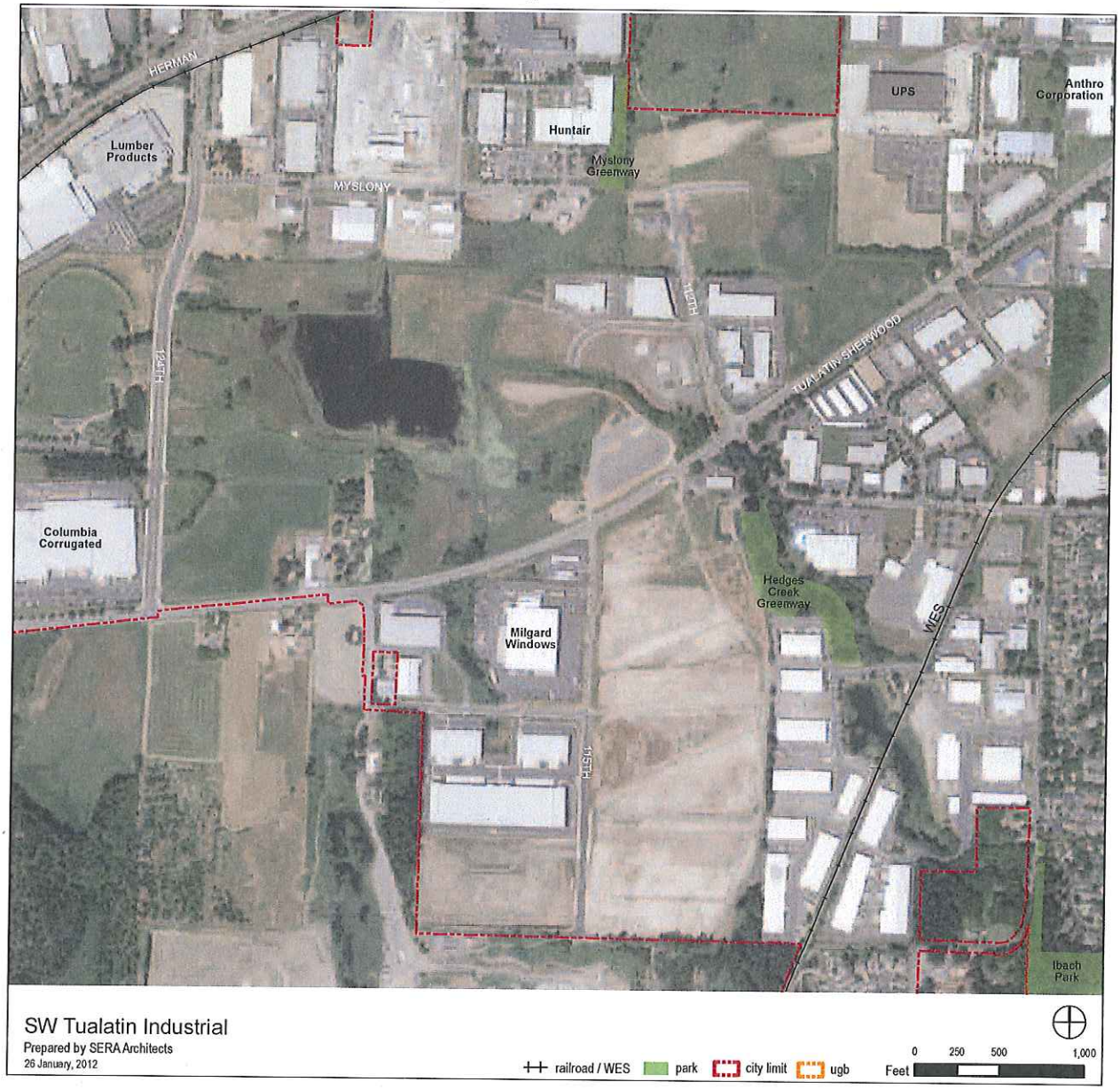
- Mix of industrial and commercial businesses to the south and some residential areas to the north.
- Wetland/stream corridor runs through the area between Herman Road and Leveton Drive.
- Predominant land use designations are manufacturing park, light and general manufacturing; general commercial and medium to high density residential designations are located along Pacific Highway.
- Northern part of the focus area has pockets of moderate to high density residential areas surrounded by more traditional single-family areas.
- Several major employers are located here, including UTC Fire & Security - America, JAE Oregon, and DPI Specialty Foods Northwest plus smaller employers along OR 99W and along Herman Road. However, average number of employees per acre is relatively low given land use patterns.
- Relatively few neighborhood amenities in the area, with the exception of pockets of amenities along OR 99W, near Herman Road and 118th, and within the multi-family residential area north of Tualatin Road.
- Area includes many active businesses, large developable parcels just south of Leveton Drive and between Tualatin Road and Leveton Drive, and good access to I-5 and OR 99W.
- Commercial and industrial areas are generally sited on large lots with ample parking.
- Transportation features include:
  - » SW 124th Avenue is the primary north-south road, with connections to OR 99W (Pacific Highway), SW Tualatin Sherwood, Tualatin, and Herman Roads and SW Teton Avenue. SW 124th Avenue and SW Herman Road are designated as city truck routes.
  - » There are no high collision areas or highly congested intersections identified in this area.
  - » Served by TriMet bus lines 12 and 94 and by shuttle and vanpool services to major employers provided by the Chamber of Commerce.
  - » Area has significant gaps in the pedestrian network, including lacking sidewalks on one or both sides of OR 99W / Pacific Highway and Herman Road in some locations; additional challenges for pedestrians and bicyclists include very large block sizes, few off-street trails or cross-walks, and intersections spaced quite far apart.

11. Southwest Industrial

Overview and Existing Development

The Southwest Industrial area is partially developed with industrial uses, but there are large swaths of vacant land east of 115th Ave, southwest of UPS, and east of 124th Ave. There are wetlands and a stream corridor running through this area that restrict development on some, but not all, of the undeveloped land east of 124th. There is additional vacant land outside the city limits south of Tualatin Sherwood Road.

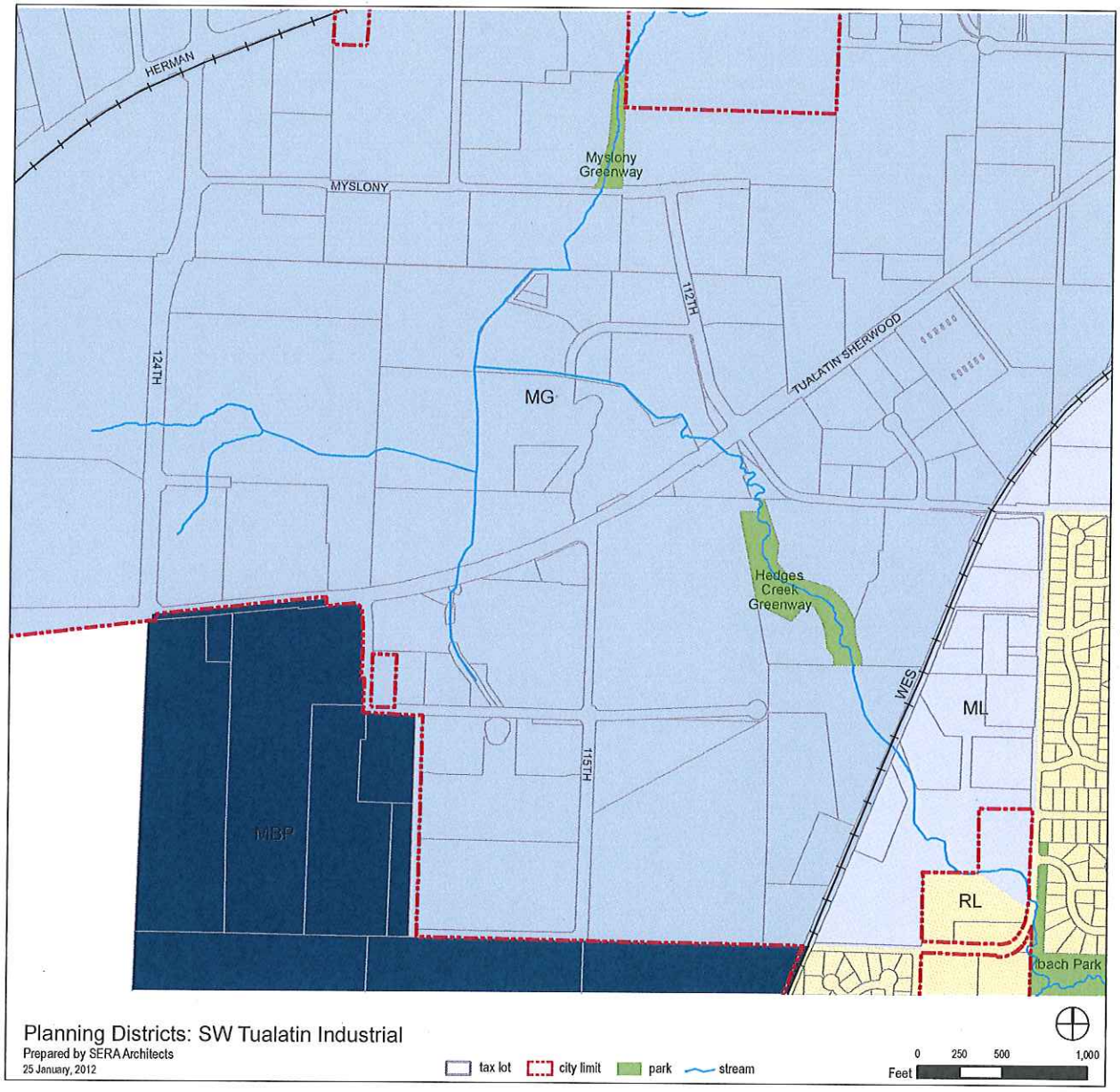
Figure 49. Southwest Industrial Existing Development



Designated Land Uses

The bulk of this focus area is land designated as General Manufacturing Planning District (MG). The district is intended to provide areas suitable for light industrial uses and also for a wide range of heavier manufacturing and processing activities. Some limited retail is also provided in the MG district. This focus area also contains a portion of land designated as Manufacturing Business Park Planning District (MBP), which is intended to provide for industrial development consistent with the Southwest Concept Plan.

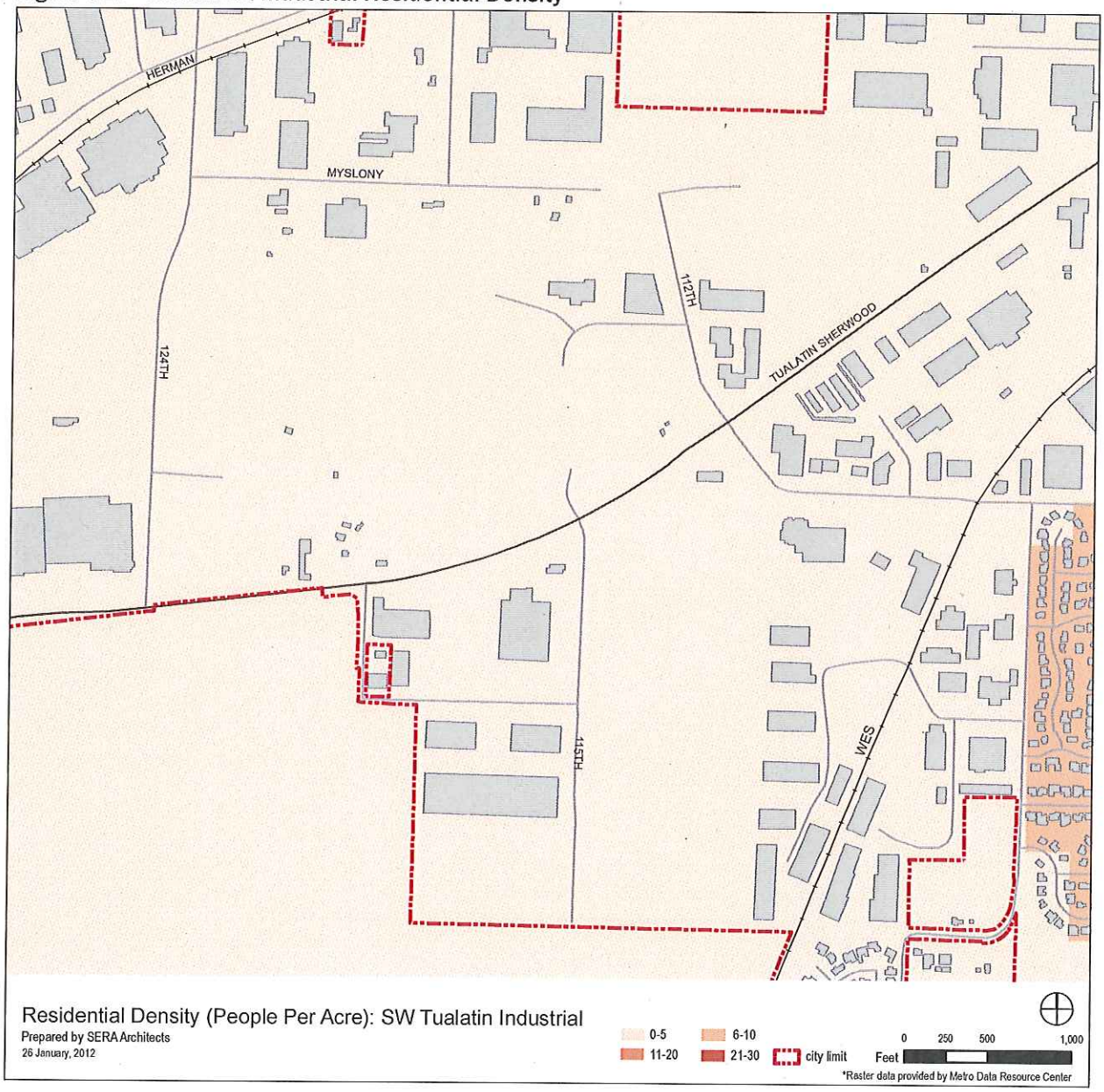
Figure 50. Southwest Industrial Planning Districts



Residential Density

Within the Southwest Industrial area itself there are virtually no residents due to the industrial nature of the area. There are single-family residential neighborhoods on the eastern edge of the area that have relatively low density.

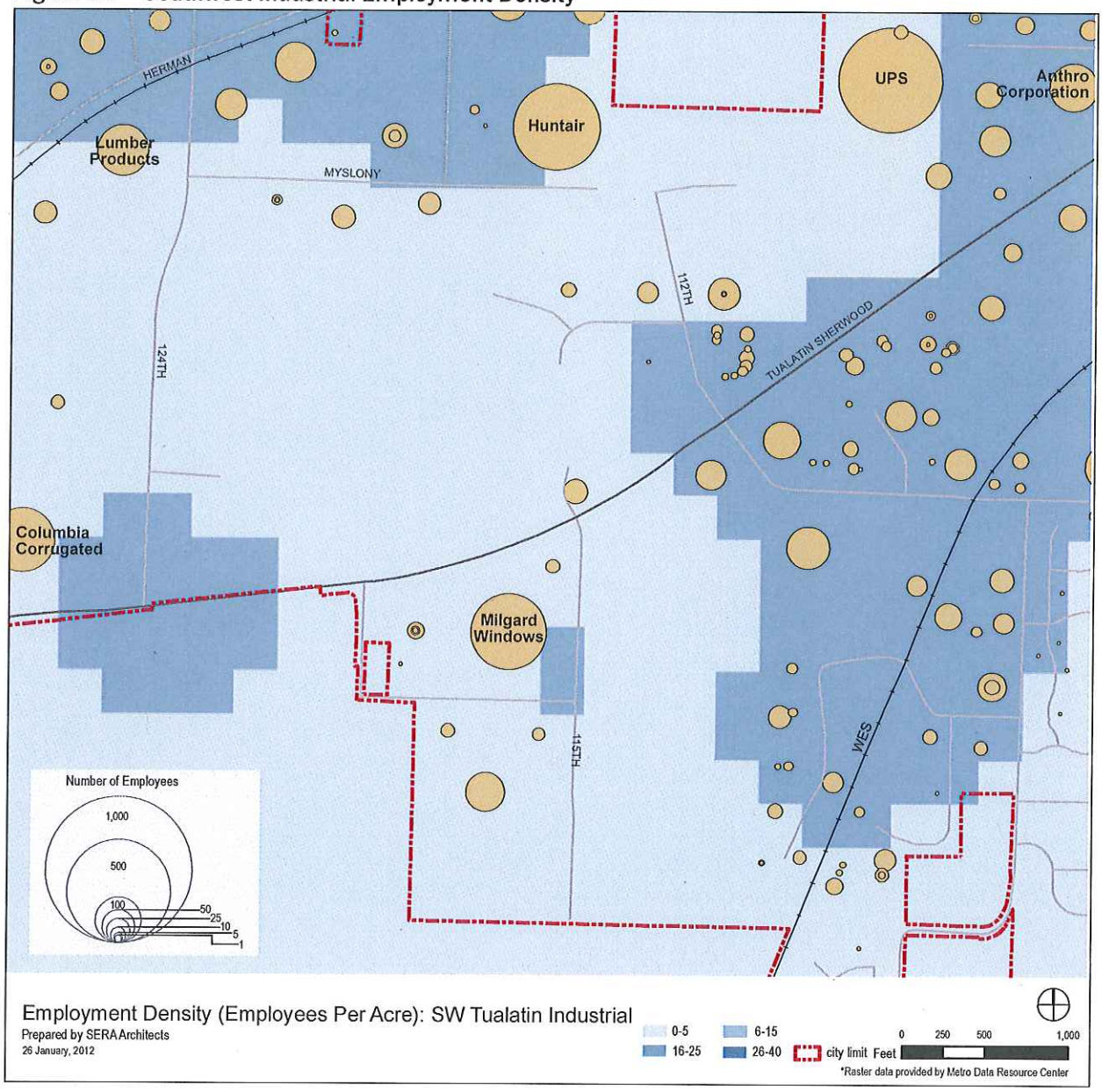
Figure 51. Southwest Industrial Residential Density



Employment Density

Due to the large amount of undeveloped land in the Southwest Industrial area, the employment density is relatively low. There are some major employers in the area, including UPS, Huntair, Lumber Products, Columbia Corrugated, and Milgard Windows, as well as many other smaller companies. Employment density is greater on the eastern and northern edges of this area.

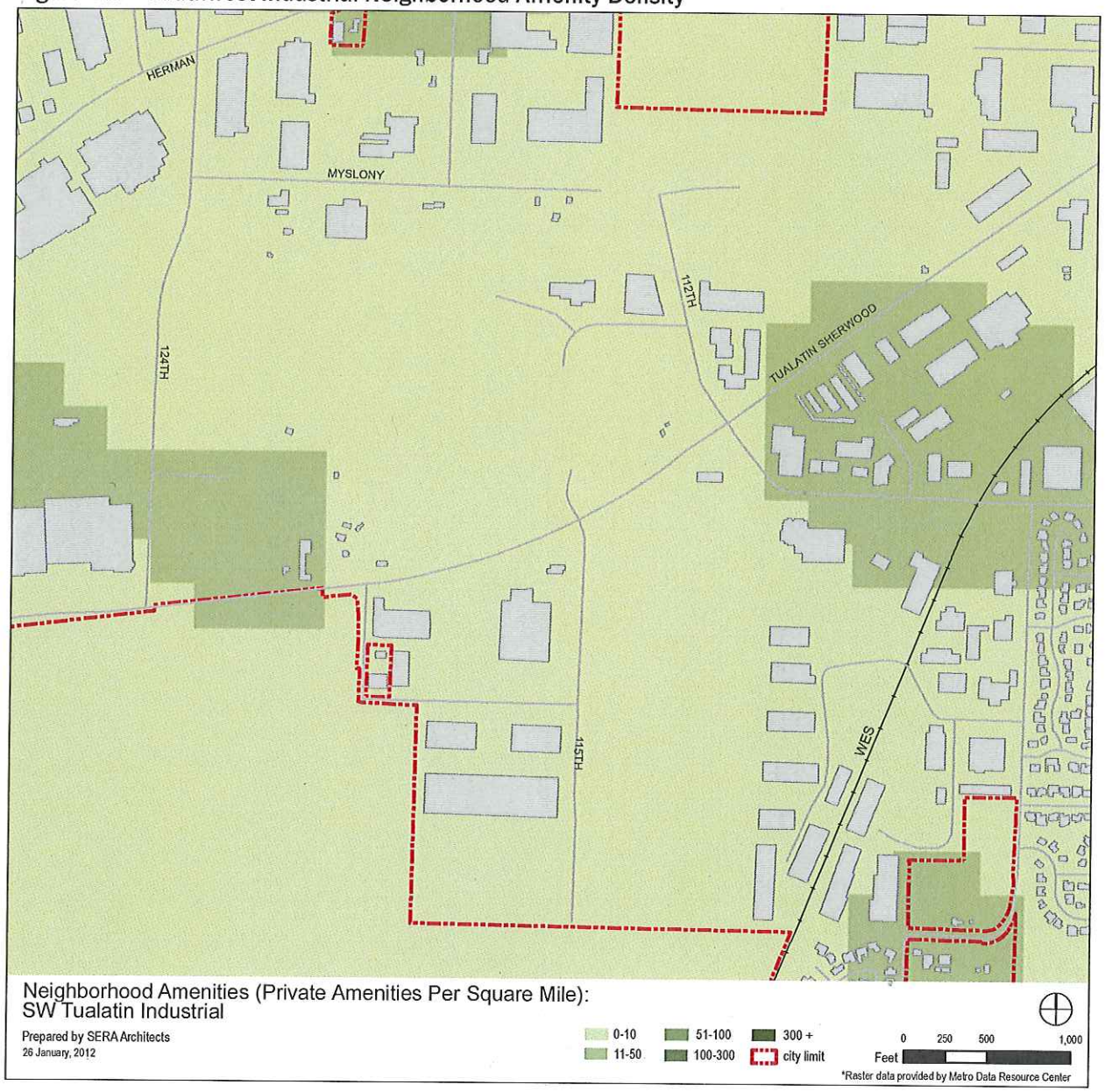
Figure 52. Southwest Industrial Employment Density



Neighborhood Amenities

There are few neighborhood amenities in the Southwest Industrial area. This is unsurprising given the nature of the businesses in the area and the relatively low density overall. Employees and residents in this area may have to travel to other parts of the city to meet their daily needs, to go out for a meal, etc.

Figure 53. Southwest Industrial Neighborhood Amenity Density



Development Opportunities and Constraints

From a market perspective, this area is simiar to the other western industrial areas of Tualatin; it offers substantively the same location attributes to prospective industrial and office users.

As an employment zone, the area has many advantages. It is characterized by many active businesses, as well as large developable parcels for new businesses. It has generally good access to I-5 and excellent access to OR 99W. The types of smaller support businesses and suppliers which are common around larger manufacturers are already in place. As the Portland Metro area faces a constrained supply of large industrial parcels, Tualatin offers an ample supply. The area outside city limits is part of the Southwest Tualatin Concept Plan Area, and is currently a gravel pit; this area is not expected to develop in the next 20 years.

Estimated upper pricing levels are shown in Table 15 below. Office and retail rents are lower than in the other focus areas.

Table 15. Estimated Upper Pricing Levels - SW Industrial

Land Use	Annual Rent / Purchase Price per Square Foot (sf)
Manufacturing / Flex	$12/sf/yr
Warehouse	$6/sf/yr
Office	$18/sf/yr
Retail	$18/sf/yr
Residential rent	N/A
Home Pricing (for sale)	N/A

Source: Loopnet, RMLS, individual properties, Johnson Reid LLC
** Retail and industrial rents are NNN. Office rents are full service.*

Viable near-term development forms, absent public policy changes or incentives, are identified in Table 16 below.

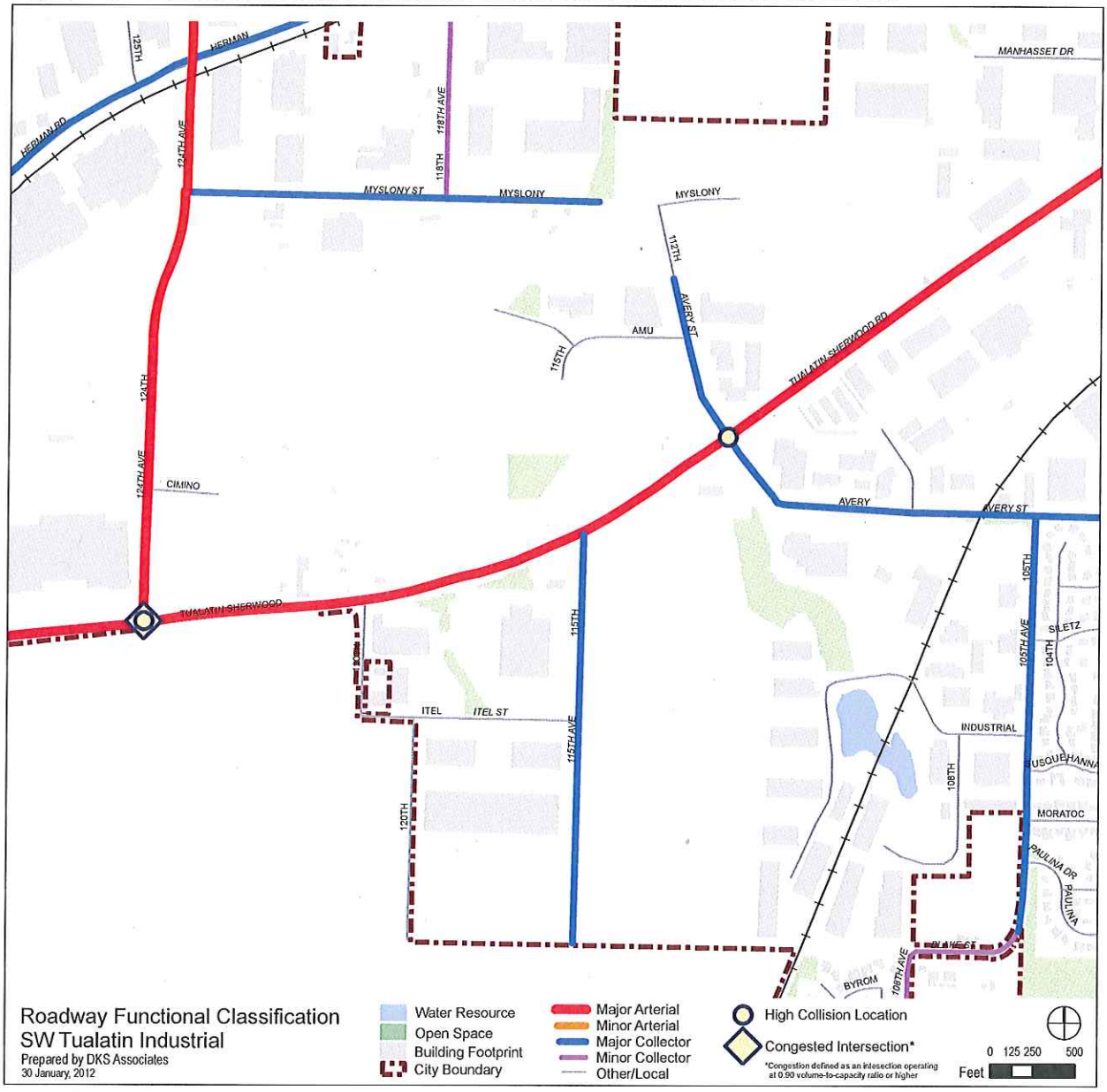
Table 16. Viable Near-to-Mid-Term Development Forms - SW Industrial

Land Use	Likely Development Forms
Industrial	1 story workspace, 2-story office space
Office	3-4 story
Retail	Single story
Rental Housing	N/A
For-Sale Housing	N/A
Parking	Surface

Key Roadways

SW Tualatin Sherwood Road provides the primary east-west access through this area, with SW 124th Avenue serving as a connection north to OR 99W. SW Avery Street and SW 105th Avenue serve as collectors for the industrial and manufacturing activities in the vicinity and are therefore designated as truck routes by the city. The intersection of SW Tualatin Sherwood Road and SW Avery Street is a high collision area. The SW Tualatin Sherwood Road/124th Avenue intersection is both a high collision area and congested. Crash data from 2008 through 2010 indicate one bicycle/vehicle crash along SW 105th Avenue.

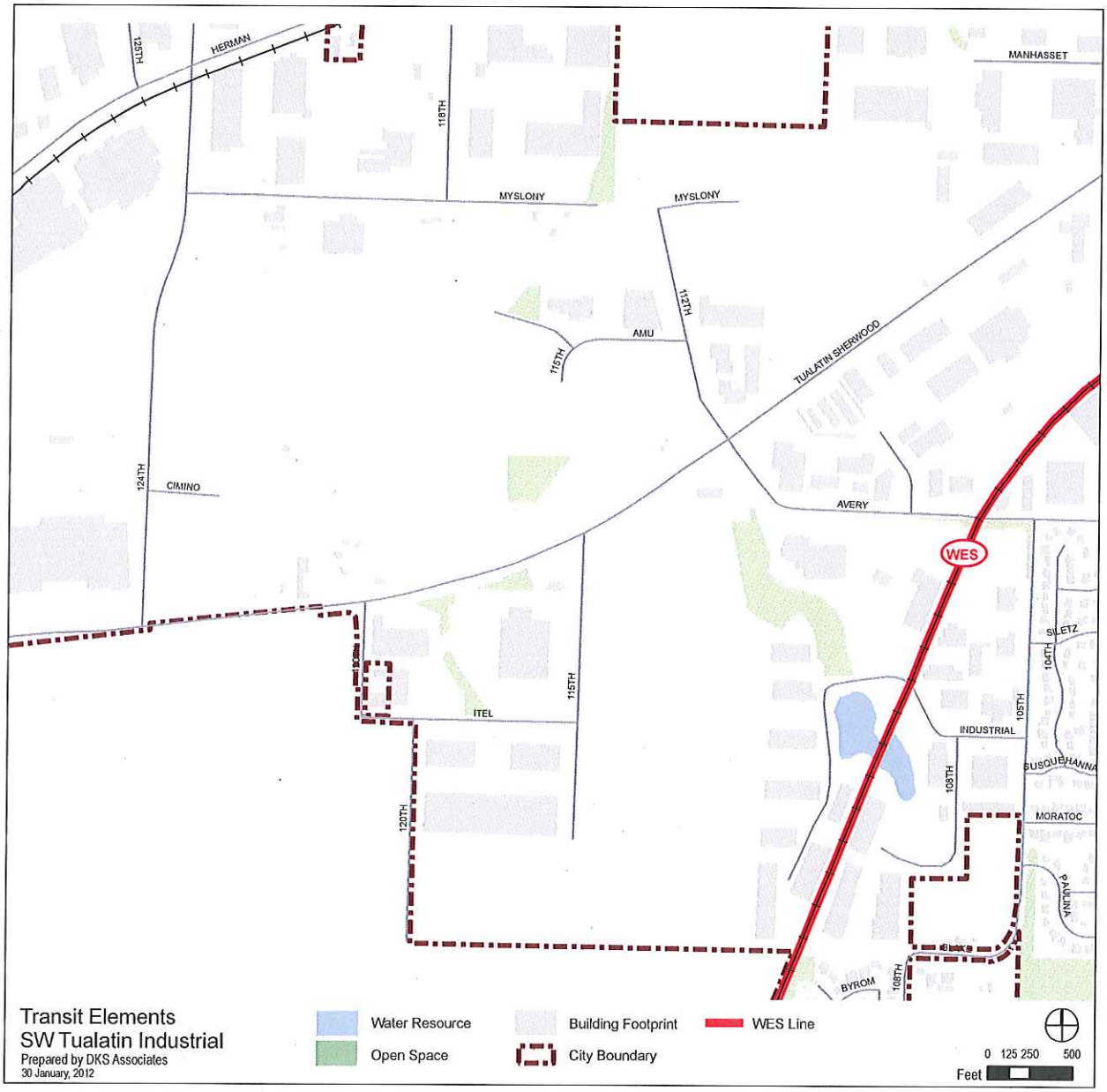
Figure 54. Southwest Industrial Functional Classification and Problem Intersections



Transit Service

There is currently no fixed route transit service provided within the Southwest Industrial focus area. The WES commuter rail line travels through the area, but there is no station stop located within the focus area boundary. There are no TriMet bus routes that travel through this focus area. However, the Tualatin Shuttle does provide dial-a-ride service within this area.

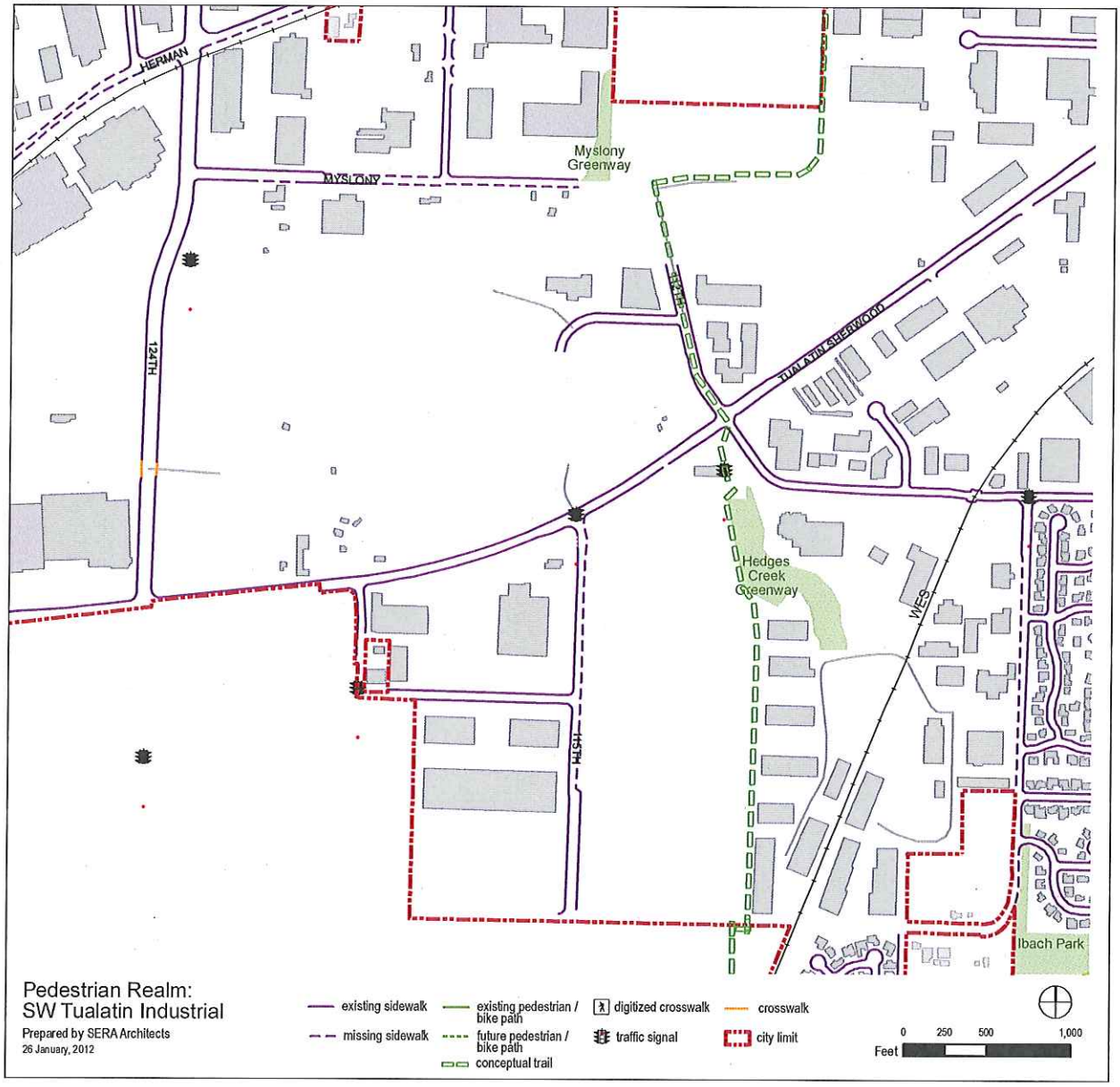
Figure 55. Southwest Industrial Transit Service



Pedestrian Facilities

Tualatin-Sherwood Road, the major roadway running through the Southwest Industrial area, has sidewalks on both sides. Traffic signals along this road are spaced fairly far apart (roughly 1000 feet apart), and do not have crosswalks. Other roads in the area generally have sidewalks on at least one side, but not necessarily on both. Because there is significant undeveloped land in the area, the connectivity of the street/sidewalk network and the completeness of the sidewalk network may improve over time with development. The conceptual alignment of the Tonquin Trail would run north-south through this area along 112th and south past the Hedges Creek Greenway.

Figure 56. Southwest Industrial Pedestrian Facilities



Summary of Key Facts

- Partially developed with industrial uses, but with large swaths of vacant land east of 115th Ave, southwest of UPS, and east of 124th Ave.
- Hedges Creek stream corridor/wetland area affects land east of 124th Avenue.
- Bulk of the area is designated for general manufacturing, with smaller areas designated for manufacturing business park and single-family residential in the southern portion.
- Virtually no residents, except for a single-family residential neighborhood along the southeastern edge.
- Some major employers are located here, including UPS, Huntair, Lumber Products, Columbia Corrugated, and Milgard Windows, as well as many other smaller companies. However, average number of employees per acre is relatively low given land use patterns and amount of vacant land.
- Relatively few neighborhood amenities in the area, except for limited concentrations on the eastern side south of Tualatin Sherwood Road and on the western side around 124th Avenue.
- Area includes active businesses, large developable parcels of land, and relatively good access to I-5 and OR 99W.
- Transportation features include:
  - » SW Tualatin Sherwood Road provides the primary east-west access, with SW 124th Avenue connecting north to OR 99W and SW Avery Street and SW 105th Avenue serving as collector roads.
  - » Intersection of SW Tualatin Sherwood Road and SW Avery Street is a high collision area; SW Tualatin Sherwood Road/124th Avenue intersection also is a high collision area and congested.
  - » No TriMet service through the area; WES line runs through the area but there is no stop.
  - » Tualatin-Sherwood Road has sidewalks on both sides and other roads have sidewalks on at least one side; significant undeveloped land and planned future trails in the area will allow for improved pedestrian connectivity over time.

12. Southwest Tualatin Concept Plan Area

Overview and Existing Development

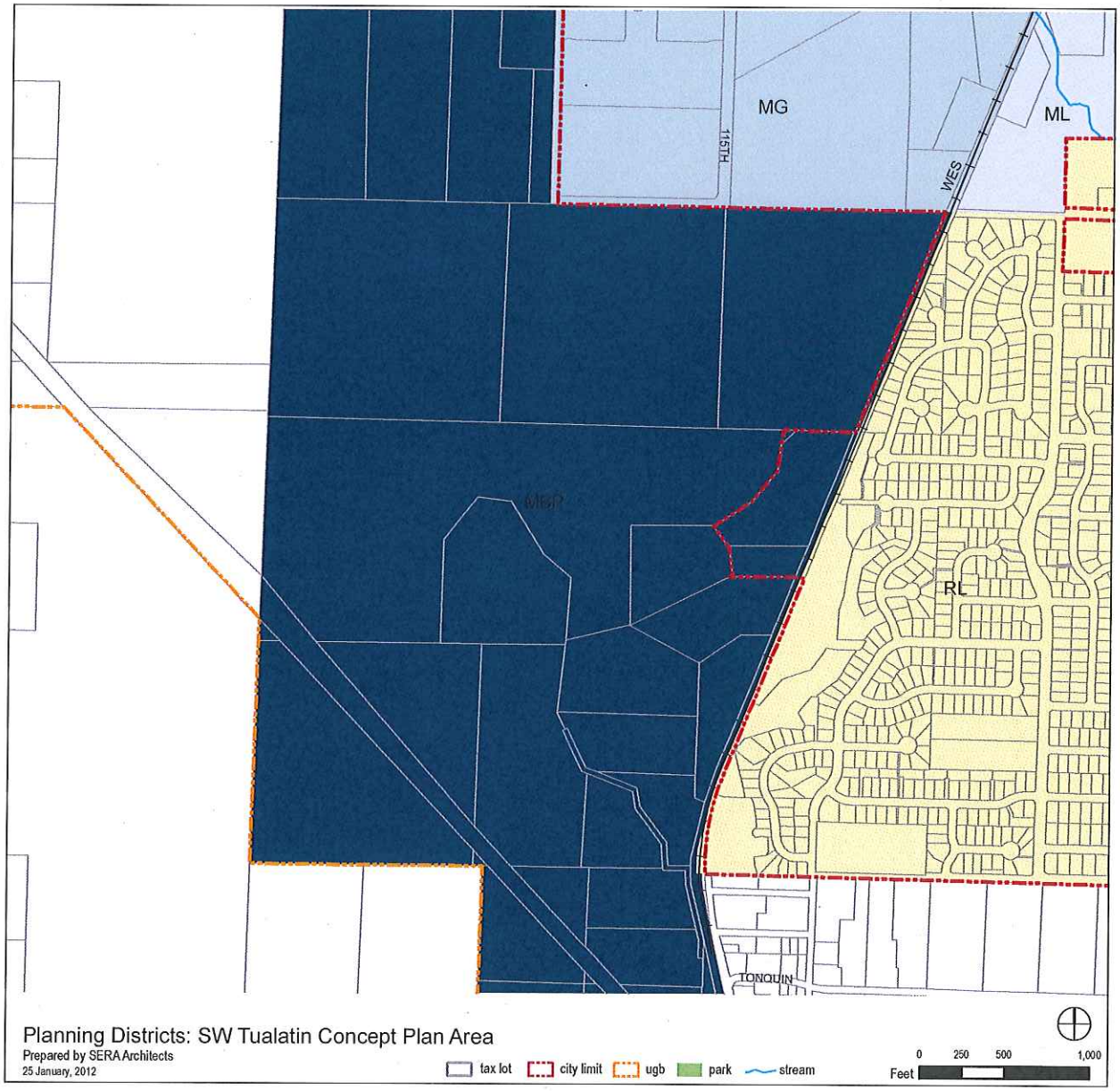
Current land uses in the Southwest Tualatin Concept Plan Area consist of aggregate mining (the majority of the area), and a small amount of rural industrial and manufacturing uses. A concept plan has been adopted for the area that calls for development with industrial uses. There are some wetlands and natural resource constraints along the eastern edge, abutting city limits, and at the northern edge. There are also major utility corridors that run through the area, including PGE and BPA easements, which are not developable.

Figure 57. SW Tualatin Concept Plan Area Existing Development

Designated Land Uses

The majority of this focus area is designated as a Manufacturing Business Park Planning District (MBP), which is intended to provide an environment for industrial development consistent with the Southwest Concept Plan. Development in this district will be a mix of light industrial and high-tech uses in a corporate campus setting with many user amenities. It also is intended to protect sites for such uses by maintaining large lot configurations, a cohesive planned-development design, and limiting uses to those that will not conflict with other industrial uses or nearby residential areas. Some local serving retail is proposed in the northern part of the SW Concept Plan Area. There is a large area of low density residential (RL) land east of the MBP district.

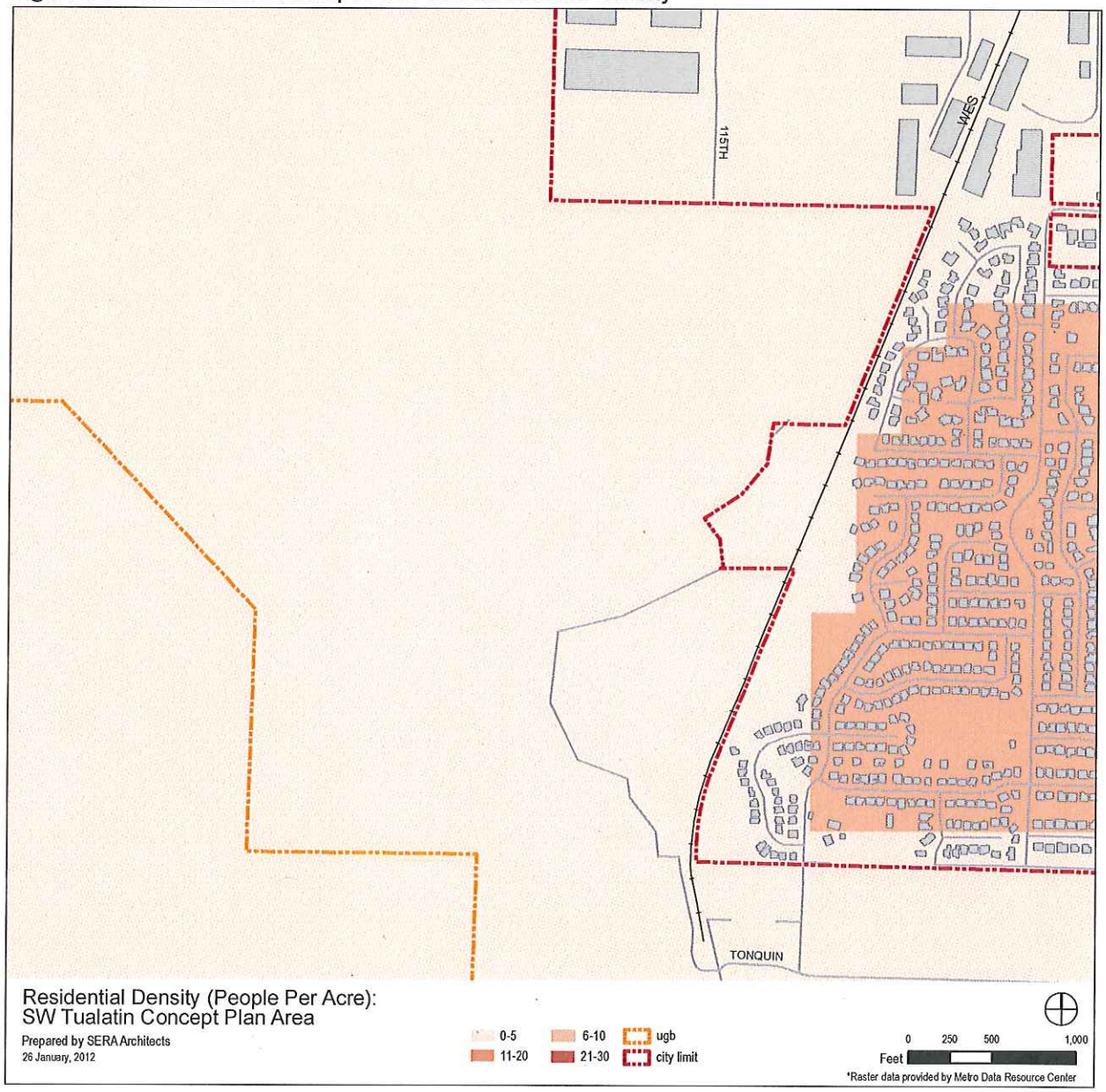
Figure 58. SW Tualatin Concept Plan Area Planning Districts



Residential Density

The Southwest Tualatin Concept Plan Area itself has no current residents. However, the adjacent residential area to the east is a single-family neighborhood with a moderate residential density.

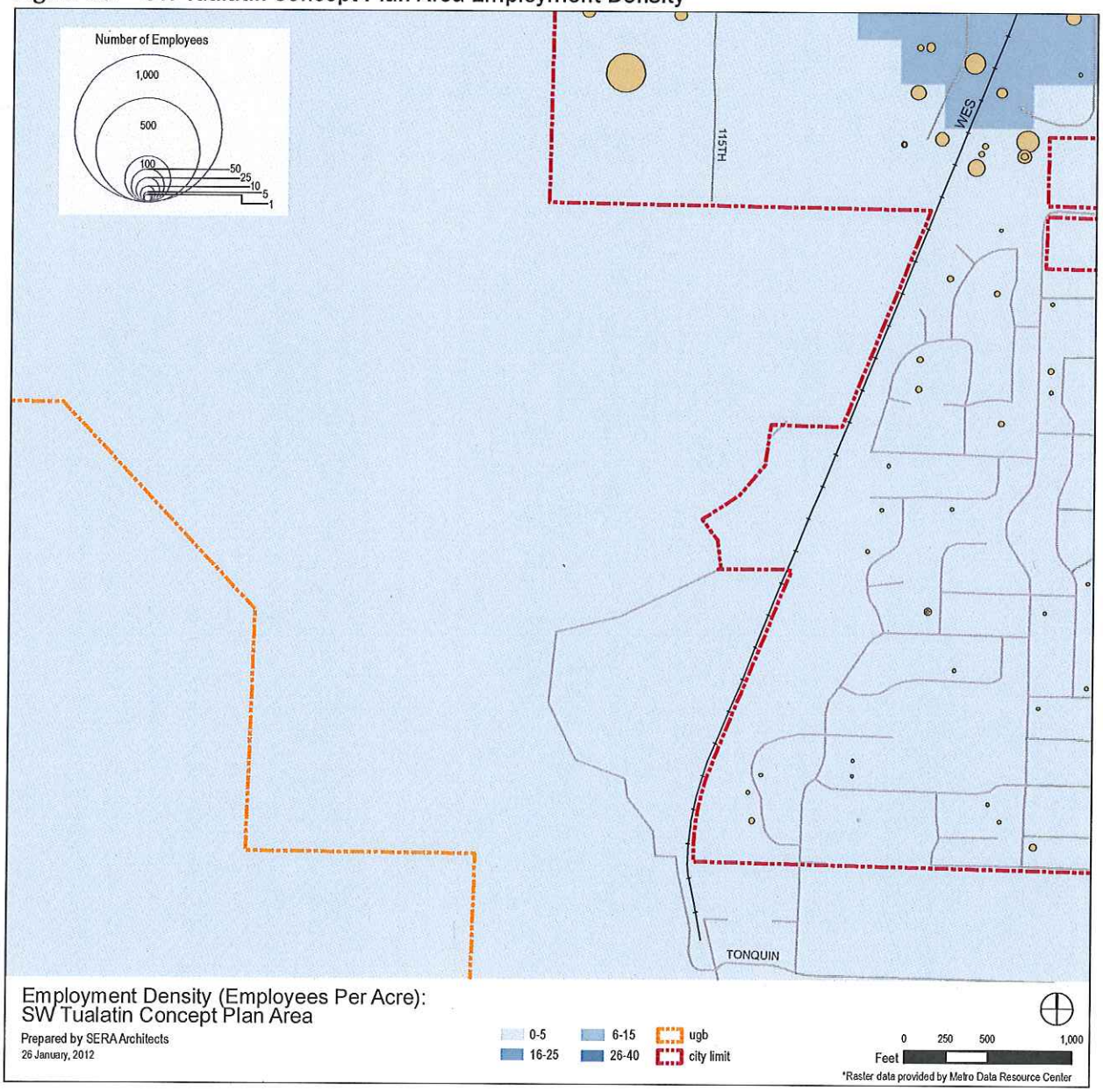
Figure 59. SW Tualatin Concept Plan Area Residential Density



Employment Density

There is little employment in or around the Southwest Tualatin Concept Plan area today. Employment in the adjacent Southwest Industrial Area to the north is described under that focus area.

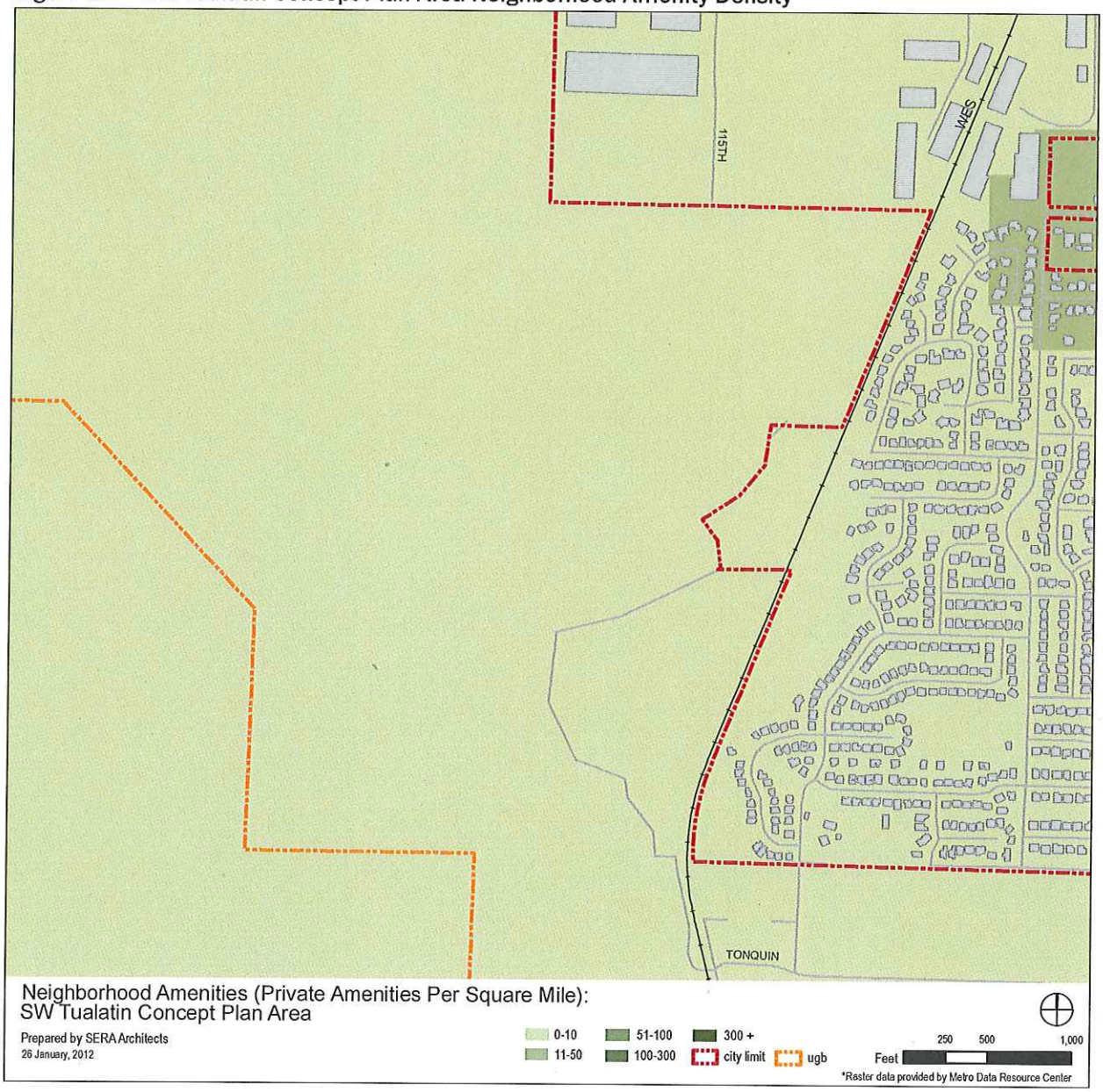
Figure 60. SW Tualatin Concept Plan Area Employment Density



Neighborhood Amenities

There are no existing neighborhood amenities within the Southwest Tualatin Concept Plan Area since it is not currently developed with urban uses. There is a small area with some neighborhood amenities at the northern edge of the adjacent residential neighborhood to the east.

Figure 61. SW Tualatin Concept Plan Area Neighborhood Amenity Density



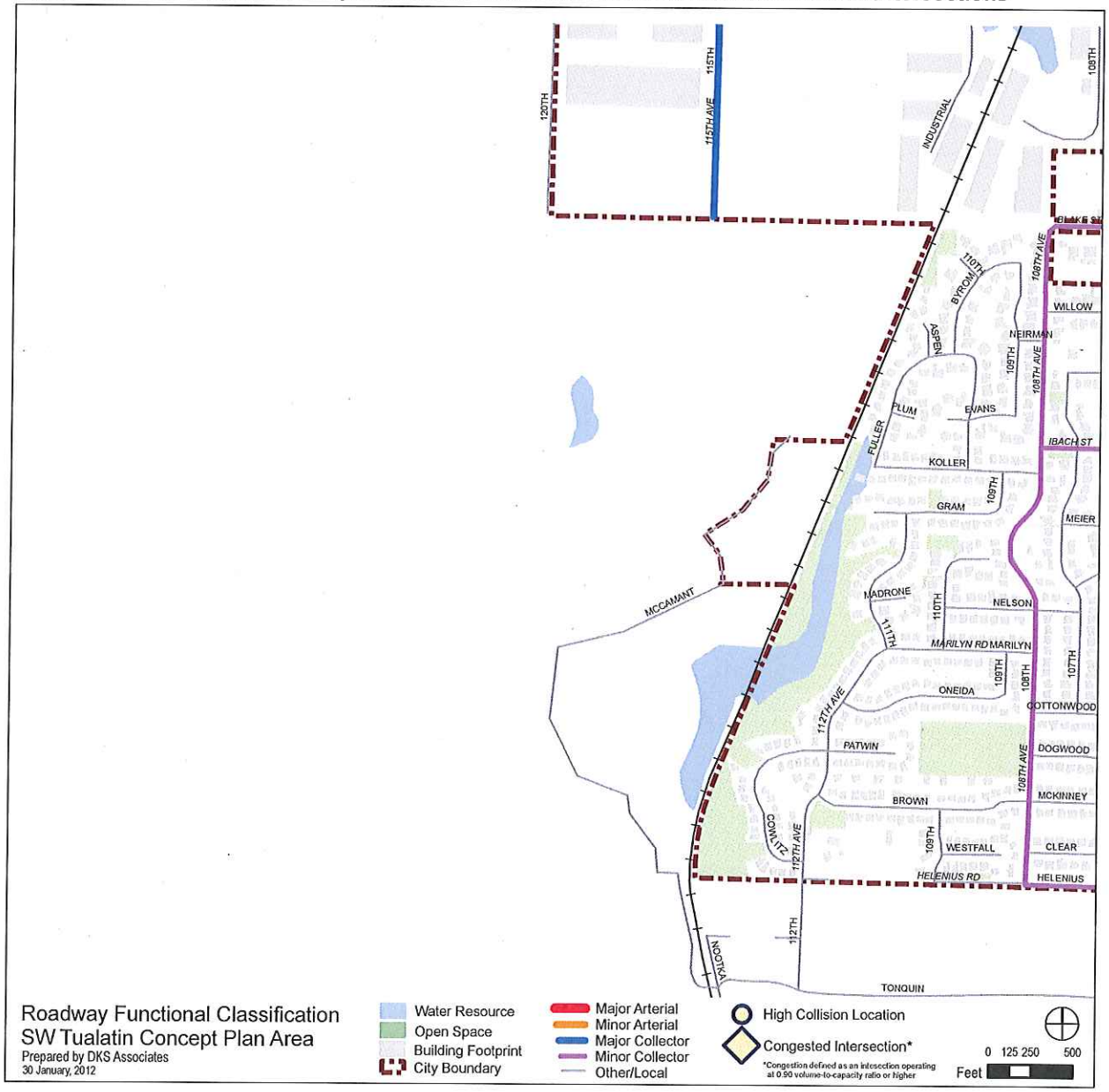
Development Opportunities and Constraints

From a market perspective, this area is similar to the western industrial areas of Tualatin; it offers substantively the same location attributes to prospective industrial and office users. However, the SW Tualatin Concept Plan Area will likely be slower to develop / redevelop than industrial areas inside the city since it currently lacks urban infrastructure and is still being used for aggregate extraction. The Concept Plan seeks to allow and attract focused types of light industrial, high-tech and campus employment users, with strict limitations on commercial development (with the exception of the planned local serving retail at the northern end of the Concept Plan area).

Key Roadways

There are currently no arterial routes serving this focus area. Although not shown on this map, Tualatin-Sherwood Road borders the SW Concept Plan area on the north; 115th also provides access from Tualatin-Sherwood Road to the eastern part of the plan area. Tonquin Rd provides access to the south part of the plan area. SW 108th Avenue provides a connection north to SW Avery Street and ultimately to SW Tualatin Sherwood Road while SW Ibach Street provides a connection east to SW Boones Ferry Road. All other roads are local streets serving the residential subdivisions in the area. No high collision areas or congested intersections were identified in this focus area and no non-vehicle crashes were reported from 2008 through 2010.

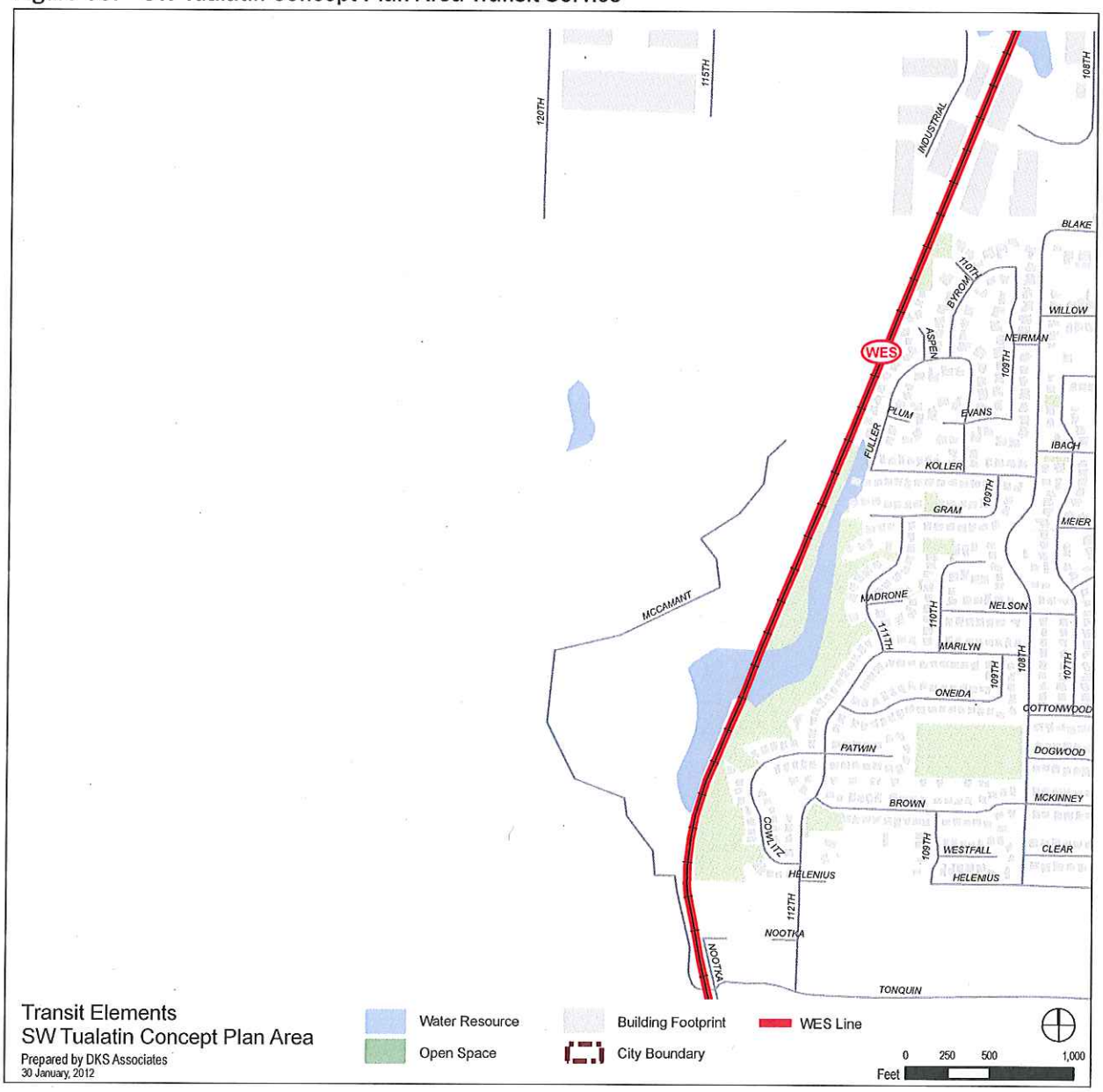
Figure 62. SW Tualatin Concept Plan Area Functional Classification and Problem Intersections



Transit Service

There is currently no transit service provided within the Southwest Tualatin Concept Plan Area. The WES commuter rail line travels through the area, but there is no station stop located within the focus area boundary. There are no TriMet bus routes that travel through this focus area.

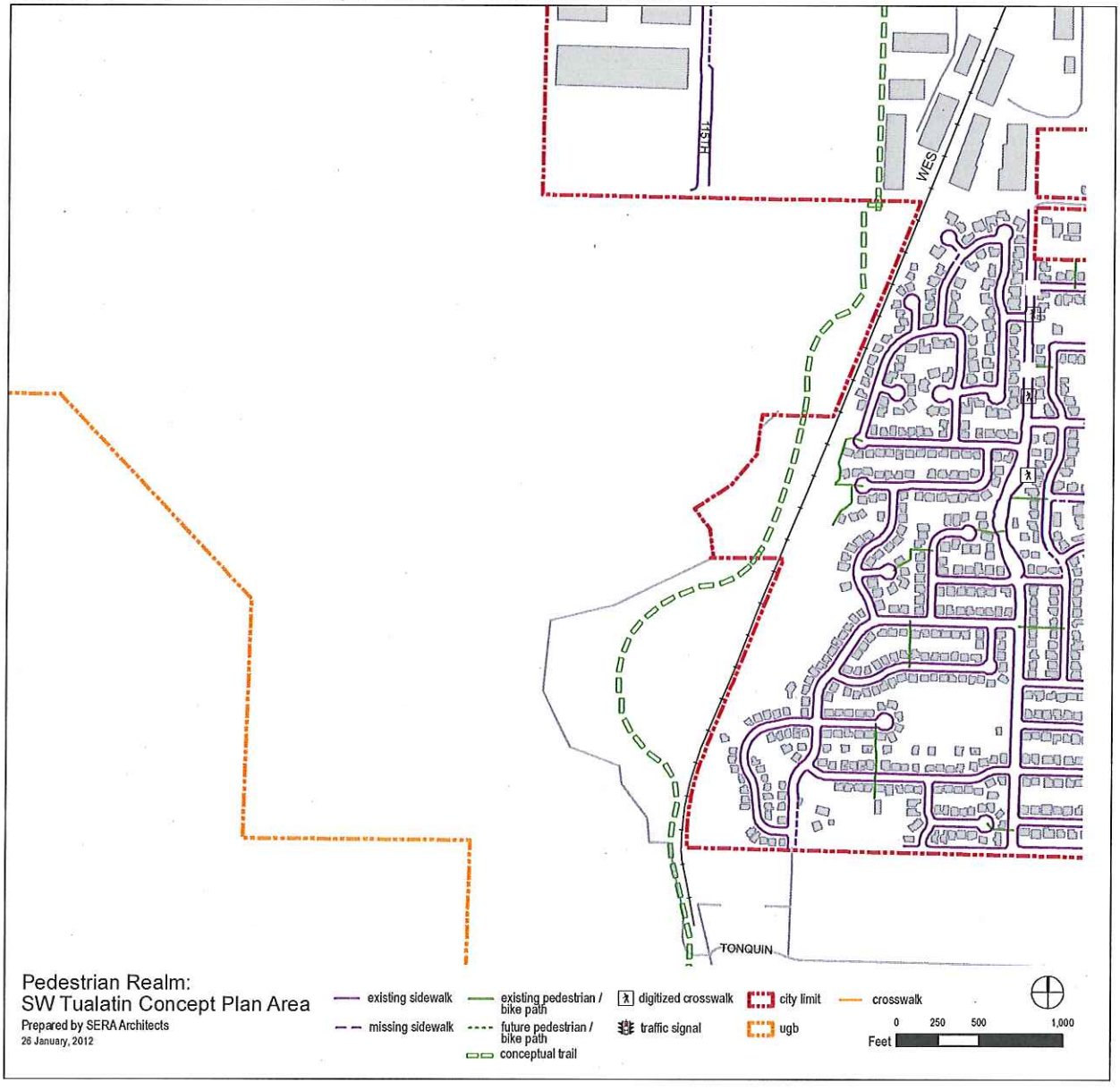
Figure 63. SW Tualatin Concept Plan Area Transit Service



Pedestrian Facilities

Because the SW Tualatin Concept Plan area is not yet developed, there are no sidewalks within the focus area. There is a good sidewalk network in the adjacent residential neighborhood, including some short trail connections, but these do not currently connect to the planned employment area. The conceptual alignment of the Tonquin Trail would run along the eastern edge of the Concept Plan area.

Figure 64. SW Tualatin Concept Plan Area Pedestrian Facilities

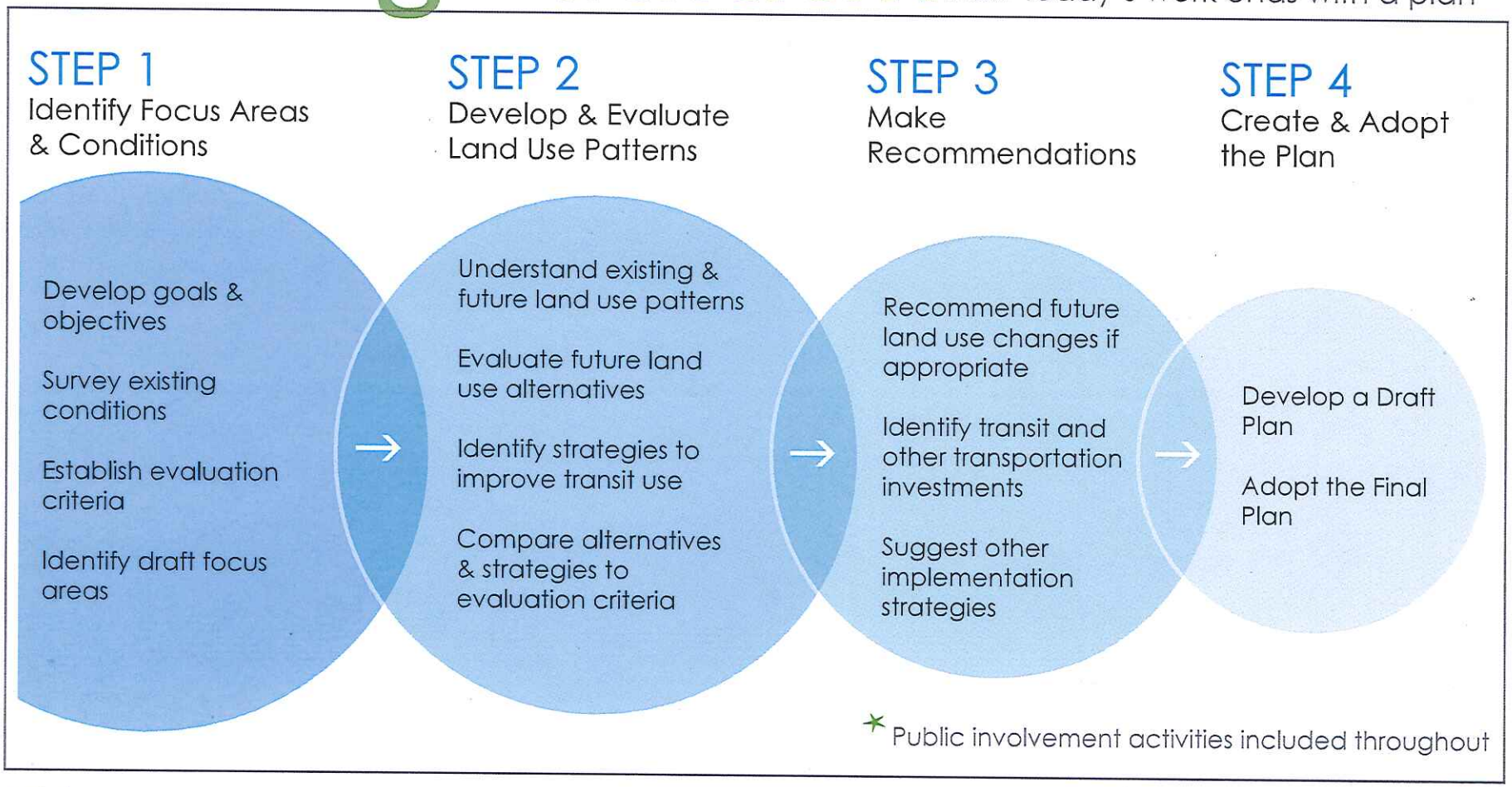


Summary of Key Facts

- Current land uses in the Southwest Tualatin Concept Plan Area consist of aggregate mining and small amount of rural industrial and manufacturing uses.
- Wetlands and natural resources may constrain development along the eastern and northern edges.
- Majority of the area is designated for manufacturing business park, with a large low density residential area to the east.
- No residents within the Concept Plan area but a single-family neighborhood with relatively small lots is located to the east.
- Little employment is currently located in this area but there is the potential for a significant amount of future employment.
- No neighborhood amenities in the Concept Plan area and limited amenities in the residential area to the east.
- Area is similar to other industrial areas but expected to be slower to develop / redevelop due to lack of infrastructure and existing aggregate mining uses.
- Transportation features include:
  - » No arterial roads in this area; SW 108th Avenue and SW Ibach Street connect to major roads in other areas.
  - » No high collision or congested intersections located here.
  - » No transit service currently provided.
  - » No sidewalks in Concept Plan area, given lack of development; good sidewalk network in the adjacent residential neighborhood, as well as some short trail connections.

Linking Tualatin

How today's work ends with a plan



Vision → Reality

Linking Tualatin will:

- Look at the relationships between land use, employment, and transit
- Help employees and residents increase transit use in the future
- Recommend future high capacity transit options, inside and outside of the city
- Connect "focus areas" of high employment, commercial, or residential use to transit

LINKING Tualatin

City of Tualatin
Transportation System Plan
& Linking Tualatin
Review and Discussion

TUALATIN
TRANSPORTATION
SYSTEM PLAN

LINKING Tualatin

March 12, 2012

Goals & Objectives

- **Transportation Task Force**
  - **Dec 15**: Value Statements
  - **Jan 19**: Draft Goals & Objectives
  - **Feb 2**: Accept **TSP** Revised Goals & Objectives
  - **Feb 23**: Accept **Linking Tualatin** Revised Goals & Objectives

- **Kick Off Meeting / Open House: Feb 16**
  - Public Review of Goals & Objectives

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Goals & Objectives

- **TSP**
  - Access & Mobility
  - Safety
  - Vibrant Community
  - Equity
  - Economy
  - Health/Environment
  - Ability to be Implemented
- **Linking Tualatin**
  - Community Involvement
  - Economy
  - Land Use
  - Transportation Choice & Mobility
  - Consistency & Coordination
  - Implementation

Existing Conditions

- **Transportation Task Force**
  - **Dec 15:** Overview of **TSP** Existing Conditions
  - **Feb 23**: Overview of **Linking Tualatin** Existing Conditions

- **Public Review**
  - **Jan 15**: Close of **TSP** Online Comment Period
  - **Feb 16**: Comments Invited at Kick Off Meeting / Open House
  - **Mar 8**: Close of **Linking Tualatin** Comment Period

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

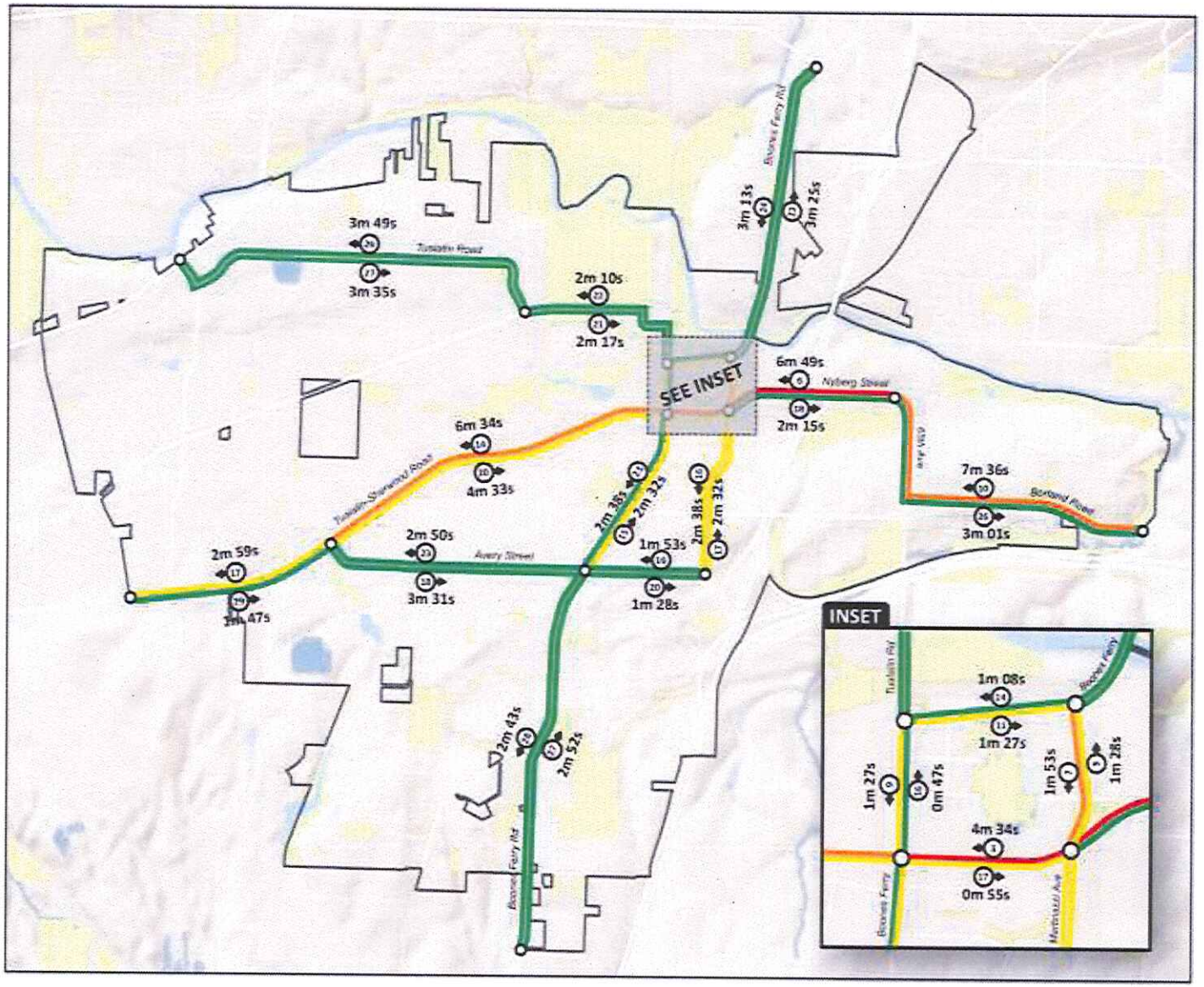
Existing Conditions

- **TSP**
  - Land Use
  - Roadway System and Conditions
  - Traffic Operations
  - Safety
  - Bicycle System
  - Pedestrian System
  - Public Transit
  - Freight Rail, Pipelines, Waterways, Airports

TUALATIN
TRANSPORTATION
SYSTEM PLAN

LINKING Tualatin

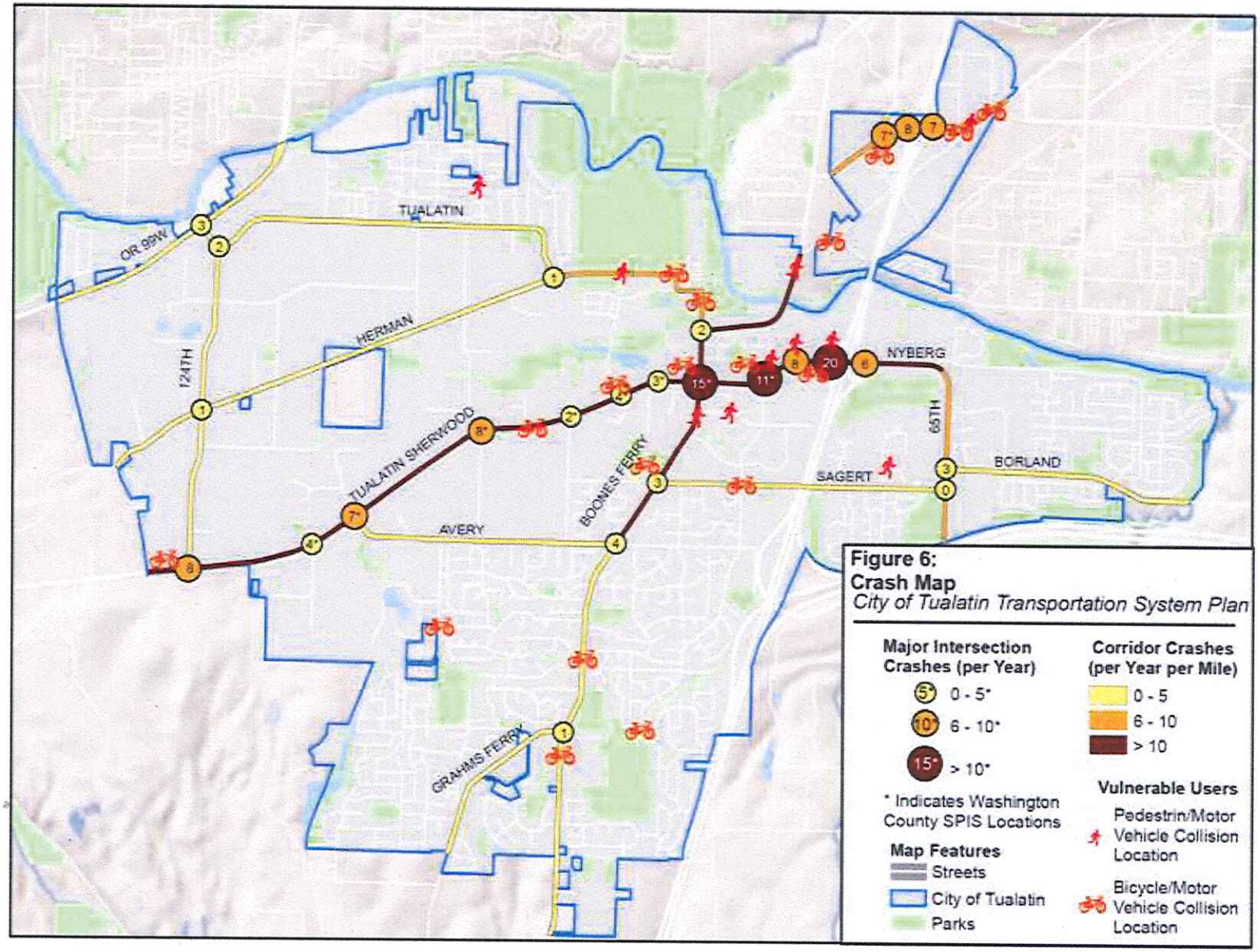
Existing Automobile Traffic Conditions



TUALATIN
TRANSPORTATION
SYSTEM PLAN

LINKING Tualatin

Existing Accident Information



TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

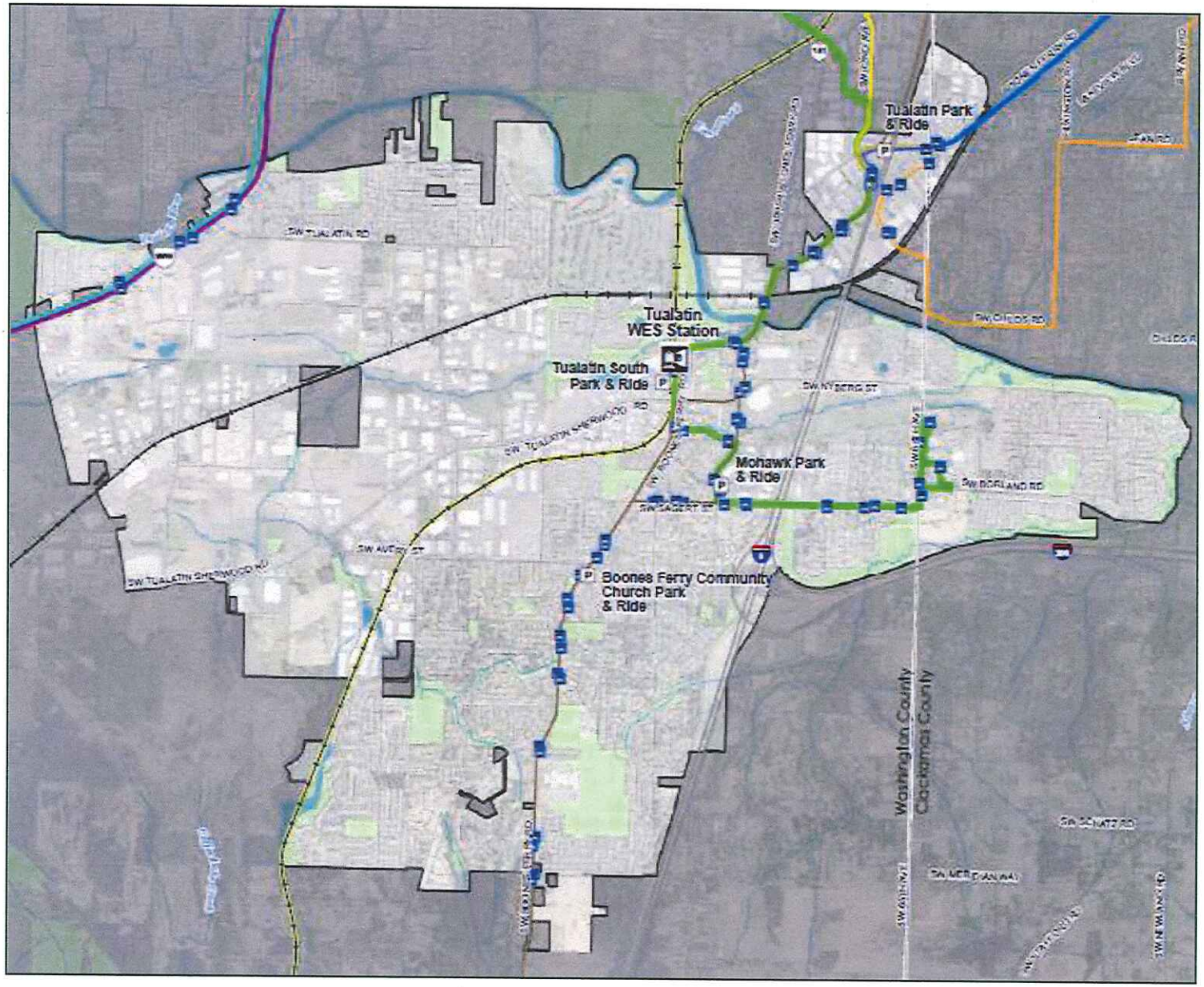
Existing Bicycle & Pedestrian Conditions

- **Bicycle Needs:**
  - Difficult **left turns**
  - **Narrow** bike lanes
  - Areas with low bike **visibility**
  - **Obstacles** in bike lanes
  - **Gaps** in the network
- **Pedestrian Needs:**
  - Sidewalk **gaps**
  - **Barriers** on sidewalks
  - **Interconnected network** of multi-use paths
  - **Safety**

TUALATIN
TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Existing Transit Conditions



TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Existing Conditions

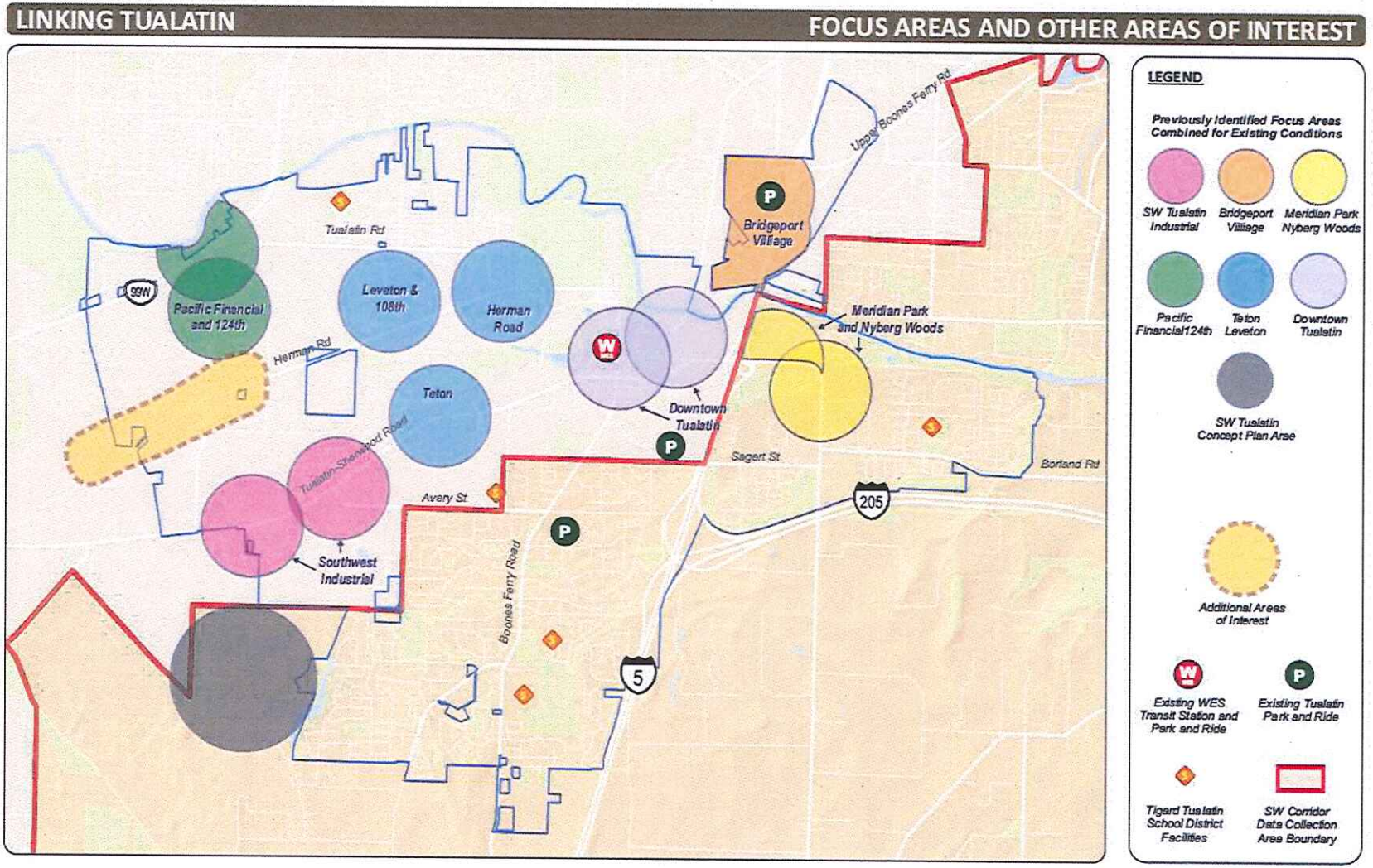
• Linking Tualatin

- **City-wide** conditions
- **Focus Area specific** conditions
- Information related to:
  - Land Use
  - Demographics
  - Housing & Employment
  - Market Conditions
  - Transportation Facilities
  - Neighborhood Amenities
  - Plans & Policies
  - Opportunities & Constraints

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Focus Areas

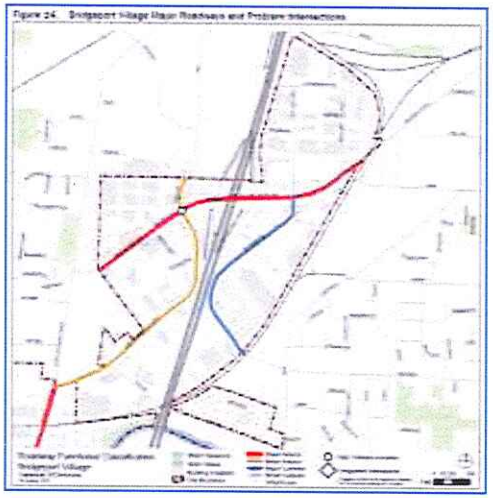


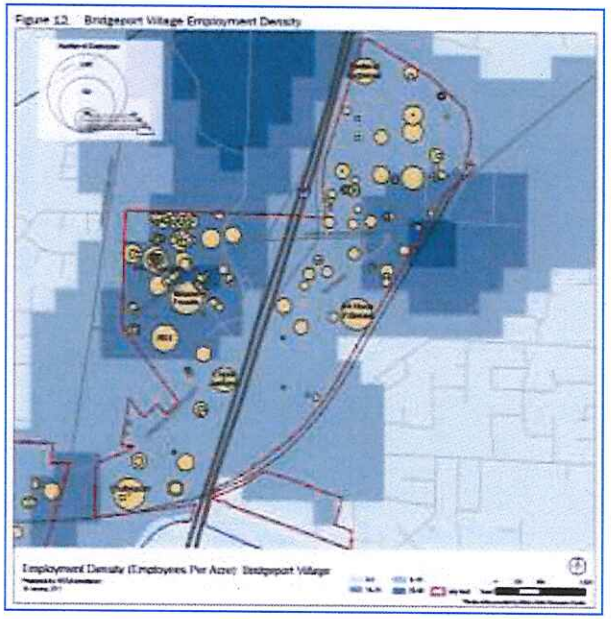
TUALATIN
TRANSPORTATION
SYSTEM PLAN

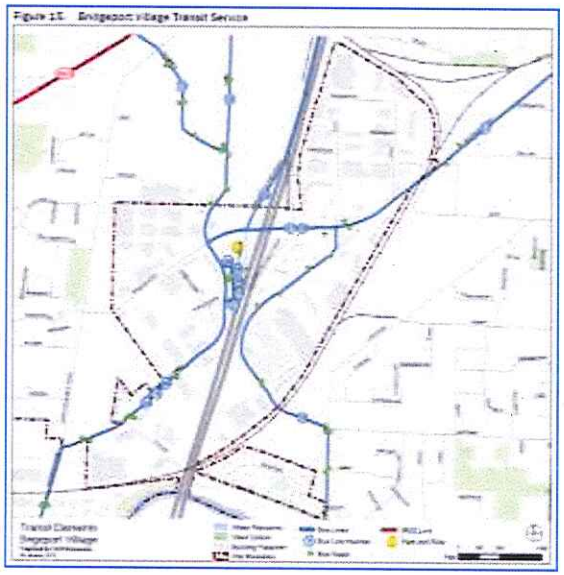
LINKING Tualatin

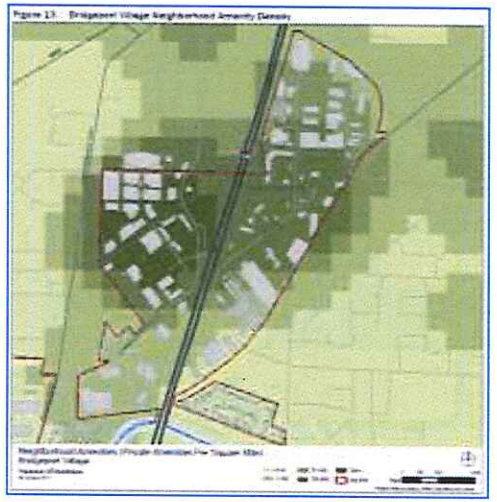
Existing Focus Area Conditions

- Aerial photo
- Planning Districts
- Residential Density
- Employment Density
- Neighborhood Amenity Density
- Development Opportunities & Constraints
- Major Roadways & Problem Intersections
- Transit Service
- Pedestrian Facilities





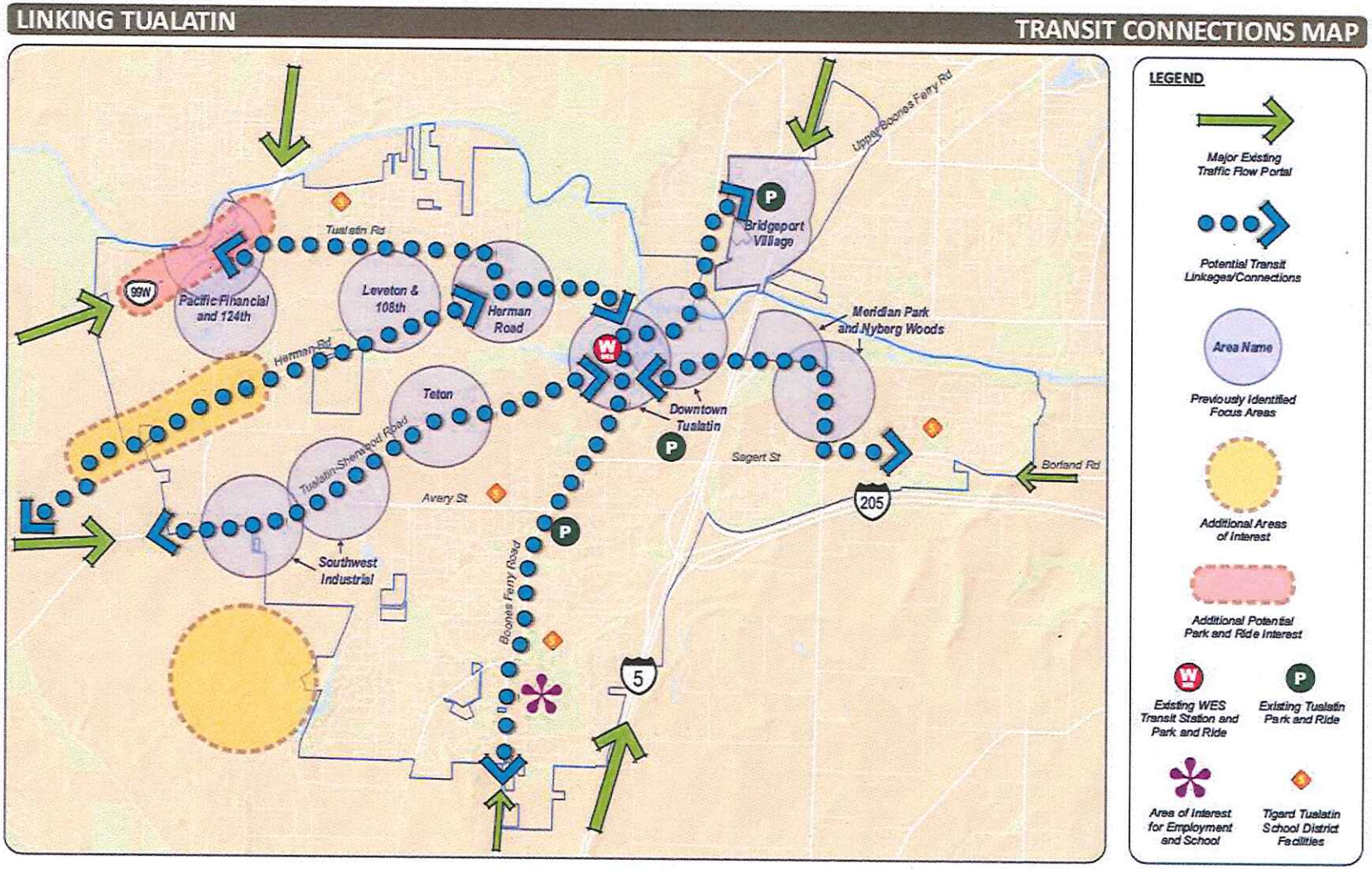




TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Key Transit Connections



TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Existing Transit Conditions

- **Transit Needs:**
  - Better **neighborhood service**
  - Consider **SMART type system** for local service
  - Need new or expanded **park & rides**
  - Extended/better **WES** service
  - Need better **southern linkages**

Next Steps

- **Linking Tualatin**
  - **Task Force & Transit Working Group:**
    - **Opportunities and Constraints** Analysis
    - Potential focus area **land use types**
    - Focus Area **evaluation criteria**
  - **April 3:** Present to Planning Commission
  - **April 23:** Present to Council

- **TSP**
  - **Task Force & Working Groups: Long list of Projects/Options**
  - **May 1:** Present to Planning Commission
  - **May 14:** Present to Council

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Upcoming Events

MARCH

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

APRIL

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

- Task Force Meeting
- Working Group Meeting
- Open House or Workshop
- TPC (formerly TPAC) Briefing
- Council Special Report
- Council Work Session

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Working Groups

Working Group	Upcoming Meeting Date
Transit	March 29th, 6-8 pm Tualatin Police Department
Downtown	April 2nd, 6-8 pm Tualatin Police Department
Bicycle & Pedestrian	April 4th , 6-8 pm Tualatin Police Department
Industrial & Freight	April 10th , 11:30 am - 1:00 pm Location TBD
Neighborhood Livability	April 11th , 6-8 pm Rm 104, Meridian Park Hospital Education Building
Major Corridors & Intersections	April 16th , 6-8 pm Tualatin Police Department

TUALATIN TRANSPORTATION SYSTEM PLAN

LINKING Tualatin

Discussion

1. Do the **goals and objectives** for the TSP and Linking Tualatin provide a satisfactory framework and direction for the projects? Are any changes to the goals or objectives for either project needed?
2. Do the **Existing Conditions Reports** for the TSP and Linking Tualatin capture the correct information? Is any information left out that should be included?

MEMORANDUM
CITY OF TUALATIN

TO: Honorable Mayor and Members of the City Council

THROUGH: Sherilyn Lombos, City Manager

FROM: Brenda Braden, City Attorney

DATE: 03/12/2012

SUBJECT: Amicus Brief in Arizona v. United States, Immigration Case

---

ISSUE BEFORE THE COUNCIL:

The Council will consider whether to sign on to the amicus curiae brief in the Arizona v. United States case which involves immigration issues.

DISCUSSION:

In April 2010 Arizona's governor signed a new immigration law, which has been enjoined by the Ninth Circuit Court of Appeals from taking effect pending the resolution of this case by the US Supreme Court.

You are being asked to sign on to the amicus curiae brief being drafted by the Santa Clara California County Counsel that will support the United States position in opposition to the law. An amicus curiae is a friend of the court that provides the court with additional information that could affect the court's ruling. A number of cities, including Portland, Seattle, Salt Lake, St. Paul, Baltimore, Minneapolis, New Haven, some Arizona cities, and several counties, have already signed on as have several smaller cities and the United States Conference of Mayors. The reason an Arizona law--which is seen as anti-immigration--is creating national concern is that several other states are considering adopting similar legislation if the Arizona law is upheld.

The four sections of the law being challenged by the federal government are:

• Section 2(B) requires local law enforcement officers and agencies to make a "reasonable attempt" to determine the immigration status of a person who has been lawfully stopped, detained, or arrested whenever the officer or agency has a "reasonable suspicion" that the person is unlawfully present in the U.S.

• Section 3 imposes criminal penalties for violations of federal immigration laws, such as failure to complete or carry alien registration documentation.

• Section 5(C) makes it a crime for an undocumented immigrant to knowingly apply for work, solicit work in a public place, or perform work in Arizona. (Six months imprisonment)

• Section 6 authorizes peace officers to arrest a person without a warrant based upon probable cause that the person committed a public offense that makes them deportable.

The federal government's arguments will focus on the Ninth Circuit's findings that Congress has preempted the challenged provisions by enacting the federal immigration laws. They will also argue that the Arizona law provides no guidelines to avoid racial profiling in applying the "reasonable suspicion" standard and that Section 6 significantly expands officers' arrest authority by not requiring a warrant.

While the amicus brief will restate that immigration enforcement is the role of the federal government, it will take a different tact and argue the impact of these laws on local law enforcement and public safety. The key points will be:

• Requiring local law enforcement agencies to enforce federal immigration law diverts scarce local resources away from local law enforcement's primary goal of maintaining public safety. It would require additional officer time to try to determine immigration status of an individual, whether it means checking for additional paperwork or contacting federal agencies.

• Requiring local law enforcement officers to attempt to determine the immigration status of any individual stopped (e.g., possible minor traffic infraction), arrested or detained for any reason if a "reasonable suspicion" exists that the person is an unlawfully-present immigrant creates potential liability for local governments. Due to lack of standards for officers to use to determine whether the person is unlawfully present, officers would have to use factors such as race, ethnicity, level of English proficiency, or national origin to support a "reasonable suspicion", which would violate the United States Constitution. • Requiring local enforcement of immigration laws would create distrust of local law enforcement agencies in the immigrant communities and impair the agencies' ability to maintain public safety. Local agencies' are tasked with preventing, investigating, and prosecuting crimes, such as domestic violence, sexual assault, child abuse, and theft. Immigrants, whether lawfully or unlawfully present, may not call police when they or their children have been victims of, or witnesses to crime for fear that another family member or friend may be undocumented.

There would be no cost to the City if Council decides to become a signator to the amicus brief.

Attachments: