

CHAPTER 3: EXISTING CONDITIONS

This chapter documents existing transportation conditions within the City of West Linn. The information presented in this chapter is intended to serve as a basis for comparing future transportation conditions, evaluating alternatives, and identifying potential solutions and improvements for the City's Transportation System Plan (TSP) Update. The information is based on existing transportation inventories, previous studies conducted by the City, and field observations.

This Chapter includes information on the existing pedestrian, bicycle, transit, motor vehicle, and other travel modes within West Linn. Because findings locally and from around the region reveal that current traffic volumes at many intersections are the same or lower than in 2006, the motor vehicle section utilizes results from the analysis conducted in 2006 (as part of the previous TSP update). Roadway intersection volumes from 2006, and more recent counts (Fall 2014) at selected intersections, are therefore established as the baseline for the evaluation of future transportation conditions.

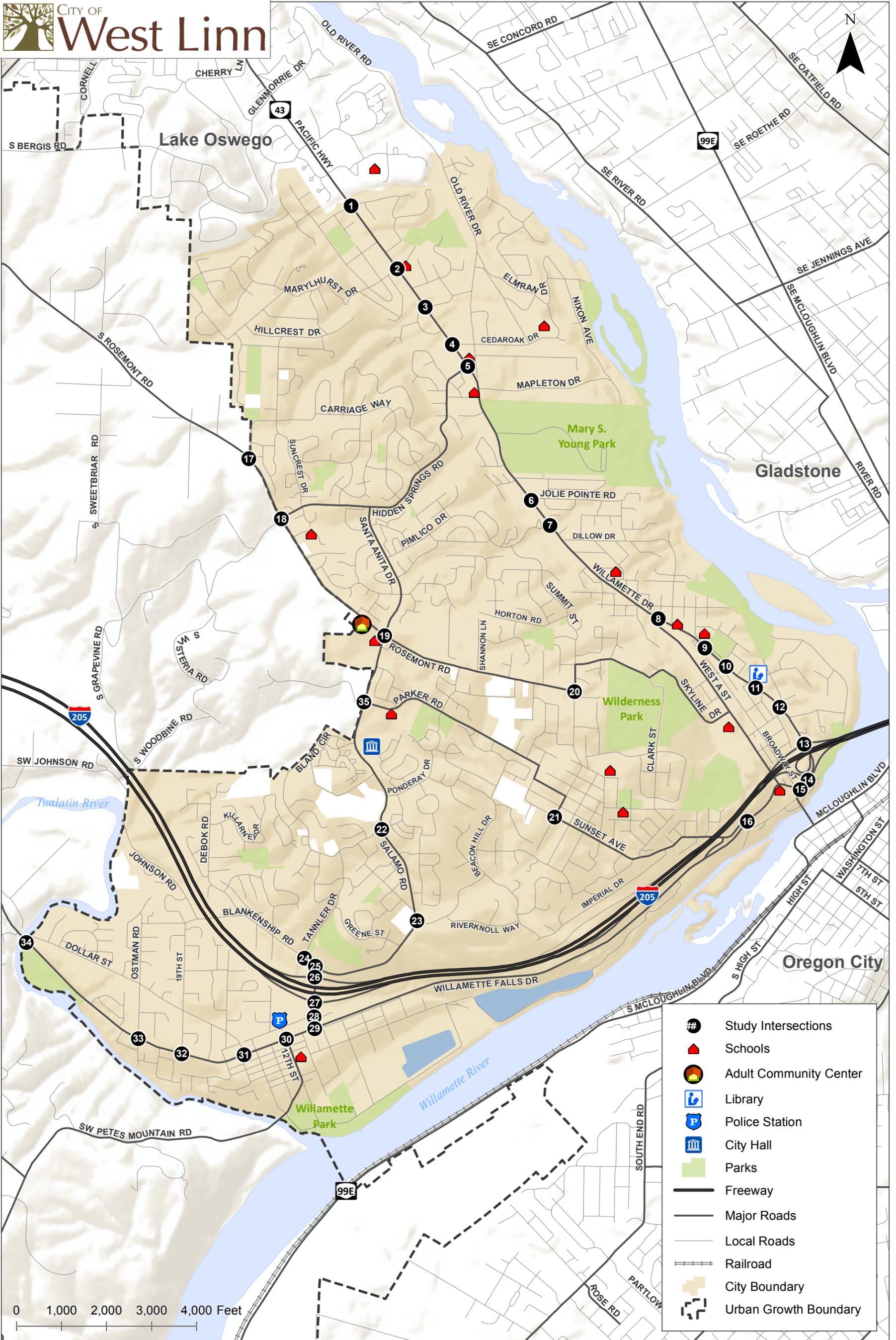
Thirty-five intersections were selected for focused operations analysis in the previous TSP update. The study intersections are identified in Figure 3-1. At each location, traffic data was gathered and analyzed to evaluate current conditions and performance for all modes of travel. The results are also compared to the most recently identified performance or design standards, as appropriate, and any elements that are found to be deficient are identified. More recent data was collected for other aspects of the transportation system including reported vehicle crashes, newly constructed facilities as described by the city and Metro GIS data, and reported traffic volumes on state and county facilities.

The following sections describe the characteristics, usage, and performance of the existing transportation system within West Linn.

PEDESTRIAN SYSTEM

The pedestrian system within the City of West Linn consists of sidewalks, multi-use paths, and trails as well as marked and unmarked, signalized and unsignalized pedestrian crossings. These facilities provide local residents with the ability to access transit as well as local retail, commercial, recreational, and other land uses by foot. Safe and convenient pedestrian facilities are essential to a vibrant community and economy within the City.

In order to assess the adequacy of pedestrian facilities in West Linn, GIS data was obtained from the city's GIS database and Metro's Regional Land Information System (RLIS). The GIS data was updated based on a review of projects completed since the last TSP Update and aerial imagery of sidewalks and other pedestrian facilities along the city's arterial and collector streets. The data includes the location of existing sidewalks along all of the city's arterial and collector streets and many of the city's neighborhood routes and local streets. The data also includes the location of existing activity centers such as parks, schools, the library, and City Hall. These activity centers were identified to determine possible pedestrian trip generators and to help prioritize potential improvements in the pedestrian system. Figure 3-2 shows the existing pedestrian facilities located within and adjacent to the West Linn city limits as well as the location of major activity centers.



	Study Intersections
	Schools
	Adult Community Center
	Library
	Police Station
	City Hall
	Parks
	Freeway
	Major Roads
	Local Roads
	Railroad
	City Boundary
	Urban Growth Boundary

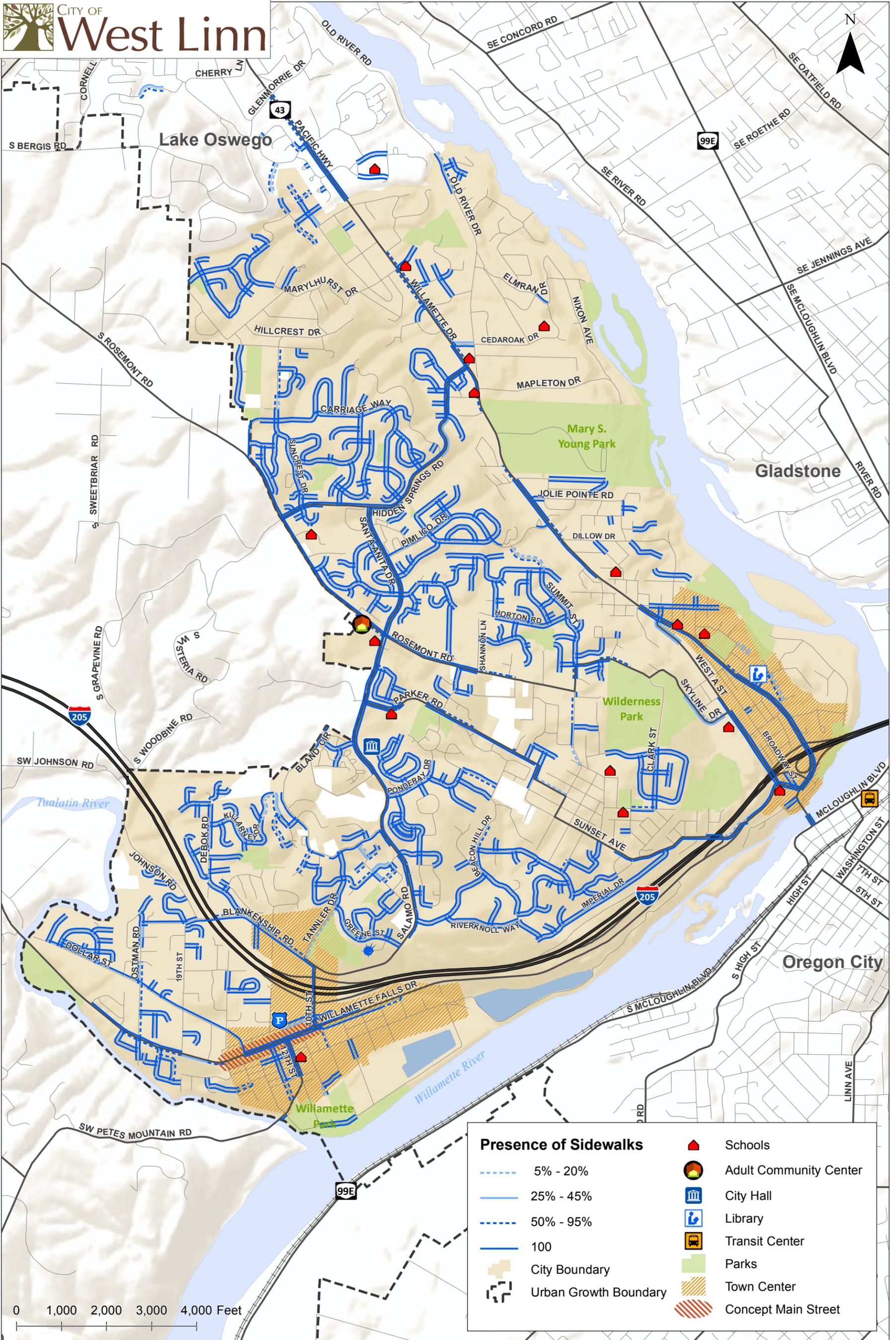
0 1,000 2,000 3,000 4,000 Feet

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Study Area
West Linn, Oregon**

**Figure
3-1**

H:\profile\17817 - West Linn Transportation System Plan\GIS\3-1 Study Area.mxd - jommerville - 10:32 AM 12/29/2014



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Pedestrian Facilities
West Linn, Oregon** Figure
3-2

H:\profile\1787 - West Linn Transportation System Plan\GIS\2-Pedestrian Facilities.mxd - 10:33 AM 12/29/2014

As shown in Figure 3-2, sidewalk connectivity is generally adequate in commercial areas and is generally inadequate near schools. It is desirable to provide at least one continuous sidewalk connection between activity centers and arterial and collector roadways to provide safe and convenient non-motorized travel options. There are locations where sidewalk coverage could be more complete and provide greater connectivity throughout the city.

Facility Connectivity

The existing sidewalk inventory shows that a basic system of walking facilities is provided along most of the major streets within the city; however, there are significant gaps in sidewalks or walkways in older neighborhoods. These older neighborhoods were developed when street standards did not require sidewalks on higher-classification roadways (collectors and arterials), or where topography constrained the ability to design an adequate sidewalk facility. As an example, the Willamette district generally has sidewalks on at least one side of the road along collectors and arterials (such as Dollar Street) but includes gaps in key locations along Willamette Falls Drive. The Robinwood neighborhood has no collector streets with sidewalks. An illustration of grade challenges is along Hidden Springs Road, where sidewalks are provided in the uphill direction only in its steepest sections. For many of these cases, it may be not feasible or desirable to construct sidewalks to fill in these gaps.

Given the issues identified above, the public involvement process for the previous TSP Update engaged neighborhood representatives to identify locations within their neighborhoods that are the best candidates for filling in gaps in existing facilities, either as sidewalks or more improved walkways. Provisions were also made in the development code to allow for re-development with an appropriate choice of pedestrian facility types for a given neighborhood street.

This TSP build on the work conducted as part of the previous TSP and recommends a balanced approach toward filling gaps in the sidewalks along arterial and collector streets where physical terrain allows and providing adequate pedestrian facilities to accommodate pedestrian travel throughout the City.

Pedestrian Assessment

The Oregon Department of Transportation (ODO) Analysis Procedures Manual (APM) provides a methodology for evaluating pedestrian facilities based on roadway characteristics, such as outside travel lane width and bicycle lane/shoulder width along roadway segments and traffic control and crossing distance at intersections. The methodology uses the roadway characteristics and applies a context-based subjective “Excellent/Good/Fair/Poor” rating to each roadway segment and intersection. For example, a six foot sidewalk is standard in a residential area and would be rated “Good” or “Excellent” if it had a buffer. Many of the rating are subjective, but if they are applied consistently throughout the study area, they could provide insight into pedestrian system conditions. The following provides a summary of the roadway characteristics considered in the methodology:

The following characteristics are considered on roadway segments:

- Outside travel lane width: Wider travel lanes are rated better than narrower travel lanes because of the larger buffer space between vehicles and pedestrians.
- Bicycle lane/shoulder width: The addition of bicycle lanes or shoulders creates greater separation between vehicles and pedestrian traffic and acts as a buffer. Wider facilities are rated better than narrow or non-existent facilities.
- Presence of buffers (landscaped or other): The presence of a buffer that separates pedestrians from traffic results in an improved rating. Wider buffers are rated better than narrower or non-existent ones.
- Sidewalk/path presence: The presence of sidewalks or paths will rate higher versus shoulders or no facilities at all. Wider sidewalks/paths rate better than narrower or non-existent ones.
- Lighting: The presence of lighting, whether roadway or pedestrian-scale, is rated better than roadways without lighting.
- Volume and speed of motorized traffic in adjacent travel lane: Lower vehicle volumes and speeds will rate higher than higher volumes and speeds. The number of lanes and functional class can be used as a surrogate to actual volumes and speeds if they are not readily available at this stage.

The following characteristics are considered at intersections:

- Traffic control: Intersections with a traffic signal or all-way stop control with crosswalks are rated better than locations with only two-way stop control or locations without crosswalks.
- Crossing width: Fewer turn or through travel lanes to be crossed is rated better than more turn/through lanes because the exposure to traffic and potential conflicts are less.
- Median islands: The presence of a median island is rated better than no islands as two-stage crossings are possible at unsignalized crossings.

Subsequent chapters will present the results of the pedestrian assessment under existing and future transportation conditions.

Pedestrian Activity Levels

Pedestrian counts were conducted at the study intersections in 2006 as part of the previous TSP update. All of the counts were conducted on a typical mid-weekday during the evening (3:30 to 6:30 p.m.) peak time period. All of the counts include the total number of pedestrians that entered the intersections in 15-minute increments. The peak hour pedestrian crossing volumes indicate the relative differences in pedestrian demand at the study intersections. Although the peak hour for vehicular traffic typically occurs from 4:00 to 5:00 p.m., the peak hour for pedestrian crossing volumes at intersections located near schools and other activity centers typically occurs earlier in the day. This was found at the Rosemont Road/Salamo Road and Highway 43/Cedaroak Drive intersections. Pedestrian crossing volumes at each study intersection are shown in Table 3-1.

Table 3-1: PM Peak Hour Pedestrian Crossing Volumes at Study Intersections

Map ID	Intersection	North/South Pedestrian Volume	East/West Pedestrian Volume	Count Year
1	Highway 43 / Arbor Drive	2	0	2006
2	Highway 43 / Marylhurst Drive-Lazy River Way	7	3	2006
3	Highway 43 / Walling Way	3	0	2006
4	Highway 43 / Cedaroak Drive	2	14	2006
5	Highway 43 / Hidden Springs Drive	2	0	2006
6	Highway 43 / Jolie Pointe Road	1	0	2006
7	Highway 43 / Pimlico Drive	1	1	2006
8	Highway 43 / West "A" Street	1	3	2006
9	Highway 43 / Holmes Street	2	1	2006
10	Highway 43 / Lewis Street-Webb Street	0	1	2006
11	Highway 43 / Burns Street	0	0	2006
12	Highway 43 / Hood Street-McKillican Street	0	1	2006
13	Highway 43 / I-205 SB Ramps	4	0	2014
14	Highway 43 / I-205 NB Ramps	0	0	2014
15	Highway 43 / Willamette Falls Drive	0	0	2014
16	Willamette Falls Drive / Sunset Avenue	0	4	2006
17	Rosemont Road / Carriage Way	0	0	2006
18	Rosemont Road / Hidden Springs Road	2	1	2006
19	Rosemont Road / Salamo Road	17	18	2006
20	Rosemont Road / Summit Street	0	0	2006
21	Sunset Avenue / Cornwall Street	0	2	2006
22	Salamo Road / Bland Circle	0	0	2006
23	Salamo Road / Barrington Drive	0	0	2006
24	Salamo Road / Parker Road	6	0	2006
25	Blankenship Road / Tannler Drive	0	0	2006
26	10 th Street / Blankenship Road	4	1	2006
27	10 th Street / I-205 SB Ramp	3	2	2006
28	10 th Street / I-205 NB Ramp	2	0	2006
29	10 th Street / 8th Avenue	4	6	2006
30	10 th Street / Willamette Falls Drive	3	2	2006
31	Willamette Falls Drive / 12 th Street	0	4	2006
32	Willamette Falls Drive / Dollar Street E	2	1	2006

33	Willamette Falls Drive / 19 th Street	0	0	2006
34	Willamette Falls Drive / Ostman Road	7	2	2006
35	Willamette Falls Drive / Dollar Street W	1	0	2006

As shown in Table 3-1, the highest pedestrian crossing volumes were observed at intersections located near retail, recreational and educational land uses. Potential pedestrian crossing improvements should be prioritized at these locations to ensure safe and convenient access for pedestrians near businesses and schools.

Existing Deficiencies and Issues

The following provides a summary of the existing deficiencies and issues identified in the pedestrian system:

- Numerous gaps exist along sidewalks in key locations near retail and schools.
- Many sidewalks throughout the City are not ADA compliant and should be brought into compliance.
- Sidewalk widths for Highway 43 should be brought up to ODOT standards or where applicable, the standards identified in the West Linn Highway 43 Conceptual Design Plan, adopted December 10, 2007.
- Basic walkways should be provided in all neighborhoods.
- The TSP and SDC projects should be revised to show potential sidewalk improvements in locations that are feasible or desirable, based on discussions with citizens and business owners.
- The spacing and safety of pedestrian crossings on arterials and highways within the city should be reviewed to identify locations where enhancements are required.
- Identification of walkway/crossing needs should be done in conjunction with routes to major transit stops.

BICYCLE SYSTEM

Safe and convenient bicycle facilities are essential to a vibrant community and economy within the City. The bicycle system within the City of West Linn consists of on-street bike lanes, shoulder bikeways and shared roadways as well as off-street bike facilities such as bicycle parking and wayfinding signage. These types of facilities provide residents with the ability to access transit as well as retail, commercial, recreational, and other land uses located within West Linn and neighboring cities by bike.

In order to assess the adequacy of bicycle facilities in West Linn, GIS data was obtained from the City's GIS database and Metro's RLIS. The GIS data was updated based on a review of projects completed

since the last TSP Update and aerial imagery of the on-street bike lanes and shoulder bikeways and other bicycle facilities along the City's arterial and collector streets. The data includes the location of existing bike lanes and streets with low, moderate, and high vehicle traffic. The data also includes the location of existing activity centers such as parks, schools, the library, and City Hall. These activity centers were identified to determine possible bicycle trip generators and to help prioritize potential improvements in the bicycle system. Figure 3-3 shows the existing bicycle facilities located within and adjacent to the West Linn city limits as well as the location of major activity centers.

Bicycle Connectivity

The arterial roadway system in West Linn has basic bike lanes on a few major facilities, but most of the arterial streets have no designated bike facilities. Nearly all collector streets have no bike facilities at all. The only streets in the city with significant bike facilities are Highway 43, West A Avenue, and intermittent segments along Summit Street, Parker Road, and Willamette Falls Drive. In many cases, such as Hidden Springs Road, and the south end of Salamo Road, the slope of the roadway limits the feasibility or need for bike lanes on major arterials.

Roads with no bike lanes or intermittent bike lanes force bicyclists to share the travel lane with motor vehicles or use the shoulder if available. In many cases, this is not a desirable option for bicyclists due to narrow widths or uneven pavement conditions. Adequate bicycle facilities should be provided to allow for safe travel between neighborhoods and activity centers.

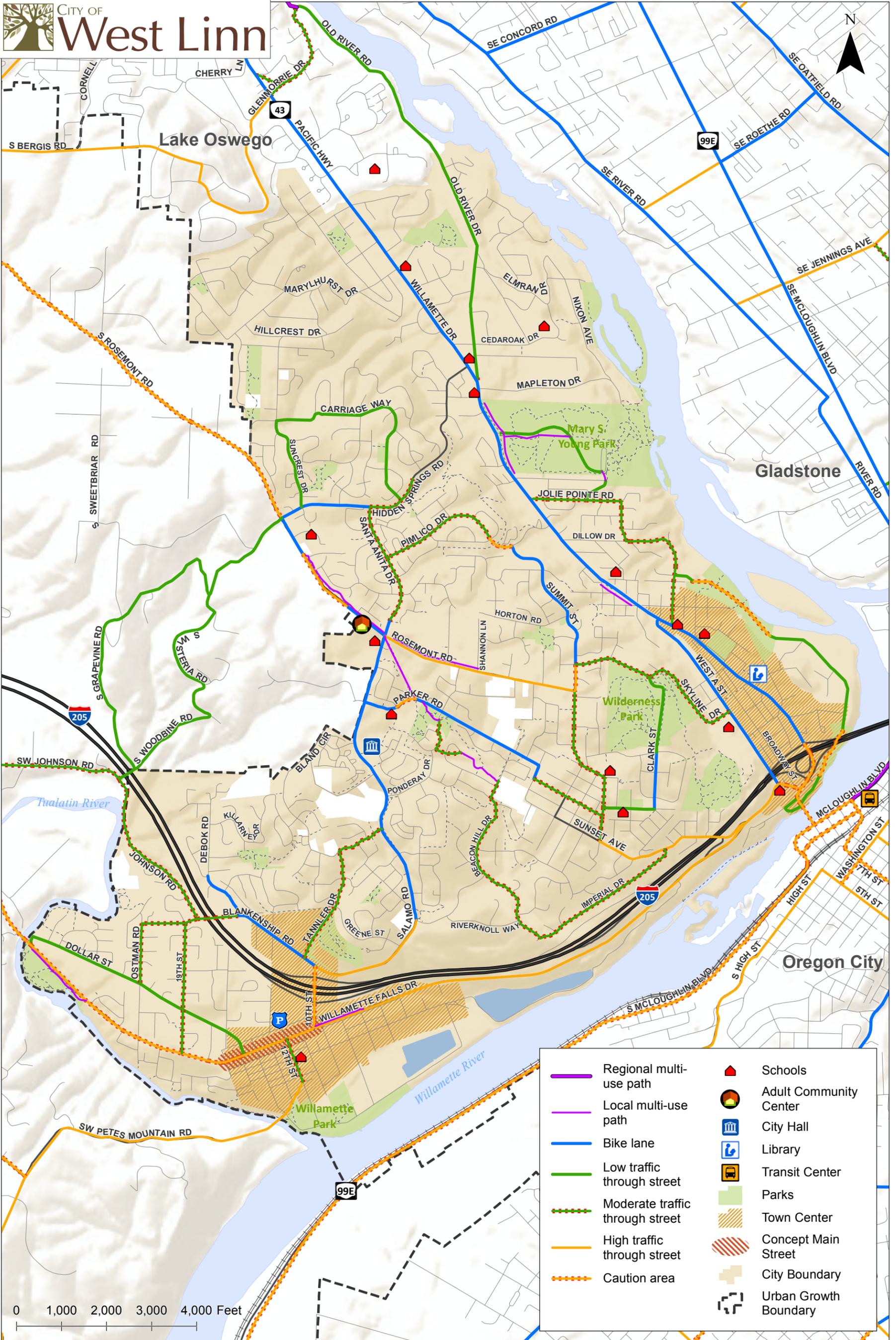
Local streets are generally not required to provide bike facilities, since streets with low vehicle volumes (under 3,000 average daily traffic) and slow speeds (25 miles per hour or less) are considered safe environments for shared vehicle- and bicycle use of the travel lanes. Deficiencies in the City's bicycle network are summarized at the end of this section.

Bicycle Level of Traffic Stress

The APM provides a methodology for evaluating Bicycle Level of Traffic Stress (LTS). This methodology can be used to evaluate the existing bicycle infrastructure and environment within West Linn. As applied by ODOT, this method classifies four levels of traffic stress that a cyclist can experience on the roadway, ranging from LTS 1 (which represents little traffic stress) to LTS 4 (which represents high stress). A road segment with LTS 1 generally has low traffic speeds and low volumes and is suitable for all cyclists, including children. A road segment with LTS 4 generally has high speeds, high volumes and is perceived as unsafe by most adults. LTS 2 is considered appealing to a majority of the bike-riding population and is the desired target on most roadways.

The LTS analysis was conducted along several street segments within West Linn which are disaggregated by direction of travel as provided by the City and ODOT. The streets include:

- Streets served by public transit;
- Safe Routes to School streets as provided by the West Linn-Wilsonville School System;



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Bicycle Facilities
West Linn, Oregon**

**Figure
3-3**

H:\profile\17817 - West Linn Transportation System Plan\figs\3-3 Bicycle Facilities.mxd - jsomerville - 10:33 AM 12/29/2014

- Streets with posted speeds greater than 25 mph;
- Streets with 24-hour vehicular counts greater than 5,000;
- Salamo Road;
- 10th Street between Salamo Road and Willamette Falls Drive;
- Hidden Springs Road;
- Dollar Street;
- Willamette Falls Drive; and,
- The Clackamas County Principal Active Transportation (PAT) routes.

Figure 3-4 illustrates the results of the LTS analysis. Key observations from the LTS review include:

- (Additional information is needed to complete this analysis)

Bicycle Activity Levels

Bicycle counts were conducted at the study intersections in 2006 as part of the previous TSP update. All of the counts were conducted on a typical mid-week day during the evening (3:30 to 6:30 p.m.) peak time period. All of the counts include the total number of bicyclists that entered the intersections in 15-minute increments. The peak hour bicycle volumes indicate low bicycle activity at the study intersections. Bicycle volumes at each study intersection are shown in Table 3-2. As shown, the only study intersection where more than three bicycles were observed during the three-hour count period was Rosemont Road/Salamo Road with a total of seven.

Table 3-2: Bicycle Crossing Volumes at Study Intersections

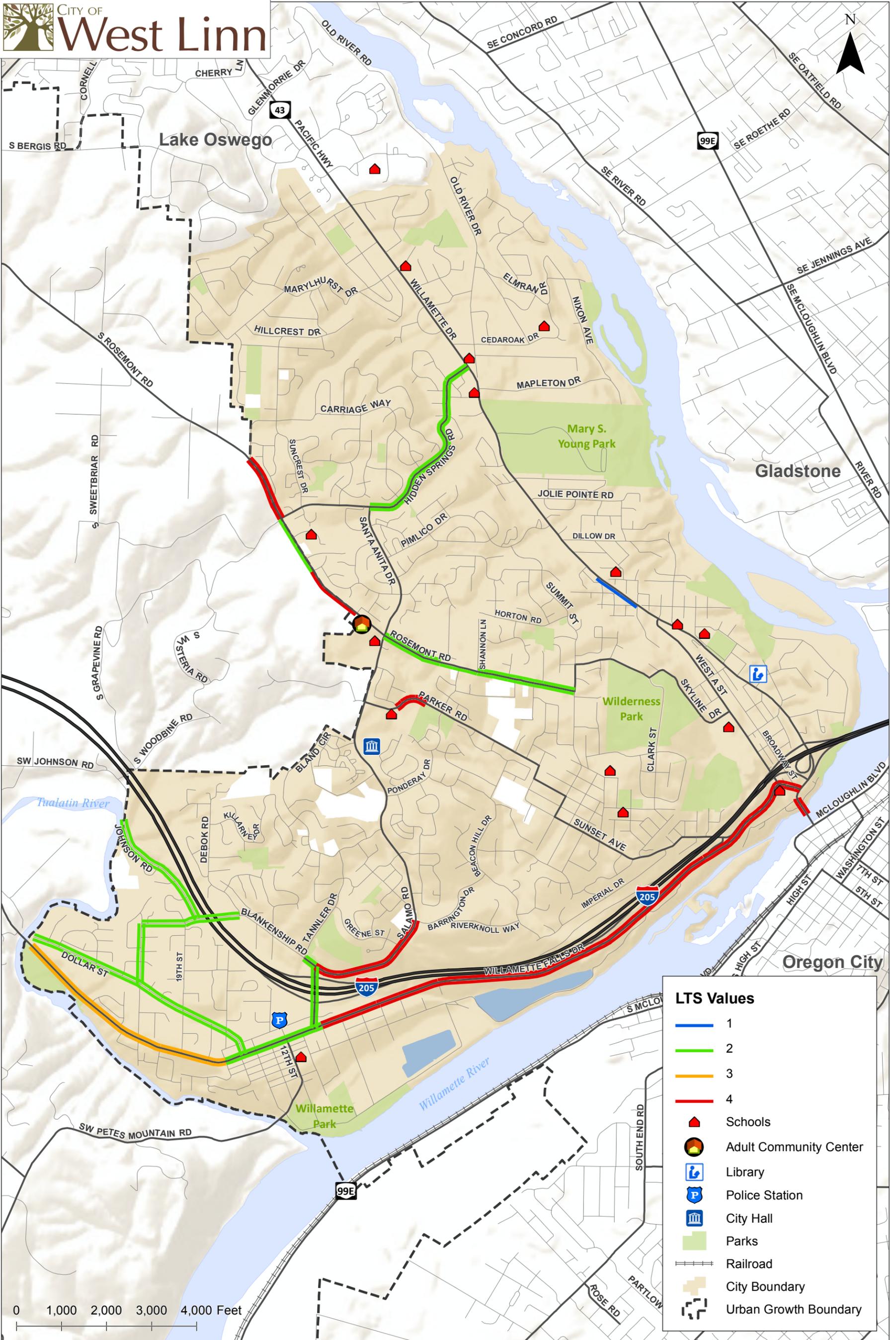
Map ID	Intersection	North/South Bicycle Volume	East/West Bicycle Volume	Count Year
1	Highway 43 / Arbor Drive	0	2	2006
2	Highway 43 / Marylhurst Drive-Lazy River Way	0	0	2006
3	Highway 43 / Walling Way	1	0	2006
4	Highway 43 / Cedaroak Drive	0	1	2006
5	Highway 43 / Hidden Springs Road	0	0	2006
6	Highway 43 / Jolie Pointe Drive	0	0	2006
7	Highway 43 / Pimlico Drive	1	0	2006
8	Highway 43 / West "A" Street	0	0	2006
9	Highway 43 / Holmes Street	0	0	2006
10	Highway 43 / Lewis Street-Webb Street	0	1	2006
11	Highway 43 / Burns Street	0	0	2006
12	Highway 43 / Hood Street-McKillican Street	1	0	2006

13	Highway 43 / I-205 SB Ramps	3	1	2014
14	Highway 43 / I-205 NB Ramps	6	0	2014
15	Highway 43 / Willamette Falls Drive	1	1	2014
16	Willamette Falls Drive / Sunset Avenue	2	0	2006
17	Rosemont Road / Carriage Way	0	0	2006
18	Rosemont Road / Hidden Springs Road	0	0	2006
19	Rosemont Road / Salamo Road	1	1	2006
0	Rosemont Road / Summit Street	1	1	2006
21	Sunset Avenue / Cornwall Street	0	0	2006
22	Salamo Road / Bland Circle	0	0	2006
23	Salamo Road / Barrington Drive	0	0	2006
24	Salamo Road / Parker Road	2	1	2006
25	Blankenship Road / Tannler Drive	0	0	2006
26	10 th Street / Blankenship Road	2	0	2006
27	10 th Street / I-205 SB Ramp	0	0	2006
28	10 th Street / I-205 NB Ramp	0	0	2006
29	10 th Street / 8th Avenue	0	2	2006
30	10 th Street / Willamette Falls Drive	1	0	2006
31	Willamette Falls Drive / 12 th Street	0	0	2006
32	Willamette Falls Drive / Dollar Street E	0	1	2006
33	Willamette Falls Drive / 19th Street	0	1	2006
34	Willamette Falls Drive / Ostman Road	0	0	2006
35	Willamette Falls Drive / Dollar Street W	0	0	2006

Existing Deficiencies and Issues

The following provides a summary of the existing deficiencies and issues identified in the existing bicycle system:

- The overall system of bike lanes provides very limited connectivity between different areas of the city.
- There are few bike lanes on the city's collector streets.
- A basic bike route system should be developed along or parallel to all arterial routes in the city, where topography and other design constraints permit. Considerations should include Rosemont Road, and portions of Willamette Falls Drive.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Bicycle Level of Traffic Stress (LTS)
West Linn, Oregon**

**Figure
3-4**

H:\profile\17817 - West Linn Transportation System Plan\GIS\4-LTS.mxd - jsummersville - 10:33 AM 12/29/2014

TRANSIT SYSTEM

The transit system within the City of West Linn includes fixed-route and paratransit services as well as regional transit centers and park-and-rides. Frequent morning and evening peak hour service along Highway 43 provides residents with the ability to use public transit for daily commuting, while less frequent mid-day, and weekend service provides residents with the ability to use public transit to access retail and recreational areas located throughout Clackamas County and the region.

Transit Service Providers

Transit service is provided in West Linn by the Tri County Metropolitan Transportation District of Oregon (TriMet), which provides transit service for the Portland Metro area including the counties of Clackamas, Multnomah and Washington. Other service providers include the West Linn School District, and Marylhurst University.

Fixed-Route Service

TriMet operates two fixed-route bus lines within West Linn, including Line 35 and Line 154. Line 35 (Macadam/Greeley) travels through West Linn along Highway 43, connecting the Oregon City Transit Center with the Lake Oswego Transit Center, the Portland City Center, the Rose Quarter Transit Center and the University of Portland. Line 154 (Willamette) travels along Willamette Falls Drive between the Oregon City Transit Center and the southwest area of West Linn. Table 3-3 summarizes the average headways and hours of service for Lines 35 and 154.

Table 3-3: Transit Service Route Weekday Peak Period Level of Service

Transit Route	Average Headways(Minutes)			Hours of Service (Hours)
	AM	Midday	PM	
#35 To Oregon City Transit Center	23	31	23	19 Hours (6:09 to 1:10 a.m.)
#35 To University of Portland	18	34	24	19 Hours (4:47 a.m. to 11:46 p.m.)
#154 To Willamette	37	70	70	12 Hours (6:33 a.m. to 6:55 p.m.)
#154 To Oregon City Transit Center	37	70	70	12 Hours (6:33 a.m. to 6:55 p.m.)

Note: Average Headways and Hours of Service reflect the following stop locations:

- Line 35 to Oregon City Transit Center: Willamette Drive & McKillican Stop ID 6339
- Line 35 to University of Portland: Willamette Drive & Burns – Stop ID 6306
- Line 154 to Willamette and to Oregon City Transit Center: Blankenship & Tannler Drive – Stop ID 9297

Existing transit routes and stops are illustrated on Figure 3-5. As shown, there are four stops with bus shelters: two near the Bolton Area shopping center, one near the Robinwood Shopping Center and one near the Willamette Historic Area Commercial District. Also, there is essentially no transit service available with convenient walking distance for most of the city west of Highway 43. This includes the shopping center on Salamo Road, and several of the area schools. There is one park-and-ride in West Linn located at the Highway 43/Cedaroak Drive intersection for commuters wishing to travel north on Line 35.

Paratransit Service

TriMet's LIFT Paratransit service is a shared-ride transportation service for residents who are unable to use regular fixed-route services due to disabilities or disabling health conditions. The service is offered within three-fourths of a mile beyond the outermost portions of TriMet's fixed-route bus and light-rail lines. Service is not offered outside of TriMet's service district. LIFT is available from 4:30 a.m. to 2:30 a.m. seven days a week. See <http://trimet.org/lift/> for detailed information and trip planning.

School Bus Service

School bus service is provided within the West Linn area by the West Linn-Wilsonville School District. Elementary school students living more than one mile from school are eligible for bus service, as are middle and high school students living more than 1.5 miles from their schools. School buses operate on all arterial and collector streets and many local streets. Safe bus stop approaches and waiting areas are a concern, as are walkways to schools within the radii not served by buses.

Shuttle Service

Mary's Woods provides a free shuttle service connecting the Marylhurst University campus with Lake Oswego and Oregon City. The Blue Line travels through West Linn along Highway 43 connecting the Marie Rose Center at Marylhurst to the Lake Oswego Transit Center and Millennium Plaza in Lake Oswego. The Green Line travels through West Linn along Highway 43 connecting the Marie Rose Center to the Oregon City Transit Center and the Evangelical church in Oregon City. There are currently no stops in West Linn. Shuttle in the Woods is a pilot program supported by a two-year grant from TriMet. Service began November 11, 2013.

Existing Deficiencies and Issues

The following provides a summary of the existing deficiencies and issues identified in the existing transit system:

- Marketing and awareness should be improved to attract higher ridership.
- Additional locations for park and ride lot facilities should be considered.
- Locations along Highway 43 where transit shelter enhancements would be most effective should be identified.

MOTOR VEHICLE

The motor vehicle system within the City of West Linn includes private streets, city streets, state highways, and an interstate freeway. This section describes how the system has been developed to date and provides a more detailed review of how it is used and operated.

Functional Classification

The functional classification system within West Linn is designed to serve numerous transportation needs. The schematic diagram in Exhibit 3-1 below reveals the relationship between facility design and mobility and accessibility outcomes. As mobility is increased (bottom axis), the provision for non-motor vehicle modes (top axis) is decreased. Similarly, as access and the use of streets for parking and loading increases (left axis), the facility design (right axis) dictates slower speeds, narrower travel ways, and non-exclusive facilities. Assigning a functional classification to roadways establishes a hierarchy of suitable design and performance characteristics that balances access and mobility, facility design and modal integration.

Exhibit 3-1: Relationship between access and mobility outcomes for various functional classifications

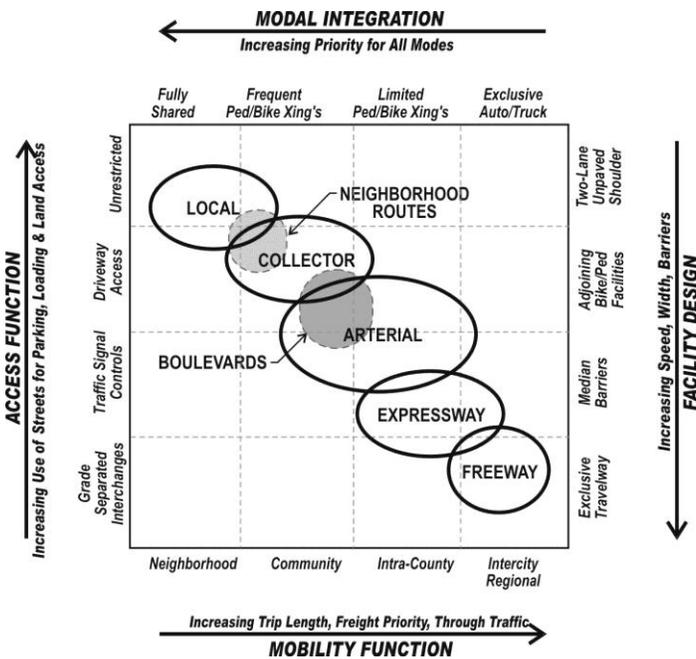


Exhibit 3-1 shows that as street classes progress from local to collector to arterial to freeway (top left corner to bottom right corner) the following occurs:

- Mobility Increases – Longer trips between destinations, greater proportion of freight traffic movement, and a higher proportion of through traffic.
- Integration of Pedestrian and Bicycle Modes Decreases – Provisions for adjoining sidewalks and bike facilities are required for the local, collector, and arterial classes; however, the frequency of intersection or mid-block crossings for non-motorized vehicles steadily decreases with higher functional classes. The freeway facilities, for example, typically do not allow pedestrian and bike facilities adjacent to the roadway and all crossings are grade-separated to enhance mobility and safety.
- Access Decreases – The shared uses for parking, loading, and direct land access is reduced. This occurs through parking regulation, access control and spacing standards (see opposite axis).

- Facility Design Standards Increase – Roadway design standards require increasingly wider, faster facilities leading to exclusive travelways for autos and trucks only. The opposite end of the spectrum is the most basic two-lane roadway with unpaved shoulders.

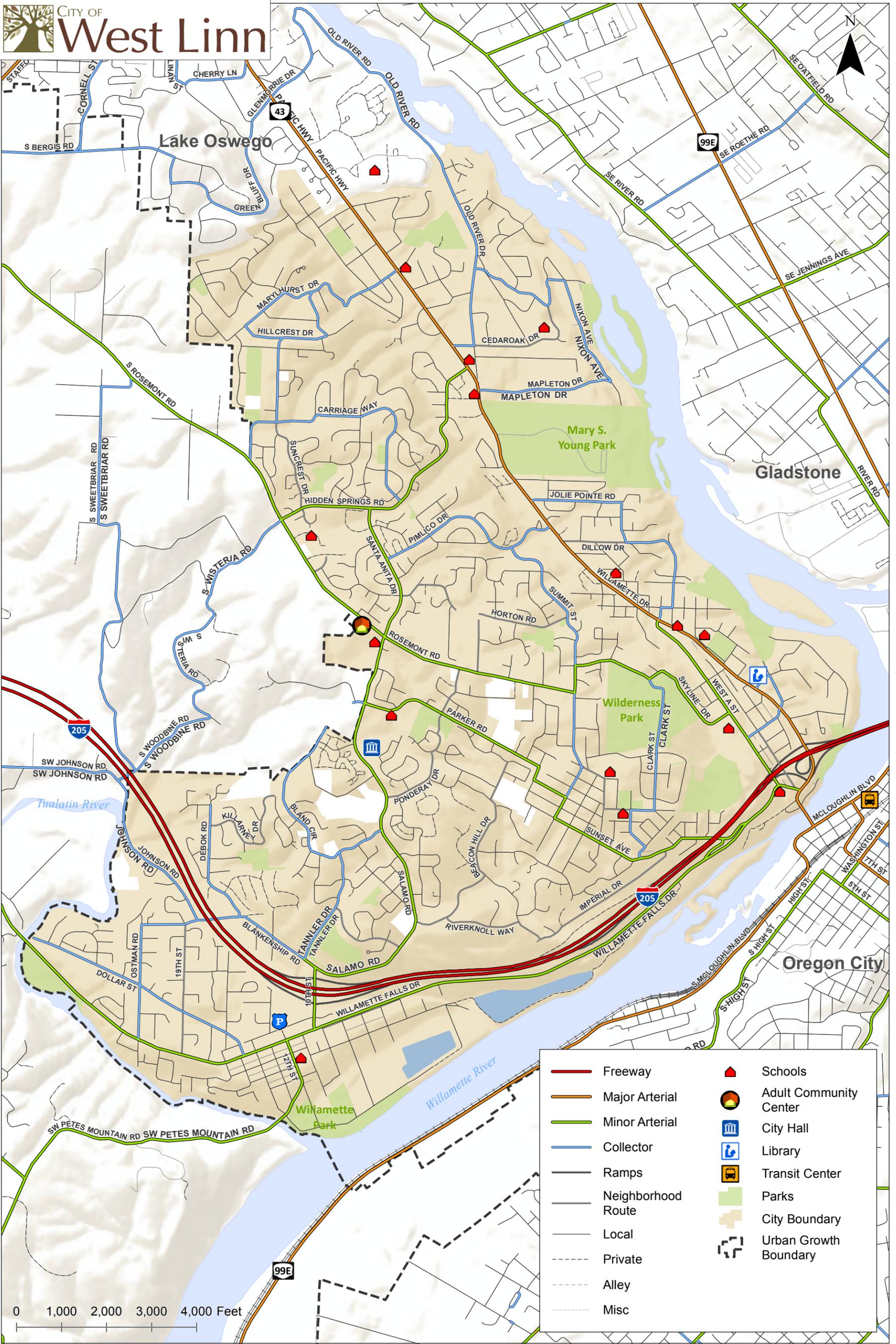
Neighborhood Routes overlap the local and collector functional classifications, and Boulevards overlapping the collector and arterial classes.

The current West Linn functional classification system for roadway facilities is depicted in Figure 3-6. The existing arterial route from Parker Road to Sunset Avenue is a circuitous route from Parker Road to Lancaster Street to Cornwall Street to Sunset Avenue. ODOT’s functional classification map West Linn (http://www.oregon.gov/ODOT/TD/TDATA/gis/docs/citymaps/West_Linn.pdf) shows a more direct route with Parker Road bypassing Lancaster Street and connecting directly to Sunset Avenue. However, the existing land use and road conditions support the route as shown in Figure 3-6. This pattern will continue until development provides the needed arterial standard street improvements. The West Linn functional classification hierarchy is described in Table 3-4.

Table 3-4: West Linn Street Functional Classification Description

Classification	Description
Principal Arterial	Typically state highways that provide the high level roadway capacity to local land uses. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterial or collectors. These highways generally span several jurisdictions and many times have statewide importance (as defined in the ODOT State Highway Classification).
Arterial	Arterials serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets in lieu of a well placed arterial street. Many of these routes connect to cities surrounding West Linn.
Collector	Collectors provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.
Neighborhood Route	Usually long relative to local streets and provide connectivity to collectors or arterials. Because neighborhood routes have greater connectivity, they generally have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/large area circulation. They are typically about a quarter to a half mile in total length. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management measures are often appropriate (including devices such as speed humps, traffic circles and other devices to be referred to in a later section in this chapter). However, it should not be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.
Local	Local streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design

ODOT’s map also shows the route from Parker Road to Sunset Avenue as an urban collector rather than an arterial. This discrepancy, along with several others identified between the ODOT and City functional classification maps are addressed in subsequent chapters of the TSP.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Functional Roadway Classifications
West Linn, Oregon**

**Figure
3-6**

H:\profile\1787 - West Linn Transportation System Plan\GIS\6 Functional Classifications.mxd - 10:33 AM 12/29/2014

The Oregon Highway Plan identifies Highway 43 as a Statewide Highway for the majority of its length in West Linn and as a District Highway approximately between I-205 and Highway 99E. Statewide Highways often function as inter-urban and inter-regional connectors to larger urban areas, providing safe and efficient, high-speed, continuous flow operations. District Highways often function as county and city arterials or collectors and provide connections between small urbanized areas, rural centers and urban hubs, while also serving local access and traffic. The management objective for District Highways is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas and moderate to low-speed operation for traffic flow and pedestrian/bicycle movements in urban areas.

Roadway Jurisdiction

Roadways within West Linn are under the jurisdiction of ODOT and the City. Each jurisdiction is responsible for determining the functional classification of the roadways, defining major design and multimodal features, and approving construction and access permits. Coordination is required among the jurisdictions to ensure that the roadways are planned, operated, maintained, and improved to safely meet public needs. Roadway jurisdiction (ownership and maintenance responsibilities) of the various roadways in the City of West Linn is identified in Figure 3-7. As shown, Highway 43 and I-205 along with its entrance and exit ramps are under the jurisdiction of ODOT, while the city is responsible for all other roadways within city limits.

Roadway Connectivity

Interstate 205 (I-205), located in the southern section of West Linn, serves as a regional facility and the major route to the East Portland metropolitan area. Highway OR 43 functions as the major north-south arterial through West Linn and includes turn lanes at several intersections. Access to I-205 from Highway 43 is provided at their interchange on the east edge of West Linn. Access to I-205 in West Linn is also provided farther west at 10th Street.

Metro spacing standards require a street spacing of one mile for major arterials and 0.5 miles for minor arterials and collectors. As Highway 43 is the only major arterial in the city, there is a need for an additional north-south major arterial approximately one mile to the east and west of Highway. For minor arterials and collectors, there are a few key corridors, such as Willamette Falls Drive, Salamo Road, Rosemont Road, and Hidden Springs Road, that are continuous facilities. There are some corridors with connectivity issues, such as Parker Road, which runs a non-direct path to Sunset Avenue, and Rosemont Road, which ends at Summit Street due to Wilderness Park. The RTP acknowledges that existing developments and natural features may present challenges in meeting the street spacing standards. In the case of West Linn, the existing street network and the natural features such as the Willamette River, the creeks, and the parks pose challenges to meeting Metro's street spacing standards.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Roadway Jurisdiction
West Linn, Oregon**

**Figure
3-7**

H:\profiles\17817 - West Linn Transportation System Plan\GIS\7 - Jurisdiction.mxd - isommen/ib - 10:34 AM 12/29/2014

Roadway Characteristics

Field inventories were conducted in 2006 as part of the previous TSP update to identify and document the characteristics of major roadways within West Linn. The inventory data includes posted speed limits, street width, right of way width, number of lanes and lane width. The data also includes the geometry and lane configurations of several major intersections along with intersection controls. These characteristics define roadway capacity and operating speeds through the street system, which affects travel path choices for drivers in West Linn. The inventory data is summarized in Table 3-5. As shown, the majority of roadways in West Linn are posted at 25 mph. Arterial roadways such as Willamette Falls Drive, Salamo Road and Rosemont Road, as well as Highway 43 are posted at higher speeds ranging from 25 to 45 mph. Street widths vary significantly between roadways while right of way width is fairly consistent.

Intersection control types at study intersections are shown on Figure 3-8. Five of the eleven traffic signals in West Linn are located in I-205 interchange areas, five are located along Highway 43, and one is located at the Santa Anita/Rosemont Road intersections. The intersection of Highway 43/Holmes Street has a pedestrian signal for Highway 43 traffic, but is stop-controlled on the side street. All-way stop controlled intersections are located at four arterial intersections and the rest of the study intersections are two-way stop controlled.

Table 3-5: Existing Study Area Roadway Characteristics by Functional Classification

Corridor	Posted Speed	Street Width [ft]	ROW Width [ft]	Number of Lanes	Lane Width [ft]
<i>Principal Arterial</i>					
Highway 43 (Willamette Drive)	35	27-80	60	2-4	12
<i>Arterial</i>					
Hidden Springs Road	25	30-53	60	2	11
West A Street	25	37-42	60	2	11
Willamette Falls Drive	25-45	32-41	120	2	11-12
Rosemont Road	25-40	23-40	60	2	10
Santa Anita Drive	25	33-54*	50-84	2	12-15
Salamo Road	25-40	32-55*	30	2	12
Summit Street (<i>also Collector</i>)	25	24-45	60-70	2	10-11
Skyline Drive	25	28-36	50	2	12
Parker Road	25-35	20-50*	60	2	10-12
Cornwall Street	25	26-33	60	2	10-11
Sunset Avenue	25	26-29	60	2	10-11
10 th Street	25	15-24	50	2-4	11
12 th Street	25	52-58	80	2	11
Tualatin Avenue	25	25	60	2	11
<i>Collector</i>					
Marylhurst Drive	25	27	50	2	10
Hillcrest Drive	25	17-23	50	2	10
Suncrest Drive	25	25-38	50	2	10
Carriage Way	25	28-38	50	2	18
Cedar oak Drive (<i>also Neighborhood Route</i>)	25	27-35	50	2	11

Old River Road	25	20-25	60	2	11
Elmran Avenue	25	20	50	2	10
Nixon Avenue	25	18-25	40-50	2	10
Mapleton Drive		18-20	50	2	11
Jolie Pointe Road	25	18-37	60	2	9
Larson Avenue		22-30	50	2	14
Failing Street		24	60	2	12-14
Pimlico Drive	25	31-40	60	2	14-16
Clark Street		42-43		2	10
Long Street		23-44		2	12-14
Simpson Street		23-44	50	2	10-11
Bland Circle	25	30-34	60	2	10-16
Tannler Drive		32-44	40-50	2	12
Blankenship Road		25-46	60	2	10-14
Debok Road	25	32-48	60	2	12-14
Johnson Road	25-40	22-42	60	2	10-12
Dollar Street	25	28-34		2	11
Ostman Road	25	21-35		2	11-12
Burns Street	25	20-23	50	2	14
Hood Street	25	23-31	40	2	11
McKillican Street	25	40-42	60	2	12
Neighborhood Route					
Dillow Road	25	20-25	30-60	2	8-11
Broadway Street		20-43		2	10-12
Horton Road		37-44*	50-55	2	16
Exeter Street	25	18-32	60	2	10-11
Oxford Street	25	35	60	2	10-14
Barrington Drive		34-44		2	12
Beacon Hill Drive		18-35		2	12
Imperial Drive		37-45		2	10-12

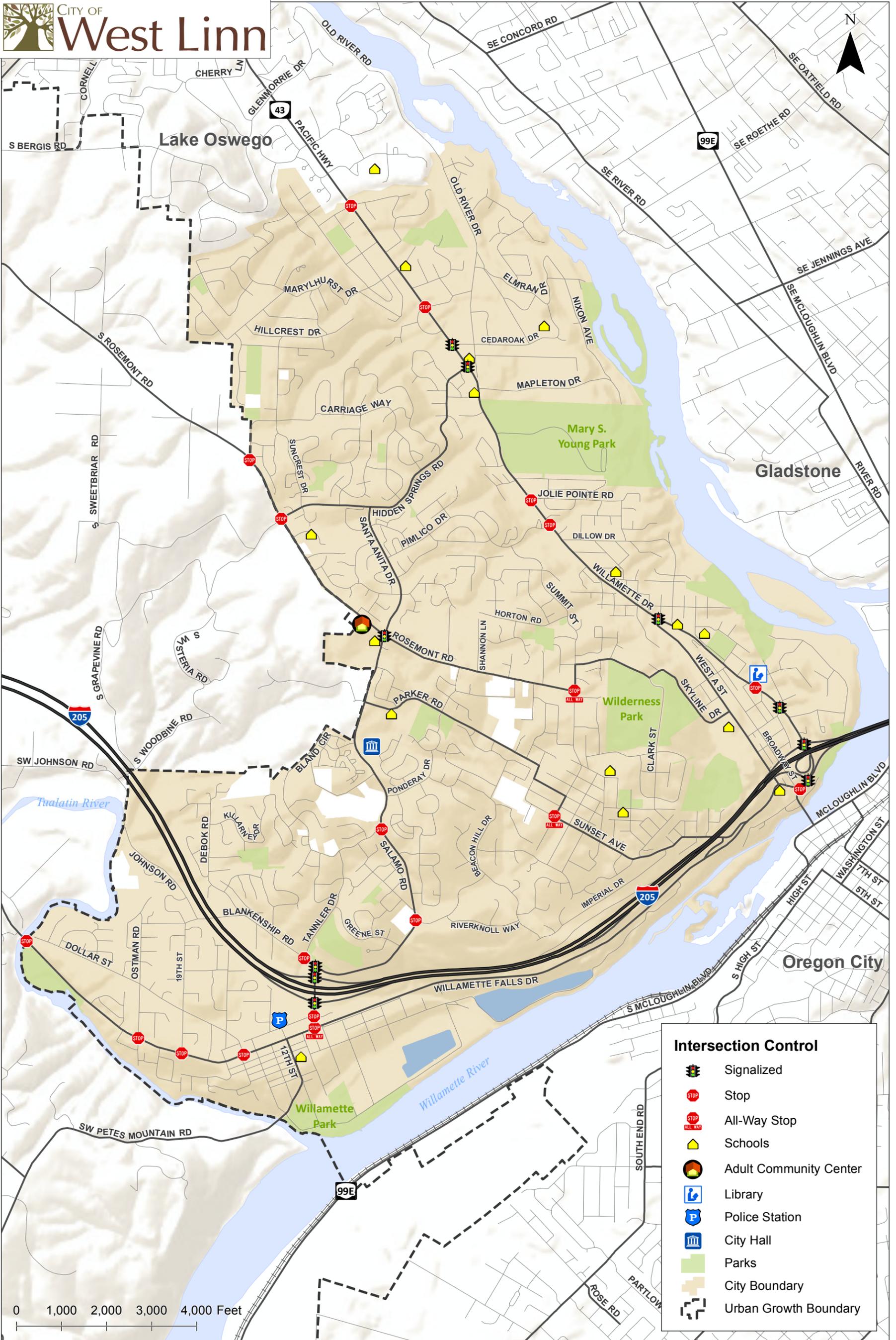
*Street width includes traffic island.

Table 3-5 also lists the existing number of lanes on each roadway in West Linn. The majority of roadways in West Linn are two lanes, although additional turn lanes are provided at I-205 interchange areas and many arterial intersections along Highway 43, Salamo Road, and Blankenship Road. Local streets in the City of West Linn are two lane roadways.

The key roadways in West Linn were measured at various locations to determine typical cross-section widths. Some streets within the study area have new sections intermixed with older sections resulting in ranges of roadway widths depending on location.

Pavement Conditions

Capitol Assets & Pavement Services, Inc. was contracted by the City of West Linn Public Works to perform a complete inspection of all of the City maintained streets in the City of West Linn over three years. All 100.8 centerline miles of streets were evaluated in accordance with Metropolitan



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Intersection Control
West Linn, Oregon**

**Figure
3-8**

H:\profiles\17817 - West Linn Transportation System Plan\GIS\3-8 Intersection Control.mxd - somerville - 10:34 AM 12/29/2014

Transportation Commission (MTC) standards, half in 2009, the other half in 2011. The Streetsaver Online 9.0 database was updated with the inspection data. Pavement inspections were completed in May 2011.

The City's overall network pavement conditions index (PCI) is currently a 62, on a scale of 0-100. That has decreased from a network PCI of 65 in 2009 and, at the current level of funding for street maintenance it will continue to decrease, falling 8 points over the next five years. As the overall condition of the City's streets continues to fall, the City will lose the opportunity to maintain streets with more cost-effective treatments, such as slurry seals and thin overlays. As street deteriorate into Poor conditions (PCI<50), they will require more extensive treatment such as thick overlays and full reconstructions, treatments that are much more expensive.

Capitol Assess & Pavement Services, Inc. in coordination with the City of West Linn Public Works prepared a report that summarizes the current state of the City's street network, the likely state of the street network over the next five years, and what steps can be taken to improve the overall condition of the City street network.

Designated Street Parking

An inventory of existing designated on-street parking was conducted in 2006 as part of the previous TSP update. The inventory focused on all arterial and collector roadways within West Linn. On-street parking is generally not provided on arterials in West Linn with the exception of angled and parallel parking accessed by frontage roads along Willamette Falls Drive between 10th Street and Dollar Street (East) and parallel parking along West A Street. Many of the collector streets in residential neighborhoods, such as Marylhurst Drive, have on-street parking.

Access Management

Appropriate roadway access spacing is needed to ensure safety and smooth operations along a corridor. Typically, each parcel is allowed access to the adjacent roadway. However, when there are numerous roadway access points along a roadway, there may be a need to implement access management measures to control access to a roadway. Access management practices can include closure, consolidation or relocation of accesses.

The ODOT access management standards, as defined in OAR 734-051, call for minimum distances between access points on the same side of the highway. The standards vary depending on the highway classification and the posted speed on the roadway, as shown in Table 3-6. The ODOT spacing standards apply to the Highway 43 and the I-205 interchange areas.

Most segments of Highway 43 do not meet ODOT access spacing standards as a result of frequent roadway intersections or driveways located along the highway as it passes through residential areas.

Table 3-6: ODOT Access Management Standards (feet)

Facility	Posted Speed (MPH)				
	55 or greater	50	40,45	30,35	25 or less
Statewide Highway (ft)	1,320	1,100	800	500	350
District Highway (ft)	700	550	500	350	250

Source: Oregon Administrative Rules, Chapter 734, Division 51, Table 4 and Table 6

Access spacing standards identified in the 2008 West Linn TSP are summarized in Table 3-7.

Table 3-7: West Linn Spacing Standards (feet)

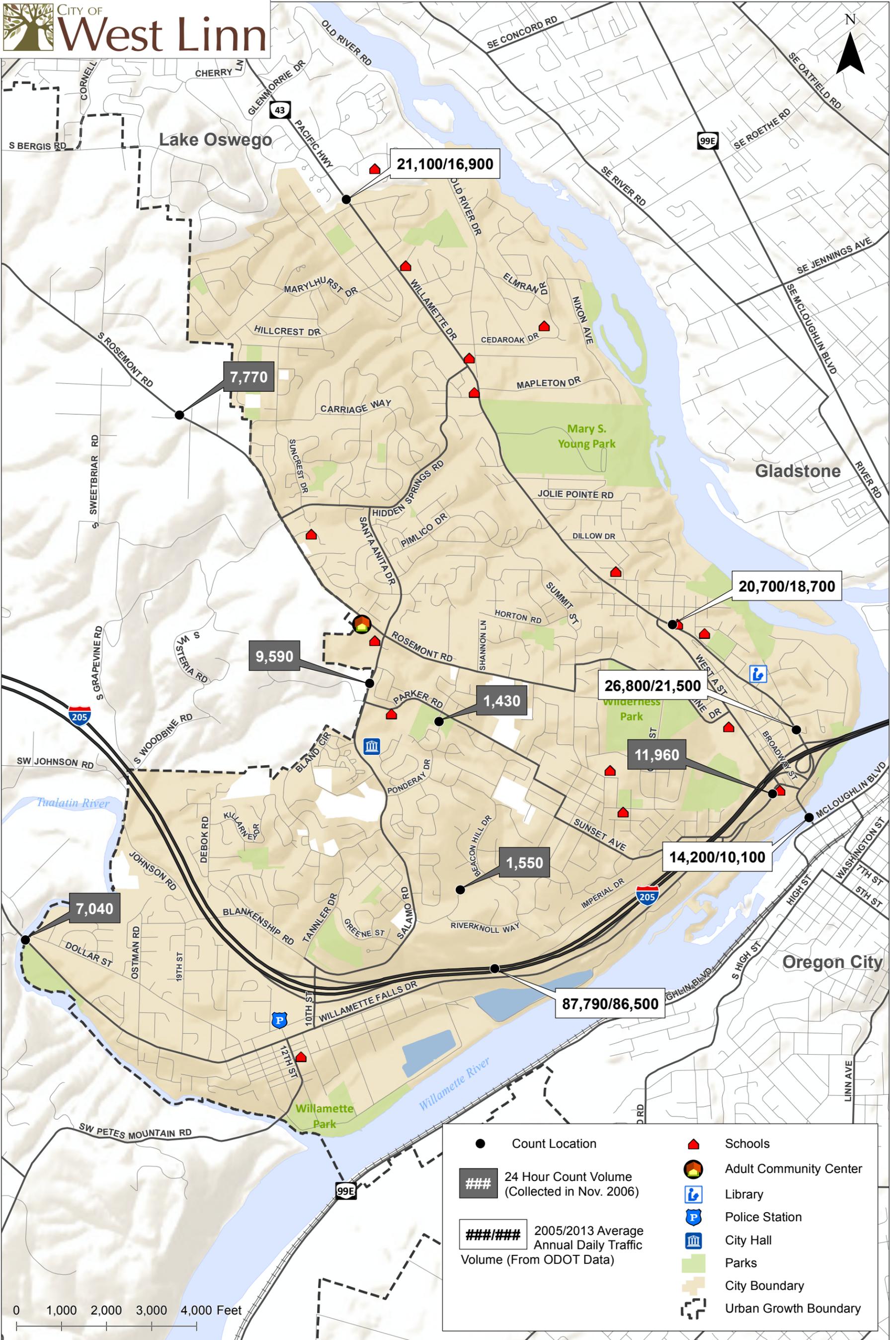
Facility	Access Requirements		
	Signal Spacing	Street	Driveway
Arterial (Urban Area)	2,650	600	300
Arterial (Opportunity Area)	1,320	NA	NA
Collector	1,320	200	150
Local Residential Street	NA	100	50
Local Commercial Street	NA	100	50

Motor Vehicle Volumes

Traffic counts were conducted at the study intersections in 2006 as part of the previous TSP update. All the counts were conducted on a typical midweek day during the weekday evening (3:30 to 6:30 p.m.) peak time period. All the counts include the total number of vehicles that entered the intersections in 15-minute increments. The peak hour motor vehicle volumes were used to determine existing traffic operations at the thirty-four study intersections and along several major roadways within West Linn. The volumes were also used to forecast future traffic volumes and operations as described in subsequent chapters of the TSP.

Figure 3-9 shows 24-hour traffic volumes along several major roadways within the West Linn area. While traffic volumes can vary from day to day and month to month based on weather, surrounding roadway conditions (such as construction), and holidays, traffic volumes within the West Linn area have generally gone down over the last several years. The following provides a summary of the traffic volumes changes based on data obtained from ODOT.

In order to better understand the overall trends of traffic volumes over the past ten years, traffic volume data were obtained from ODOT's Traffic Counting Program. Average Annual Daily Traffic (AADT) was obtained at select locations along Highway 43 and I-205; no data is available for Rosemont Road, Salamo Road, Wild Rose Drive, Barrington Drive, or Willamette Falls Drive. Chart 3-1 shows the traffic volume changes between 2004 and 2013.



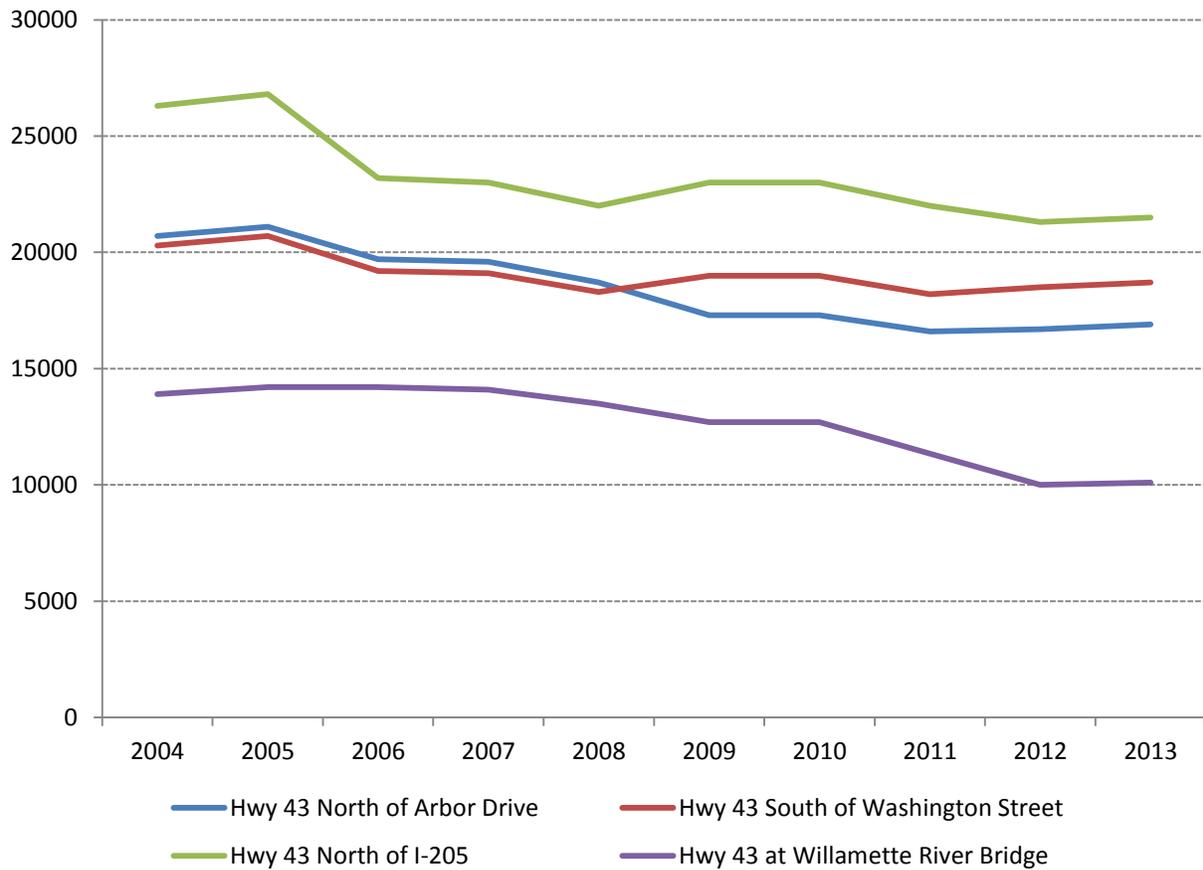
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Average Daily Traffic Volumes (2006)
West Linn, Oregon**

**Figure
3-9**

H:\profile\17817 - West Linn Transportation System Plan\GIS\9-Average Daily Traffic Volumes.mxd - jscummerville - 10:34 AM 12/29/2014

Chart 3-1: Traffic Volumes Changes



As shown in Chart 3-1, traffic volumes have generally decreased over the last several years, including from the time of the 2008 TSP update. The data for I-205 was omitted from the chart to make it legible, but that data shows a similar decrease in traffic volumes from 91,300 in 2005 to 86,500 in 2013. Additional data obtained from ODOT shows that traffic volumes along Highway 43 are not anticipated to return to 2004 levels until 2033 or beyond while traffic volumes along I-205 is not anticipated to return to 2004 levels much sooner.

Research conducted by ODOT in advance of this TSP update indicates the following:

1. Measured AADTs on Highway 43 have decreased an average of nine percent between 2006 and 2013.
2. Measured AADTs on I-205 have decreased an average of four percent near the 10th Street interchange and increased an average of six percent near the Highway 43 interchange between 2006 and 2013.
3. The difference in the peak hour counts taken from the 2006 TSP and the 2014 counts reveal:
 - a. The 10th Street corridor has lost volume.
 - b. The Willamette Falls Drive corridor near 10th Street has lost volume.

- c. Highway 43 has increased in volume but at an average rate near 25 percent less than what the TSP predicted. Unless a larger growth rate is assumed the volumes will be less than what the TSP predicted in 2030 and would not meet those volumes until sometime between 2030 and 2040.
- d. I-205 volumes at 10th Street will not recover to the 2004 volume until 2033.
- e. I-205 volumes at Highway 43 surpassed 2004 volumes in 2011.

Given that traffic volumes have generally decreased within the City of West Linn, with the exception of a few select intersections, the traffic operations shown in the 2006 TSP and summarized below, are assumed to reflect current conditions.

Existing Operation Conditions

Level of Service (LOS) and volume to capacity (v/c) are frequently used as measures of effectiveness for intersection operation. LOS is determined based upon average approach delay at signalized intersections and critical movement delay at unsignalized intersections. LOS A, B, and C indicate conditions where traffic moves without significant delays, while LOS D and E indicate progressively worsening conditions and LOS F indicates conditions where average approach delay exceeds 80 seconds per vehicle entering a signalized intersection and where the critical movement delay exceeds 50 seconds per vehicle at an unsignalized intersection. Unsignalized intersections provide LOS for major and minor street turning movements. For this reason, LOS E and even LOS F can occur for a specific turning movement; however, the majority of traffic may not be delayed (in cases where major street traffic is not required to stop). LOS E or F conditions at unsignalized intersections generally provide a basis to study intersections further to determine availability of acceptable gaps, safety and traffic signal warrants.

V/C is determined by dividing the total volume at an intersection approach or movement by the maximum volume the intersection approach or movement can theoretically handle. For example, when a v/c is 0.80, the volume represents 80 percent of the intersection capacity. If the volume exceeds the capacity, queues will form and will lengthen until demand subsides below the available capacity. When the v/c approaches 1.0, intersection operation becomes unstable and small disruptions can cause traffic flow to break down.

LOS and V/C are used as measures of effectiveness for study intersection performance. The minimum operational standard specified in the City of West Linn Comprehensive Plan (April 2006) is LOS D for all facilities except principal arterials (Highway 43) where the minimum is LOS E. The ODOT operating performance standards require intersections inside an Urban Growth Boundary and within the Portland Metropolitan Region to operate below the maximum V/C ratios shown in Table 3-8.

Table 3-8: ODOT Operating Standards

ODOT Highway Category	Location	Volume to Capacity Ratio (v/c)
Corridors	Highway 43 10 th Street	0.99
Ramp Terminals for Freeway Interchange Ramps	I-205 ramp intersections	0.85

Source: Oregon Highway Plan, Oregon Department of Transportation, August 2012, Policy 1F.

The City has adopted Town Center and Main Street designations in concept only. Once boundaries have been established and adopted by the City, ODOT will allow a higher level of congestion (v/c=1.1) on their facilities.

The weekday evening peak hour intersection volumes were used to determine the existing operating conditions at the study intersections based on the 2000 Highway Capacity Manual methodology for signalized and unsignalized intersections.

Table 3-9 summarizes the weekday evening peak hour intersection operation at the study intersections based on 2006 traffic volumes. Intersections controlled by traffic signals operate within accepted standards along Highway 43 and at some locations on 10th Street. However, the intersection of 10th Street / Salamo Road-Blankenship Drive operates at capacity today, because of the close spacing with the freeway off-ramps and coordinated signal controls between those two adjacent intersections. Queues on the Salamo Road approach have been observed to extend over a quarter-mile uphill during peak periods and require several traffic cycles to clear.

The locations controlled by all-way stops generally operate within acceptable standards, as do those with stop sign controls on the minor street approach only. There are several exceptions along Highway 43 where the estimated delay for vehicles turning left onto the highway from the minor street is very significant, with an LOS F rating. These locations will be reviewed to determine if volumes and spacing are sufficient to justify installation of traffic signals or other higher capacity controls.

Table 3-9: Weekday PM Peak Hour Intersection Level of Service

Intersection	Level of Service (LOS)	Delay (Sec)	Volume/Capacity (V/C)	Measure of Effectiveness (MOE)		MOE Met?
				Agency	Maximum	
<i>Signalized Intersections</i>						
Highway 43/Marylhurst Dr	B	16.3	0.80	ODOT	v/c 0.99	Yes
Highway 43 / Cedaroak Dr	B	10.4	0.65	ODOT	v/c 0.99	Yes
Highway 43 / Hidden Springs Rd	C	25.0	0.83	ODOT	v/c 0.99	Yes
Highway 43 / West A St	B	12.5	0.74	ODOT	v/c 1.1	Yes
Highway 43 / Hood St-McKillican St	C	23.6	0.76	ODOT	v/c 1.1	Yes
Highway 43 / I-205 SB	C	26.5	0.85	ODOT	v/c 0.85	Yes
Highway 43 / I-205 NB	A	8.0	0.30	ODOT	v/c 0.85	Yes
10 th St / Blankenship Dr	D	55.0	0.63	ODOT	v/c 0.85	Yes
10 th St / I-205 SB	C	34.4	0.61	ODOT	v/c 0.85	Yes
10 th St / I-205 NB	B	16.1	0.65	ODOT	v/c 0.85	Yes

All-Way Stop Intersections						
Salamo Rd / Rosemont Rd	E	38.3	>1	City	LOS D	No
Rosemont Rd / Summit St	A	9.2	0.37	City	LOS D	Yes
Sunset Ave / Cornwall St	A	7.6	0.15	City	LOS D	Yes
Willamette Falls Dr / 10 th St	C	23.8	0.87	City	LOS D	Yes
Unsignalized Intersections						
Highway 43 / Arbor Dr	B/F	1.5	0.03 / 0.37	ODOT	v/c 0.99	Yes
Highway 43 / Walling Way	B/E	0.9	0.04 / 0.21	ODOT	v/c 0.99	Yes
Highway 43 / Jolie Pointe Rd	A/E	0.8	0.03 / 0.22	ODOT	v/c 0.99	Yes
Highway 43 / Pimlico Dr	B/F	7.9	0.16 / >1	ODOT	v/c 0.99	No
Highway 43 / Holmes St	B/F	2.7	0.02 / 0.65	ODOT	v/c 0.99	Yes
Highway 43 / Lewis St	B/E	0.6	0.01 / 0.15	ODOT	v/c 0.99	Yes
Highway 43 / Burns St	B/F	39.6	0.23 / >1	ODOT	v/c 1.1	No
Highway 43 / Willamette Falls Dr	A/F	73.5	0.21 / >1	ODOT	v/c 0.99	No
Willamette Falls Dr / Sunset Ave	B/F	98.2	0.22 / >1	City	LOS D	No
Rosemont Rd / Carriage Way	A/C	2.4	0.09 / 0.21	City	LOS D	Yes
Rosemont Rd / Hidden Springs Rd	A/C	3.1	0.10 / 0.14	City	LOS D	Yes
Salamo Rd / Bland Circle	A/B	0.8	0.00 / 0.09	City	LOS D	Yes
Salamo Rd / Barrington Dr	A/C	2.5	0.04 / 0.20	City	LOS D	Yes
Salamo Rd / Parker Rd	A/C	1.6	0.05 / 0.13	City	LOS D	Yes
Blankenship Road / Tannler Dr	A/F	8.0	0.13 / 0.52	City	LOS D	No
10 th St / 8 th Ave	A/F	10.1	0.13 / 0.73	City	LOS D	No
Willamette Falls Dr / 12 th St	A/C	3.7	0.17 / 0.23	City	LOS D	No
Willamette Falls Dr / Dollar St (East)	A/C	1.3	0.01 / 0.21	City	LOS D	Yes
Willamette Falls Dr / 19 th St	A/F	42.6	0.01 / 0.95	City	LOS D	No
Willamette Falls Dr / Ostman Rd	A/C	0.8	0.03 / 0.06	City	LOS D	Yes
Willamette Falls Dr / Dollar St (West)	A/B	1.0	0.03 / 0.07	City	LOS D	Yes

Notes:

LOS = Intersection Level of Service (Signal), Critical Movement Level of Service (TWSC).

Delay = Intersection Average vehicle delay (Signal), critical movement vehicle delay (TWSC).

V/C = Intersection V/C (Signal) critical movement V/C (TWSC).

MOE = Measure of Effectiveness

Traffic Safety

Crash data were obtained from ODOT to identify any areas of traffic safety concern within West Linn. To identify potential focus areas for safety improvements in the TSP, crash patterns were evaluated at specific study intersections throughout the city. The evaluations were based on the five most recent years of crash data available at the time of analysis (January 1, 2009 to December 31, 2013). Crashes were evaluated based on their frequency, type (e.g., rear-end, angle, fixed object), severity (i.e., property damage only, injury and fatality), and whether a bicycle and/or pedestrian was involved. Table 3-10 summarizes the crashes experienced at study intersections, by crash type and by crash severity.

Table 3-10: Crash Data

Location	Crash Type						Severity		Total
	Angle	Turn	Rear-End	Side Swipe	Fixed Object	Ped/Bike	PDO*	Injury	
HWY 34 & Cedar Oak Drive	-	1	3	-	-	-	2	2	4
HWY 34 & Hidden Springs Road	-	1	7	1	-	-	6	3	9
HWY 34 & I-205 SB Ramps	2	3	7	-	-	1	5	8	13
Willamette Falls Drive & 10 th Street	-	2	2	-	-	-	4	0	4
10 th Street & 8th Avenue	4	8	-	-	-	-	9	3	12
10 th Street & Blankenship Road	-	-	1	-	-	-	1	-	1
10 th Street & I-205 NB Ramps	-	1	4	-	-	-	2	3	5
10 th Street & I-205 SB Ramps	-	1	2	-	-	-	2	1	3
Blankenship Road & Tannler Drive	1	2	1	-	1	-	2	3	5
HWY 34 & I-205 NB Ramps	-	1	2	-	2	-	2	3	5
HWY 34 & Willamette Falls Drive	-	3	2	-	-	-	4	1	5

* PDO = Property Damage Only

Truck Freight

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. The only state-designated truck route in West Linn is I-205.

Traffic counts were conducted at the study intersections in 2006 as part of the previous TSP update. All the counts were conducted on a typical mid-week day during weekday evening (3:30 to 6:30 p.m.) peak time period. All of the counts include the total number of trucks that entered the intersection as a percentage of total vehicles. Truck percentages at study intersections are listed in Table 3-11. Freight routes are shown on Figure 3-10.

Table 3-11: PM Peak Hour Truck Volumes at Study Intersections

Intersection	Intersection Truck Volume	Truck % of All Vehicular Traffic	Count Year
Highway 43 / Arbor Drive	26	1%	2006
Highway 43 / Walling Way	23	1%	2006
Highway 43 / Cedar Oak Drive	31	2%	2006
Highway 43 / Hidden Springs Drive	23	1%	2006
Highway 43 / Jolie Pointe Drive	52	3%	2006
Highway 43 / Pimlico Drive	54	3%	2006
Highway 43 / West "A" Street	60	3%	2006
Highway 43 / Burns Street	39	2%	2006
Highway 43 / Hood Street-McKillican Street	42	2%	2006
Highway 43 / I-205 SB Ramps	75	4%	2014

Highway 43 / I-205 NB Ramps	86	5%	2014
Highway 43 / Willamette Falls Drive	49	2%	2014
Rosemont Road / Carriage Way	5	1%	2006
Rosemont Road / Hidden Springs Road	5	1%	2006
Rosemont Road / Salamo Road	30	2%	2006
Rosemont Road / Summit Street	1	0%	2006
Salamo Road / Bland Circle	24	3%	2006
Salamo Road / Barrington Drive	34	5%	2006
Salamo Road / Parker Road	7	1%	2006
Sunset Ave / Cornwall St	0	0%	2006
Blankenship Rd / Tannler Dr	27	2%	2006
10 th St / Blankenship Road	43	3%	2006
10 th St / I-205 SB Ramp	88	5%	2006
10 th St / I-205 NB Ramp	90	5%	2006
10 th St / 8th Ave	30	2%	2006
10 th St / Willamette Falls Dr	27	2%	2006
Willamette Falls Drive / Sunset Ave	38	2%	2006
Willamette Falls Drive / Dollar Street E	16	1%	2006
Willamette Falls Drive / 12 th Street	24	2%	2006
Willamette Falls Drive / 19 th Street	24	2%	2006
Willamette Falls Drive / Ostman Road	27	3%	2006
Willamette Falls Drive / Dollar Street W	22	2%	2006

OTHER TRAVEL MODES

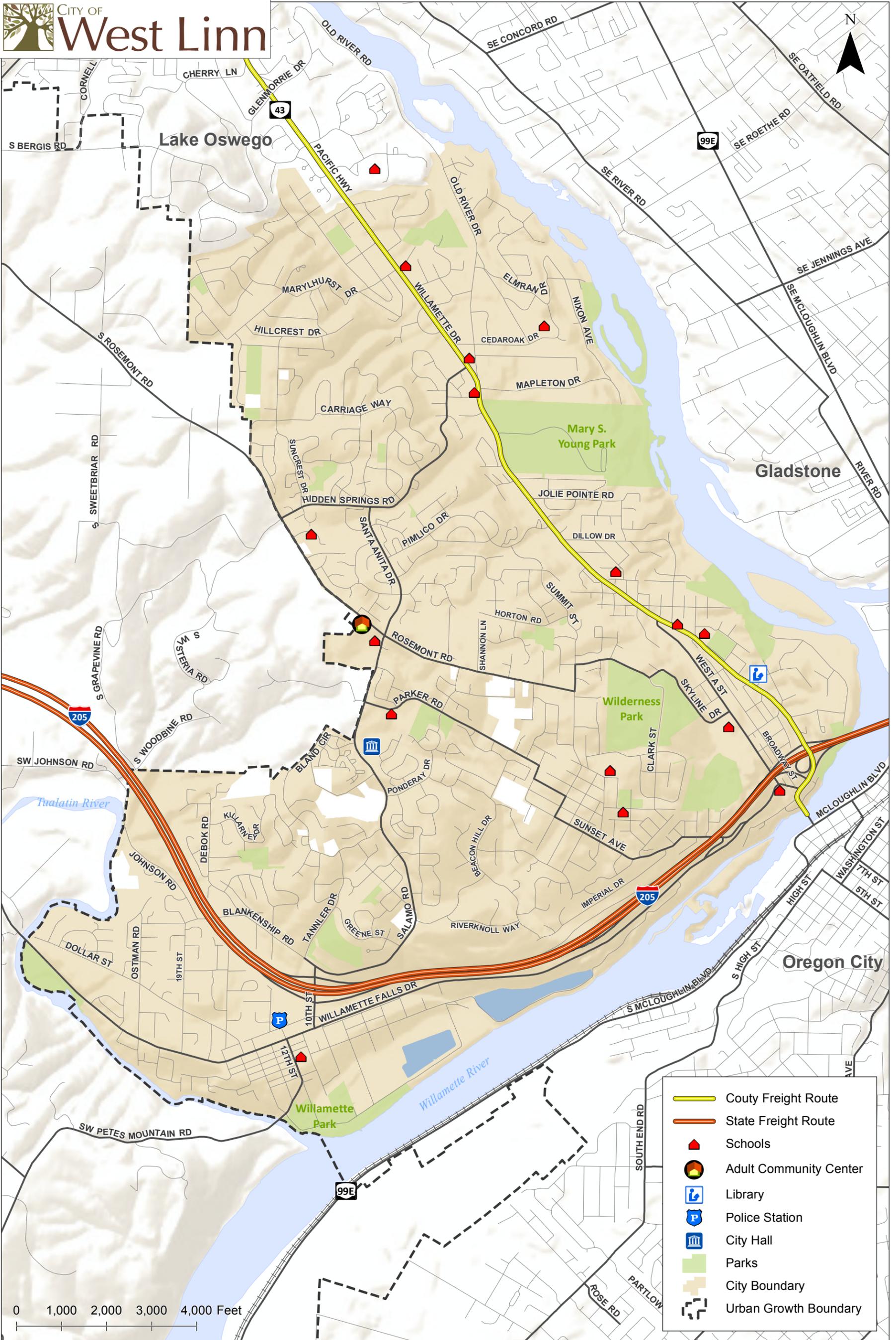
There are no other modes of transportation within West Linn, with the exception of the Tualatin and Willamette Rivers, which are primarily used for recreation. All major air, rail and natural gas pipelines are located north and south of West Linn in neighboring cities.

Rail

There are no railroads located within the West Linn city limits. The closest railroads include the Union Pacific Railroad located to the north in Lake Oswego and the Union Pacific Railroad located to the south in Oregon City.

Air

There are no airports located within the West Linn city limits. The closest airports include the Portland International Airport located approximately 19 miles to the north via Interstate 205 (I-205), the Aurora State Airport located approximately 15 miles to the south via 99E, and the Mulino Airport located approximately 14 miles to the south via I-205 and OR 213.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Freight Routes
West Linn, Oregon**

**Figure
3-10**

H:\profiles\17817 - West Linn Transportation System Plan\GIS\3-10 Freight Routes.mxd - j.sommerville - 10:32 AM 12/29/2014

Water

Although the eastern boundary of West Linn is defined by the Willamette River and the southwestern boundary is defined by the Tualatin River, these waterways are rarely used to support transportation. They are, however, used for recreational purposes. In addition to several single-family residential homes with private access points to the rivers, there are two public boat ramps, including the Bernert Landing boat ramp located at the intersection of 12th and Volpp Street where the Tualatin River meets the Willamette River and the Cedaroak boat ramp located at the end of Elmran Avenue. The boat ramps offer river access for local residents as well as docking systems and wildlife viewing. A public fishing dock is also located along Territorial Drive near the falls.

The Willamette Falls Locks located between Oregon City and West Linn is currently closed indefinitely by the U.S. Army Corps of Engineers due to needed gudgeon anchor repairs. All freight and recreational water travel has been eliminated during this closure.

Pipeline

There are no major pipelines located within the West Linn city limits. The closest major pipelines include the Northwest Natural pipelines located to the north in Lake Oswego and to the south in Oregon City.

TRANSPORTATION SYSTEM MANAGEMENT OPERATIONS

Transportation System Management and Operations (TSMO) measures are designed to increase the efficiency and safety of the transportation system without physically increasing roadway capacity. Typical TSMO measures include Intelligent Transportation System (ITS) solutions, real-time traveler information, and services that respond quickly to traffic incidents. Based on discussions with City staff, the TSMO measures currently in West Linn consist of a coordination signal system along 10th Street between the I-205 eastbound ramps and Blankenship-Salamo Road and two speed feedback signs the City uses in multiple locations around the city to address local concerns for safety.

Metro's 2035 Regional Transportation Plan (RTP) includes projects on regionally significant roadways throughout the region. However, none of the projects are TSMO related.

TRANSPORTATION DEMAND MANAGEMENT

The RTP requires all cities with populations greater than 25,000 people to develop a Transportation Demand Management (TDM) plan. The RTP also requires that TDM strategies be used to encourage alternative transportation modes and achieve higher vehicle occupancy targets. TDM measures are designed to change travel behavior in order to reduce the need for more road capacity and improve performance of the road system. The TDM programs and strategies in West Linn are primarily implemented through City code and include incentives for reduced vehicle parking requirements for private developments.

Section 46.090 through Section 46.150 of the Community Development Code (CDC) indicates the following:

46.090 (Minimum Parking Space Requirements)

- G. Parking reductions. CDC 55.100(H)(5) explains reductions of up to 10 percent for development sites next to transit stops and up to 10 percent for commercial development sites adjacent to large multi-family residential sites.
- H. For office, industrial, and public uses where there are more than 20 parking spaces for employees on the site, at least 10 percent of the required employee parking spaces shall be reserved for carpool use before 9:00 a.m. on weekdays. The spaces will be the closest to the building entrance, except for any disabled parking and those signed for exclusive customer use. The carpool/vanpool spaces shall be clearly marked "Reserved – Carpool/Vanpool Before 9:00 a.m."
- I. Existing developments along transit streets or near transit stops may redevelop up to 10 percent of the existing parking spaces to provide transit-oriented facilities, including bus pullouts, bus stops and shelters, park and ride stations, and other similar facilities.

46.140 (Exemption to Parking Requirements)

To facilitate the design requirements of Chapter 58 CDC, properties in the Willamette Falls Drive Commercial District/Overlay Zone, located between 10th and 16th Streets, shall be exempt from the requirements for off-street parking as identified in this chapter. Any off-street parking spaces provided shall be designed and installed per the dimensional standards of this code. (Ord. 1463, 2000)

46.150 (Design and Standards)

The following standards apply to the design and improvement of areas used for vehicle parking, storage, loading, and circulation:

- D. Bicycle facilities and parking.
 - 1. Provisions shall be made for pedestrian and bicycle ways if such facilities are shown on an adopted plan.
 - 2. Bicycle parking facilities shall either be lockable enclosures in which the bicycle is stored, or secure stationary racks which accommodate bicyclist's locks securing the frame and both wheels. The bicycle parking shall be no more than 50 feet from the entrance to the building, well-lit, observable, and properly signed.
 - 3. Bicycle parking must be provided [per Table 46.150(D)(3)-1]
- E. Office or industrial developments shall be allowed a 10 percent reduction in the number of required parking spaces when the property owner agrees to a demand management program that includes three or more of the following measures:

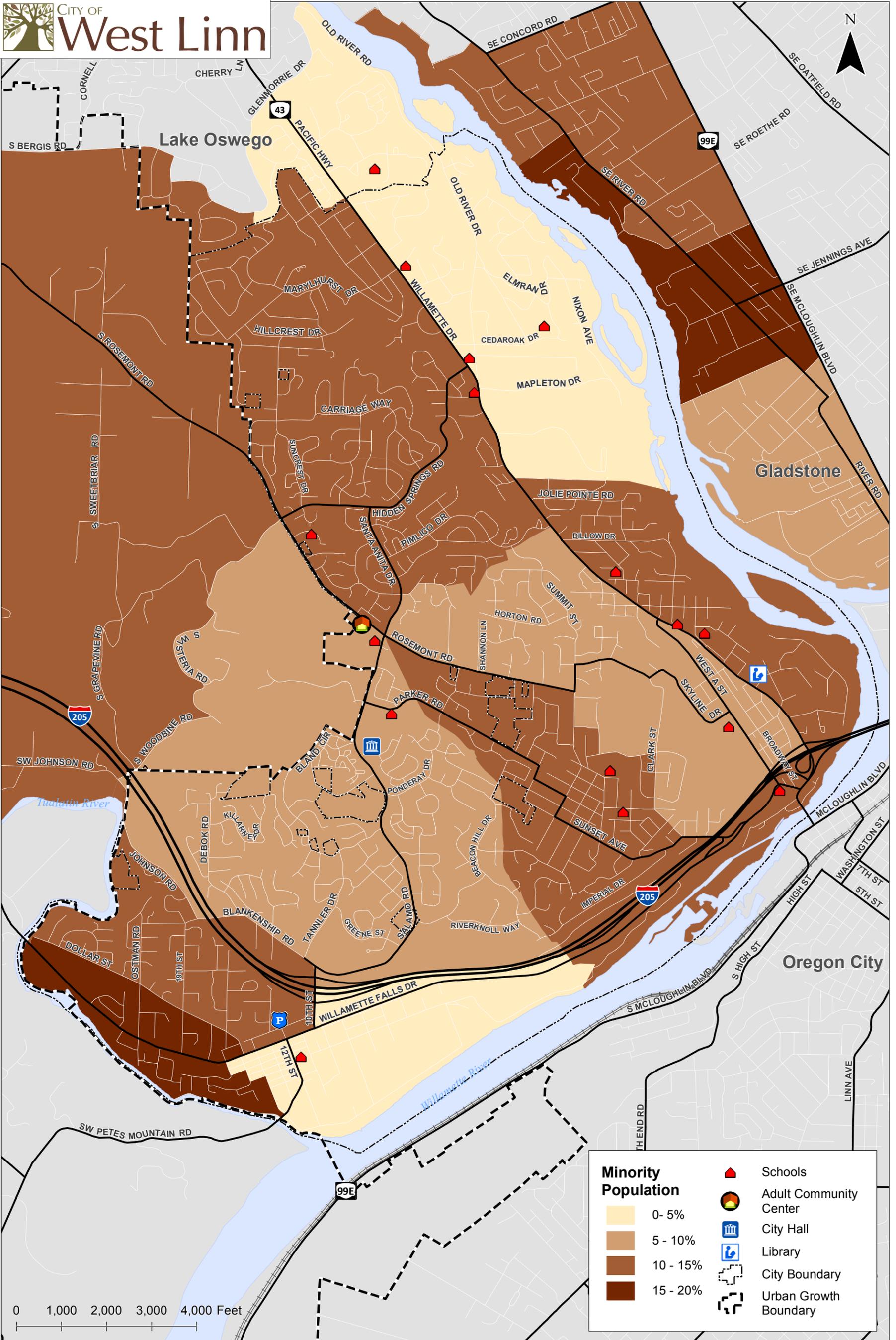
1. Designate a transportation coordinator responsible for promoting public transit and ride-sharing among employees.
2. Participate in region-wide ride matching program at the site.
3. Provide free transit passes to employees.
4. Provide showers and lockers for employees who commute by bicycle.
5. Charge employees for monthly parking and provide a transportation allowance to employees equal to the parking charge.
6. Install office technology, floorplans, and tenant regulations which are permanent, which effectively arrange for at least 10 percent of the employees to telecommute, thereby reducing employee automobile traffic by 10 percent.

The required demand management measures shall be included as conditions of approval for the proposed project. The property owner or manager shall file an annual affidavit with the City of West Linn stating that ongoing demand management measures required as conditions of approval have not been discontinued.

Metro's 2035 Regional Transportation Plan (RSP) includes TDM projects and policies that impact areas throughout the region. These relatively low-cost projects will be implemented by a variety of local and regional organizations and with a variety of funding sources, such as Metro's Metro Regional Travel Options (RTO) grants program. A total of \$2.1 million in federal transportation funding is available to government agencies and nonprofit organizations across the region who want to make it easier to walk, bike, take transit and share rides. Metro will also fund projects that improve air quality, improve health, and reduce drive-alone trips and auto traffic.

ENVIRONMENTAL JUSTICE

The socio-economically sensitive populations within West Linn consist of minorities, people with low-income (people who earn 0 to 1.99 times the federal poverty level), elderly people (people 65 years of age or older), youth (people 16 years of age or younger), non-English speakers, and people with disabilities. Identifying the location of these individuals or the concentration of these individuals can be a challenge given the current socio-economic conditions within West Linn. Therefore, 2010 census data was combined with a general understanding of local conditions to ensure that the existing transportation system meets the needs of these individuals. Figure 3-11 through 3-16 illustrate the populations within West Linn.

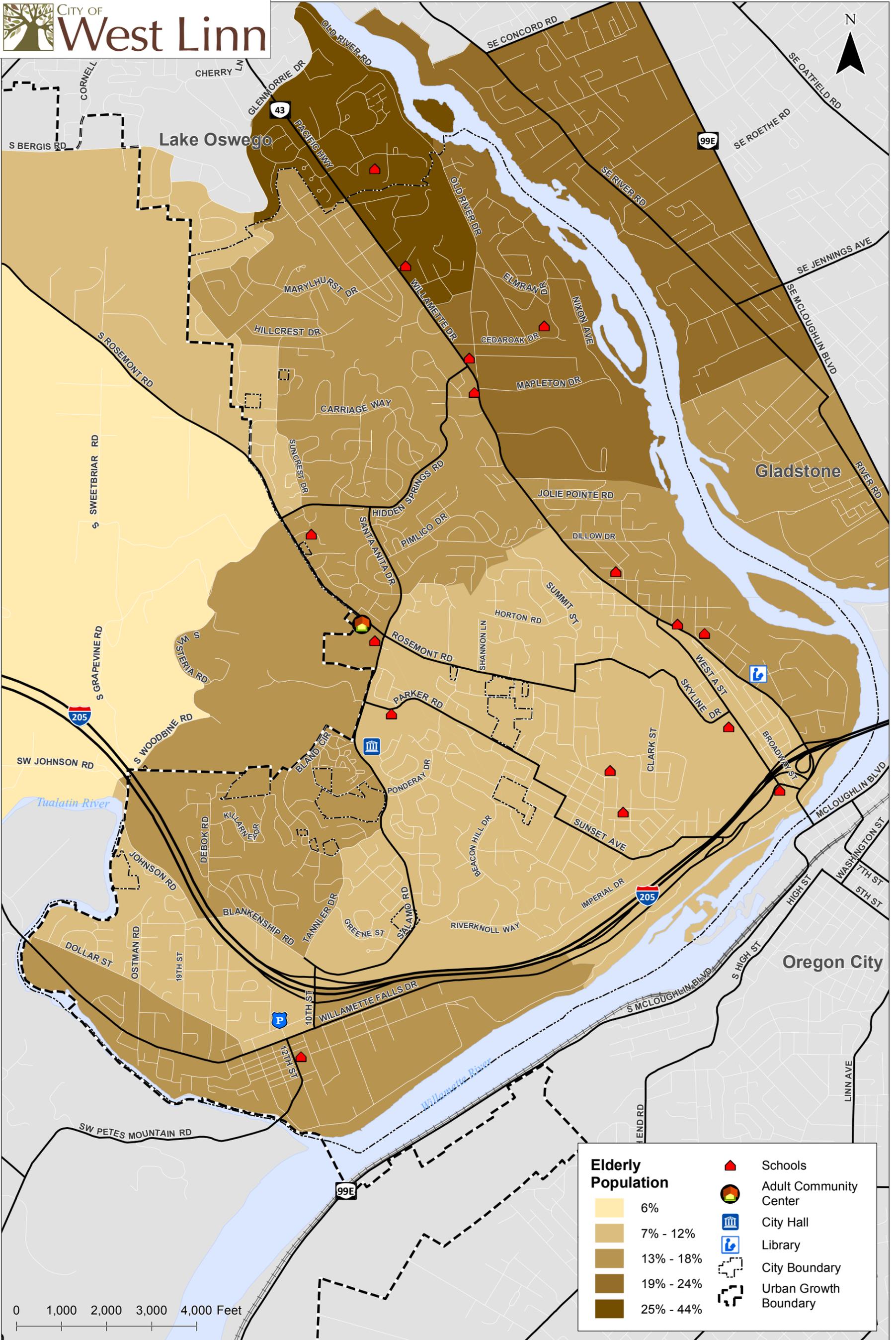


This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Minority Population
West Linn, Oregon**

**Figure
3-11**

H:\profiles\17817 - West Linn Transportation System Plan\GIS\3-11 Minority Population.mxd - jrommelle - 10:32 AM 12/29/2014

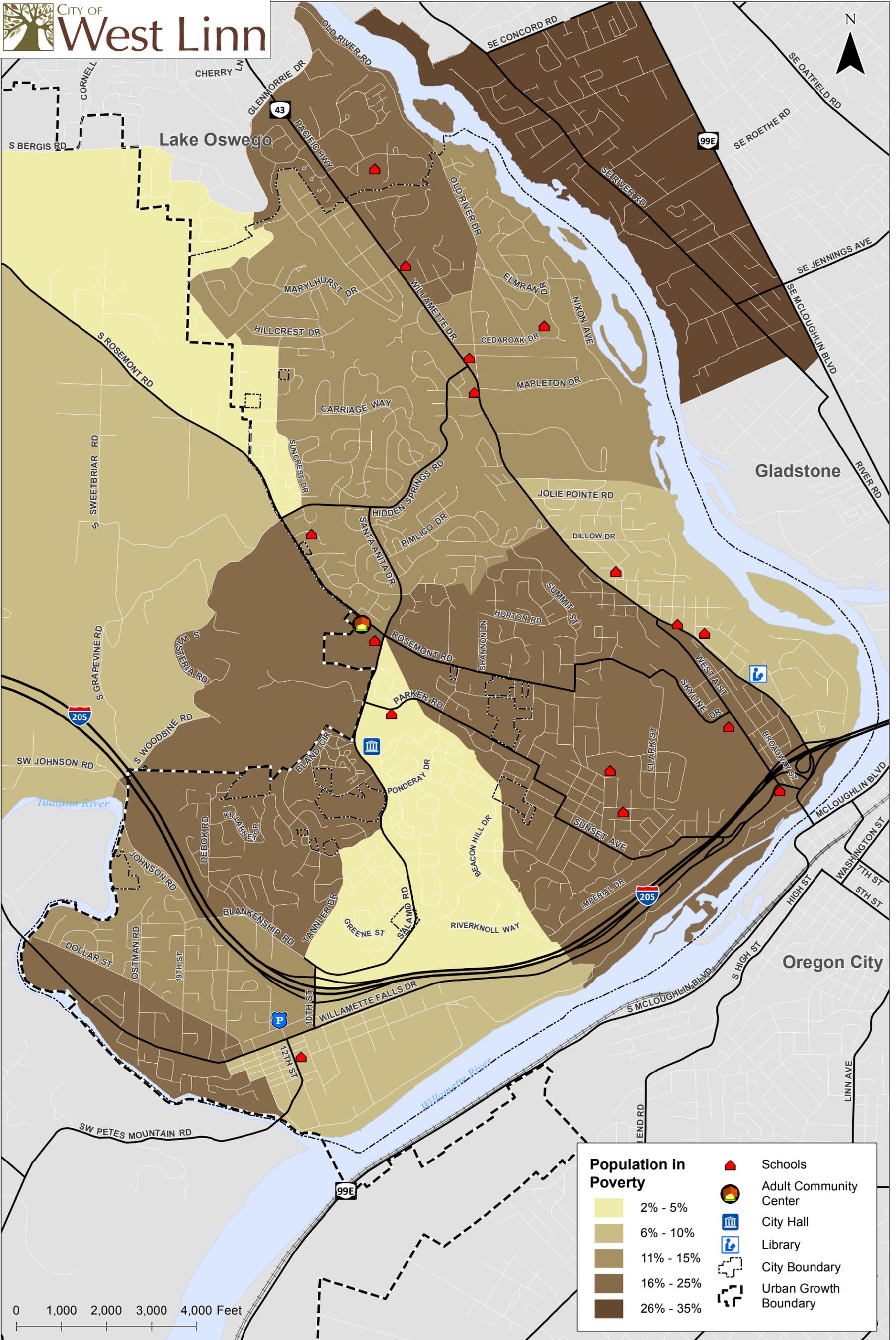


This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Elderly Population
West Linn, Oregon**

**Figure
3-12**

H:\profiles\17817 - West Linn Transportation System Plan\figs\3-12 Elderly Population.mxd - jommerville - 10:32 AM 12/29/2014



Population in Poverty		Landmarks	
	2% - 5%		Schools
	6% - 10%		Adult Community Center
	11% - 15%		City Hall
	16% - 25%		Library
	26% - 35%		City Boundary
			Urban Growth Boundary

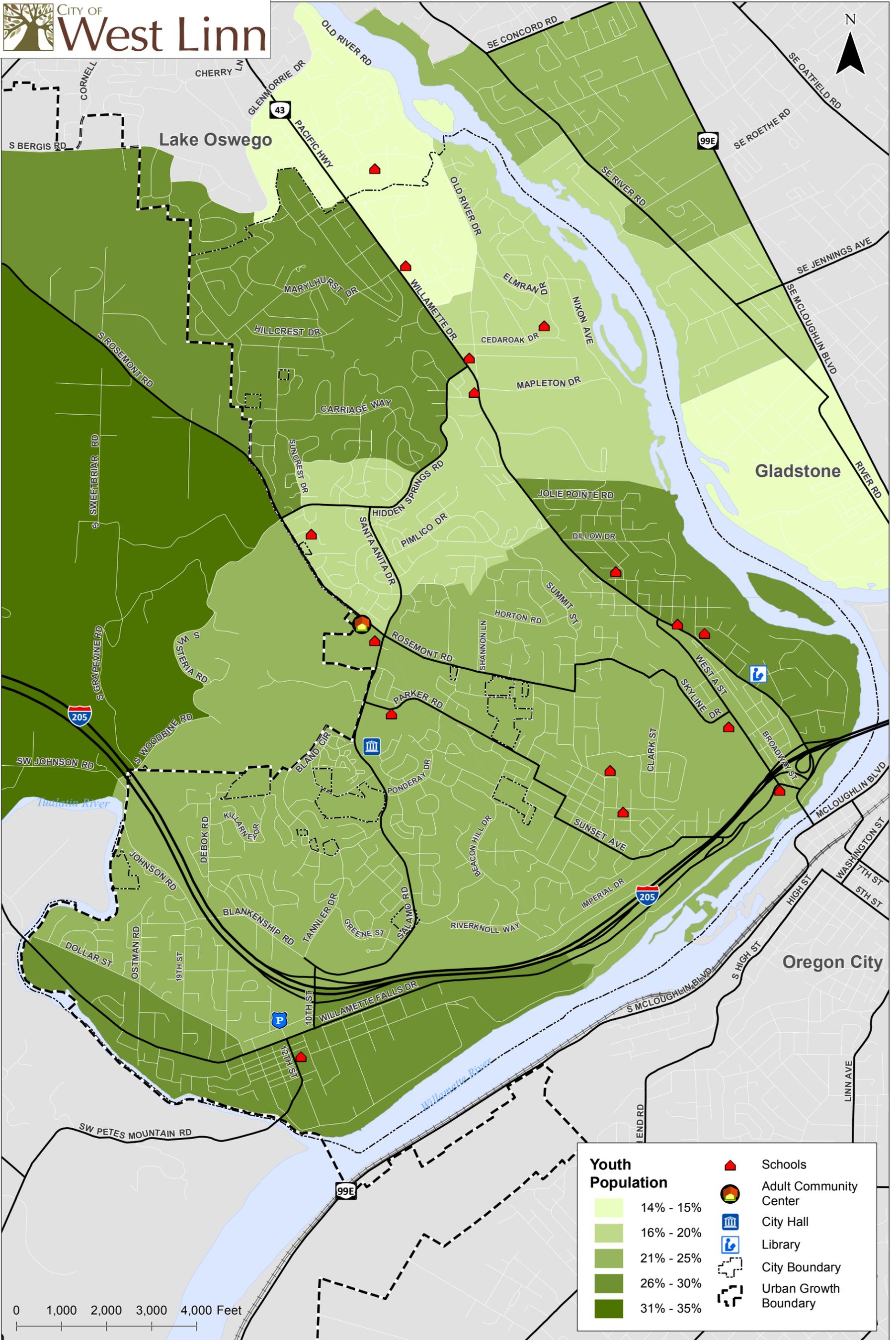
0 1,000 2,000 3,000 4,000 Feet

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Population in Poverty
West Linn, Oregon**

**Figure
3-13**

H:\profiles\17817 - West Linn Transportation System Plan\figs\3-13 Population in Poverty.mxd - jsmmerville - 10:32 AM 12/29/2014

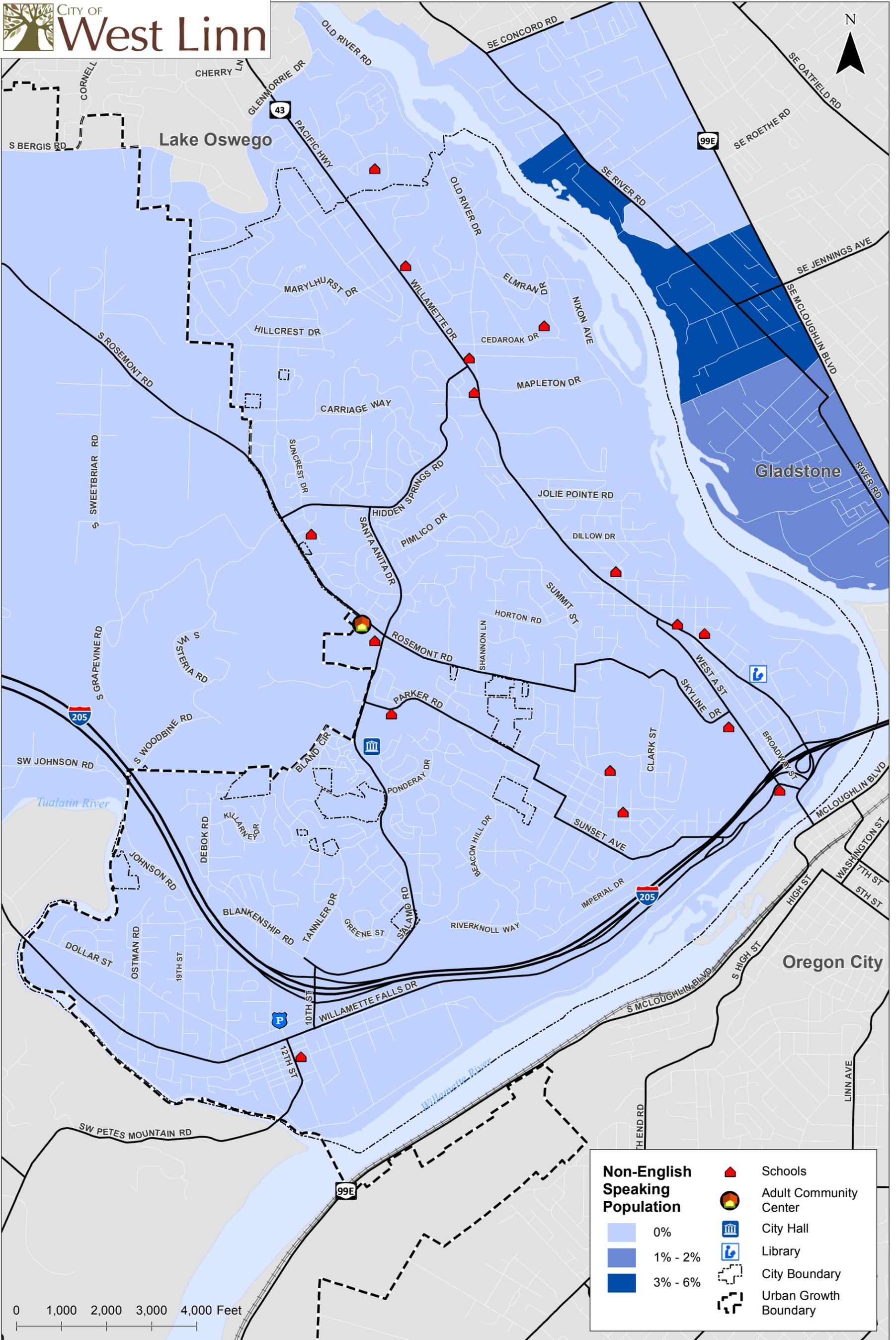


This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Youth Population
West Linn, Oregon**

**Figure
3-14**

H:\profiles\17817 - West Linn Transportation System Plan\figs\3-14 Youth Population.mxd - jscammerville - 10:32 AM 12/29/2014



Non-English Speaking Population	Schools
0%	Adult Community Center
1% - 2%	City Hall
3% - 6%	Library
	City Boundary
	Urban Growth Boundary

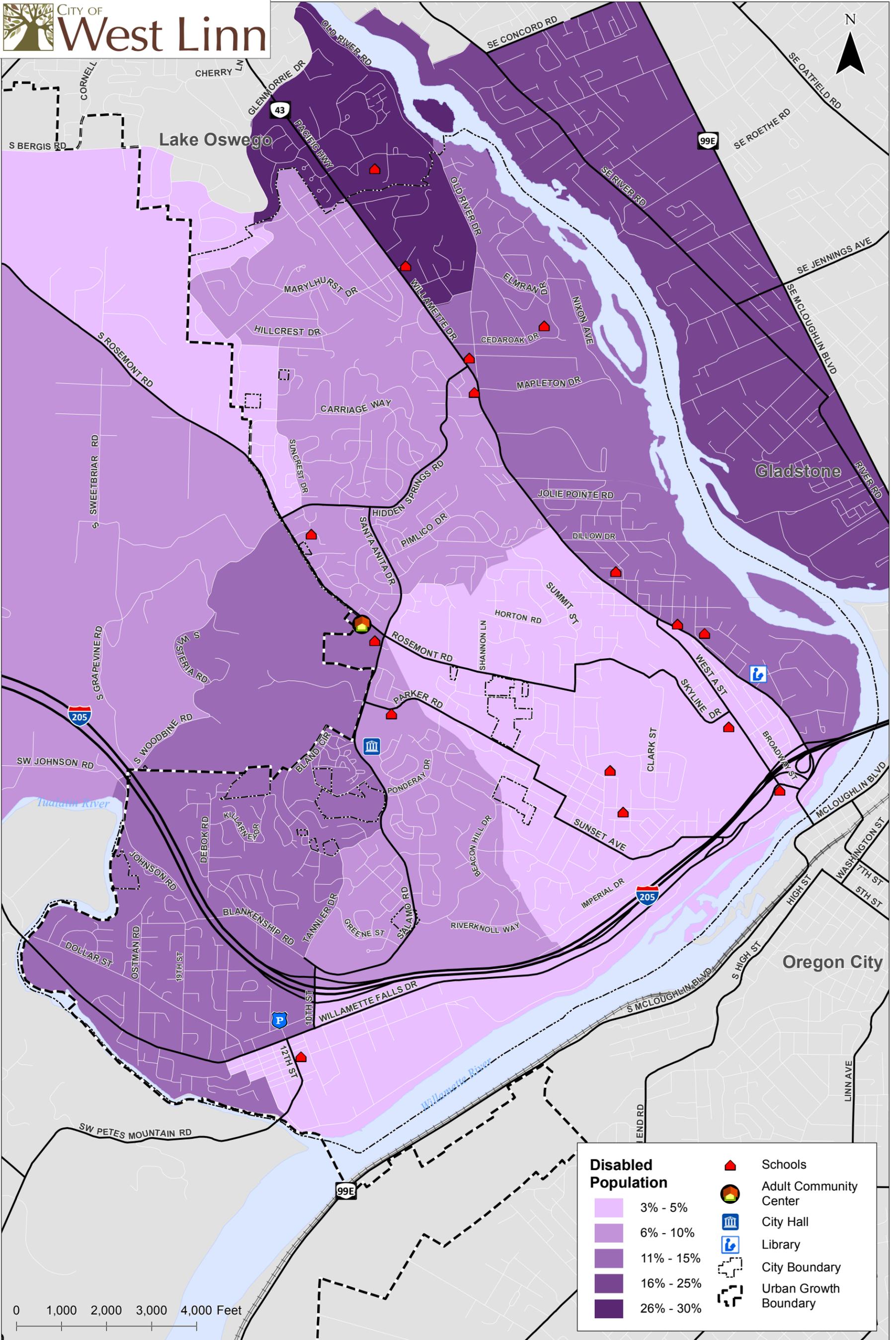
0 1,000 2,000 3,000 4,000 Feet

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Non-English Speaking Population West Linn, Oregon

Figure 3-15

H:\profiles\17817 - West Linn Transportation System Plan\figs\3-15 Non-English Speaking Population.mxd - jommerville - 10:32 AM 12/29/2014



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Disabled Population West Linn, Oregon Figure 3-16

H:\profiles\17817 - West Linn Transportation System Plan\figs\3-16 Disabled Population.mxd - jscamneville - 10:32 AM 12/29/2014