



**To:** Members of the Technical Advisory Committee for the City of Milwaukie's Transportation System Plan 2023-2025 Update

**From:** Laura Weigel, Planning Manager  
Ryan Dyar, Associate Planner

**Date:** February 12, 2025, for Thursday, February 19, 2025, TSPTC Meeting #7

**Subject:** Meeting Materials

Dear Committee Members,

I hope you are all staying warm during these cold months! We've been busy since our last meeting. Consequently, enclosed you'll find a rather lengthy packet of materials for your review. Fortunately, much of what's included is a refined version of items you've seen before.

We ask that you review and consider all the materials, and we're happy to discuss any aspect of what's included here on Wednesday. However, if you're short on time, we'd like to make a few recommendations to help you focus on specific aspects of the three exhibits that will be the bulk of our discussion.

- **Exhibit A. Draft Multimodal Functional Classification Memo:** Review the maps and classification descriptions on pages 5-15. This is new and not something we've discussed before. The memo provides additional context about this proposal that you'll likely find helpful, but if you're pressed for time, focusing on the proposed classifications on the maps and classification descriptions towards the end of the memo should help prepare you for the discussion.
- **Exhibit B. Draft Transportation System Conditions Memo:** Review the roadway needs discussion and maps on pages 7-24. Specifically look at the intersection evaluation map (*Figure 8*), the Roadway Gaps and Needs map (*Figure 12*), and the Connectivity Gaps and Needs map (*Figure 12B*). The first assesses key intersections for functionality. The second identifies roadway projects in the current TSP that haven't been implemented and are proposed to carry forward in this TSP. And the third identifies areas in the city where streets could be extended, or multi-use paths might occur with redevelopment to improve connectivity; this is an updated version of a map that exists in the current TSP.
- **Exhibit C. Draft Project Evaluation Matrix:** This is a matrix you've seen before but includes language modifications and an example project/solution illustrating how the matrix would be used to evaluate proposed solutions. Focus on the demonstration project and how points are assigned.

We thank you once again for dedicating your time and energy to this process and are excited to be developing a transportation system that benefits all Milwaukie residents. Should you have



## CITY OF MILWAUKIE

any questions or require further information, please do not hesitate to reach out. I look forward to seeing you next Wednesday.

Sincerely,

Laura Weigel, Planning Manager

Ryan Dyar, Associate Planner

**Attachments:**

Exhibit A. Draft Multimodal Functional Classification Memorandum

Exhibit B. Draft Transportation System Conditions (Needs and Gaps Memo)

Exhibit C. Draft Project Evaluation Assessment Table

# EXHIBIT A. MULTIMODAL FUNCTIONAL CLASSIFICATION MEMORANDUM & DESIGN BEST PRACTICES

**Date:** February 12, 2025

**To:** Transportation System Plan Advisory Committee (TSPAC)

**From:** Project Management Team (PMT)

**Project:** Milwaukie Transportation System Plan

**Subject:** Functional Classification

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# Introduction

The vehicular functional classification system originated in the early 20th century. As transportation networks expanded and became more complex, engineers and planners needed a systematic way to manage traffic. Functional classification systems attempt to impose order by categorizing roads and streets based on their intended function within a larger network. Milwaukie's current roadway functional classification divides roads into the following hierarchy: arterials, collectors, neighborhood collectors, and local streets. Each classification serves a different role in facilitating mobility and access.

As part of its needs and gaps analysis, the city and its consultants are recommending that a functional classification system be adopted for each mode of transportation considered in the Transportation System Plan, including walking, cycling, public transit, and freight. These networks would not replace but accompany the functional classification used for automobiles. This memo summarizes that need, proposes a classification for each mode, and presents modal maps with draft classification assignments.

## Expanding the Functional Classification System

### Why expand the functional classification system to other modes?

The city's current roadway functional classification system—arterial, collector, etc.—is fundamentally rooted in the efficient movement of vehicular traffic. While the system does consider and allow for the allocation of space for other modes of transportation, such as bicycles and pedestrians, these modes remain secondary to the focus on vehicular flow. This inherent bias towards motorized vehicles within the framework suggests that adopting a separate, distinct, functional classification for other modes is warranted. Such a classification would better reflect the unique needs of each mode and ensure that their infrastructure is considered with the same level of intentionality and priority as vehicular infrastructure. For example, cyclists and pedestrians can and do leverage different facilities, such as off-street trails, pathways, and plazas; additionally, they are generally considered to be more sensitive to out-of-direction travel, grade changes, and the surrounding land-use and transportation context.

### How will the expanded classification system be used?

The expanded functional classification system will be used for the new Milwaukie Transportation System Plan (TSP) and for future updates of the TSP. In this context, it will primarily inform network analysis, guide the development of policy recommendations related to facility design, traffic management strategies, and land-use planning. Additionally, it will help with TSP project prioritization, ensuring that limited resources are directed toward the most critical facilities.

The functional classification system will also be used to implement the TSP through the city's development review process and associated land-use planning projects, such as area plans, corridor plans, and zoning amendments. Classification designations won't specify specific treatments or designs but will signal to staff what role the facility is intended to play within the modal network. Consequently, staff should be better able to avoid potential modal conflicts, consider the impact that new development might have on the network, and determine appropriate dedications and public improvement requirements.

## Functional classifications versus facility types and treatments

As noted, the functional classification system does not prescribe a specific facility type (e.g., bicycle lane, multi-use pathway) or treatment (e.g., curb-extensions, Rectangular Rapid Flashing Beacons) for each road segment. While classifications indicate the role of a facility within the larger modal network, the exact facility type, or treatment needed will depend on several factors. These factors include the surrounding land-use, transportation context, and other practical constraints, such as limited right-of-way and available funding.

### *Example: Monroe Greenway*

The Monroe Greenway Project provides a clear example of how facility needs and treatments can vary along a single route when considering factors like traffic volumes and adjacent land uses.

While the entire project (from McLoughlin Boulevard to Linwood Avenue) has been discussed as a greenway, the specific multimodal treatments will differ depending on the adjacent land uses and transportation context. For instance, the eastern segment, which runs through low-density residential development and has an average daily traffic count less than 1000, will be improved with neighborhood greenway type treatments such as curb extensions, speed cushions, street markings, and signage. In contrast, the central segment crosses major roads like Highway 224 and serves busy commercial destinations such as Milwaukie Marketplace. In this area, an on-street multi-use pathway was installed near the 7 Acres Apartment complex to provide a separated walking and biking environment. At the crossing of Highway 224, features like bicycle/pedestrian-only diverters and limitations on turning movements for automobiles are being planned to improve multimodal travel in a busy vehicle environment. While the entire route would be classified as a Major City Bikeway under the proposed system, the applied treatments would respond to the adjacent land use and travel conditions.

## Speaking of...what's happening to neighborhood greenways?

In short, nothing will change— we're just giving them a new name in the TSP. All greenway-style treatments are still part of the city's toolkit to improve comfort and safety for people walking and rolling in Milwaukie.

The neighborhood greenway designation in the 2007 TSP can be thought of as the city's first attempt to establish a functional classification or network plan for cycling. From a vision perspective, the streets designated as neighborhood greenways in the 2007 TSP are still essential parts of the city's bicycle network. These routes largely remain low-speed, low-volume, and attractive for cyclists. As such, the treatments considered for these facilities will continue to come from the "neighborhood greenway" toolkit, which focuses on calming traffic, prioritizing bicycle movement, and signaling bicycle priority.

Except for Monroe Street, which is proposed to be designated as a Major City Bikeway, all other greenways will be reclassified as City Bikeways under the new system. As discussed below, both Major City Bikeways and City Bikeways are designed to offer direct, convenient bicycle access to key destinations and accommodate larger volumes of cyclists. The design guidance (see the Improvements subsection for these classifications) includes a variety of treatments aimed at maximizing cyclist comfort. While the best treatment approach will vary depending on factors like available right-of-way, funding, land use, and traffic volumes, in many cases, treatments will still involve interventions to calm traffic and maintain lower vehicular volumes along these routes.

*Neighborhood greenway is a useful term that we'll probably keep using*

The National Association of City Transportation Officials (NACTO) refers to low-traffic, low-speed streets that prioritize cycling as "bicycle boulevards." NACTO's [Bicycle Urban Design Guide](#) points out that communities across the country have used different terms, like "neighborhood greenway," to brand these routes. The City of Milwaukie will likely continue to use the term "neighborhood greenway" for improvement projects, as it's widely understood in the region to refer to low-traffic, low-speed streets. However, for the purposes of the TSP, these facilities will be classified under the new functional system.

### Functional classifications and level of traffic stress

As the Transportation System Plan Advisory Committee (TSPAC) is aware, the updated [Transportation Planning Rule](#) (TPR) requires the city to adopt new performance standards for non-vehicular modes of transportation. The City's consultant recommended, and the committee agreed, that Pedestrian Level of Traffic Stress (PLTS) and Bicycle Level of Traffic Stress (BLTS) are useful companions to more traditional, vehicular-based measures, such as Level of Service (LOS). These measures move beyond a simple focus on infrastructure presence (i.e., is there a bike lane); instead, they ask the city to consider and track how the type and quality of infrastructure, combined with adjacent environmental factors (traffic speeds, traffic volumes, and land-use), alters the sense of safety and comfort for cyclists and pedestrians.

While the city initially considered adopting single citywide mode-specific level of traffic stress (PLTS and BLTS) targets, the introduction of a functional classification system clarifies which routes are most critical for bicycle and pedestrian travel, allowing the city to assign different stress targets based on classification. Below you'll see that new PLTS targets have been proposed for Major City Walkways (adjusting from a citywide target of PLTS 2 to PLTS 1 for these facilities). For its bicycle network, the city has retained the BLTS 1 target for all facilities.

# Proposed Street Classifications

## Pedestrian Classification Hierarchy and Descriptions

**Major City Walkway:** Major City Walkways provide safe, convenient, and attractive pedestrian accommodations along major streets and trails with the highest level of pedestrian activity supported by current and planned land uses. These include streets in Milwaukie's 2040 Town Center, streets with frequent-transit lines, and high-demand off-street trails like the Trolley Trail. Major City Walkways can also be routes providing continuous pedestrian connections across the city.

- **Level of Traffic Stress Target:** PLTS 1
- **Land Use:** Major City Walkways generally serve areas in Milwaukie's Region 2040 Town Center, where land is zoned for high density residential, commercial, and mixed-use development, but also run along major streets through predominantly low-density residential areas. Where auto-oriented land uses are allowed on Major City Walkways, site development standards should address the needs of pedestrians for access.
- **Improvements:** Major City Walkways should have regularly spaced marked crossings (with closer spacing in the Region 2040 Town Center and in other commercial and mixed-use areas, such as Milwaukie Marketplace). Major City Walkways should have wide sidewalks, and a pedestrian realm that can accommodate higher volumes of pedestrian activity.
- **Milwaukie Example:** 32<sup>nd</sup> Avenue is an example of a proposed Major City Walkway. It is a street with a frequent transit route (Route 75), has planned high-density residential uses (Hillside Manor), community service uses (Providence Hospital), and provides access to multiple commercial businesses (Milwaukie Café). It also serves as one of the few continuous north/south connections in the city, connecting Harrison Street to Johnson Creek Boulevard.

**City Walkway:** City Walkways provide safe, convenient, and attractive pedestrian access along major streets with moderate levels of pedestrian activity supported by current and planned land uses. These include streets with non-frequent transit lines, and streets that provide direct connections between Major City Walkways, and key destinations.

- **Level of Traffic Stress Target:** PLTS 2
- **Land Use:** City Walkways provide access along major streets, connecting residential neighborhoods with low and moderate density development to Major City Walkways, Neighborhood Hubs, schools, and other local key destinations.
- **Improvements:** City Walkways should have regularly spaced marked crossings (with closer spacing in commercial and mixed-use areas), sidewalks, and a pedestrian realm that can accommodate moderate levels of pedestrian activity.
- **Milwaukie Example:** International Way is an example of a proposed City Walkway. It provides access to various businesses, connects two proposed Major City Walkways (37<sup>th</sup> Avenue and Lake Road) and is a street with an infrequent transit line (Route 152). International Way runs through exclusively commercial and industrial land uses and sees moderate pedestrian activity (likely due to the auto-oriented nature of development).

**Neighborhood Walkway:** Neighborhood Walkways provide safe and convenient connections from residential neighborhoods to Major City Walkways, City Walkways, and nearby key destinations such as schools, parks, and Neighborhood Hubs. Neighborhood Walkways are primarily routes that have low levels of motor vehicle traffic or do not allow motor vehicle traffic.

- **Level of Traffic Stress Target:** PLTS 2
- **Land Use:** Neighborhood Walkways are usually located in residential or natural areas on low-volume streets or connections that do not allow motor vehicles.
- **Improvements:** Neighborhood Walkways should be designed to provide a safe and comfortable walking environment but may take many forms depending on the context. Design types may include sidewalks, shoulders, shared streets, woonerfs, pedestrian-only paths, multi-use paths, soft-surface trails, and ramps/stairs.
- **Milwaukie Example:** Roswell Street is an example of a proposed Neighborhood Walkway. It is primarily serving neighborhood residents, acts as a critical connector to a school (Ardenwald Elementary).

**Local Service Walkway:** Local

Service Walkways provide the local circulation needs for pedestrians and provide safe and convenient access to local destinations.

- **Level of Traffic Stress Target:** PLTS 2
- **Land Use:** Local Service Walkways support all land uses by providing direct access to properties.
- **Improvements:** Local Service Walkways should be designed to provide a safe and comfortable walking environment but may take many forms depending on the context. Design types may include sidewalks, shoulders, shared streets, woonerfs, pedestrian-only paths, multi-use paths, soft-surface trails, and ramps/stairs.
- **Milwaukie Example:** Local service walkways are any street/route not designated as a Major City Walkway, City Walkway, or Neighborhood Walkway.



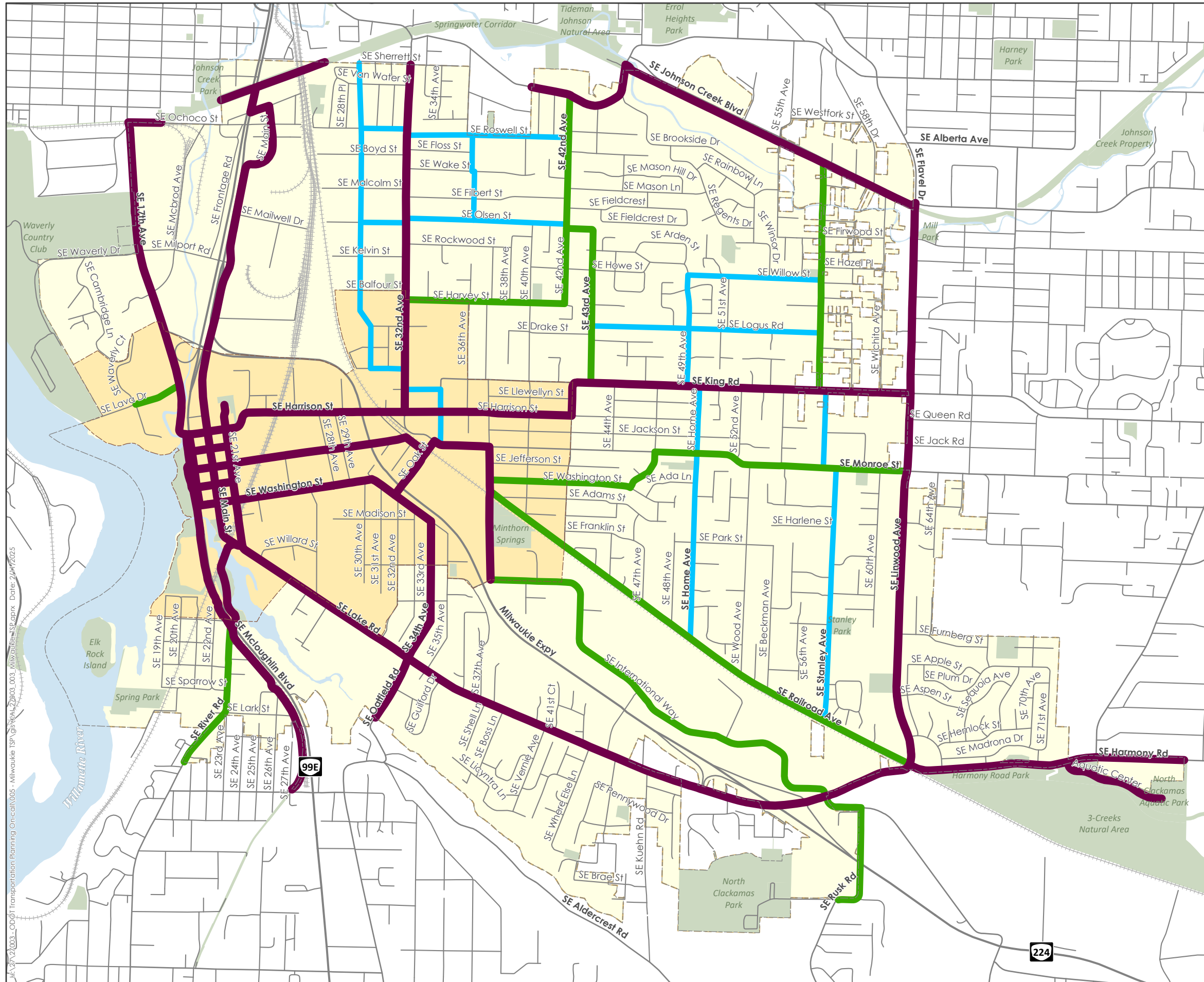


**FIGURE 1**

**Proposed  
Pedestrian Classifications**

**Legend**

- Major City Walkway
- City Walkway
- Neighborhood Walkway
- Local Service Walkway
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/11/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



## Bicycle Classification Hierarchy and Descriptions

**Major City Bikeway:** Major City Bikeways are the foundation of Milwaukie's bicycle network, accommodate higher volumes of bicycle traffic, and generally provide continuous routes through the city for cyclists traveling longer distances. Major City Bikeways connect cyclists to City Bikeways, Neighborhood Bikeways, and generally connect to regional bicycle facilities.

- **Level of Traffic Stress Target:** BLTS 1
- **Land Use:** Major City Bikeways support a variety of land-use types. Where appropriate, development standards should preserve the functionality of the facility to maintain safe and comfortable conditions for high volumes of cyclists.
- **Improvements:** Major City Bikeways should be designed to accommodate larger numbers of cyclists, maximize their comfort, and minimize delays. Motor vehicle lanes and possibly on-street parking may be removed on Major City Bikeways to provide added width for separated in-roadway facilities where compatible with adjacent land uses. Where improvements to the bicycling environment are needed but the ability to reallocate road space is limited, consider alternative approaches that include property acquisition, or dedication, parallel routes and/or less desirable facilities.
- **Milwaukie Example:** Linwood's Avenue multiuse pathways are an example of a proposed Major City Bikeway. It serves as a continuous comfortable connection through the city and connects Portland, Milwaukie, and Clackamas. Moreover, the two separated pathways, each over 10 ft wide, are designed to accommodate many cyclists and to maximize their comfort (the pathways are raised, separated from automobile traffic by a curb and landscape strip).

**City Bikeway:** City Bikeways establish direct and convenient bicycle access between key destinations within Milwaukie and between Major City Bikeways. City Bikeways accommodate higher volumes of cyclists and connect cyclists across longer distances than neighborhood bikeways.

- **Level of Traffic Stress Target:** BLTS 1
- **Land Use:** City Bikeways support a variety of land-use types. Where appropriate, development standards should preserve the functionality of the facility to maintain safe and comfortable conditions for high volumes of cyclists
- **Improvements:** City Bikeways should also be designed to accommodate large numbers of cyclists, to maximize their comfort and to minimize delays. Motor vehicle lanes and possibly on-street parking may be removed from City Bikeways to provide needed width for separated-in-roadway facilities where compatible with adjacent land uses and only after taking into consideration the essential movement of all modes. Where improvements to the bicycling environment are needed but the ability to reallocate road space is limited, consider alternative approaches that include property acquisition, or dedication, parallel routes and/or less desirable facilities. City Bikeways developed as shared roadways use all appropriate tools to achieve BLTS 1.
- **Milwaukie Example:** 29<sup>th</sup> Avenue is an example of a proposed City Bikeway. It serves as a direct and comfortable connection between a Major City Bikeways (Springwater Corridor Trail) and a significant residential development (Hillside Manor).

**Neighborhood Bikeway:** Neighborhood Bikeways provide connections from residential neighborhoods to Major City Bikeways, City Bikeways, and nearby destinations such as schools, parks, transit stops, and commercial areas.

- **Level of Traffic Stress Target:** BLTS 1
- **Land Use:** Neighborhood Bikeways are usually supported by low and moderate density residential development.
- **Improvements:** Neighborhood Bikeways should be designed to provide a safe and comfortable cycling environment but may take many forms depending on the context. Design types may include minimal treatments, signage and markings, or may be a shared road environment that utilizes significant traffic calming and operation management strategies. Separated facilities are generally not provided on Neighborhood Bikeways.
- **Milwaukie Example:** Logus Road is an example of a proposed Neighborhood Bikeway. It connects two City Bikeways ( 43<sup>rd</sup> Avenue and Stanley Avenue) and connects nearby properties to a school (Lewelling Elementary).

**Local Service Bikeway:** Local Service Bikeways serve local circulation needs for bicyclists and provide access to adjacent properties. Streets that are not classified as Major City Bikeways, Neighborhood Bikeways, or City Bikeways are classified as a Local Service Bikeway.




- **Level of Traffic Stress Target:** BLTS 1.
- **Land Use:** Local Service Bikeways support all land uses by providing direct access to properties.
- **Improvements:** Consider the following design treatments for Local Service Bikeways: shared roadways, traffic calming, bicycle lanes, and extra-wide curb lanes. Crossings of Local Service Bikeways with other rights-of-way should minimize conflicts. On-street parking on Local Service Bikeways should not be removed to provide bicycle lanes.
- **Milwaukie Example:** As noted, local service bikeways are any street/route not designated as a Major City Bikeways, City Bikeways, or Neighborhood Bikeways.

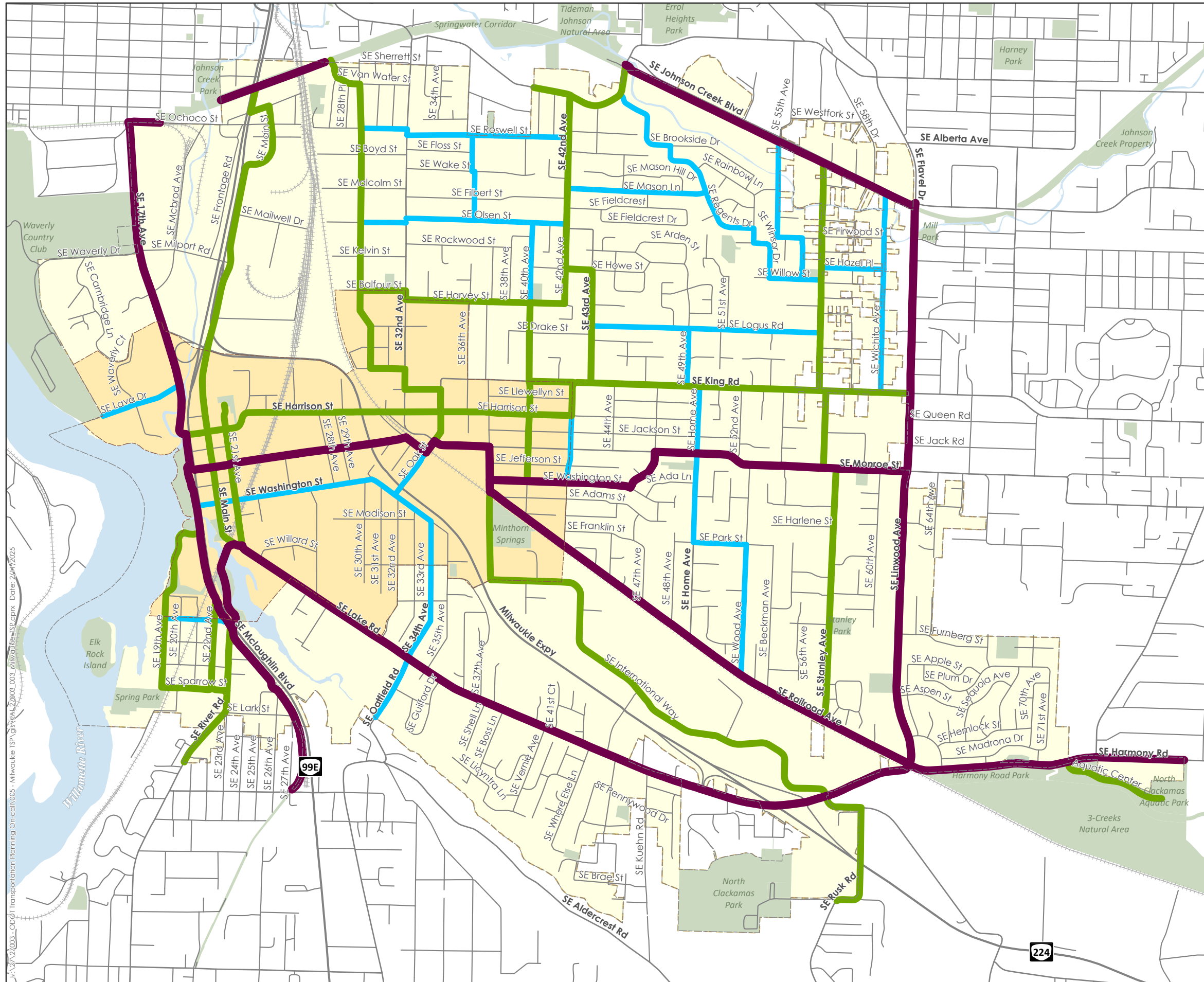


**FIGURE 2**

**Proposed  
 Bike Classifications**

**Legend**

-  Major City Bikeway
-  City Bikeway
-  Neighborhood Bikeway
-  Local Service Bikeway
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/11/2025

Data Sources: City of Milwaukie, ODOT



## Transit Classification Hierarchy and Descriptions

**Regional Transitway:** Regional Transitways facilitate regional transit trips with fast and reliable service over long distances, operating in right-of-way that is either reserved exclusively for transit use or enhanced for high-capacity transit accommodations.

- **Land Use:** Land near Regional Transitways is typically zoned for major regional attractions, high-density residential and mixed-use development. Auto-oriented development is discouraged at or near Regional Transitway stops.
- **Improvements:** Use transit-preferential treatments to facilitate fast and reliable transit operations. Provide signal preemption or transit signal priority at major intersections, prioritize transit stations or transit lanes over on-street parking, and provide enough lane width to accommodate standard transit vehicles.
- **Milwaukie Example:** The MAX Light Rail Orange Line is currently the only example of a transit facility that would be classified as a Regional Transitway in Milwaukie. However, Metro's [High Capacity Transit Strategy](#) identifies two routes through the city that would possibly warrant reclassifying those facilities as Regional Transitways.

**Major Transit Priority Street:** Major Transit Priority Streets facilitate the frequent and reliable movement of transit vehicles that connect the Milwaukie Town Center to adjacent communities and other key destinations. Major Transit Priority Streets have frequent service or are expected to receive that level of service in the future to support envisioned growth.

- **Land Use:** Transit-oriented land uses are encouraged along Major Transit Priority Streets, particularly in the Milwaukie Town Center. Auto-oriented development is typically discouraged from locating on a Major Transit Priority Street.
- **Improvements:** Use transit-preferential treatments such as signal preemption or transit signal priority at major intersections, prioritize transit stops or transit lanes over on-street parking, and provide enough lane width to accommodate standard transit vehicles.
- **Milwaukie Example:** King Road and Harrison Streets are examples of a Major Transit Priority Street. Both accommodate Frequent Bus Routes (service offered every 15 minutes) that connect the Milwaukie Town Center to regional destinations.

**Transit Access Street:** Transit Access Streets facilitate the movement of transit vehicles connecting Downtown Milwaukie with neighborhoods, industrial and employment areas with other destinations and other transit service.

- **Land Use:** Pedestrian-oriented development and accommodations are encouraged in commercial, institutional, mixed-use, and industrial areas along Transit Access Street.
- **Improvements:** Provide transit signal priority as needed at major intersections and prioritize transit stops over on-street parking. Provide sufficient lane width to accommodate standard transit vehicles where appropriate, taking into account other street classifications.
- **Milwaukie Example:** Lake Road and International Way are examples of Transit Access Streets. These routes have infrequent transit service that provides a connection between Downtown Milwaukie, employment, and residential areas.

**Local Service Transit Street:** Local Service Transit Streets primarily facilitate movement of smaller transit vehicles, including paratransit and community/jobs connector shuttles. Local Service Transit Streets seldom have regular transit service except for short street segments and do not typically include transit specific street design elements such as bus stops.








- **Land Use:** Transit operations on Local Service Transit Streets should give preference to access for individual properties and to the specific needs of property owners and residents along the street.
- **Improvements:** There typically are no special design treatments for transit vehicles.
- **Milwaukie Example:** Local Service Transit Streets is any street not classified as a Regional Transitways, Major Transit Priority Streets, or Transit Access Streets.

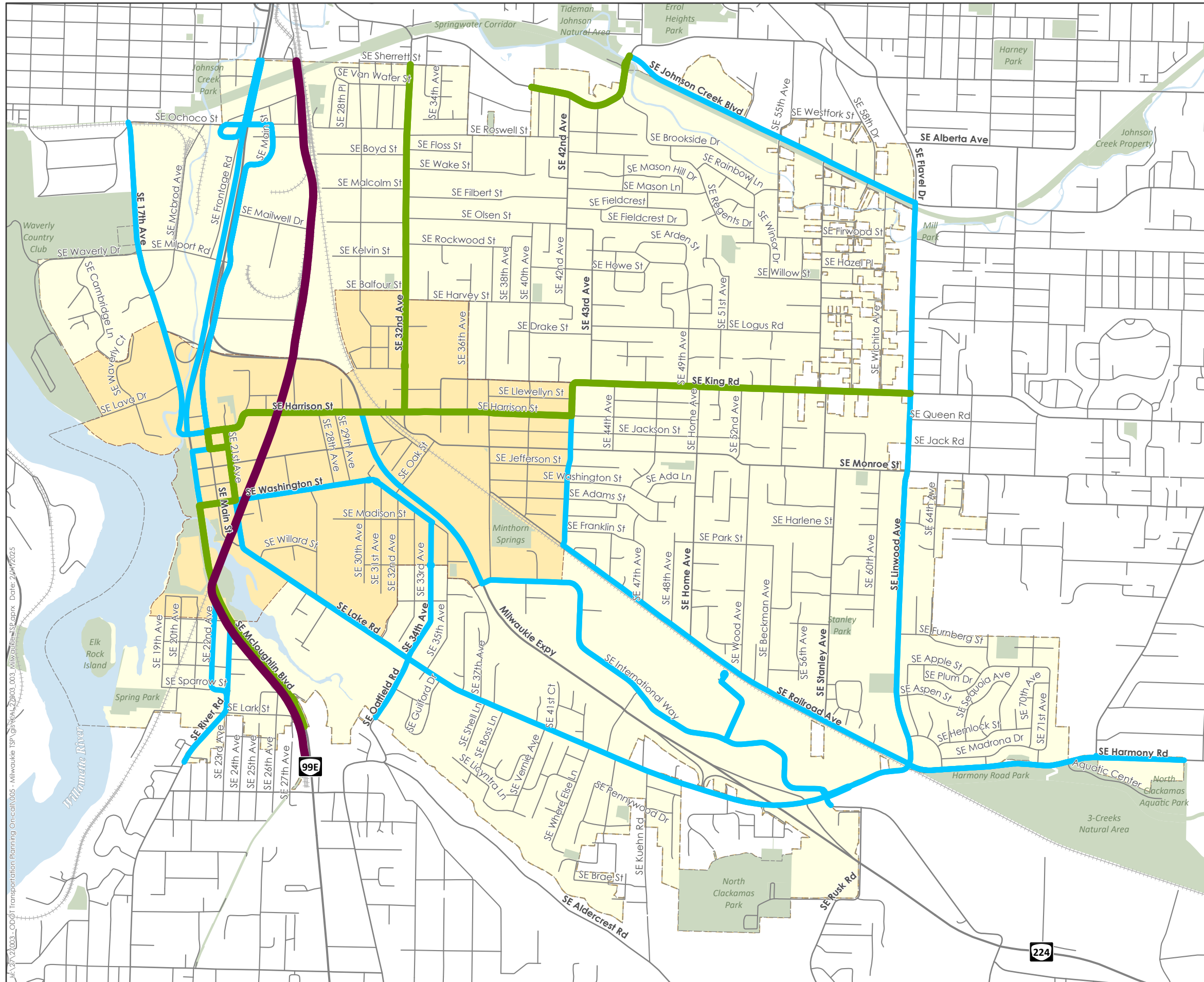


FIGURE 3

Proposed  
Transit Classifications

Legend

-  Regional Transitway
-  Major Transit Priority Street
-  Transit Access Street
-  Local Service Transit Street
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/11/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



## Freight Classification Hierarchy and Descriptions

**Regional Truckway:** Regional Truckways accommodate the continuous and regional flow of truck freight through the city.

- **Land Use:** Serve regional freight needs along major highway corridors.
- **Improvements:** Regional Truckways are limited access facilities designed to accommodate the movement of all types and sizes of trucks.
- **Milwaukie Example:** Highway 224 is an example of a proposed Regional Truckway. It is a major vehicular oriented highway corridor with limited access that provides a continuous high-capacity freight route through Milwaukie.

**Priority Truck Street:** Priority Truck Streets serve as the primary travel routes for local truck freight, connecting freight-generating land uses to Regional Truckways.

- **Land Use:** Support industrial and employment uses that generate high truck activity on corridors served by Priority Truck Streets.
- **Improvements:** Priority Truck Streets are designed to accommodate most truck classes. Buffer adjacent residential uses from noise impacts, where warranted.
- **Milwaukie Example:** SE 17<sup>th</sup> Avenue is an example of a Priority Truck Street. It is a key roadway that connects freight-generating land uses to Regional Truckways.

**Truck Access Street:** Truck Access Streets serve as the primary local access corridors for industrial and other freight-generating land uses.

- **Land Use:** Support industrial and commercial land uses that generate moderate to high volumes of truck trips.
- **Improvements:** Priority Truck Streets are designed to accommodate most truck classes in balance with other modal needs.
- **Milwaukie Example:** SE International Way is an example of a Truck Access Street. It is a key roadway that directly serves a variety of industrial and commercial uses.

**Local Service Truck Street:** Local Service Truck Streets serve local truck circulation and access.

- **Land Use:** Local Service Truck Streets provide for goods and service delivery to individual commercial, employment, and residential land uses outside of industrial area.
- **Improvements:** Local Service Truck Streets should give preference to accessing individual properties and the specific needs of property owners and residents along the street.

**Milwaukie Example:** Local Service Truck Streets are any street/route not designated as a Regional Truckway, Priority Truck Street, or Truck Access Street











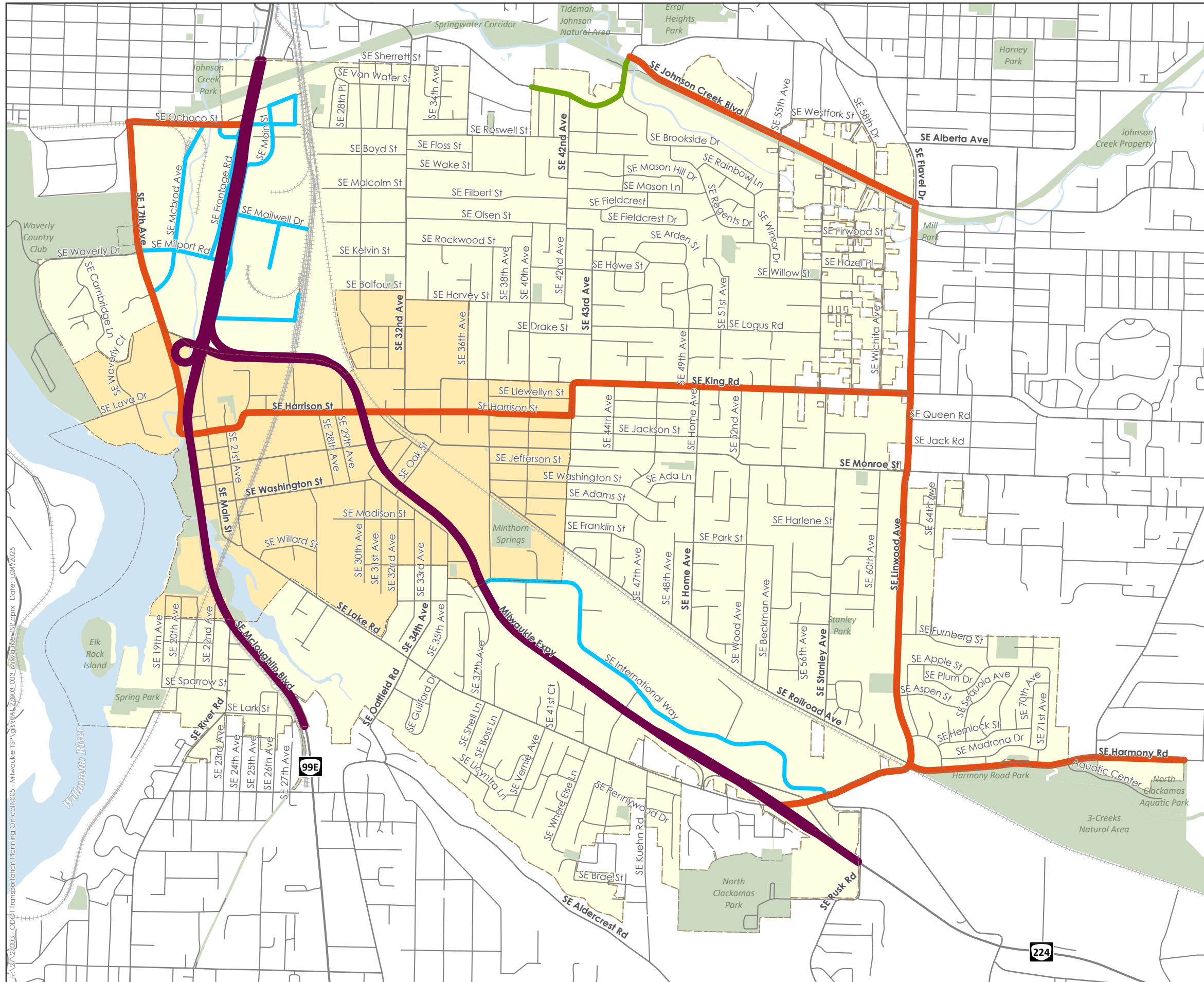


**FIGURE 4**

**Proposed Freight Classifications**

**Legend**

-  Regional Truckway
-  Priority Truck Street
-  Weight Restricted Truck Priority Street
-  Truck Access Street
-  Local Service Truck Street
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 1/31/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



## Bicycle and Pedestrian Facility Design Guidance

The active transportation sections of Milwaukie's current TSP include a list of potential facility types and roadway treatments designed to make streets safer and more comfortable for people walking and rolling. This is a standard feature in TSPs and active transportation plans. Over the past two decades, however, cities across the U.S. and internationally have gained valuable insights into best practices for managing active transportation systems, including facility designs, roadway markings, operations, and signage. As a result, the range of possible interventions has grown significantly, making it impractical to list all of them in the document.

Instead, we propose that the TSP refer to a selection of authoritative sources that represent the professional consensus on best practices. These include:

- NACTO's [\*Urban Bikeway Design Guide\*](#)
- NACTO's [\*Urban Street Design Guide\*](#)
- NACTO's [\*Transit Street Design Guide\*](#)
- Metro's [\*Designing Livable Streets and Trails Guide\*](#)
- Oregon Department of Transportation's [\*Blueprint for Urban Design\*](#)

This approach will help streamline the document while ensuring alignment with the latest standards and practices as they evolve over the lifespan of the TSP.

# Exhibit B. DRAFT TRANSPORTATION SYSTEM CONDITIONS

**Date:** February 11, 2025

**To:** Project Management Team

**From:** Kittelson & Associates, Inc.

**Project:** Milwaukie Transportation System Plan

**Subject:** Transportation System Conditions, Needs, and Gaps

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## Introduction

The existing conditions inventory, needs, and gaps analysis is an assessment of Milwaukie's current transportation system within its city limits, as shown in Figure 1.

Information summarized in this memorandum was obtained and assembled using available Geographic Information System (GIS) data, aerial photography, field observations, and historical the Oregon Department of Transportation (ODOT) crash data.



# Existing Transportation System Inventory

The existing transportation system inventory evaluates current land uses within the city to understand the types of lands, and natural resources that the transportation system interacts with as well as the demographic cross section of community members relying on it. The inventory also assesses the current characteristics of the multimodal travel ways to understand how it is serving its users today.

## Land Use and Population

Land use is a key factor in developing a functional transportation system. The amount of land planned for development, the types of land uses, and how they relate to each other have a direct relationship to the anticipated demands for the transportation system. This section identifies the zoning designations that help define land use within the study area.

### Land Use

Figure 2 illustrates the current Comprehensive Plan land use designations. The majority of the land area in the City is designated for moderate density residential uses. The Town Center includes concentrations of high density residential, commercial, public, and mixed-use designations. Industrial uses are primarily concentrated in the North Milwaukie Innovation area along OR 99, the Johnson Creek Industrial Area along Johnson Creek Boulevard, and the International Way Business District along OR 224.

### Key Destinations and Activity Centers

Key destinations and activity centers in the City of Milwaukie include schools, grocery stores, Neighborhood Hubs, transit stops, parks, and an assortment of other uses that include medical facilities, adult care facilities, childcare facilities, farmers market, places of worship, and the library. Priority Focus Areas are considered essential destinations for the public to access and are likely to generate multimodal trips. Priority focus areas are schools, Neighborhood Hubs, parks, transit stops, and areas where there are likely higher concentrations of underserved populations (including senior living facilities, low-income housing, and resource centers). The Milwaukie Town Center is also considered a key destination/priority focus area given its concentration of employment, higher-density housing, affordable housing development Hillside Park, commercial uses, and schools. Figure 3 illustrates the location of these facilities. These destinations will be integrated into considerations to improve multimodal access for people living, working, and visiting the City. Creating and maintaining access to these and other similar land uses is important for ensuring a well-connected and high-quality circulation network.

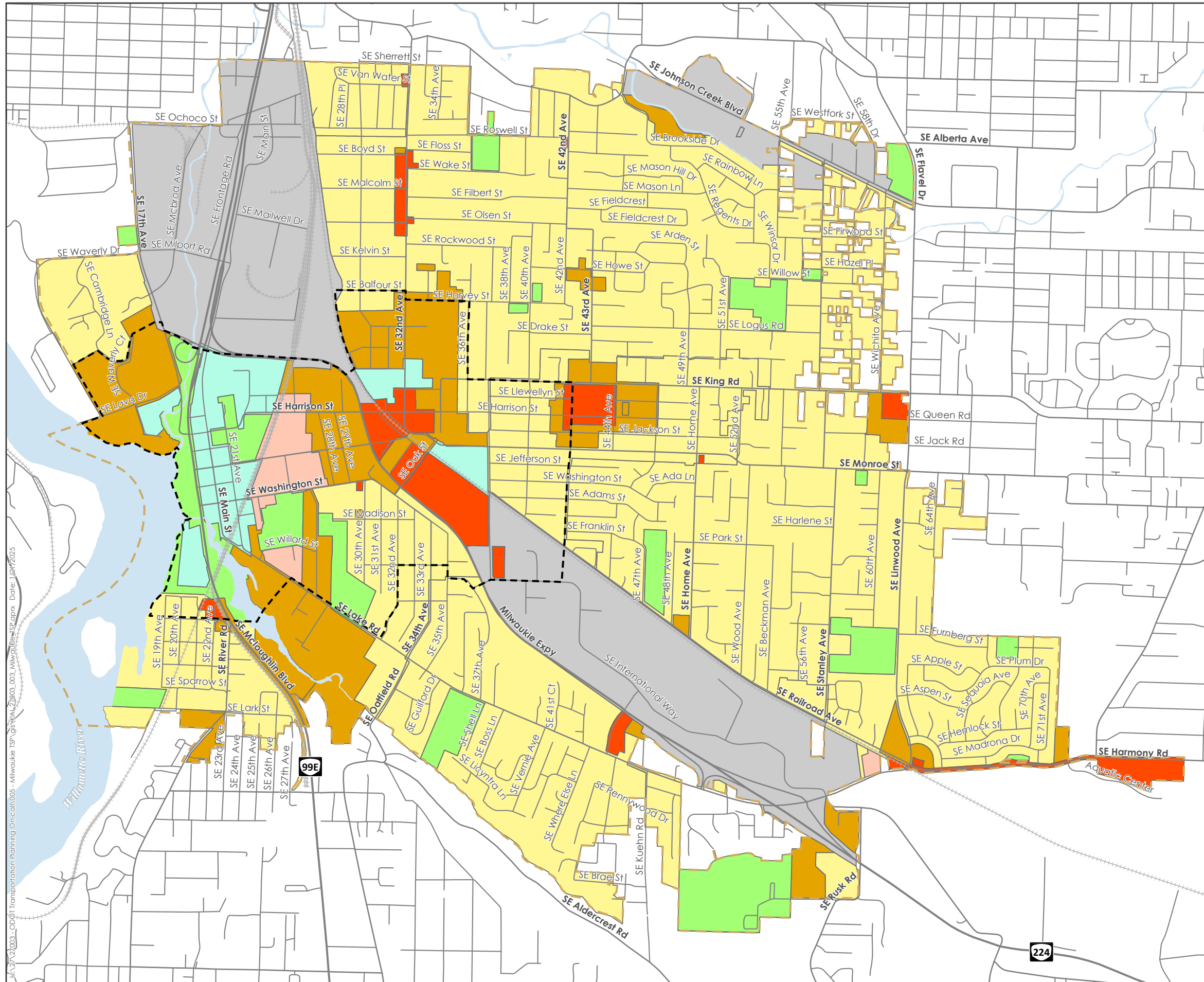


**FIGURE 2**

**Land Use**

**Legend**

- MD - Moderate Density
- HD - High Density
- C - Commercial
- C/HD - Mixed Use
- I - Industrial
- P - Public
- TC - Town Center
- Milwaukie City Limits
- Milwaukie Town Center



Generated On: 1/21/2025

Data Sources: City of Milwaukie, ODOT





















**FIGURE 3**

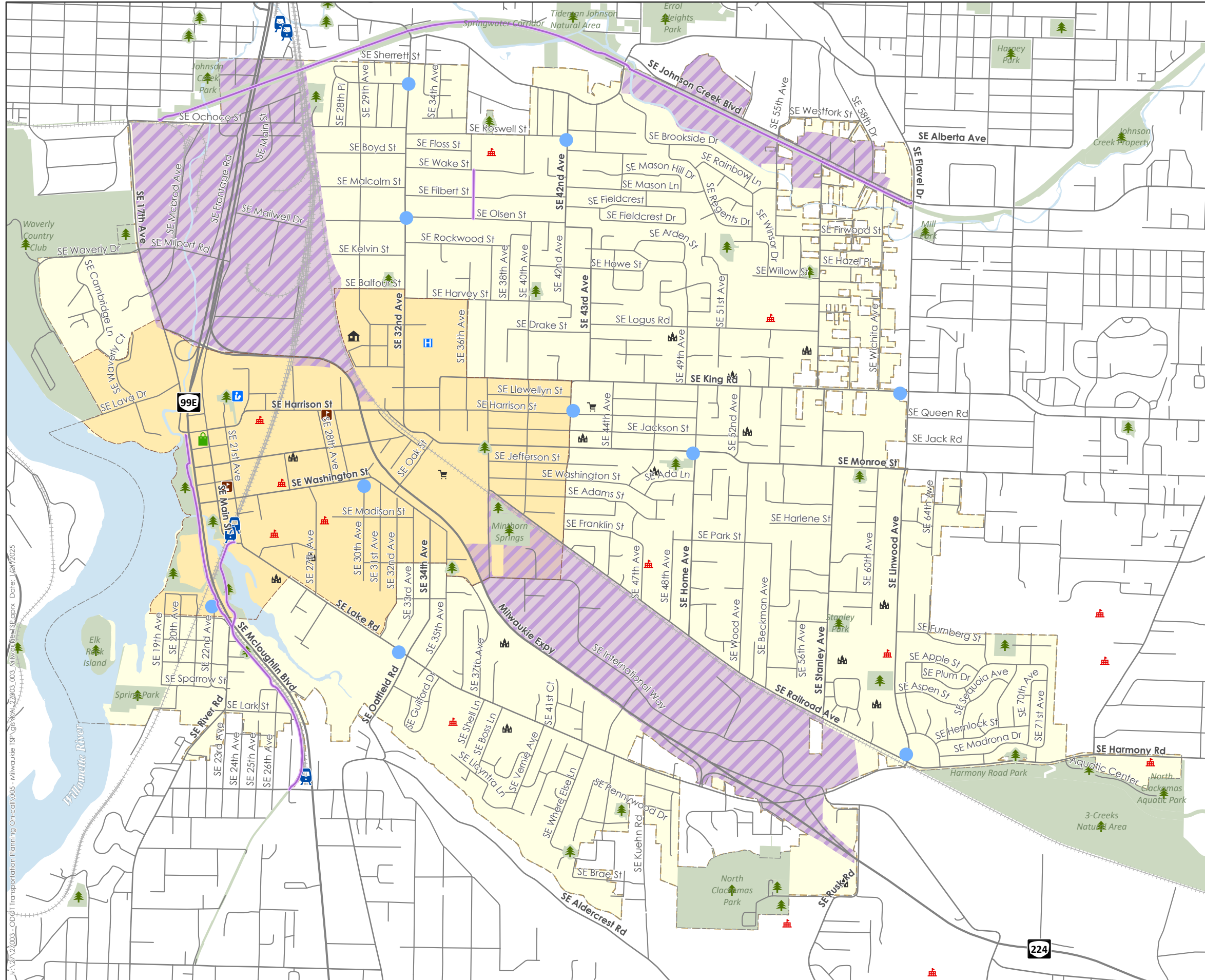
**Key Destinations**

**Legend**

-  MAX Station
-  Schools
-  Grocery Store
-  Farmers markets
-  Hospital (Providence Milwaukie)
-  Library
-  Neighborhood Hub
-  Church
-  Large Adult Care Facility
-  Large Childcare Facility
-  Housing
-  Park
-  Multi-Use Path
-  Industrial Employment Zone
-  Milwaukie City Limits
-  Milwaukie Town Center

Generated On: 1/21/2025

Data Sources: City of Milwaukie, ODOT



## Population Demographics

The *Milwaukie Community Profile Memorandum* documents and analyzes demographic data for the city of Milwaukie, focusing on underserved populations, as identified in Oregon Administrative Rule (OAR) 660-012-0125. OAR 660-012-0125 specifically identifies the following populations as being underserved regarding transportation and land use planning due to historic and current marginalization.

- Black and African American people
- Indigenous people (including Tribes, American Indian/Alaska Native and Hawaii Native);
- People of Color (including but not limited to Hispanic, Latina/o/x, Asian, Arabic or North African, Middle Eastern, Pacific Islander, and mixed-race or mixed-ethnicity populations);
- Immigrants, including undocumented immigrants and refugees
- People with limited English proficiency
- People with disabilities
- People experiencing homelessness
- Low-income and low-wealth community members
- Low- and moderate-income renters and homeowners
- Single parents
- Lesbian, gay, bisexual, transgender, queer, intersex, asexual, or two-spirit community members; and
- Youth and seniors

As identified in the *Milwaukie Community Profile Memorandum*, disadvantaged populations are dispersed throughout the City<sup>1</sup>, so when the TSP considers improving access for disadvantaged groups, there will be general emphasis on providing low-stress multimodal connections within the larger Milwaukie Town Center and priority focus areas.

---

<sup>1</sup> While it has been found that there is a general dispersal of disadvantaged populations throughout Milwaukie, Hillside Park is an important public housing community located on the west side of SE 32<sup>nd</sup> Avenue across from the Providence Milwaukie Hospital site. In association with the Housing Authority of Clackamas County (HACC), Hillside Park is currently undergoing a major redevelopment that will replace aging buildings and infrastructure with approximately 500 new affordable rental housing units. Hillside Park is located within the defined Milwaukie Town Center.



# Roadway System

Roadways provide infrastructure for motor vehicles, freight, bicycle, pedestrian, and transit facilities. The roadway network establishes links both within the city and outside of its boundaries, connecting surrounding areas and neighboring jurisdictions. The following sections describe and inventory the existing roadway system within the City of Milwaukie, including roadway jurisdictions and functional classifications, freight routes, and key roadway and intersection characteristics.

## Roadway Ownership

Public roadways within the City of Milwaukie are owned, operated and maintained by three primary jurisdictions: the City of Milwaukie, ODOT, and Clackamas County. These three jurisdictions coordinate planning, operations, maintenance, and improvements of roadway facilities within the urban area and ensure the continued performance and functionality of the transportation system to meet public needs. These jurisdictions are responsible for the following:

- Maintenance and operations;
- Determining the road's functional classification;
- Defining the roadway's design and multimodal features; and approving construction and access permits.

Figure 4 maps roadway facilities by ownership in the City of Milwaukie while Table 1 provides a more detailed breakdown of these roadways. As would be expected, the majority of the roadway corridors in the City are city-owned.

*Table 1. Roadway Ownership*

	<b>City Owned Roadways</b>	<b>Joint City/Portland Owned Roadways</b>	<b>Clackamas County Owned Roadways</b>	<b>ODOT Owned Roadways</b>
City-Wide	77.9 miles	0.8 miles	2.6 miles	8.1 miles

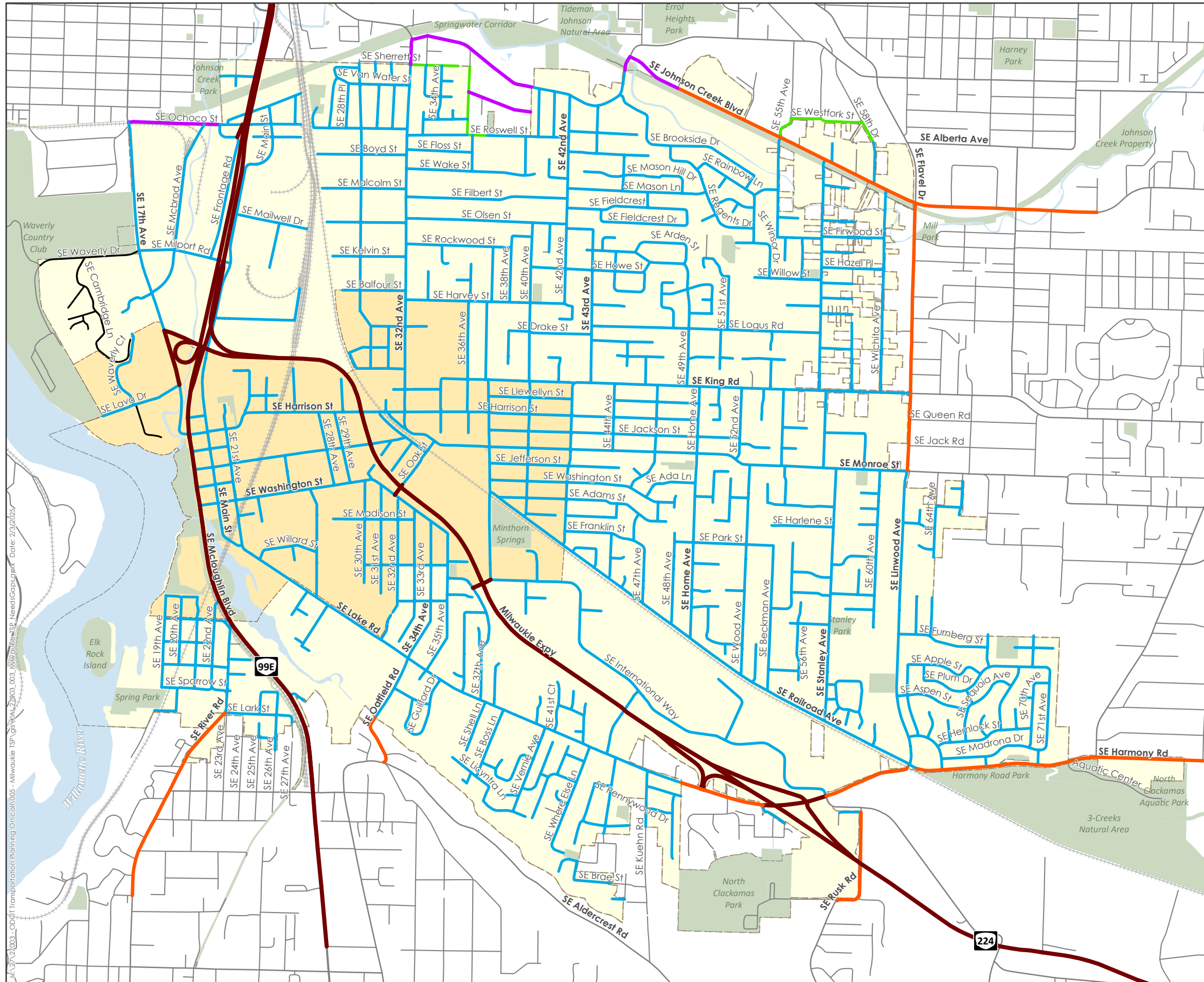


FIGURE 4

Roadway Ownership

Legend

-  Milwaukie Road
-  Milwaukie/Portland Shared
-  Portland
-  Clackamas County Road
-  ODOT
-  Public Road (Privately Maintained)
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/3/2025

Data Sources: City of Milwaukie, ODOT



11/27/2023 - ODOT Transportation Planning On-call 005 - Milwaukie TSP - NeedsCorps.sjperx - Date: 2/3/2025

## Roadway Functional Classification

Roadway functional classifications organize streets based on their role in the transportation system. The City's functional classifications form a hierarchy of streets ranging from those that are primarily for travel mobility (regional routes and arterials) to those that are primarily for access to property (neighborhood routes and local streets). The functional classification system is developed with the recognition that individual streets do not act independently of each other but form a network of streets that work together to serve travel needs on a local, citywide, and regional level.

The City's functional classification system includes regional routes, arterials, collectors, neighborhood routes, and local streets.

Figure 5 maps the current functional classifications while Table 2 summarizes the breakdown of the classifications in total miles of facilities. The majority of streets in the City are classified as local streets, focusing on providing direct access, with key arterial, collector roadways, and regional routes providing overall mobility.

*Table 2. Roadway Functional Classification*

	<b>Regional Routes</b>	<b>Arterials</b>	<b>Collectors</b>	<b>Neighborhood Routes</b>	<b>Local Streets</b>	<b>Total</b>
<b>City-Wide</b>	6.0 miles	11.0 miles	13.3 miles	9.3 miles	49.7 miles	<b>89.3 miles</b>

### Functional Classification Needs/Gaps Assessment

The existing functional classifications were reviewed to ensure there are no gaps or inconsistencies in designations with partnering agencies such as ODOT or Clackamas County or adjacent agencies such as the City of Portland.

#### *Functional Classification Missing Segments*

Based on a review of the City's roadway functional classification map, the following roadway segments are not designated in the current Milwaukie TSP roadway functional classification map and would need modification in the new Milwaukie TSP:

- Johnson Creek Boulevard from SE 45<sup>th</sup> Place to the east city limits as highlighted in Figure 5. Although a Clackamas County owned/maintained roadway, a Milwaukie Arterial designation would ensure inter-agency consistency with the County.
- Harmony Road from SE Linwood Avenue to the east city limits as highlighted in Figure 5. Although a Clackamas County owned/maintained roadway, a Milwaukie Arterial designation would ensure inter-agency consistency with the County.
- SE 17<sup>th</sup> Avenue from roughly SE Waverly Place to the north city limits as highlighted in Figure 5. This segment will be updated to an Arterial designation, consistent with the remainder of SE 17<sup>th</sup> Avenue.

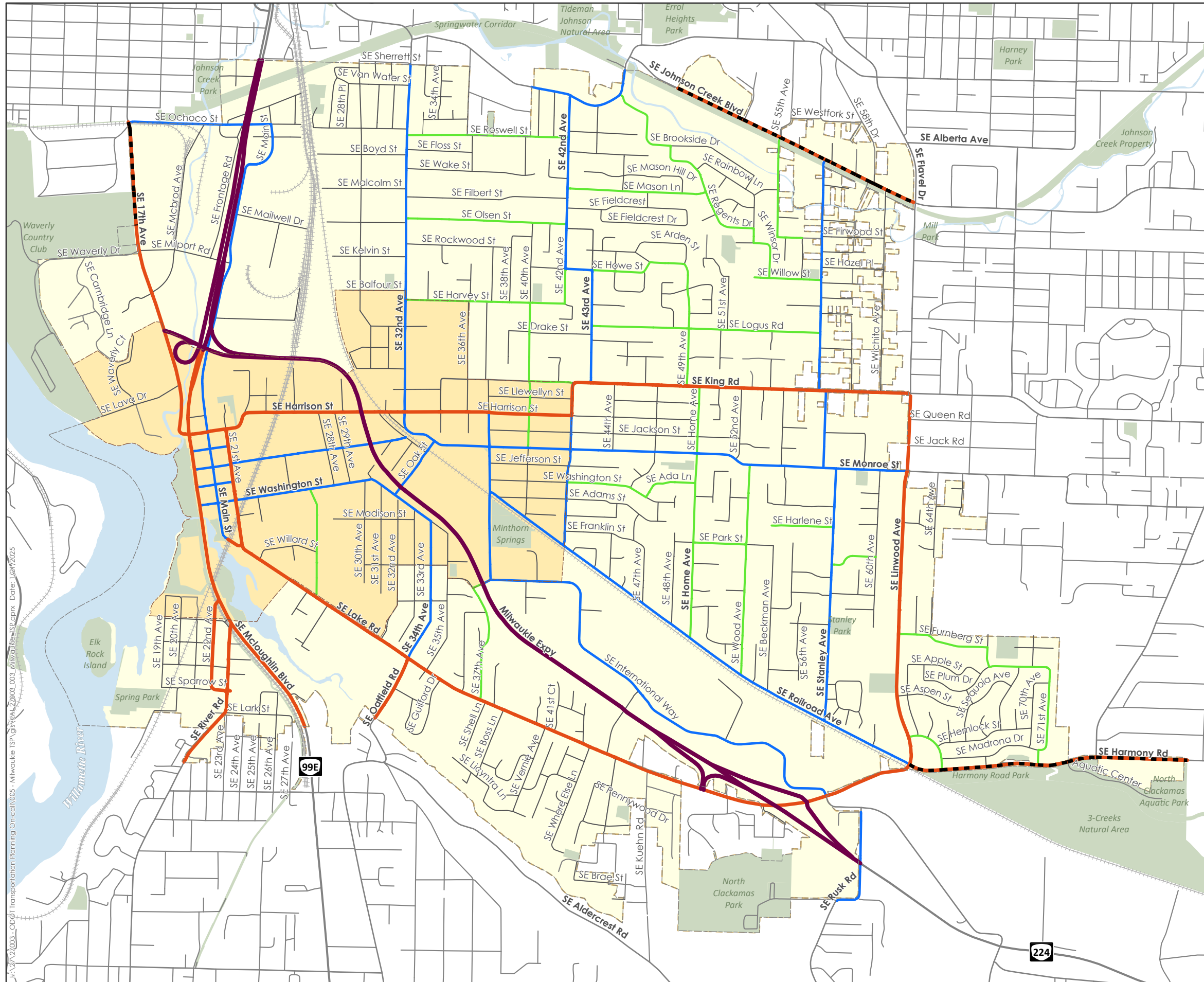


**FIGURE 5**

**Functional Classification**

**Legend**

- Regional Route
- Arterial
- Collector
- Neighborhood Routes
- Local Street
- Missing Designation
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 1/21/2025

Data Sources: City of Milwaukie, ODOT



## Freight

Freight route classifications are provided at the State, Federal, and local levels. In Oregon, the Oregon Highway Plan (OHP) documents State freight designations on the state highway system. As previously noted, the OR 99E corridor (segment north of OR 224) and the OR 224 corridor are classified by ODOT as Freight Routes. At the Federal level, there are no roadways within Milwaukie that are classified as part of the National Highway System (NHS), and therefore there are no roadways classified as National Highway Freight Routes.

### *Freight Classification Changes*

The City is considering the incorporation of multimodal functional classifications into the new TSP. This will update the terminology used to describe freight routes. See accompanying *DRAFT Multimodal Functional Classification Memorandum for the updated Freight Classifications*.

### Freight Needs/Gaps Assessment

The Freight Master Plan element in the current Milwaukie TSP was reviewed to identify projects that are still relevant and needed to address the efficient movement of freight. These projects are summarized in TSP Figure 9-1 and TSP Table 9-1 for freight planning projects that have not yet been completed. All of these projects were reviewed with city planning and engineering staff for inclusion in the new Milwaukie TSP project development and review process. Based on this assessment, all currently planned and unconstructed freight projects in the TSP were identified as having continued relevance. These projects are identified as gaps and mapped in Figure 6.

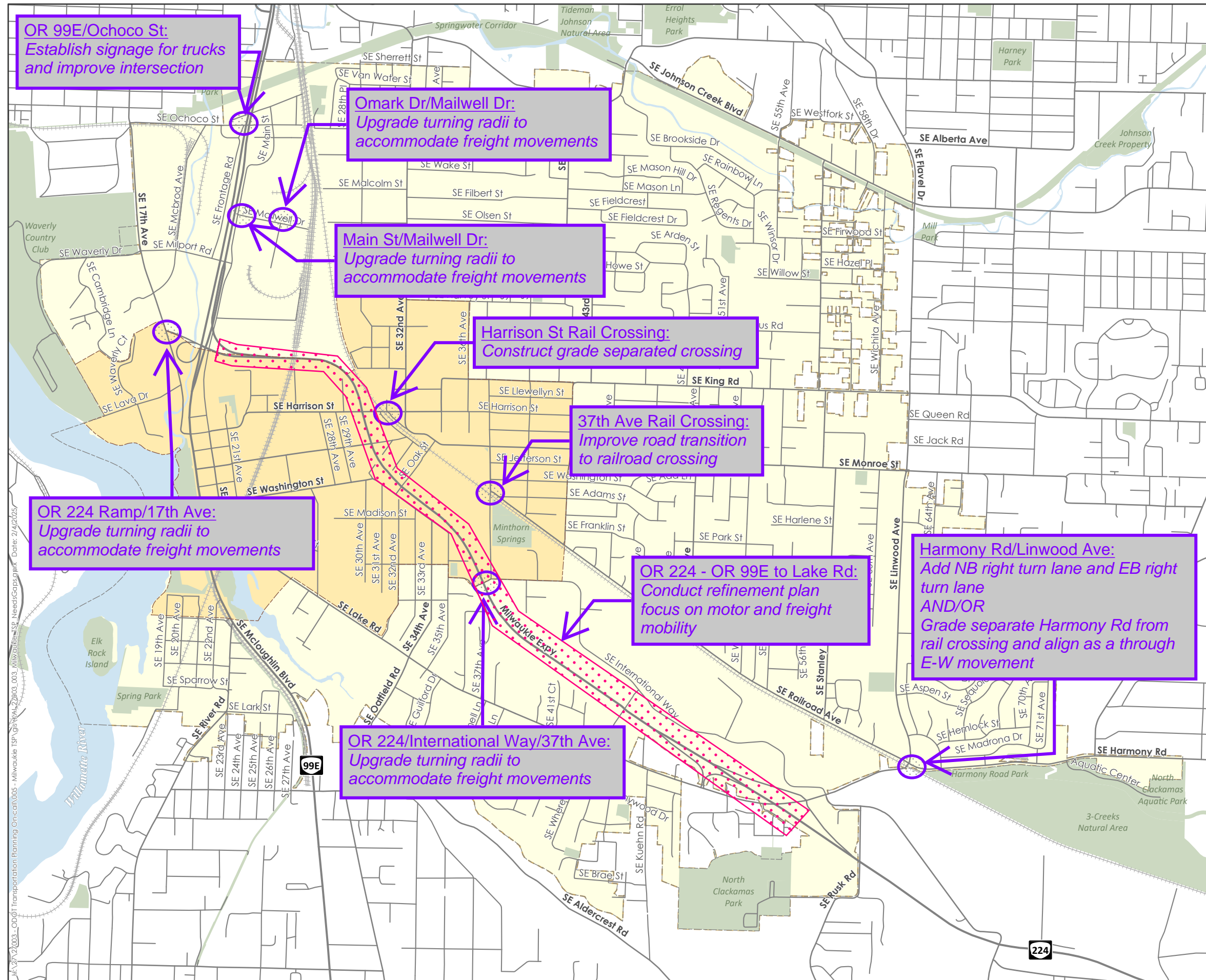


FIGURE 6

Freight Gaps and Needs

Legend

- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/4/2025

Data Sources: City of Milwaukie, ODOT



## Intersection Traffic Control

Intersection traffic control in the City of Milwaukie primarily consists of all-way stop control and signalized intersections. Traffic signals exist mainly along OR 99E, OR 224, Harrison Street, King Road, Lake Road, Linwood Avenue, and Johnson Creek Boulevard. The location of existing traffic signals and all-way stop control intersections are mapped in Figure 7.

## Intersection Operations Evaluation

Traffic operations were evaluated at the following five intersections as selected by City engineering staff. Some of these intersections have been formally studied as part of other planning efforts and are known to experience peak hour operational challenges.

- SE Oak Street / SE Railroad Avenue / SE Monroe Street
- SE 32nd Avenue / SE Harrison Street
- SE 42nd Avenue / SE Roswell Street
- SE 32<sup>nd</sup> Avenue / SE Harvey Street
- SE Railroad Avenue / SE 37<sup>th</sup> Avenue

When not already available from previous studies, supplemental weekday PM peak hour traffic counts were collected at the key intersections in September 2024 following the start of the school year. The traffic counts included the total number of vehicles, pedestrians, bicyclists, and heavy vehicles that entered the intersections in 15-minute intervals.

### *Analysis Methodology and Performance Standards*

All traffic operations analyses described in this section conform with City standard methodologies and guidelines. The City of Milwaukie's operational standard for city-owned intersections is Level-of-Service "D" or better.

### *Existing Traffic Conditions*

The intersection operations analysis was conducted using Synchro and PTV Vistro 2022, software tools designed to assist with operations analyses in accordance with Highway Capacity Manual (HCM, Reference 5) methodologies. The analysis results include level-of-service (LOS), delay, and volume-to-capacity (v/c) ratios at all intersections. The LOS, delay, and v/c ratios are reported for the overall intersection at signalized intersections and the critical movement at unsignalized intersections in accordance with the methodologies outlined in ODOT's *Analysis Procedures Manual*. Figure 8 summarizes existing lane configurations, traffic control devices, and PM peak hour operations at the study intersections. As shown in Figure 8, all study intersections meet the LOS D standard under the existing PM Peak Hour. *Traffic counts and operations worksheets are included in Appendix A.*

### *Year 2045 Baseline Traffic Operations*

The year 2045 projected traffic conditions analysis identifies how the study area's transportation system will operate in the TSP horizon year 2045. Metro's Travel Demand Model provides base (2020) and future (2045) traffic volume projections that reflect anticipated land use changes and planned transportation improvements within the Metro region. Intersection turning



movement volumes were derived from the traffic volume projections by applying the post-processing methodology identified in the National Cooperative Highway Research Program (NCHRP) Report 765, *Analytical Travel Forecasting Approaches for Project-Level Planning and Design*. The methodology derives forecast traffic volumes based on the existing traffic volumes and base and future year traffic volume projections in the model. *The year 2045 traffic volume development worksheets and travel demand model outputs are provided in Appendix B.*

Figure 8 illustrates the additional study intersection forecast year 2045 traffic volumes and operations. Table 3 summarizes the forecast operations and findings.

*Table 3. 2045 Additional Study Intersection Operations Summary*

Intersection	2045 Future Conditions		Operational Challenge
	Forecast to Operate within LOS D Standard	Forecast to Operate Above LOS D Standard	
SE Roswell Street/ SE 42 <sup>nd</sup> Avenue	x		The critical Roswell Street approach is forecast to operate within acceptable standards during peak travel periods. While the intersection does experience periods of short-term congestion during school release times at nearby Ardenwald Elementary, no capacity-based traffic control improvements are forecast to be needed. However, considering the large number of pedestrians that traverse this intersection due to its proximity to Ardenwald Elementary, pedestrian crossing enhancements such as an RRFB treatments across SE 42 <sup>nd</sup> Avenue should be considered.
SE Harvey Street/ SW 32 <sup>nd</sup> Avenue	x		While the critical Harvey Street approach is forecast to operate within acceptable standards during peak travel periods, enhanced pedestrian and bicycle crossing treatments of SE Harvey Street have been identified as part of other study efforts that should be incorporated as part of the new TSP project development and prioritization efforts.
SE Harrison Street/ SE 32 <sup>nd</sup> Avenue	x		While forecast to have adequate long-term intersection capacity, the split phasing on the north and south approaches can result in long vehicle queues on the southbound through/left-turn lane during peak time periods. This intersection has also been identified as a challenging intersection for pedestrians and bicycles to cross.
SE Oak Street/ SE Railroad Ave/ SE Monroe Street		x	The westbound Monroe Street approach is forecast to operate over capacity in 2045 traffic conditions. This is attributed to growth along the Monroe and Oak Street corridors.

Intersection	2045 Future Conditions		Operational Challenge
	Forecast to Operate within LOS D Standard	Forecast to Operate Above LOS D Standard	
SE Railroad Ave/ SE 37 <sup>th</sup> Avenue		x	The westbound left-turn movement is forecast to operate with high levels of delay resulting in LOS F conditions. This is attributed to forecast growth on the 37 <sup>th</sup> Avenue and SE Railroad Avenue corridors.

Intersection Traffic Control Needs/Gaps Assessment

Based on the analysis above, intersections forecast to exceed the LOS D standard are identified in gaps and illustrated in Figure 9.








Additionally, the Street Network Master Plan element in the current Milwaukie TSP was reviewed to identify projects that are still relevant and needed to address traffic operations, safety, and geometric challenges. These intersection projects are summarized in TSP Figure 8-5 and TSP Table 8-10. The review determined that multiple intersection capacity or geometric improvement projects have been implemented as part of other capital projects such as the Linwood Avenue improvements and various projects along OR 99E. All other remaining projects have yet to be implemented. Based on conversations with City engineering staff, those remaining projects which are notated on Figure 9, are still needed to address various traffic control, safety, or geometric deficiencies. Projects in other planning efforts that have occurred since the last TSP update, such as the study of SE 42<sup>nd</sup> Avenue & SE Johnson Creek Boulevard, were also incorporated into Figure 9.

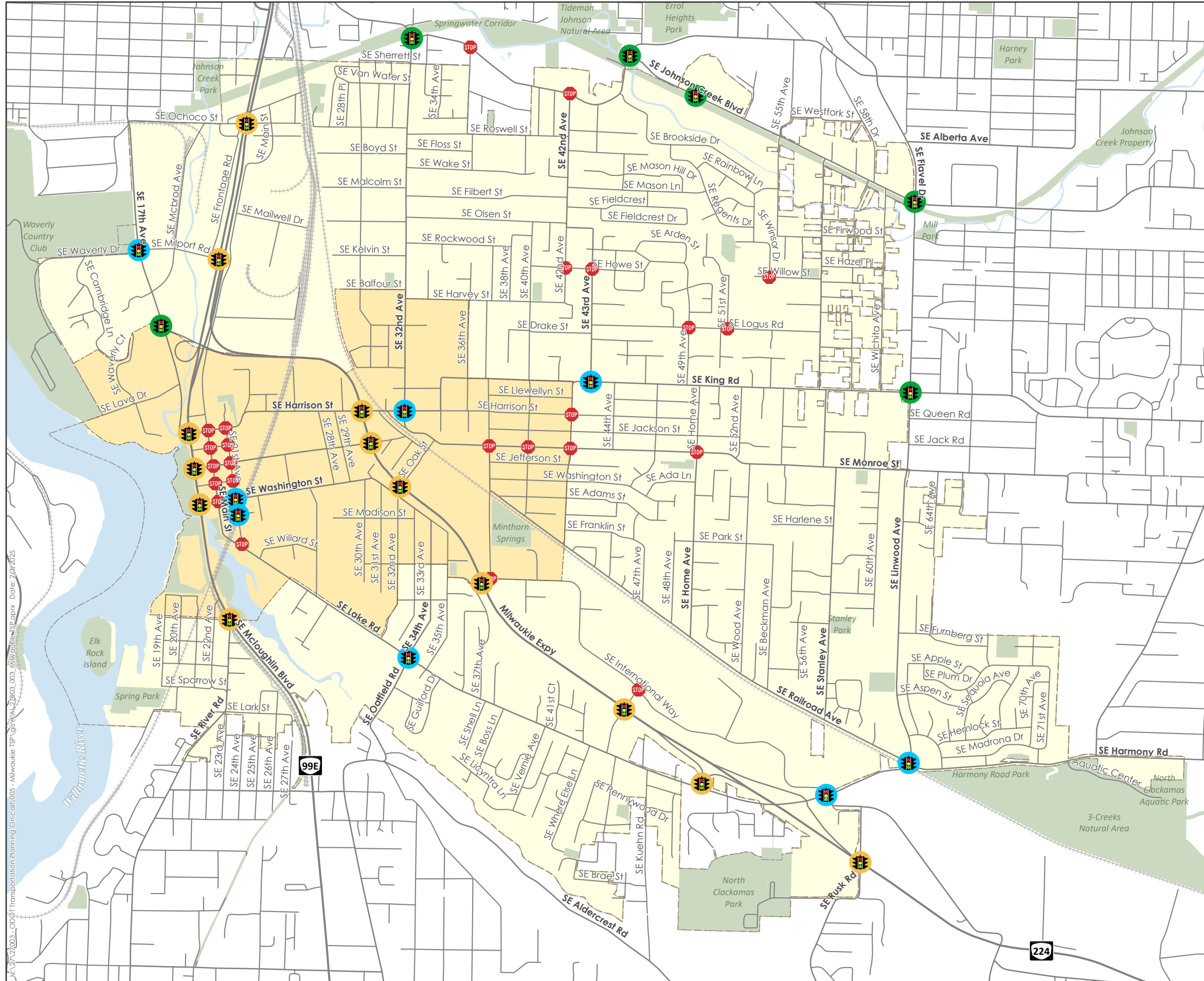


**FIGURE 7**

**Intersection Control**

**Legend**

-  All-Way Stop
-  Signalized Intersection - City of Milwaukie Owned
-  Signalized Intersection - Clackamas County Owned
-  Signalized Intersection - ODOT Owned
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



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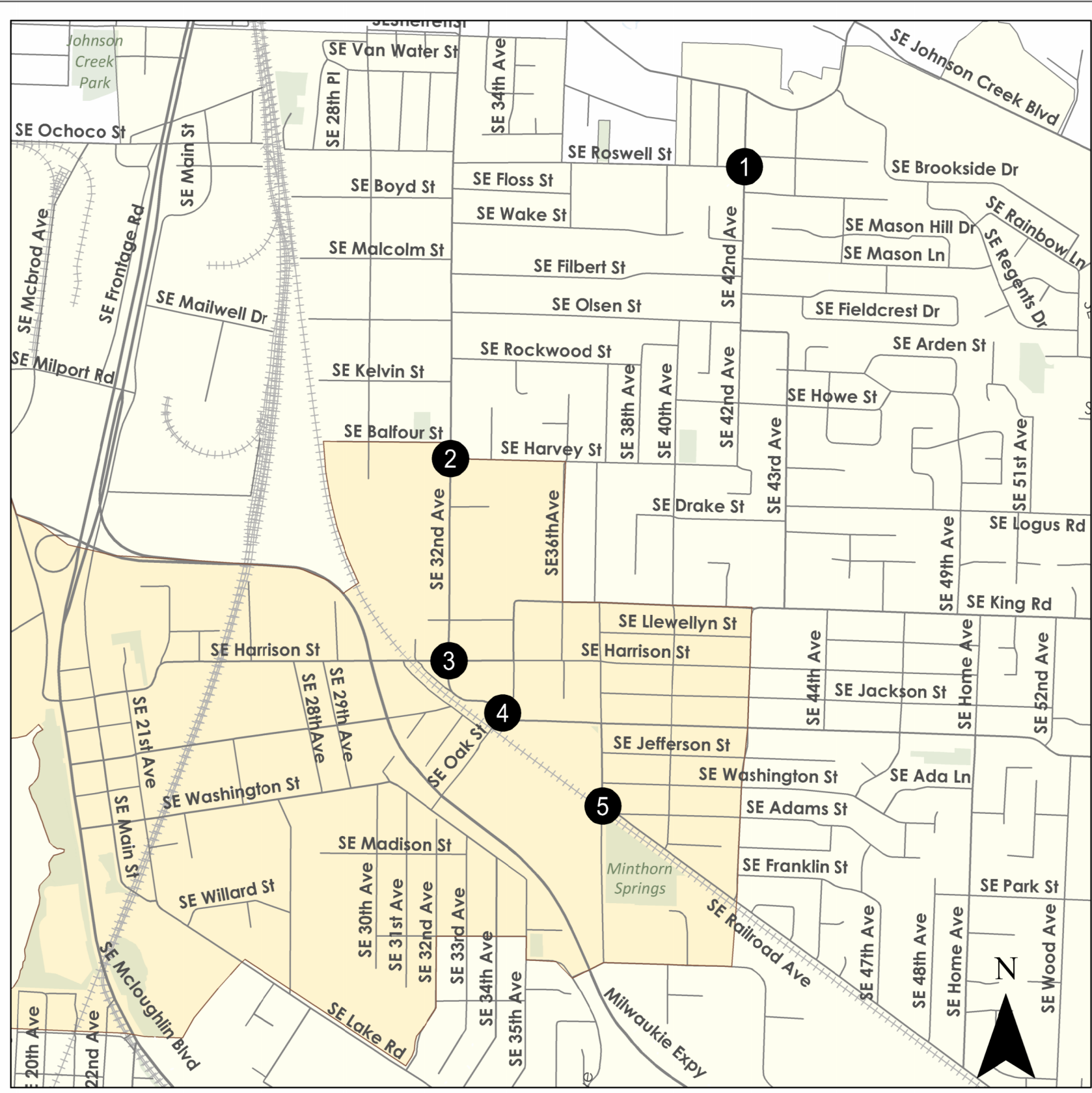
Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



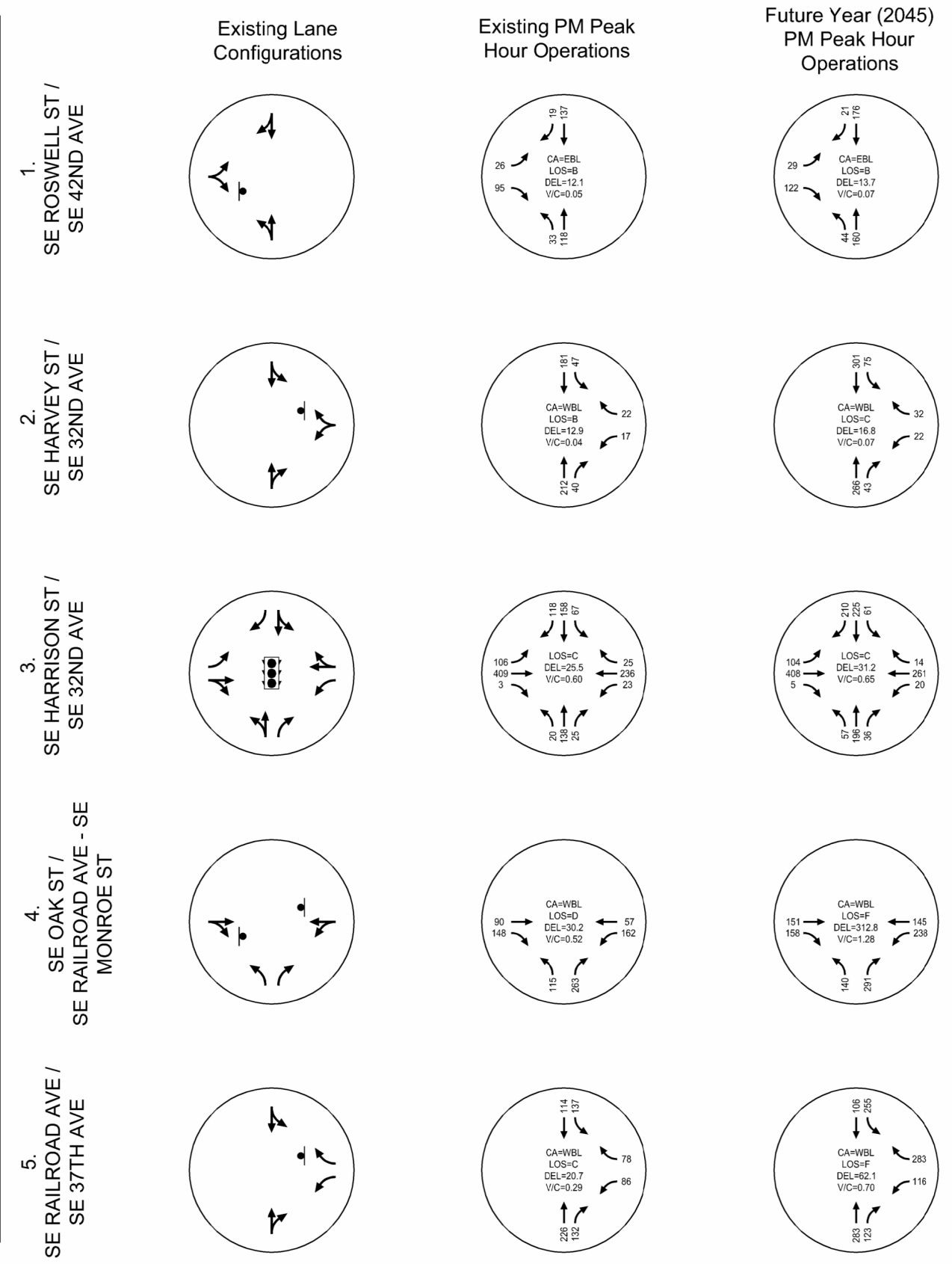
224

H:\27003-005 - Milwaukie TSP\Traffic Analysis\Figures\27003.005\_OperationsFigures.dwg Nov 12, 2024 - 3:14pm - msteele Layout Tab: Fig 8



**LEGEND**  
 # - STUDY INTERSECTIONS  
 CA = CRITICAL APPROACH  
 LOS = CRITICAL APPROACH LEVEL OF SERVICE  
 DEL\* = CRITICAL APPROACH AVERAGE CONTROL DELAY  
 V/C\* = CRITICAL APPROACH VOLUME-TO-CAPACITY RATIO  
 \*Critical Movement Delay and V/C Ratio Reported for TWSC Intersections - Overall Delay and V/C Ratio Reported for Signalized Intersection

↔ - LANE SYMBOL  
 ● - STOP SIGN  
 🚦 - SIGNAL



Existing Lane Configurations, Traffic Control Devices, and PM Peak Hour Operations  
 Milwaukie Oregon

Figure 8

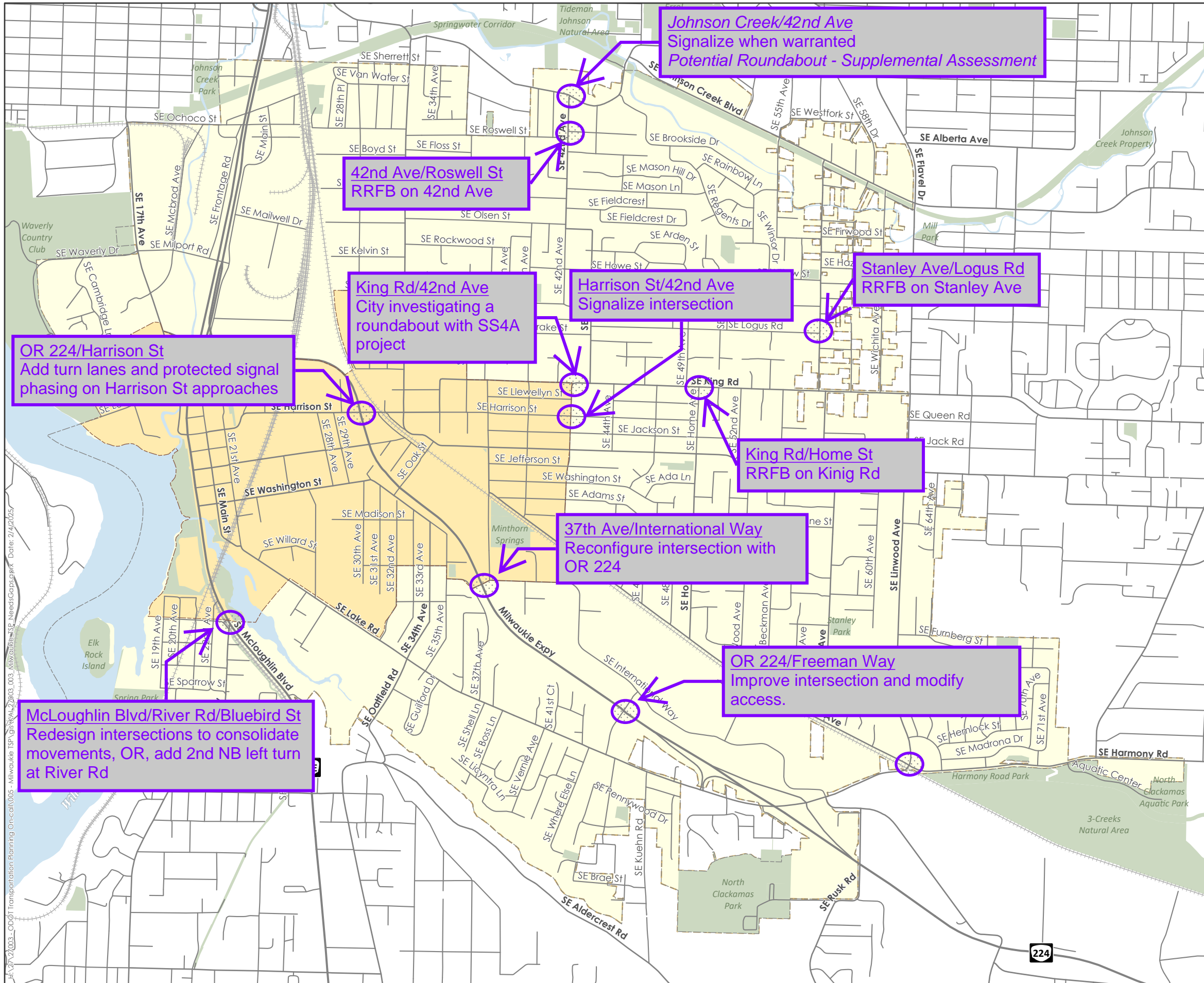


**FIGURE 9**

**Intersection Control Gaps and Needs**

**Legend**

- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/4/2025

Data Sources: City of Milwaukie, ODOT



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## Roadway Characteristics

The following sections provide an overview of roadway characteristics within the City, including travel lanes, posted speed limits, intersection traffic control, and other key characteristics.

### Travel Lanes

Roadway facilities by travel lanes are mapped in Figure 10. There are no identified projects in the current Milwaukie TSP that would add or substantively change the number of corridor-level travel lanes on existing Milwaukie roadways.

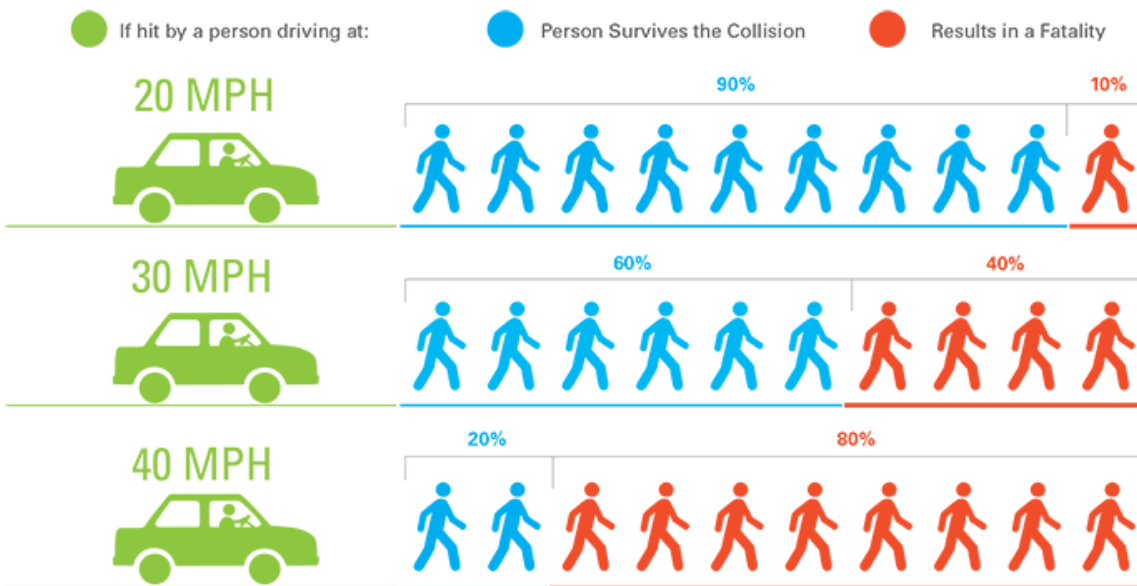
### Posted Speeds

Roadway facilities by posted speeds are mapped in Figure 11. Roadways without posted speed limits are subject to statutory speed limits established by the state (ORS 811.11 and ORS 811.105), except for school zones that are posted at 20 MPH.

Posted speeds on City facilities are generally 25 to 35 MPH. Posted speeds on ODOT facilities range from 35 to 50 MPH, except for the segment of OR 99E near and through downtown Milwaukie, which is posted at 30 MPH.

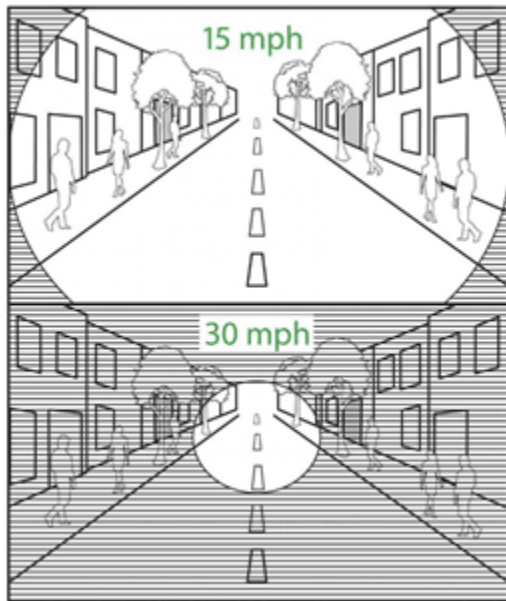
Due to recent legislative changes to ORS 810.180, The City of Milwaukie can establish by ordinance a reduction in the speed limit on local residential streets from 25 MPH to 20 MPH. As shown in Exhibit 1 and Exhibit 2, reducing speeds decreases the likelihood of fatal injury crashes and makes it easier for drivers to see and react to people in the roadway.

Exhibit 1. Vehicle Speed Comparison to Chance of Pedestrian Injury and Fatality



Source: <https://www.ite.org/technical-resources/topics/speed-management-for-safety/speed-as-a-safety-problem/>

Exhibit 2. Field of Vision Bases on Speed of Motorist



Source: <https://www.ite.org/technical-resources/topics/speed-management-for-safety/speed-as-a-safety-problem/>

## Roadway Gaps/Needs Assessment

The Street Network Master Plan element in the current Milwaukie TSP was reviewed to identify projects that are still relevant and needed to address corridor and intersection. These intersection projects are summarized in TSP Figure 8-5 and TSP Table 8-10. The review determined that multiple corridor and intersection approach projects have yet to be implemented. Based on conversations with City engineering staff, those remaining projects which are notated on Figure 12, are still needed to address various roadway corridor deficiencies.

The local street network is an important part of Milwaukie's existing transportation network as it provides a fabric of roadways that provide local access and circulation to residential neighborhoods. The local street network in Milwaukie has essentially been built out over time, however it is not well connected in some parts of the city which can inhibit efficient connections to neighborhood schools, parks, and neighborhood hubs. The current Milwaukie TSP recognizes these challenges and has identified opportunities to improve local street connections over time. TSP Figure 8-4, the City's current street connectivity plan, was reviewed and updated based on input from City staff to refine the local street connections. This included updating the location of street extensions based on potential impacts to existing land use and identifying multimodal path connections for pedestrians and bicycles. This updated map is illustrated in Figure 12B.








There is also an opportunity to adopt a formal 20 MPH speed for local streets in Milwaukie. This is consistent with other neighboring jurisdictions such as the City of Portland. No other changes to the posted speeds have been identified at this time.

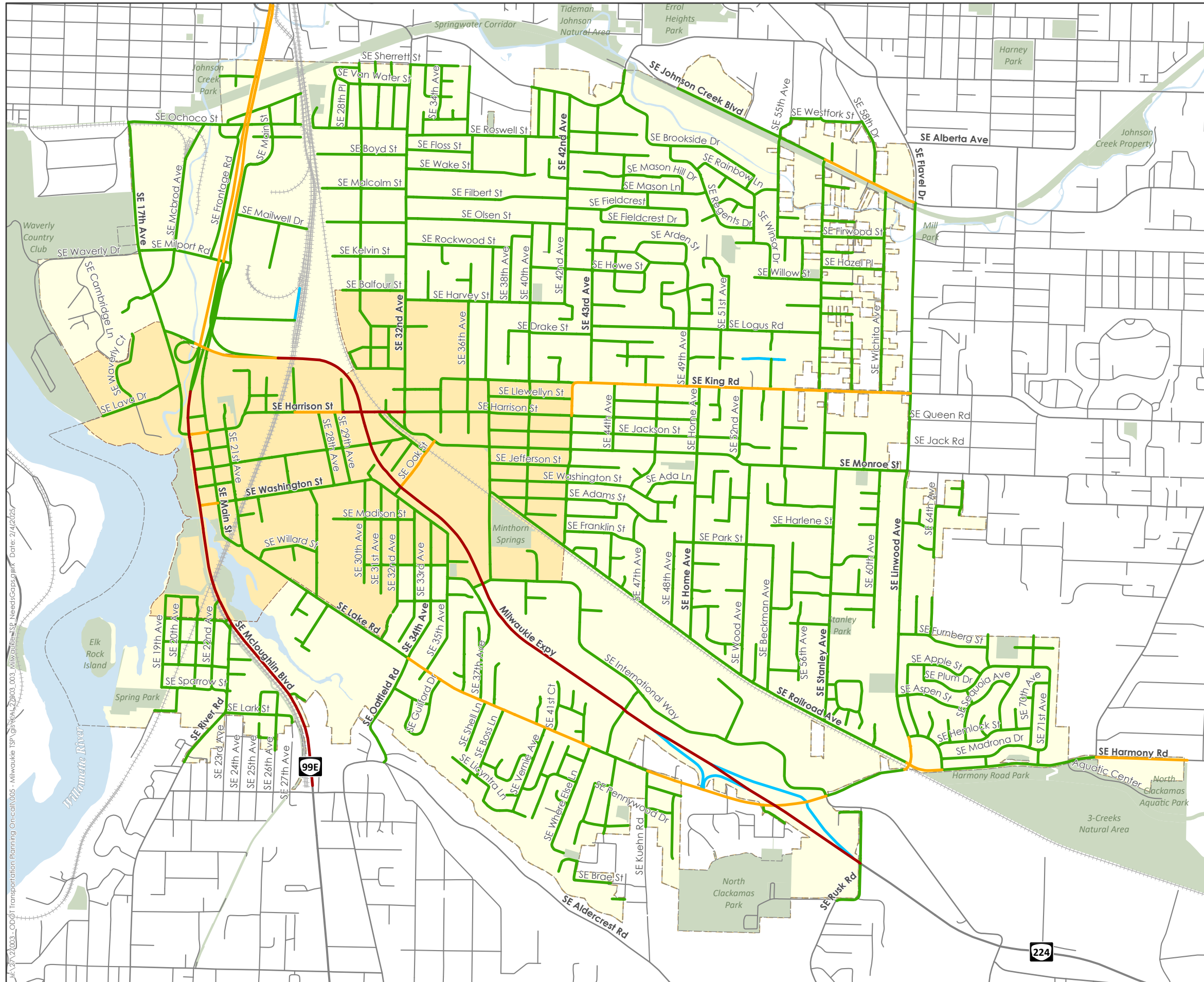


**FIGURE 10**

**Roadway Lanes**

**Legend**

-  1 Lane
-  2 Lanes
-  3 Lanes
-  4+ Lanes
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/4/2025

Data Sources: City of Milwaukie, ODOT







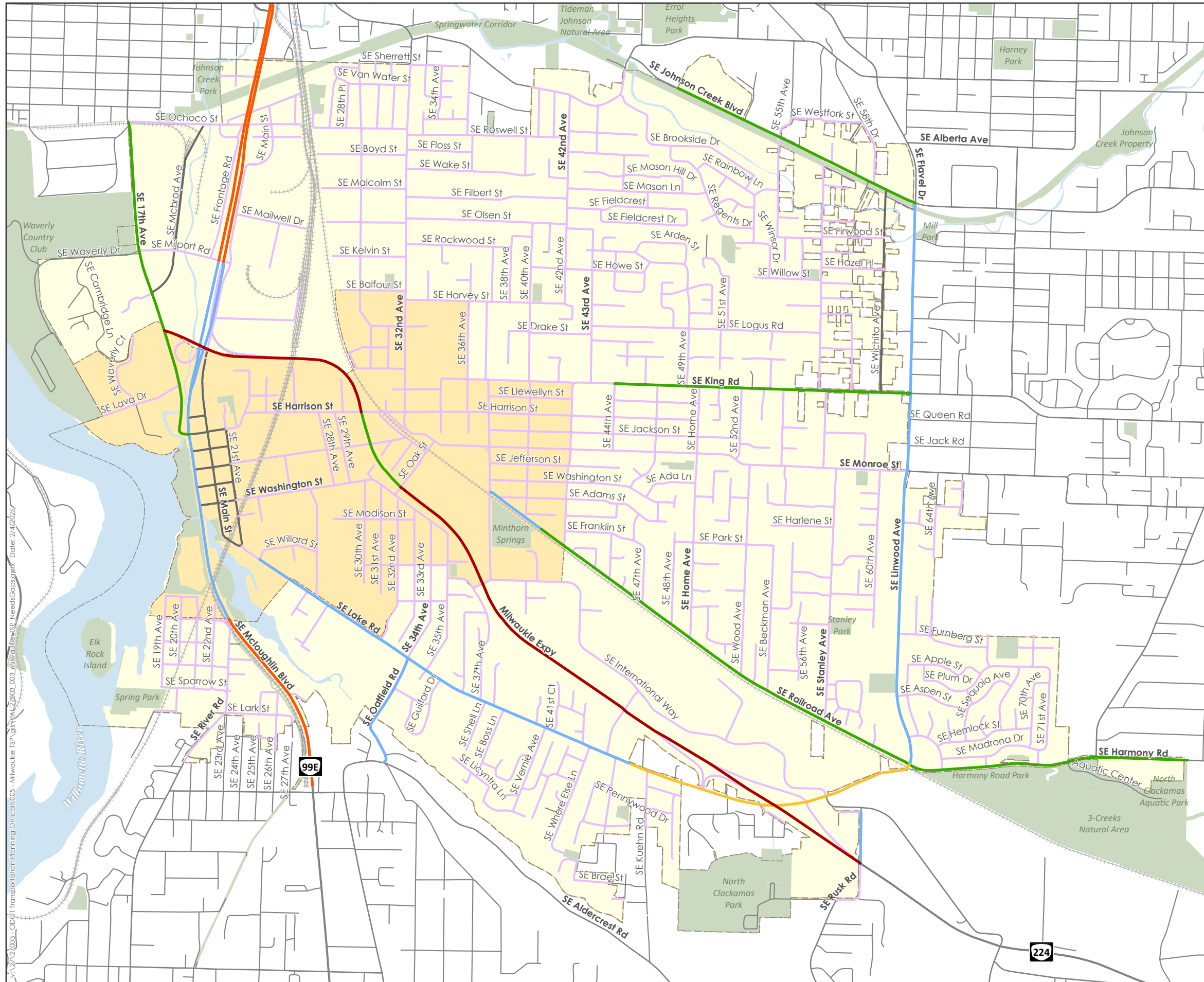
**FIGURE 11**

**Posted Speed**

**Legend**

- 50 MPH
- 45 MPH
- 40 MPH
- 35 MPH
- 30 MPH
- 25 MPH
- 20 MPH

- Milwaukie City Limits
- Milwaukie Town Center
- Parks



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Data Sources: City of Milwaukie, ODOT



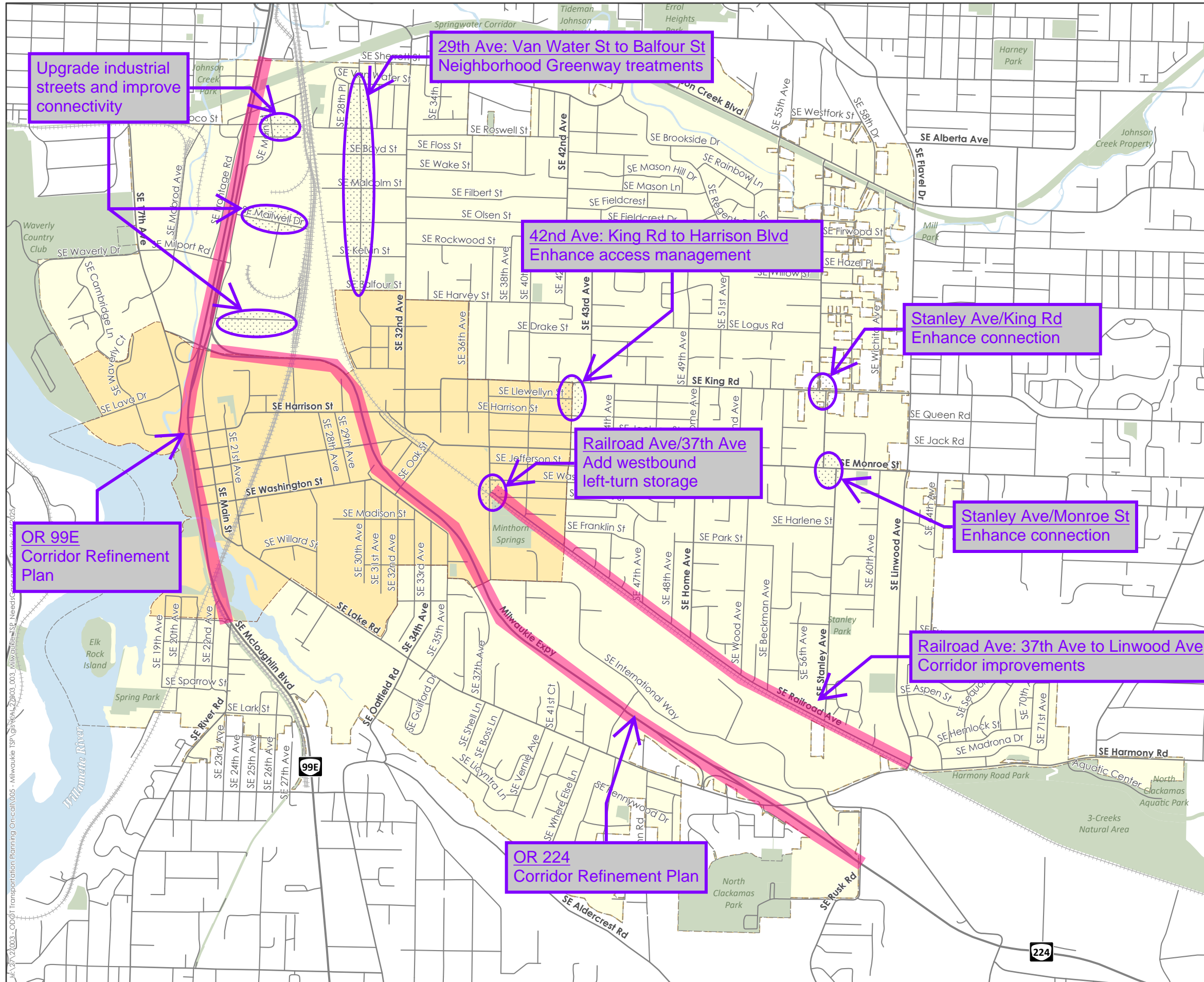


FIGURE 12

Roadway Gaps and Needs

Legend

- Milwaukie City Limits
- Milwaukie Town Center
- Parks



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Data Sources: City of Milwaukie, ODOT



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## Pedestrian and Bicycle Facilities

Pedestrian and bicycle facilities provide infrastructure for people to walk, bike, roll, or use mobility devices. In the City of Milwaukie, the pedestrian and bicycle accommodations primarily consist of on-street facilities and multi-use trails.

### Pedestrian Facilities

Pedestrian facilities refer to infrastructure designed for people walking or using mobility devices and typically include sidewalks, trails, crossings, and curb ramps. A well-connected pedestrian network provides safe and efficient links between pedestrian trip generators like schools, parks, commercial areas, neighborhood hubs, residential neighborhoods, and other pedestrian attractors.

Figure 13 illustrates all pedestrian facilities within the City of Milwaukie. As shown, this consists of sidewalks on one or both sides of select roadways and a collection of trails and on-street multi-use pathways. As tabulated in Table 4, only 16 percent of the city's total potential sidewalk network has sidewalks greater than 5 feet and without barriers.

*Table 4. Existing City-Wide Pedestrian Network Completeness by Functional Classification*

	<b>Regional Routes</b>	<b>Arterials</b>	<b>Collectors</b>	<b>Neighborhood Routes</b>	<b>Local Streets</b>	<b>Total</b>
<i>Sidewalks ≥5 feet Percent Complete</i>	18%	26%	21%	13%	8%	16%

## Pedestrian Level of Traffic Stress

The ODOT Analysis Procedures Manual (APM) provides a methodology for evaluating pedestrian environments called Pedestrian Level of Traffic Stress (PLTS)<sup>2</sup>. This methodology classifies four levels of traffic stress that a person walking can experience, ranging from PLTS 1 (little traffic stress) to PLTS 4 (high traffic stress). A segment that is rated PLTS 1 has wide sidewalks that are set back from adjacent traffic lanes and is typically suitable for all users, including young children and people using mobility devices. An example of a PLTS 1 facility is illustrated in Exhibit 3. Monroe Street is PLTS 1 because the width of facility is over 6 feet wide and the parking lane provides a comfortable buffer from traffic. A segment that is rated PLTS 4 is generally located along high speed, multilane roadways with narrow or missing sidewalks and would only be utilized by able-bodied adults with limited route choices. An example of a PLTS 4 facility is illustrated in Exhibit 4. Roswell Avenue is PLTS 4 because the sidewalk is curb-tight and there are several barriers reducing the effective width of the sidewalk: people using mobility devices or pushing strollers would not be able to use the sidewalk without significant challenges.

*Exhibit 3. PLTS 1 Facility (Monroe Street)*



*Exhibit 4. PLTS 4 Facility (Roswell Avenue)*



---

<sup>2</sup> The roadway network was estimated by multiplying roadway centerline miles by two, recognizing a complete pedestrian network would achieve PLTS 1 or 2 on both sides of the street.

Per the APM, PLTS 2 is considered a reasonable target for pedestrian facilities due to its acceptability for most adults; however, within a ¼ mile of schools, in downtown cores, and near transit stops, a target of PLTS 1 is recommended. The APM also notes that there should be no PLTS 3 or 4 facilities within ¼ mile of elementary schools because of the associated safety concerns. **The City of Milwaukie should strive to achieve PLTS 1 where feasible, particularly in the vicinity of schools, however given the fact that Milwaukie has few vacant parcels, there are constraints such as the lack of right-of-way available that make a PLTS 1 unfeasible in many situations. Based on the city's constraints the consultant team believes that in Milwaukie PLTS 2 is an acceptable target as it is accessible for most users.**

Figure 14 illustrates the existing PLTS in the planning area. Under existing conditions, approximately 15% of the existing roadway network in Milwaukie has a PLTS 1 or 2 score as tabulated in Table 5. Most of the roadways in the city have a PLTS 3 or 4 score due to the lack sidewalk facilities or they have obstructions that limit the effective sidewalk width to levels that impede walking and rolling.

Table 5. Existing City-Wide PLTS Inventory Network Completeness

	<b>Regional Routes</b>	<b>Arterials</b>	<b>Collectors</b>	<b>Neighborhood Routes</b>	<b>Local Streets</b>	<b>Total</b>
PLTS 1 or 2	0.0 (0% complete)	6.2 (29% complete)	7.2 (28% complete)	2.9 (16% complete)	7.9 (9% complete)	24.2 (15% complete)

## Pedestrian Classification Changes

The City is incorporating multimodal functional classifications into the TSP. This will update the terminology used to describe pedestrian routes. See accompanying *DRAFT Multimodal Functional Classification Memorandum for the updated Pedestrian Classifications*.

## Pedestrian Gaps Inventory

Figure 15A illustrates the citywide pedestrian gaps. Gaps include the following conditions:

- Missing pedestrian facilities
- Segments that are PLTS 3 or PLTS 4
- Locations where there have been reported injuries and deaths of people walking or using a mobility device from the most recent 5 years of available crash data (2018-2022)
- Intersections that are challenging for pedestrians to cross or navigate. These challenges can be attributed to one or more issues such as a lack of pedestrian accommodations, wide intersections with long crossing distances, lack of wayfinding, poor geometrics, and high motor vehicle interactions.

Most roadways in Milwaukie do not meet the preliminarily identified PLTS 2 target. Consistent with the new TPR requirements, the Milwaukie TSP will focus on identifying and evaluating projects that are in the Milwaukie Town Center or that are within a ¼ mile walkshed of schools, grocery stores, neighborhood hubs, transit stops, and senior living/low income/resource centers. Figure

15B illustrates the gaps and needs in those priority focus areas. Figure 15C through Figure 15I provide the individual gaps for each of those respective geographic walksheds.

This map will be used in conjunction with committee input and input from the community to develop a prioritized list of constrained and unconstrained improvement projects.

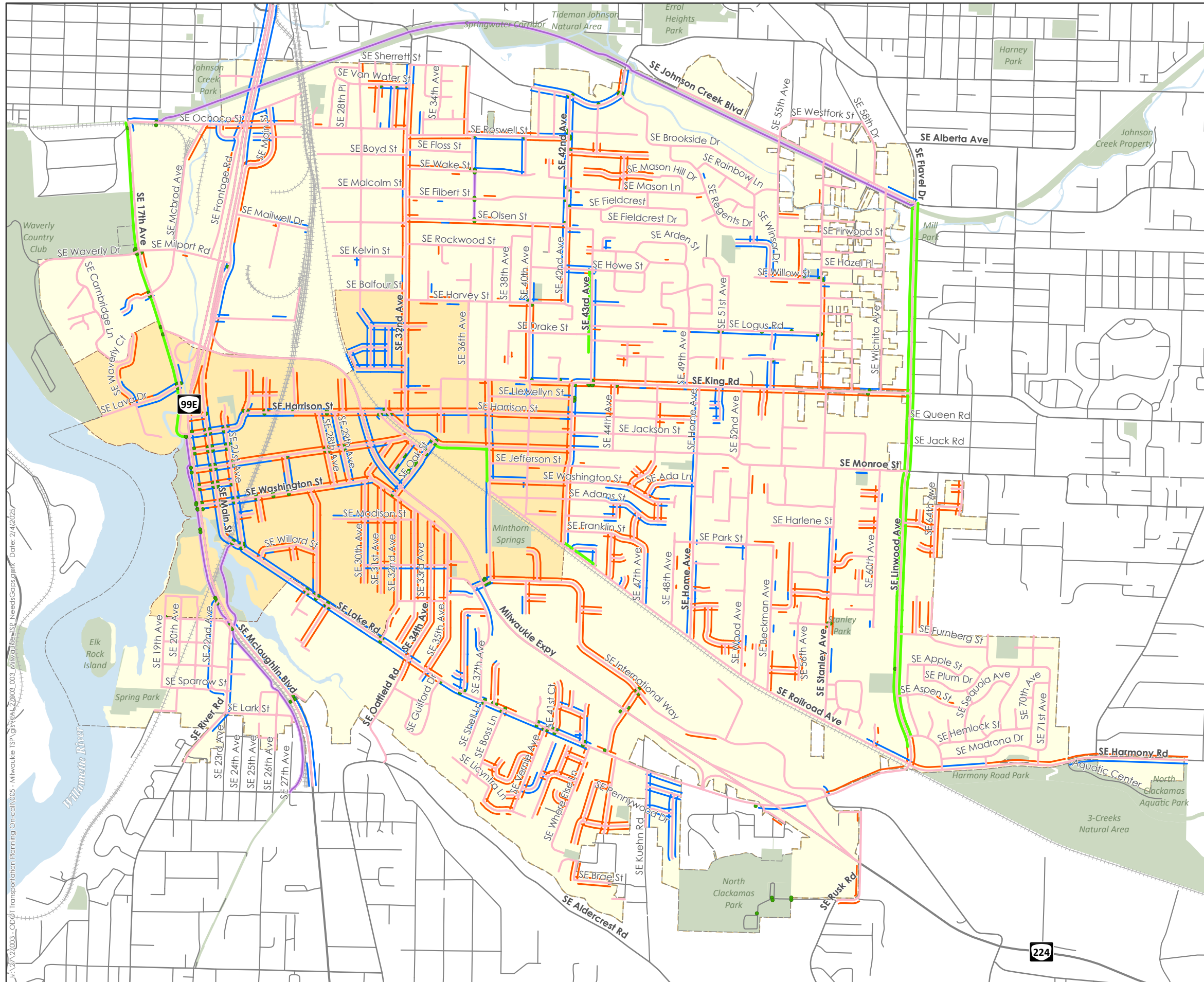


**FIGURE 13**

**Pedestrian Facilities**

**Legend**

- ADA Ramp
- Sidewalk ≥5 feet
- <5 feet or has barriers
- On-Street Ped/Bike Pathway
- Multi-Use Path
- Milwaukie Town Center
- Milwaukie City Limits



Generated On: 2/4/2025

Data Sources: City of Milwaukie, ODOT







**FIGURE 14**

**Pedestrian  
Level of Traffic Stress**

**Legend**

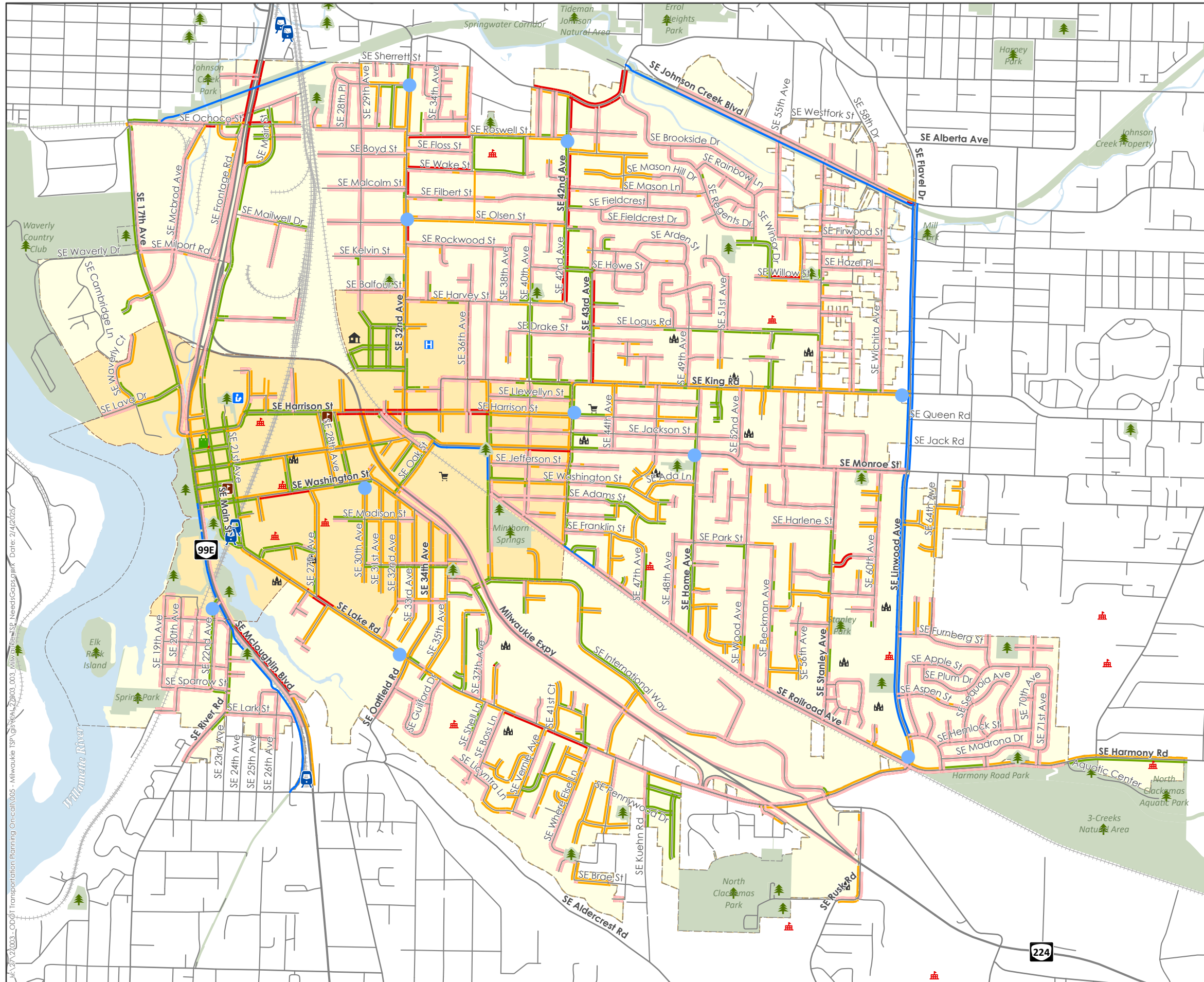
- PLTS 1
- PLTS 2
- PLTS 3
- PLTS 4
- No Sidewalk = PLTS 4

Note: Analysis Limited to Roadway Segments

- Schools
- Grocery Store
- Farmers markets
- Hospital (Providence Milwaukie)
- Library
- Neighborhood Hub
- Church
- Large Adult Care Facility
- Large Childcare Facility
- Housing
- MAX Station
- Park
- Milwaukie City Boundary
- Milwaukie Town Center
- Parks

Generated On: 2/4/2025

Data Sources: City of Milwaukie, ODOT











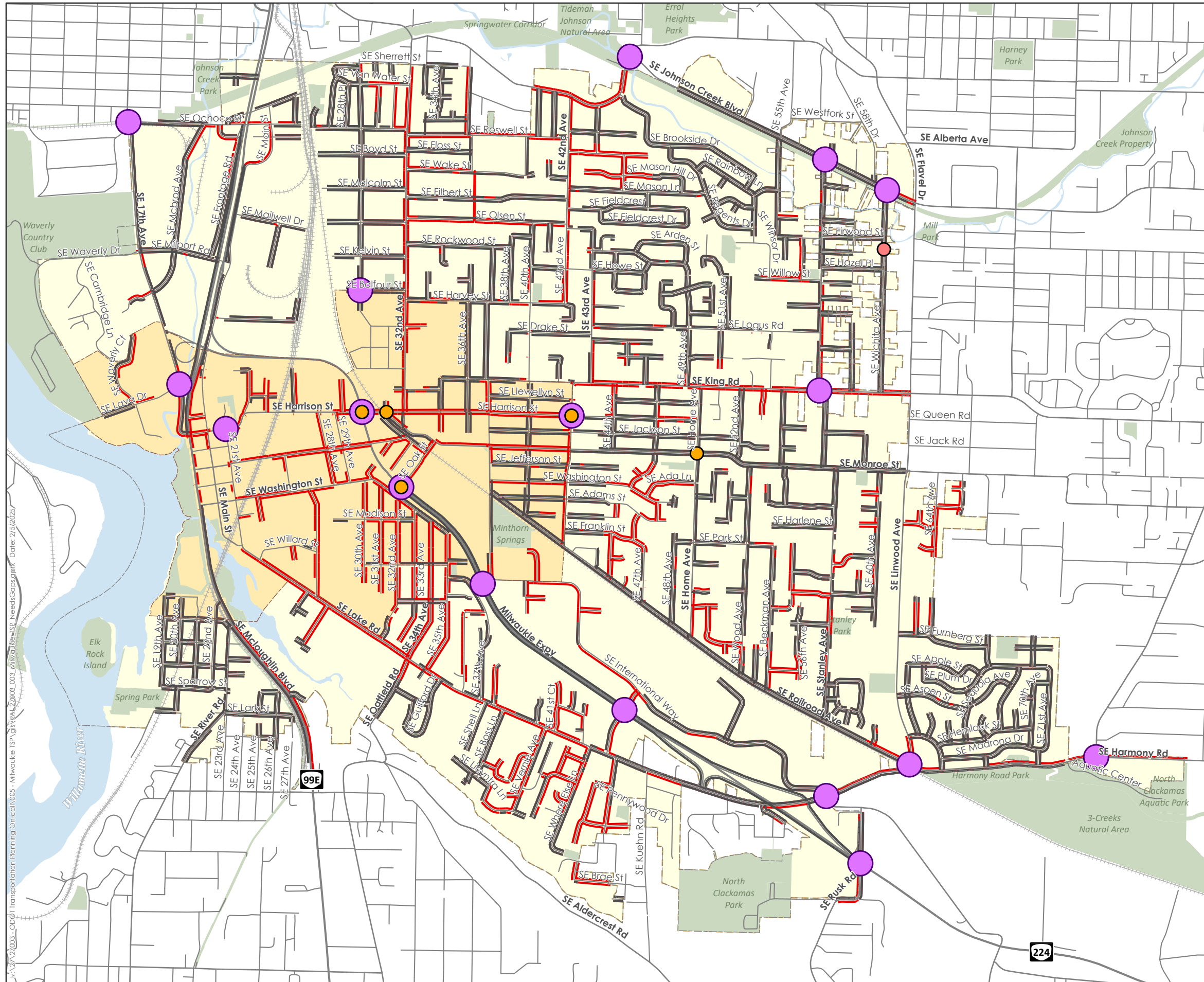
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**FIGURE 15A**  
**Pedestrian Gaps and**  
**Deficiencies**  
Citywide

Legend

-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target
-  Challenging Intersections for Pedestrians
-  Fatal Pedestrian Crash
-  Severe Injury Pedestrian Crash
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT





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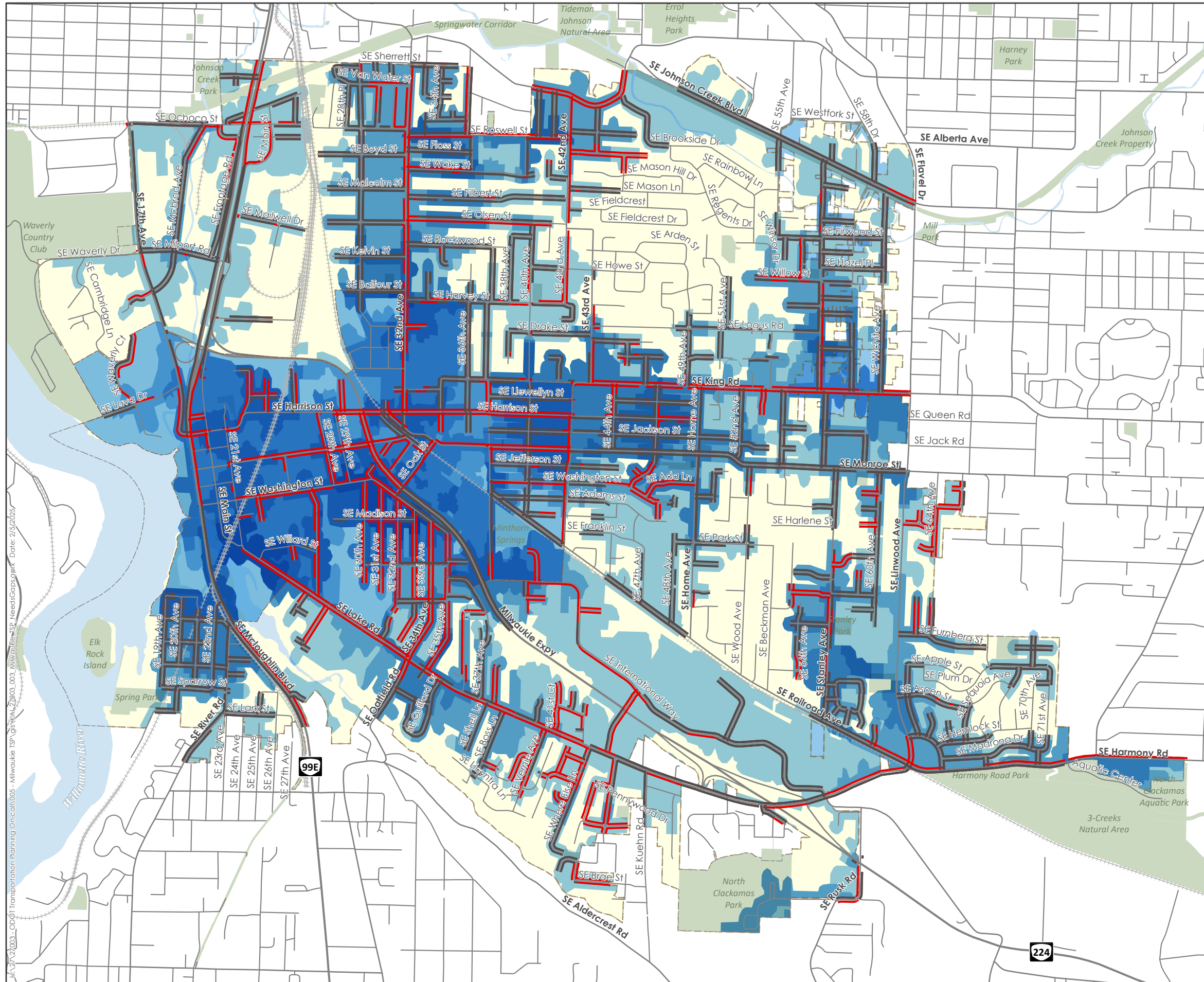
**FIGURE 15B**  
**Pedestrian Gaps and**  
**Deficiencies**  
**Priority Focus Areas**

**Legend**

-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target

**Density of Focus Area Walksheds**

-  6 (Walkshed Layers)
-  3 (Walkshed Layers)
-  1 (Walkshed Layer)
-  Milwaukie City Limits
-  Parks



Generated On: 2/5/2025






Data Sources: City of Milwaukie, ODOT

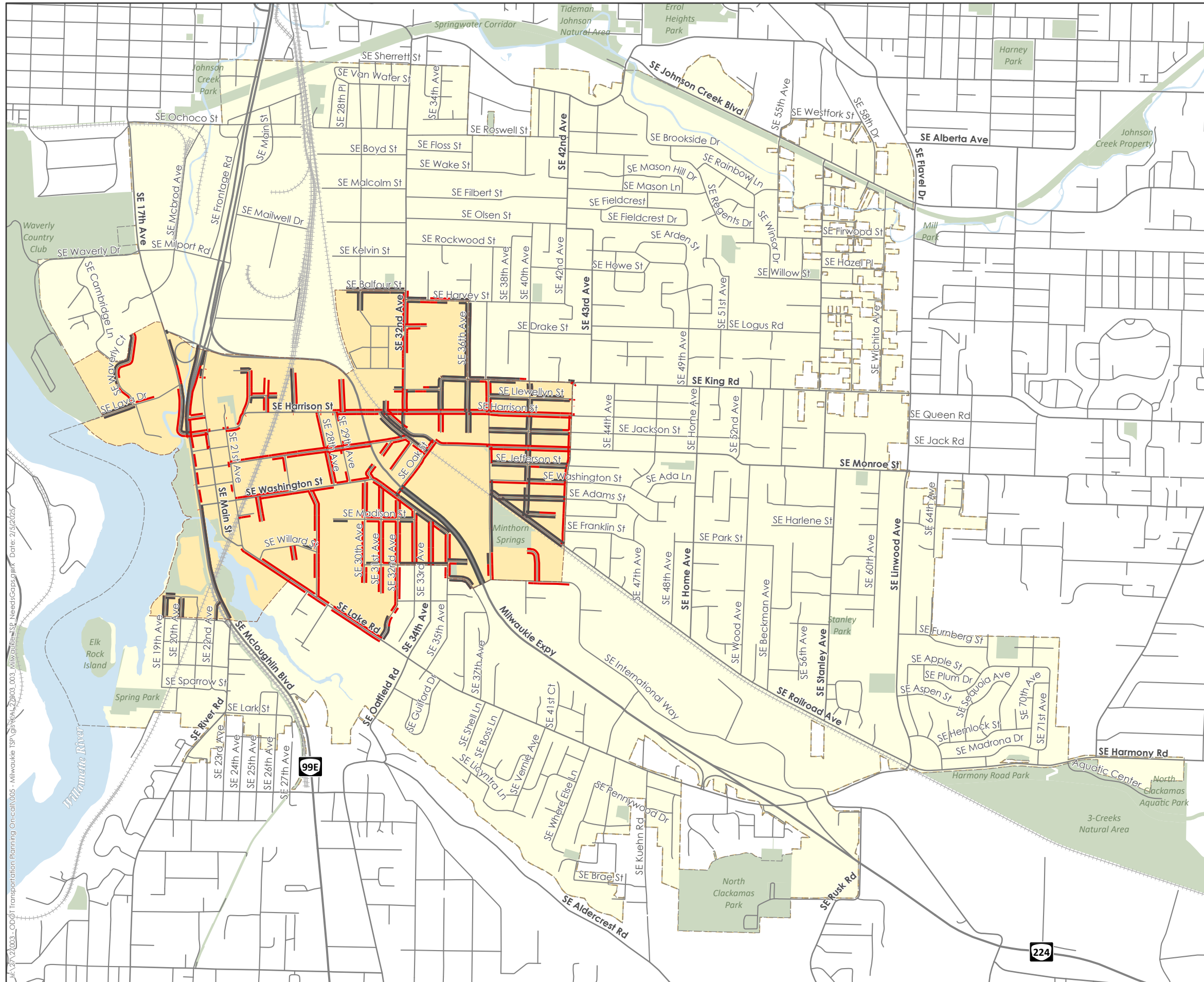




**FIGURE 15C**  
**Pedestrian Gaps and Deficiencies**  
**Milwaukie Town Center**

**Legend**

-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



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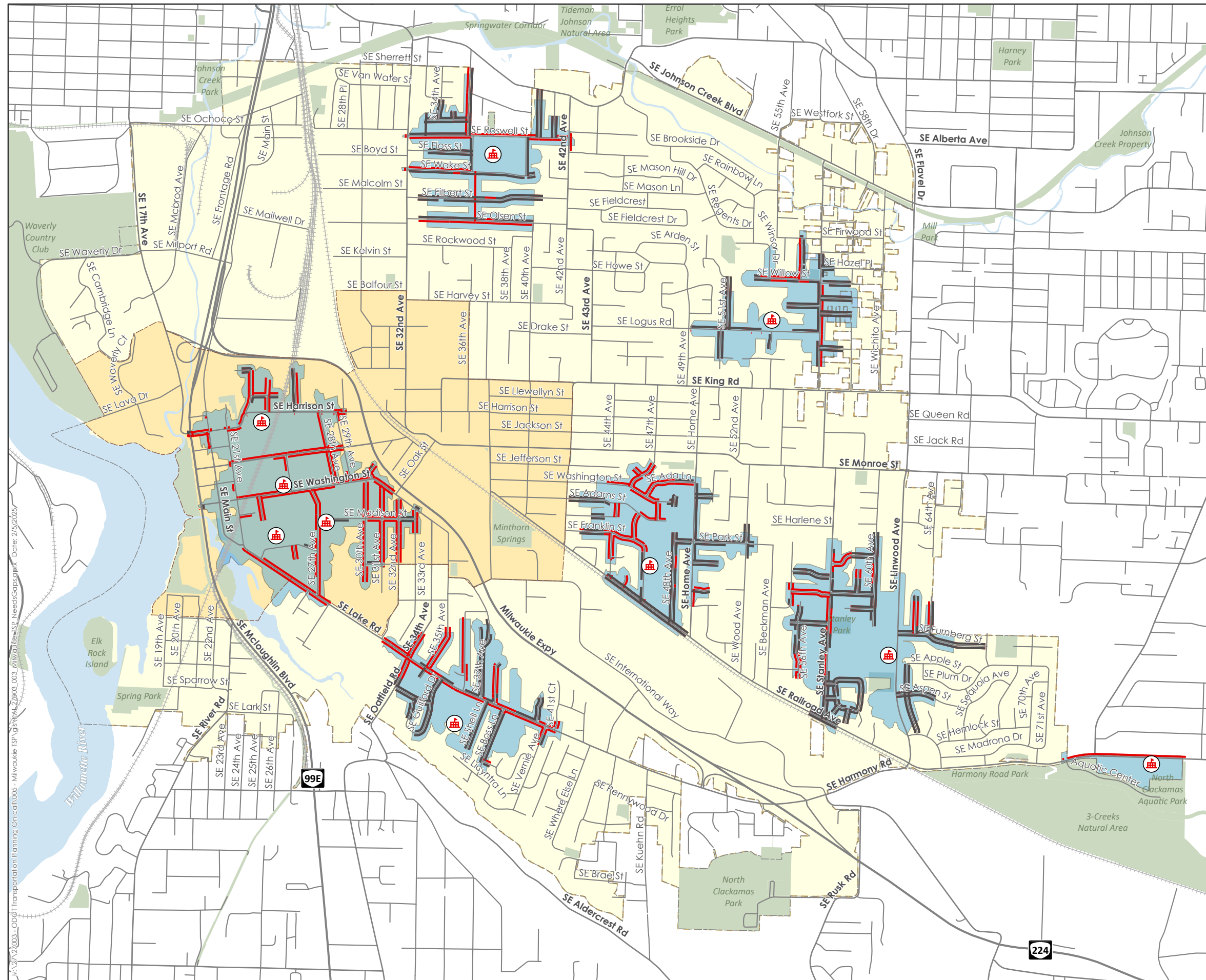
Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles





**FIGURE 15D**  
**Pedestrian Gaps and Deficiencies**  
Primary/Secondary/ Post-Secondary Schools



**Legend**

- Schools
- Pedestrian Facility Does Not Meet the PLTS 2 Target
- No Sidewalk/Does Not Meet the PLTS 2 Target
- Quarter-Mile Walkshed Area
- Milwaukie City Limits
- Milwaukie Town Center
- Parks

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Data Sources: City of Milwaukie, ODOT







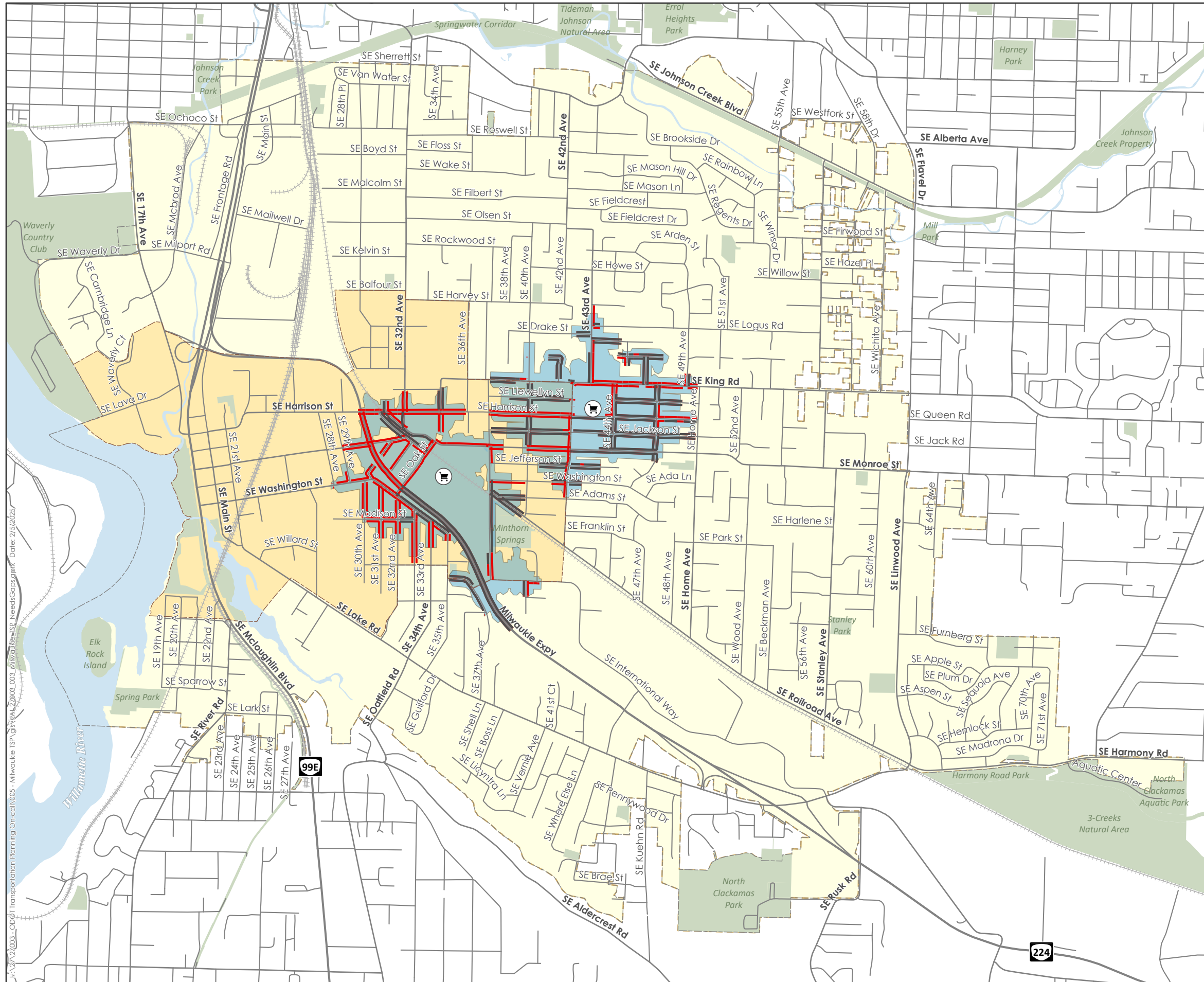
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**FIGURE 15E**  
**Pedestrian Gaps and**  
**Deficiencies**  
**Grocery Stores**

Legend

-  Grocery Store
-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target
-  Quarter-Mile Walkshed Area
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT



0 0.25 0.5 0.75 Miles

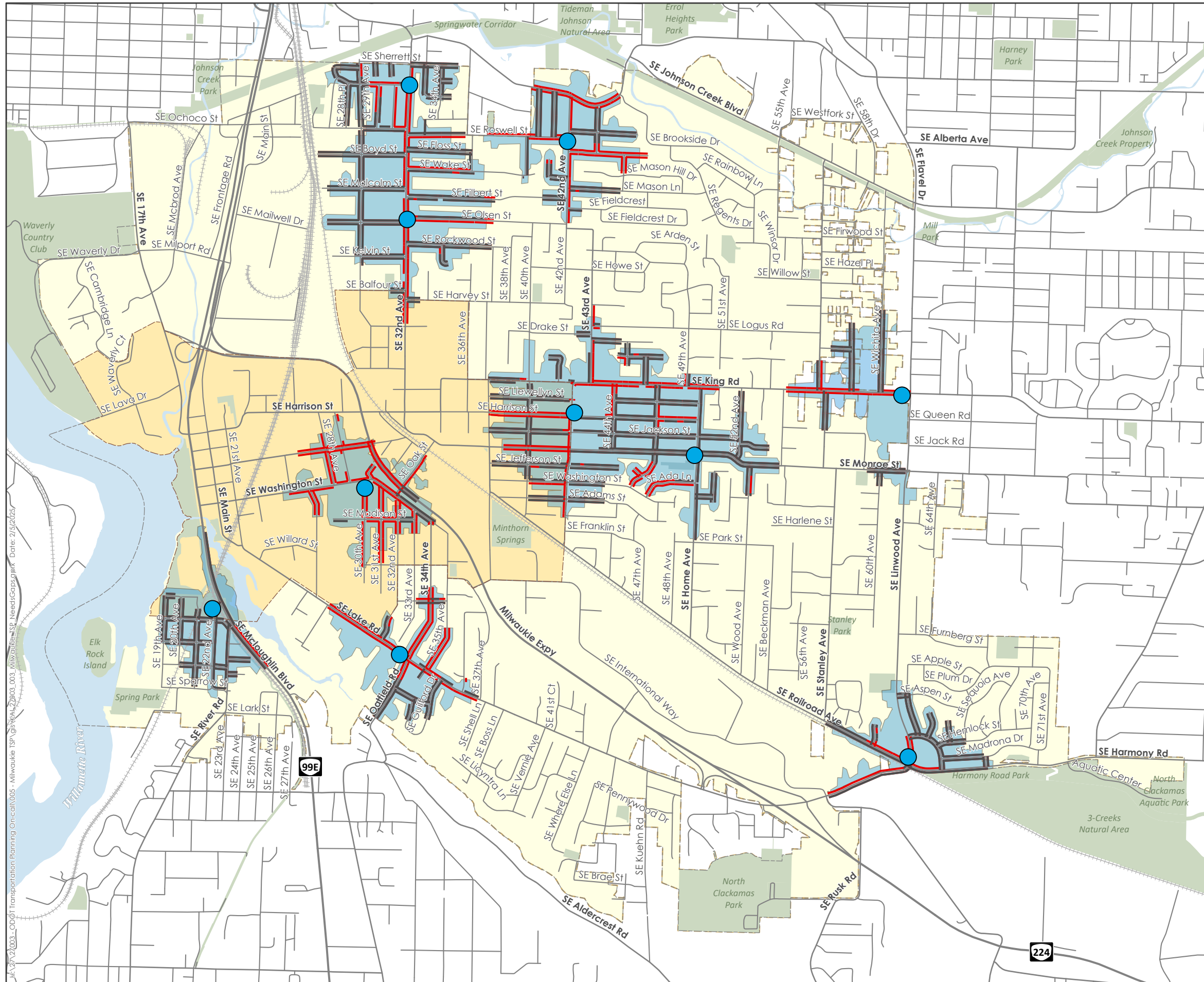




**FIGURE 15F**  
**Pedestrian Gaps and**  
**Deficiencies**  
**Neighborhood Hubs**

Legend

-  Neighborhood Hub
-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target
-  Quarter-Mile Walkshed Area
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



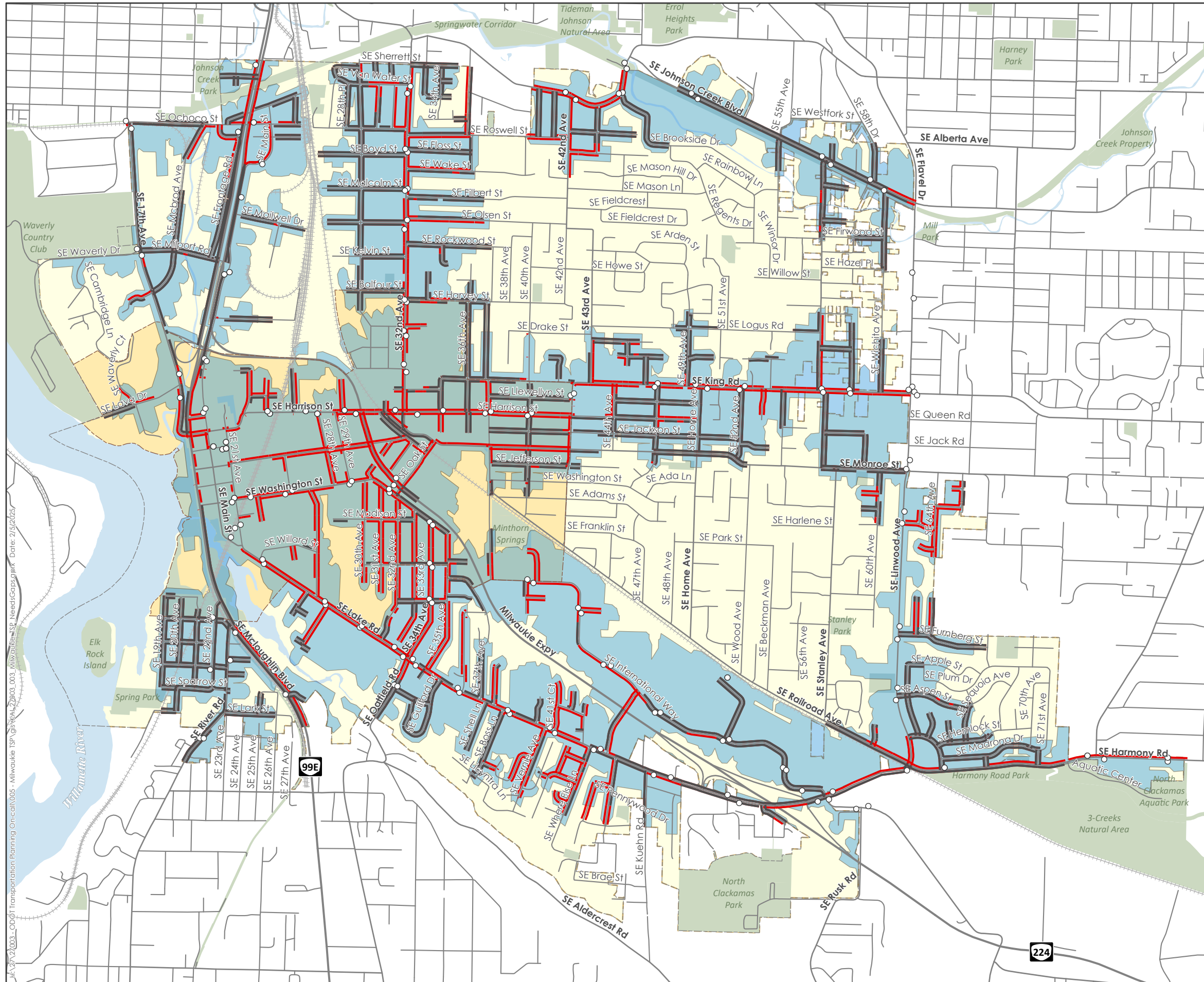
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**FIGURE 15G**  
**Pedestrian Gaps and**  
**Deficiencies**  
**Transit Stops**

**Legend**

- Bus Stop
- Pedestrian Facility Does Not Meet the PLTS 2 Target
- No Sidewalk/Does Not Meet the PLTS 2 Target
- Quarter-Mile Walkshed
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



224







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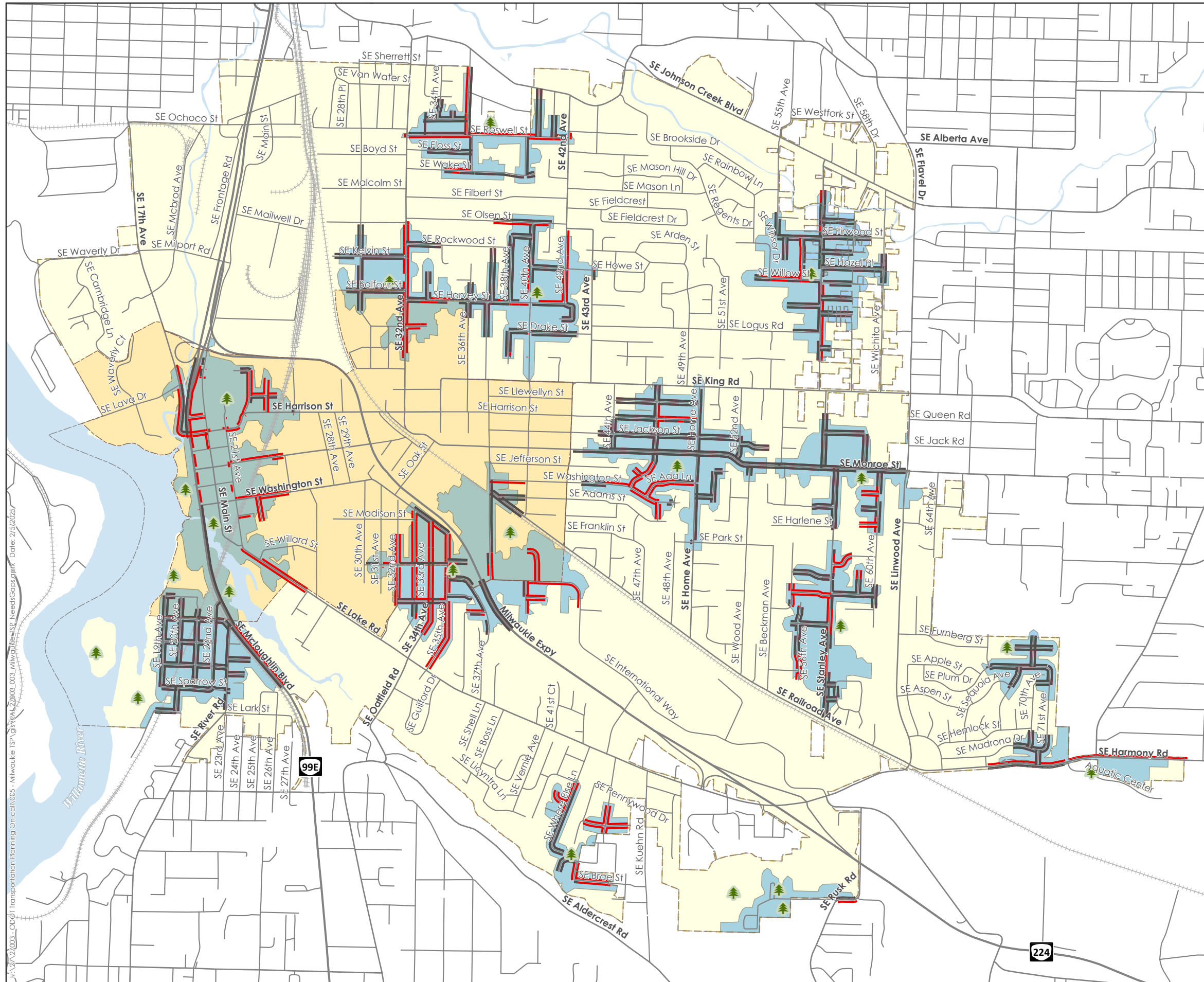




**FIGURE 15H**  
**Pedestrian Gaps and Deficiencies**  
**Parks**

Legend

-  Park
-  Pedestrian Facility Does Not Meet the PLTS 2 Target
-  No Sidewalk/Does Not Meet the PLTS 2 Target
-  Quarter-Mile Walkshed
-  Milwaukie City Limits
-  Milwaukie Town Center



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



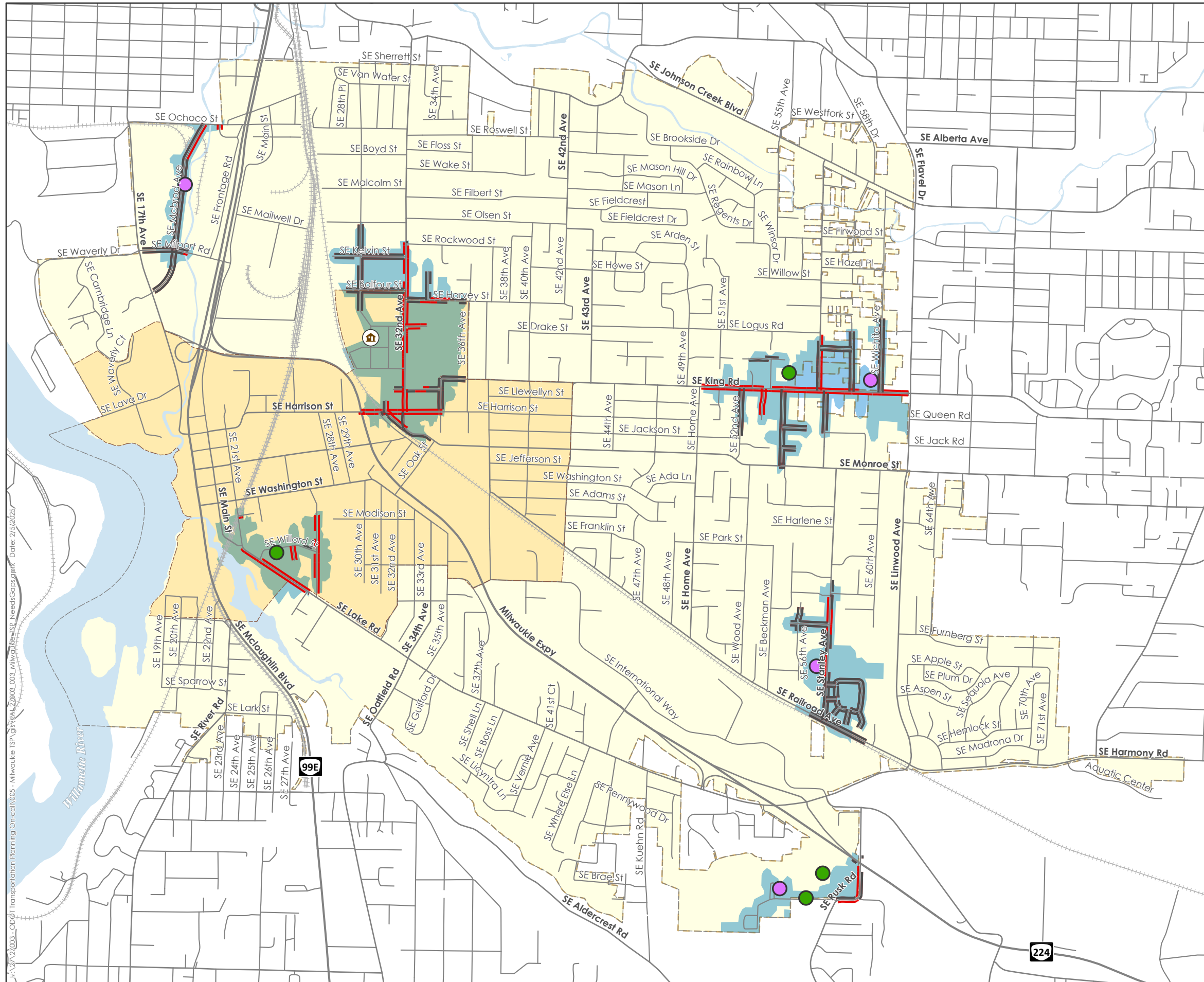
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**FIGURE 15I**  
**Pedestrian Gaps and Deficiencies**  
Senior Living Facilities, Low-Income Housing, and Resource Centers

Legend

- Low-Income Housing
- Resource Center
- Senior Living Facility
- Pedestrian Facility Does Not Meet the PLTS 2 Target
- No Sidewalk/Does Not Meet the PLTS 2 Target
- Quarter-Mile Walkshed
- Milwaukie City Limits
- Milwaukie Town Center



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



## Bicycle Facilities

Bicycle facilities refer to infrastructure designed for people biking, including bike lanes, shared use paths, paved shoulders, and the crossing infrastructure that supports a well-connected bicycle network, such as ramps and rectangular rapid flashing beacons (RRFBs).

Figure 16 maps existing bicycle facilities in the City of Milwaukie. Like pedestrian facilities, bicycle facilities serve a variety of trips, including trips to major attractions such as schools, parks, retail centers, and public facilities; commuter trips; recreational trips; and access to transit. The existing bicycle system in the City of Milwaukie consists of dedicated bicycle lanes, shared use paths/trails, and paved shoulders. As tabulated in Table 6, only 31% of the city's total potential bicycle network (limited to Regional Routes, Arterials, and Collectors) has bicycle accommodations.

*Table 6 Existing City-Wide Bicycle Network Completeness by Functional Classification*

	<b>Regional Routes</b>	<b>Arterials</b>	<b>Collectors</b>	<b>Total</b>
<i>Bicycle Network Percent Complete</i>	0%	69%	6%	31%

## Bicycle Level of Traffic Stress

The ODOT APM provides a methodology for evaluating bicycle environments called Bicycle Level of Traffic Stress (BLTS)<sup>3</sup>. As applied by ODOT, this methodology classifies four levels of traffic stress that a person biking can experience on the roadway, ranging from BLTS 1 (little traffic stress) to BLTS 4 (high traffic stress). A road segment that is rated BLTS 1 generally has low traffic volumes and travel speeds and/or enhanced bicycle facilities and is typically suitable for all users, including children. Exhibit 5 illustrates an example of a BLTS 1 facility that is BLTS 1 due to the low traffic volumes and travel speeds. A road segment that is rated BLTS 4 generally has high traffic volumes and travel speeds and is perceived as unsafe by most adults. Exhibit 6 illustrates an example of a BLTS 4 facility, which is BLTS 4 due the higher traffic speeds and volumes and lack of buffer for the bicycle facility.

---

<sup>3</sup> This methodology was completed using assumptions to fill in some missing data including precise bike lane widths, precise average daily traffic volumes on some streets, and roadway grades.

Exhibit 5. BLTS 1 Facility (Logus Road)



Exhibit 6. BLTS 4 Facility (OR 99E)



Per the ODOT APM, BLTS 2 is considered a reasonable target for bicycle facilities due to its acceptability for most adults; however, within a ¼ mile of schools, a target of BLTS 1 is recommended. **The City should strive to achieve BLTS 1 where feasible, particularly in the vicinity of schools and along priority bicycle routes.**

Figure 17 illustrates the existing BLTS in the planning area. Under existing conditions, approximately 70% of all existing roadways in Milwaukie are BLTS 1. Most roadways in Milwaukie are low-stress, local streets. However, of the Arterials and Collectors, there is a much lower level of BLTS 1 facilities.

Table 7 Existing City-Wide BLTS Inventory Network Completeness

	Regional Routes	Arterials	Collectors	Neighborhood Routes	Local Streets	Total
BLTS 1	0.0 (0% complete)	4.4 (40% complete)	0.9 (7% complete)	9.3 (100% complete)	48.2 (100% complete)	62.8 (70% complete)

## Bicycle Classification Changes

The City is incorporating multimodal functional classifications into the TSP. This will update the terminology used to describe bicycle routes. See accompanying *DRAFT Multimodal Functional Classification Memorandum for the updated Bike Classifications*.

## Bicycle Gaps Inventory

Figure 18A illustrates the citywide bicycle gaps. Gaps include the following conditions:

- Missing bicycle facilities on arterials or collectors<sup>4</sup>
- Segments that are BLTS 2, BLTS 3, or BLTS 4
- Locations where there have been reported severe injuries and deaths of people biking from the most recent 5 years of available crash data (2018-2022)
- Intersections that are challenging for bicyclists to cross or navigate. These challenges can be attributed to one or more issues such as a lack of bicycle infrastructure, lack of wayfinding, poor geometrics, and high motor vehicle interactions.

Consistent with the new TPR requirements, the TSP will focus on identifying and evaluating projects that are in the Town Center or that are within ¼ mile bikeshed<sup>5</sup> of schools, grocery stores, neighborhood hubs, transit stops, and senior living/low income/resource centers. Figure 18B illustrates the gaps and needs in those priority focus areas. Figure 18C through Figure 18H provide the individual gaps for each of those respective bikesheds.

This map will be used in conjunction with committee input and input from the community to develop a prioritized list of constrained and unconstrained improvement projects.

---

<sup>4</sup> Due to the low volume and speed nature of local streets, designated bicycle facilities are not required on local streets.

<sup>5</sup> Quarter-mile bikesheds are defined as the roadway segments that could be accessed by biking a quarter linear mile to a destination.

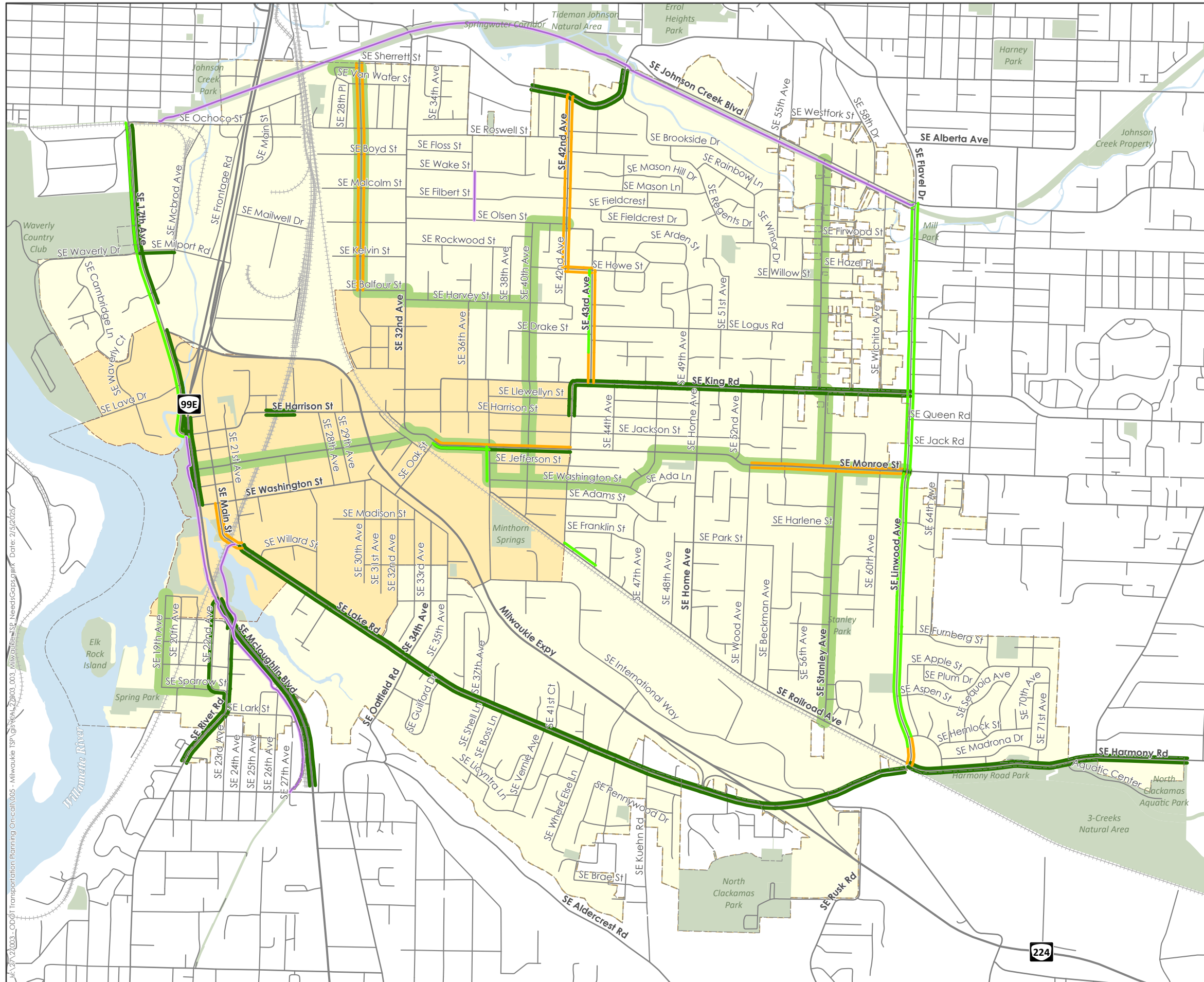


**FIGURE 16**

**Bicycle Facilities**

**Legend**

-  Bicycle Lanes
-  Shared Roads
-  On-Street Ped/Bike Pathway
-  Multi-Use Path
-  Greenway (Overlay Designation)
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT



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**FIGURE 17**

**Bicycle  
Level of Traffic Stress**

Legend

- BLTS 1
- BLTS 2
- BLTS 3
- BLTS 4

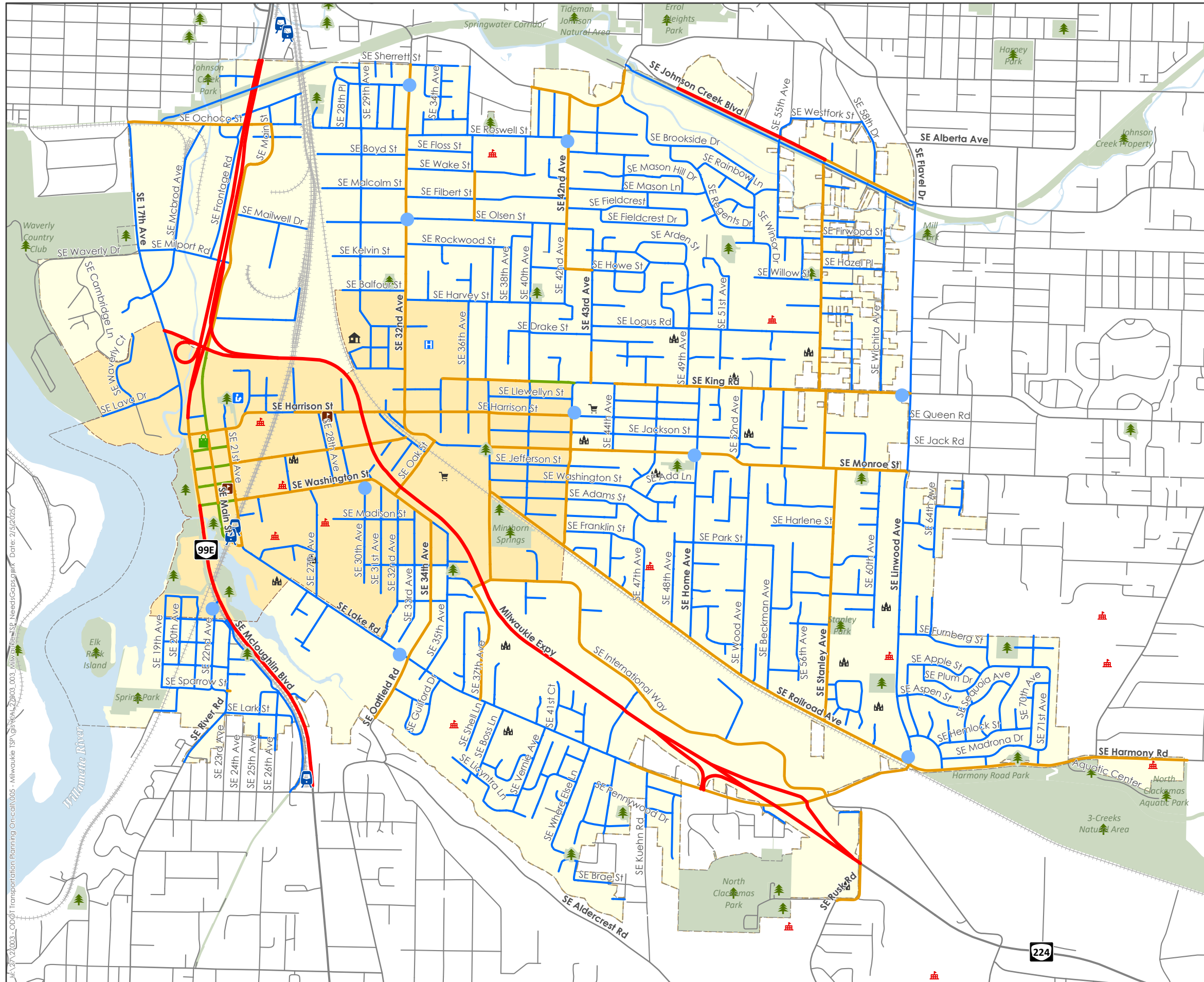
Note: Analysis Limited to Roadway Segments

- Schools
- Grocery Store
- Farmers markets
- Hospital (Providence Milwaukie)
- Library
- Neighborhood Hub
- Church
- Large Adult Care Facility
- Large Childcare Facility
- Housing
- MAX Station
- Park
- Milwaukie City Boundary
- Milwaukie Town Center
- Parks

Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles










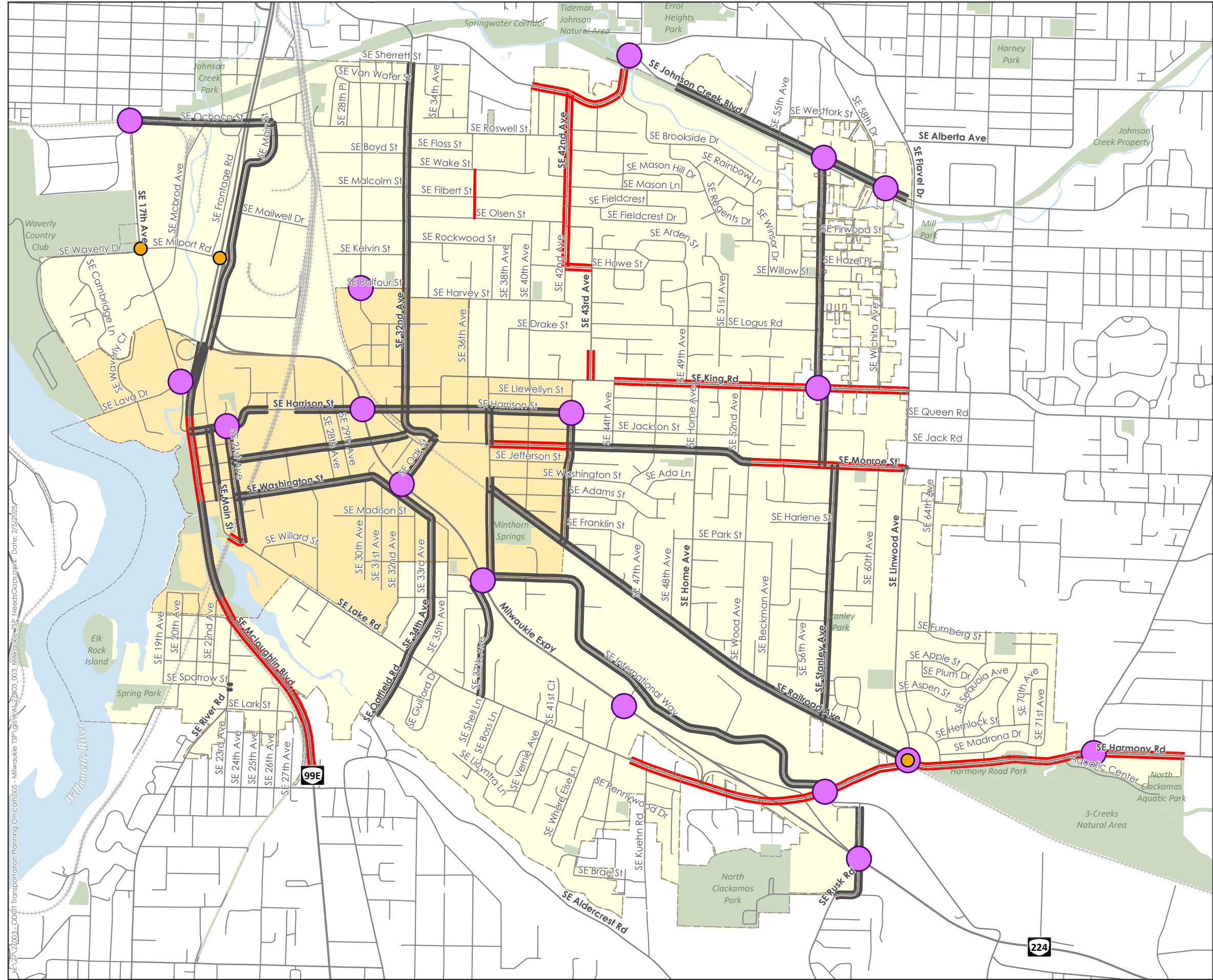
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**FIGURE 18A**  
**Bicycle Gaps and Deficiencies**  
Citywide

**Legend**

-  Bicycle Facility Does Not Meet the BLTS 1 Target
-  No Bicycle Facility/Does Not Meet the BLTS 1 Target
-  Challenging Intersections for Bicycles
-  Severe Injury
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT



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**FIGURE 18B**  
**Bicycle Gaps and Deficiencies**  
**Priority Focus Areas**

**Legend**

Bicycle Facility Does Not Meet the BLTS 1 Target

No Bicycle Facility/Does Not Meet the PLTS 2 Target

**Density of Focus Area Bikesheds**

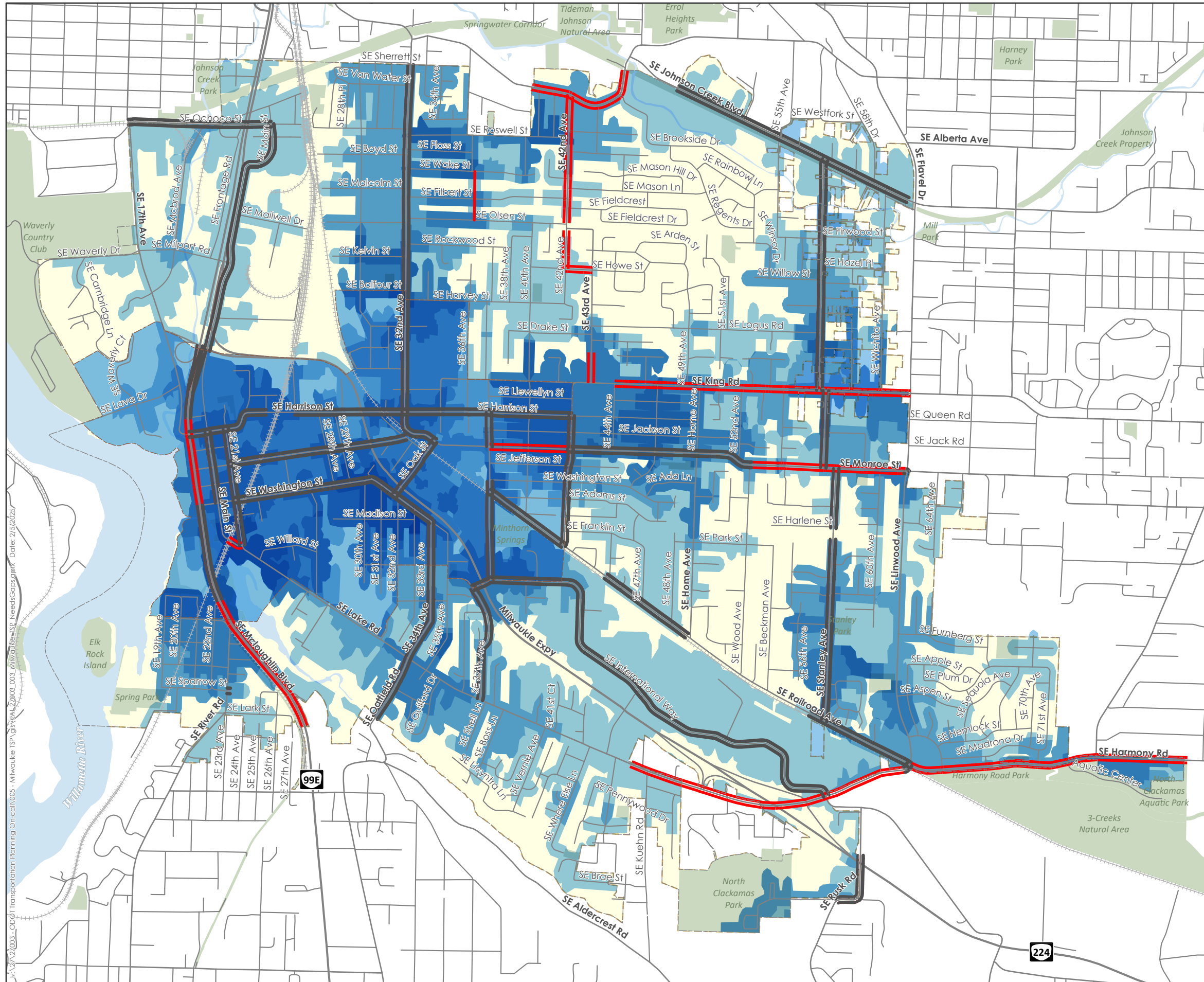
6 (Bikeshed Layers)

3 (Bikeshed Layers)

1 (Bikeshed Layer)

Milwaukie City Limits

Parks



Generated On: 2/5/2025






Data Sources: City of Milwaukie, ODOT

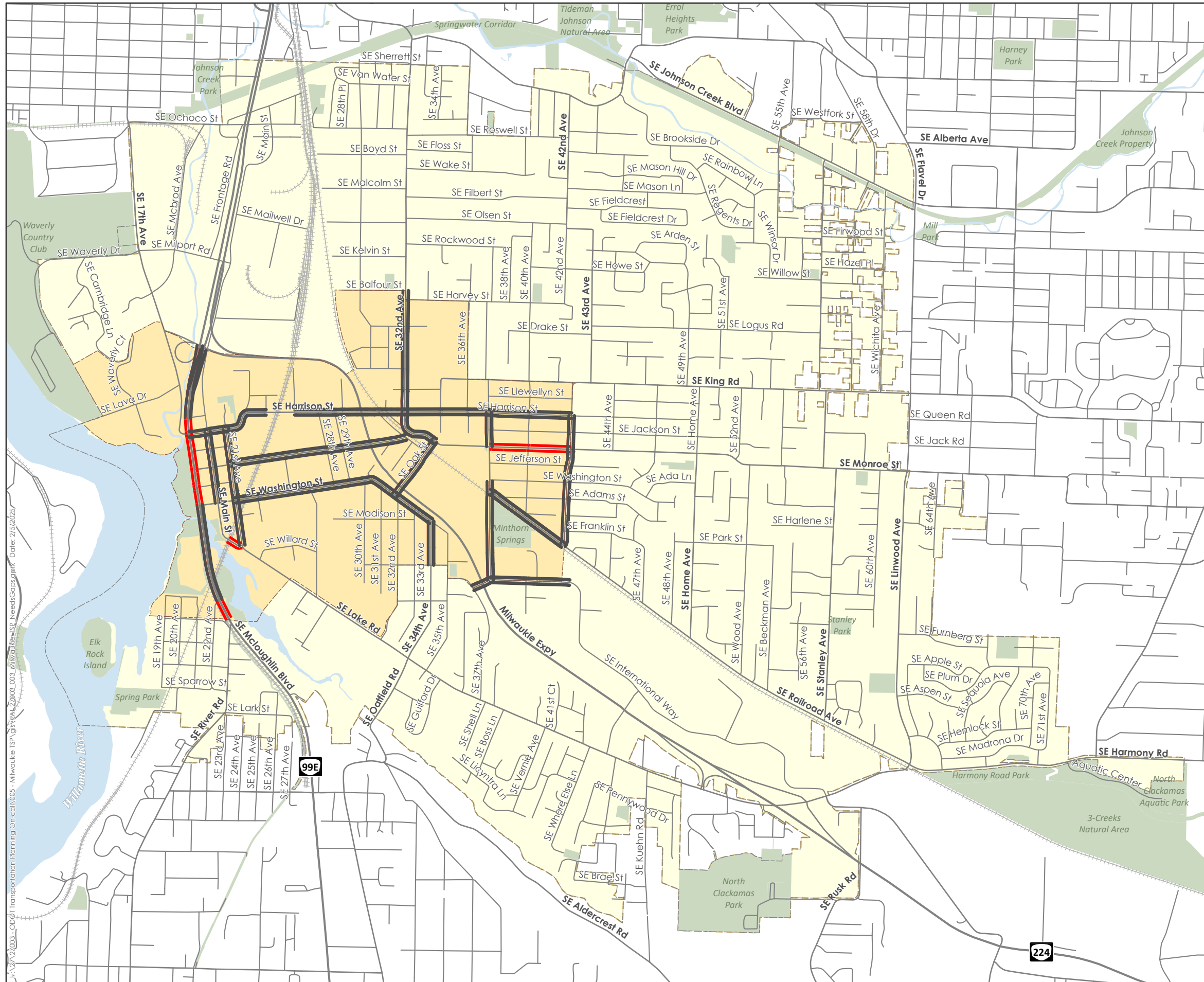




**FIGURE 18C**  
**Bicycle Gaps and Deficiencies**  
**Milwaukie Town Center**

**Legend**

-  Bicycle Facility Does Not Meet the BLTS 1 Target
-  No Bicycle Facility/Does Not Meet the BLTS 1 Target
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



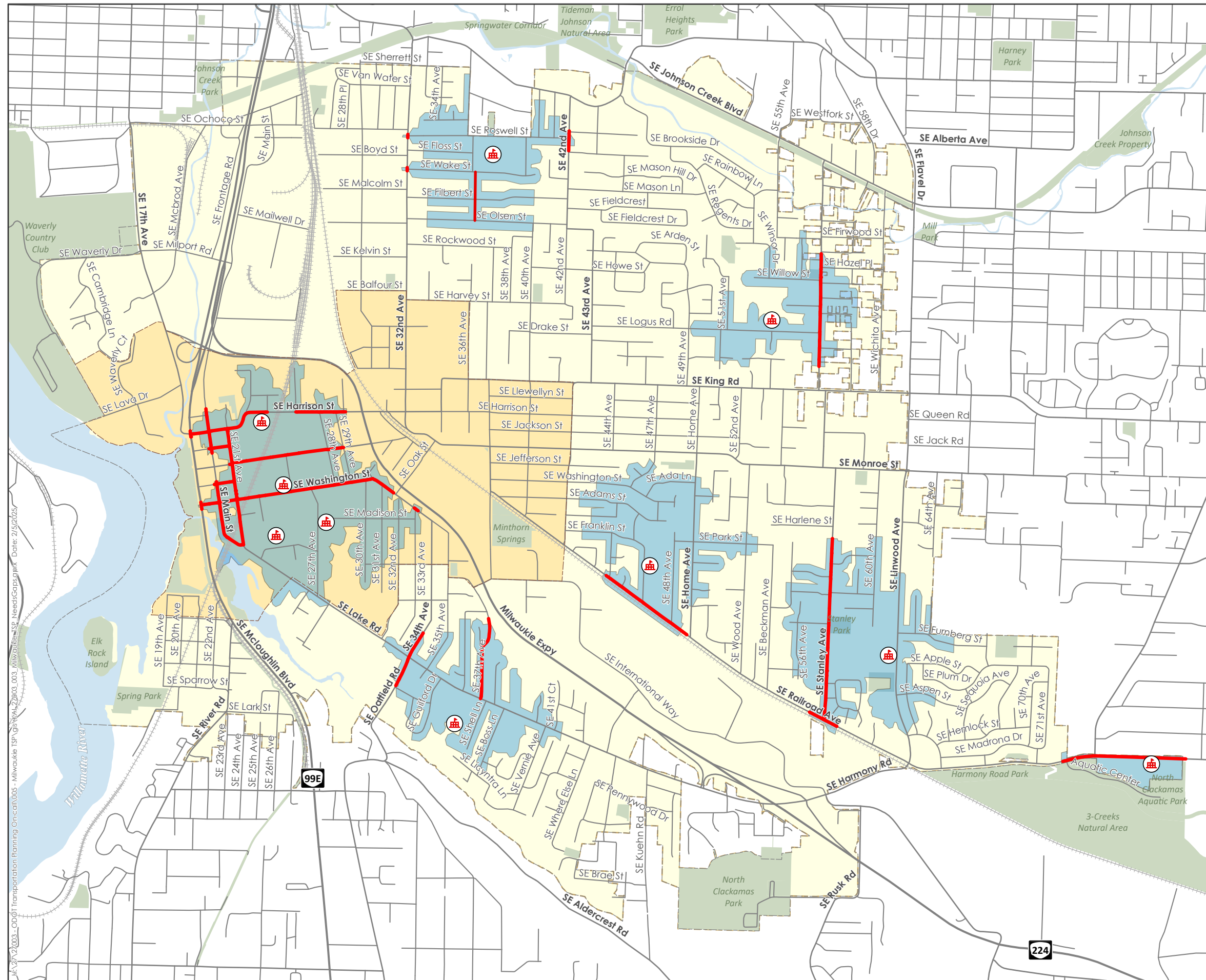
Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT





**FIGURE 18D**  
**Bicycle Gaps and Deficiencies**  
Primary/Secondary/ Post-Secondary Schools



Legend

- Schools
- Bicycle Facility Does Not Meet the BLTS 1 Target
- Quarter-Mile Bikeshed Area
- Milwaukie City Limits
- Milwaukie Town Center
- Parks

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Data Sources: City of Milwaukie, ODOT



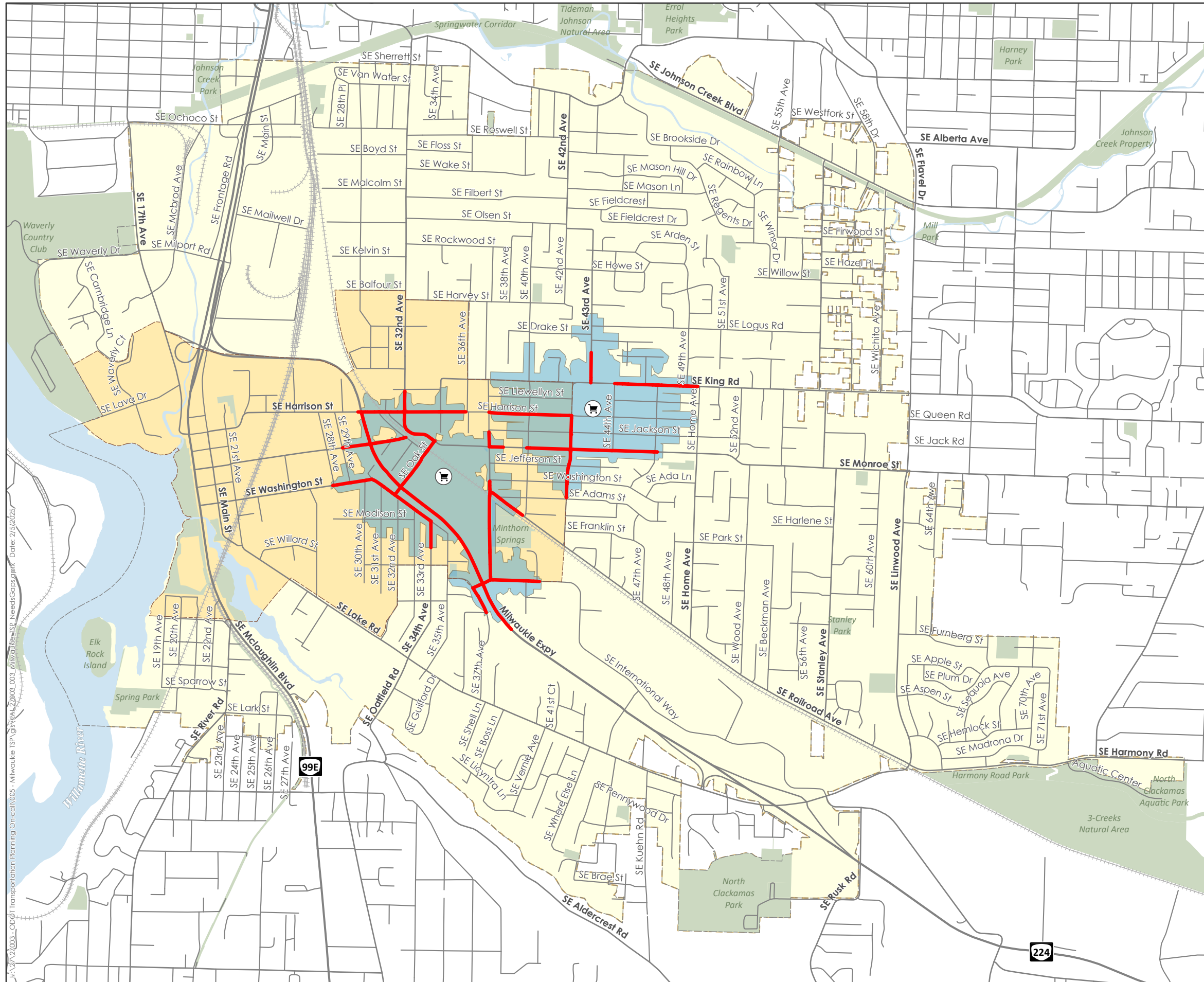
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**FIGURE 18E**  
**Bicycle Gaps and Deficiencies**  
**Grocery Stores**

Legend

- Grocery Store
- Bicycle Facility Does Not Meet the BLTS 1 Target
- Quarter-Mile Bikedshed Area
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



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Data Sources: City of Milwaukie, ODOT







0 0.25 0.5 0.75 Miles

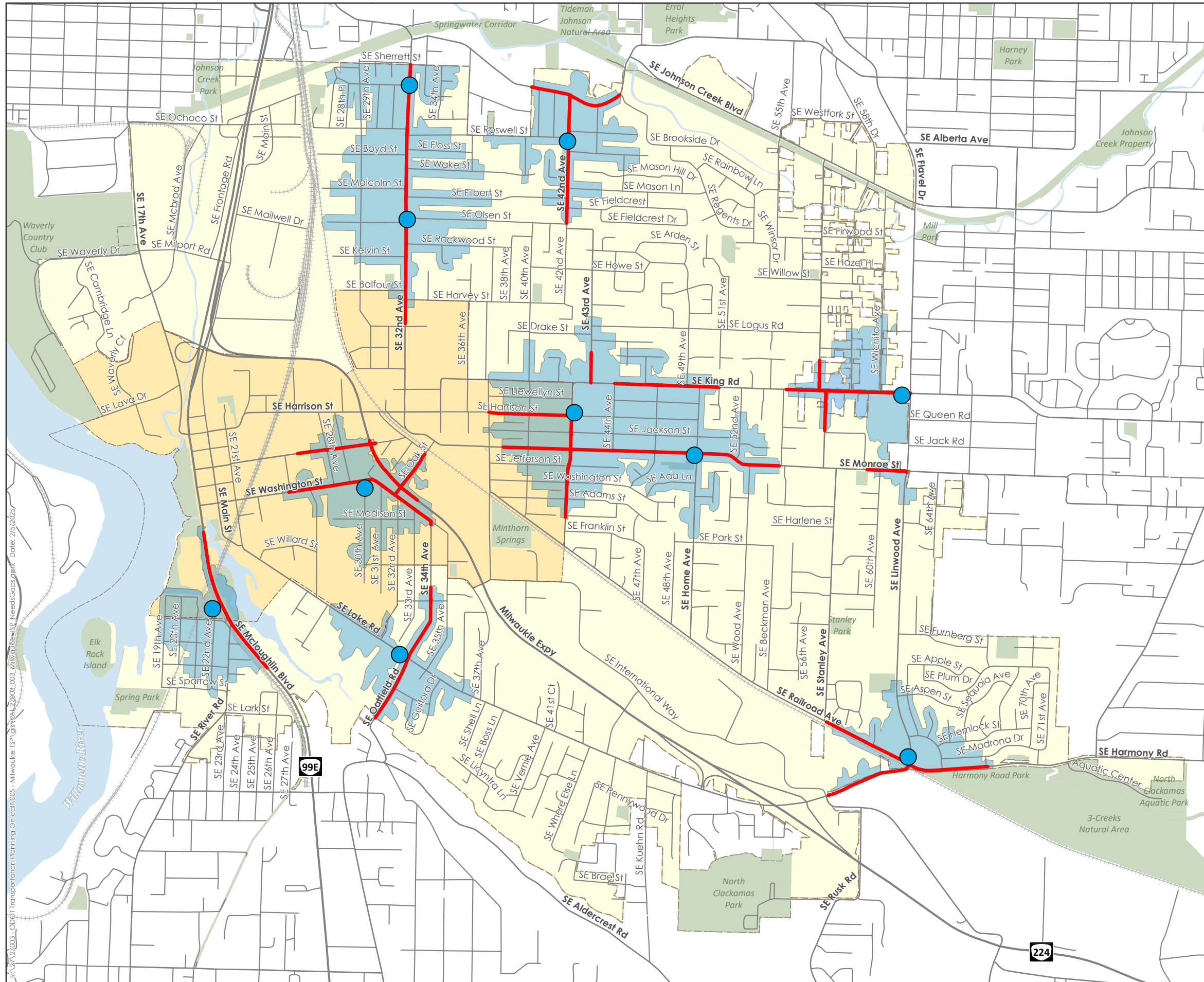




**FIGURE 18F**  
**Bicycle Gaps and Deficiencies**  
**Neighborhood Hubs**

Legend

-  Neighborhood Hub
-  Bicycle Facility Does Not Meet the BLTS 1 Target
-  Quarter-Mile Bikedshed Area
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



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Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles

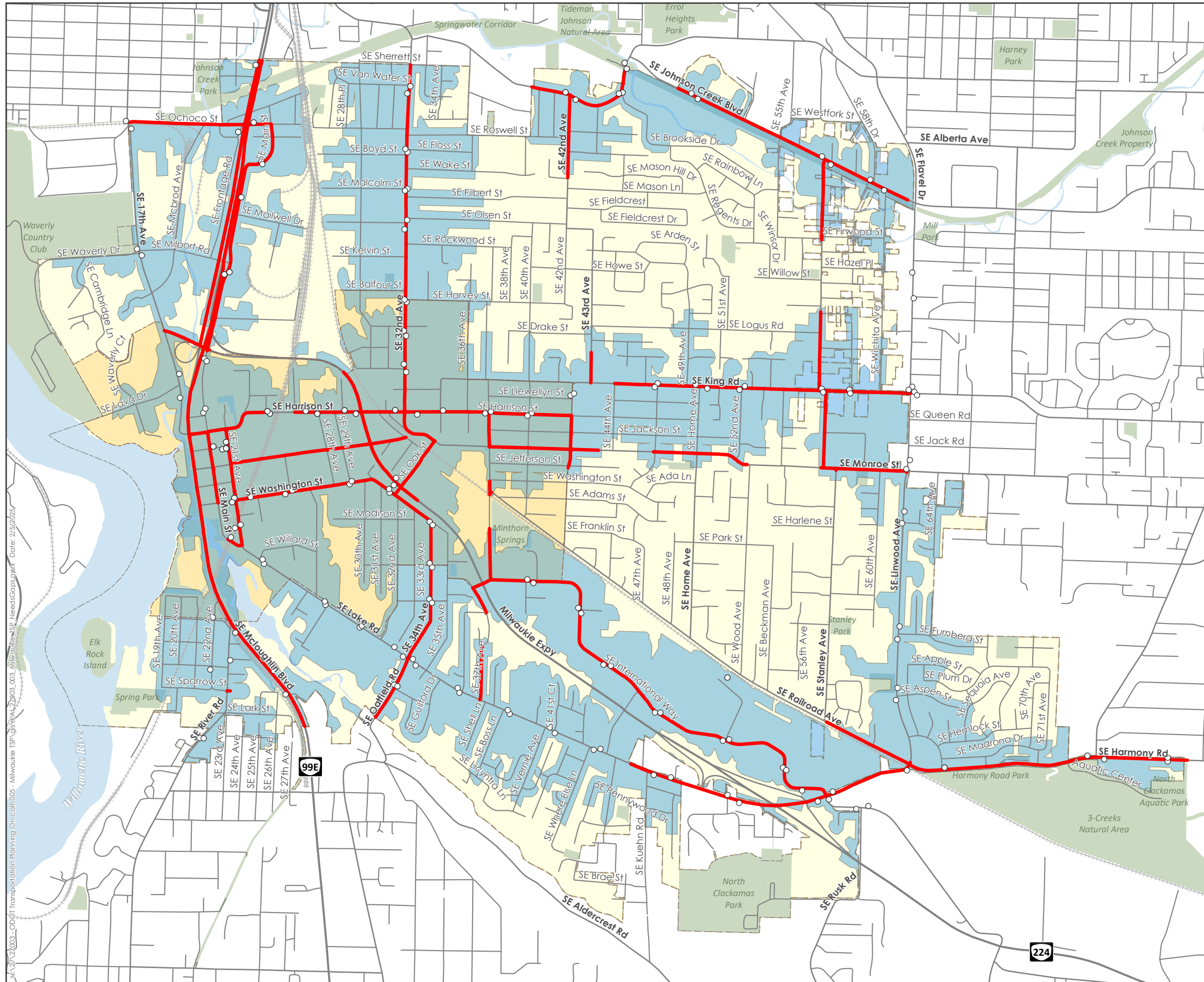




**FIGURE 18G**  
**Bicycle Gaps and Deficiencies**  
**Transit Stops**

**Legend**

- Bus Stop
- Bicycle Facility Does Not Meet the BLTS 1 Target
- Quarter-Mile Bikeshed
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



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Data Sources: City of Milwaukie, ODOT







0 0.25 0.5 0.75 Miles

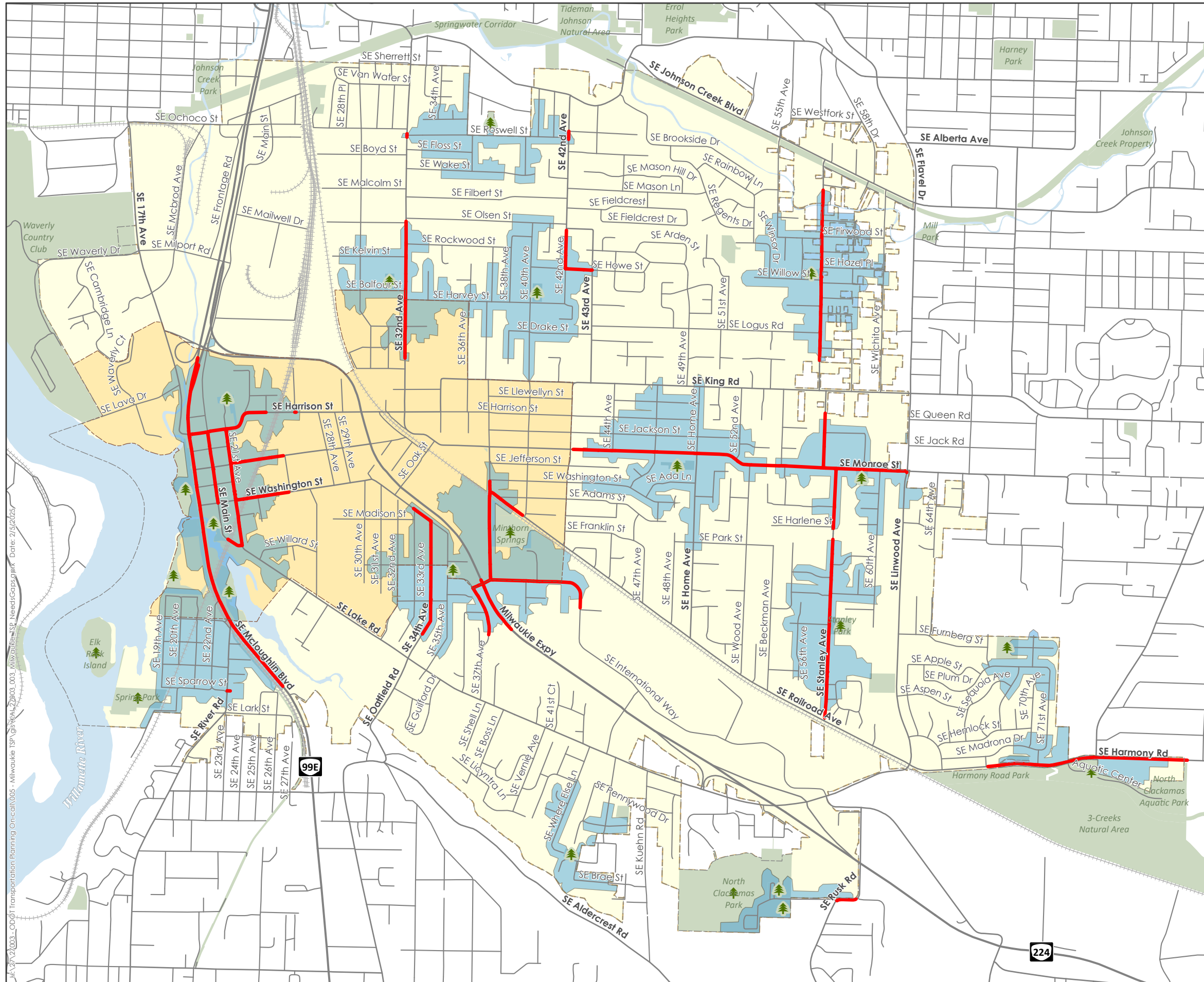




**FIGURE 18H**  
**Bicycle Gaps and Deficiencies**  
**Parks**

**Legend**

-  Park
-  Bicycle Facility Does Not Meet the BLTS 1 Target
-  Quarter-Mile Bikeshed
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



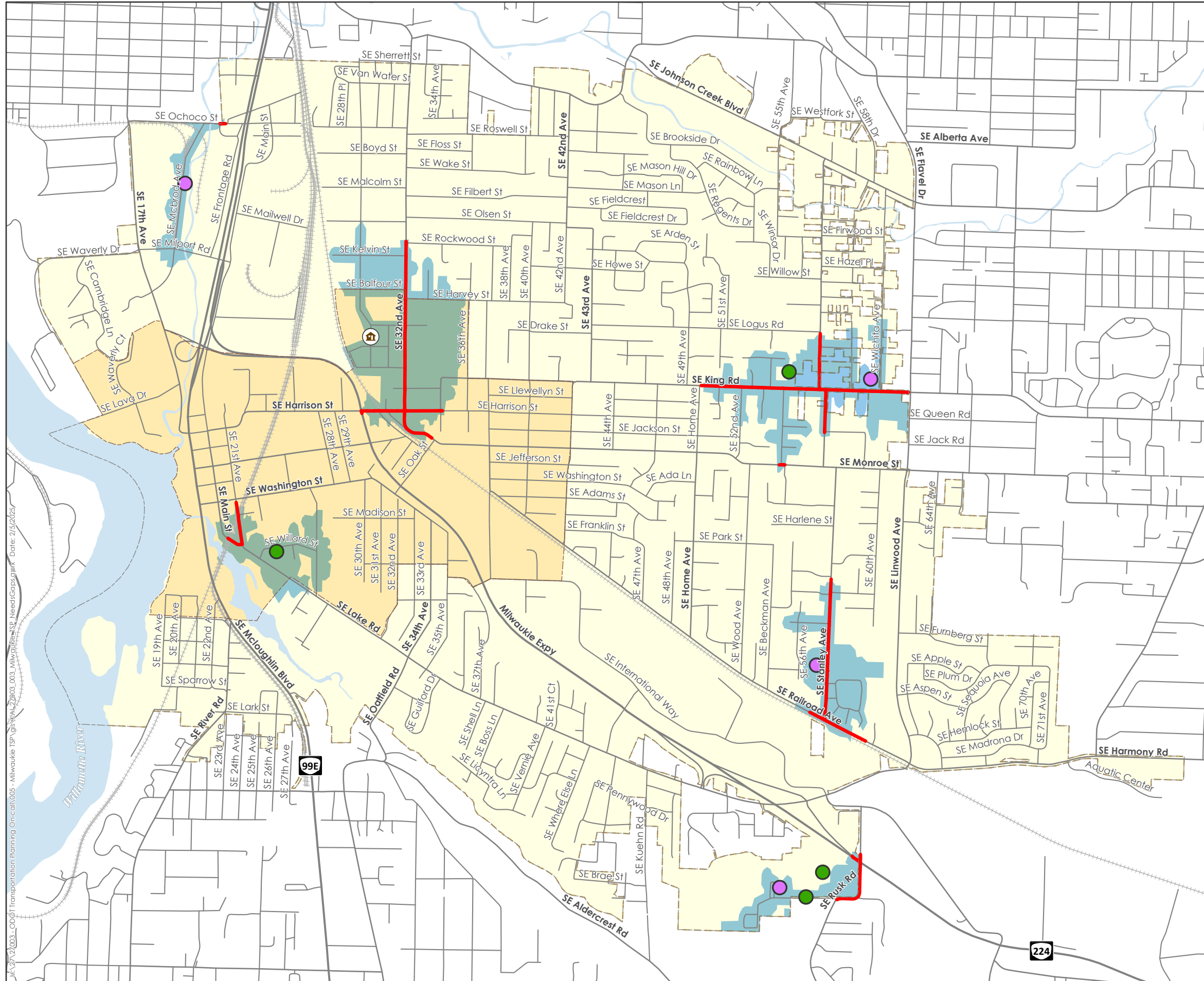


FIGURE 18I

**Bicycle Gaps and Deficiencies**  
**Senior Living Facilities, Low-Income Housing, and Resource Centers**

Legend

- Low-Income Housing
- Resource Center
- Senior Living Facility
- Bicycle Facility Does Not Meet the BLTS 1 Target
- Quarter-Mile Bikeshed
- Milwaukie City Limits
- Milwaukie Town Center



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles





## Transit System

Public transit enhances climate-friendly and equitable outcomes by supporting accessibility for people who cannot drive and reducing reliance on single-occupancy vehicles. Public transit in Milwaukie includes the MAX Orange Line, TriMet Frequent Service Routes, TriMet Standard Service Routes, and paratransit service.

- The MAX Orange Line travels between Milwaukie, PSU, Pioneer Square, and Union Station. The stop at Pioneer Square provides connection to the MAX Blue, Red, Yellow, and Green Lines, connecting Milwaukie to the broader Metro region.
- Frequent Service Route 33-McLoughlin/King Road runs between Clackamas Community College and Clackamas Town Center and connects to Downtown Milwaukie and the Oregon City Transit Center.
- Frequent Service Route 75-Cesar Chavez/Lombard runs between Milwaukie City Center and St. Johns, connecting Milwaukie to jobs and services in east Portland.
- There are several additional Standard Service Routes, including 32-Oatfield, 34-Linwood/River Rd, and 152-Milwaukie providing additional connections within Milwaukie and to the broader Metro region.
- TriMet provides LIFT Paratransit service to people who are not able to use fixed-route transit services due to a disabling health condition throughout Milwaukie.

As illustrated in Figure 19, the majority of Milwaukie is located within a half-mile walkshed from an existing transit stop.

## Transit Classification Changes

The City is incorporating multimodal functional classifications into the TSP. This will update the terminology used to describe transit routes. See accompanying *DRAFT Multimodal Functional Classification Memorandum for the updated Transit Classifications*.

## Transit Needs/Gaps Assessment

The Public Transit Master Plan element in the current Milwaukie TSP was reviewed to identify projects that are still relevant and needed to address public transit needs. These projects are summarized in TSP Figure 7-3 and TSP Table 7-1. All of these projects were reviewed with city planning, engineering, and TriMet staff for inclusion in the new Milwaukie TSP project development and review process. Based on this assessment, all relevant projects have been identified as gaps and mapped in Figure 19B.

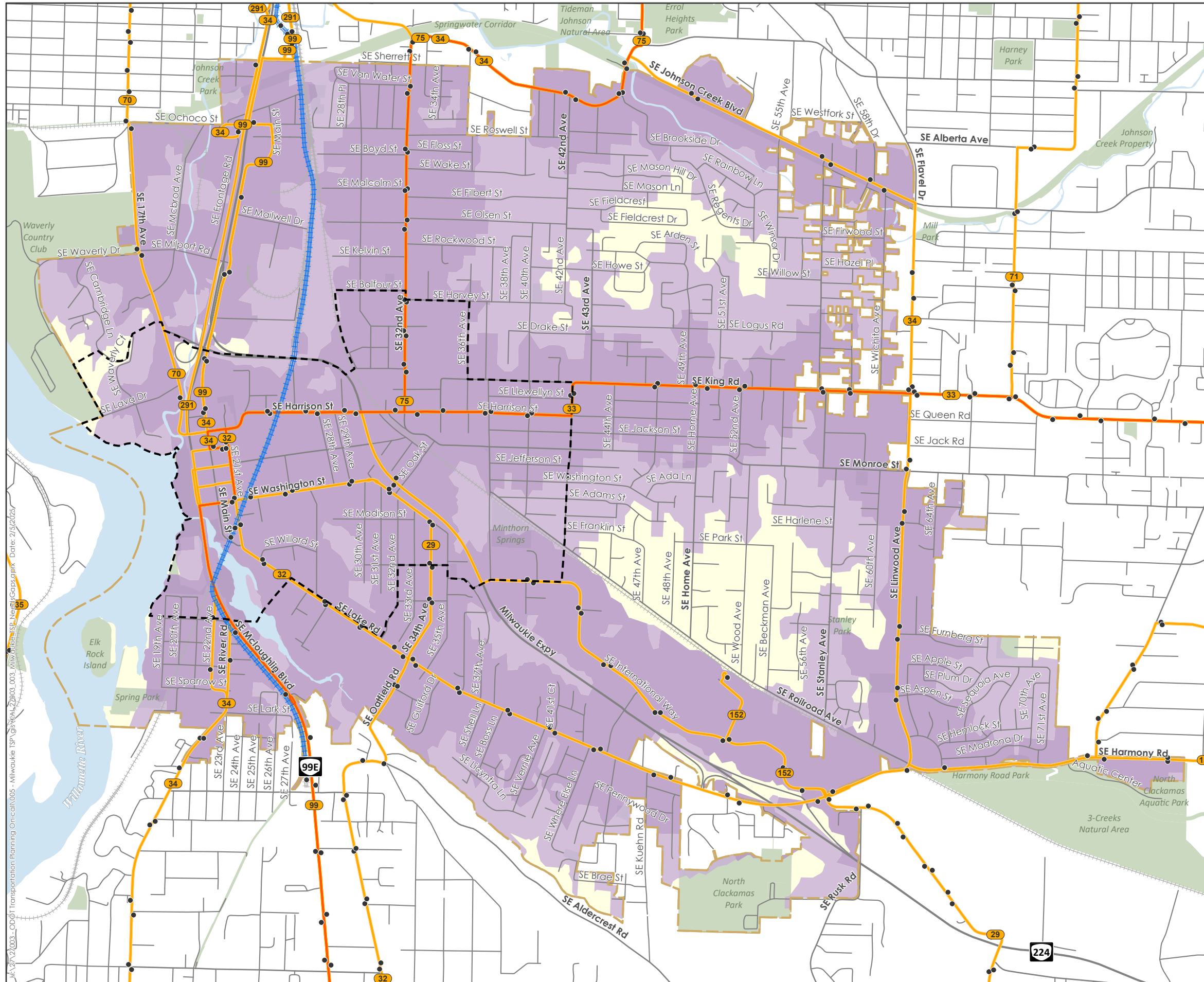


FIGURE 19

Transit System

Legend

- Bus Stops
- Frequent Bus Routes
- Bus Routes
- Light Rail
- Quarter-Mile Walkshed from Bus Stops
- Half-Mile Walkshed from Bus Stops
- Milwaukie City Limits
- Milwaukie Town Center



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Data Sources: City of Milwaukie, ODOT, TriMet

0 0.25 0.5 0.75 Miles



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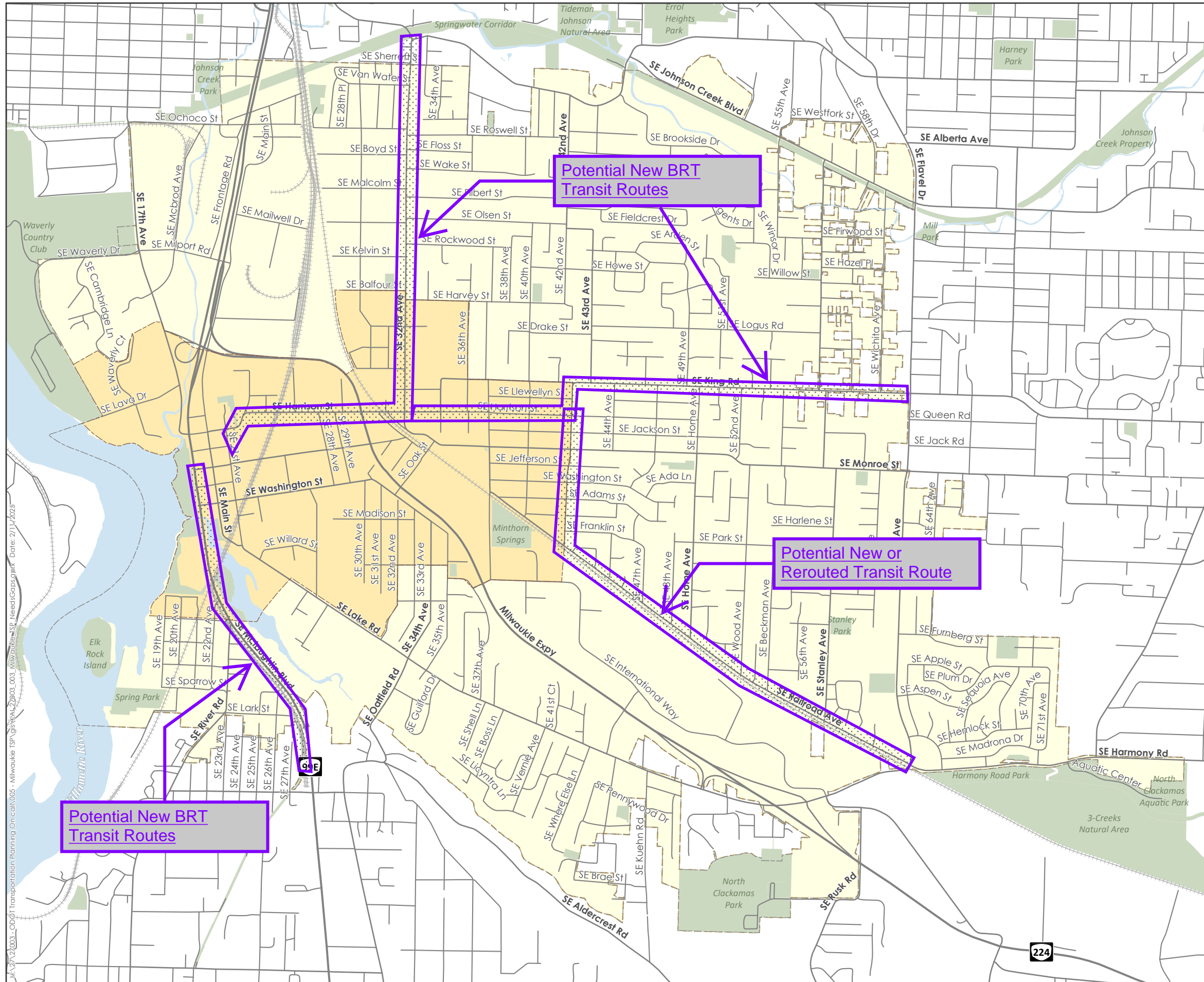


FIGURE 19B

Transit Gaps and Needs

Legend

- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/11/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



# Safety

The most recent available crash data (January 1, 2018 to December 31, 2022) was downloaded from ODOT's crash data portal. This data was used to map the following:

- Total number of crashes by severity (Figure 20)
- Fatal and serious injury crashes, included as a focus area, consistent with the Vision Zero aspect of the Safe System Approach (Figure 21)
- Pedestrian involved crashes, included as a mapped component due to the vulnerability of this user group (Figure 22)
- Bicycle involved crashes, included as a mapped component due to the vulnerability of this user group (Figure 23)
- The 2022 ODOT Safety Priority Index System (SPIS) sites (Figure 24)

Chart 1 summarizes crash history by severity and type. Pedestrian and bicyclist-involved crashes are more likely to result in fatal and serious injuries than other crash types. Rear-end crashes are the most common crash type in the City.

*Chart 1. Crash Severity by Type (January 1, 2018 to December 31, 2022)*

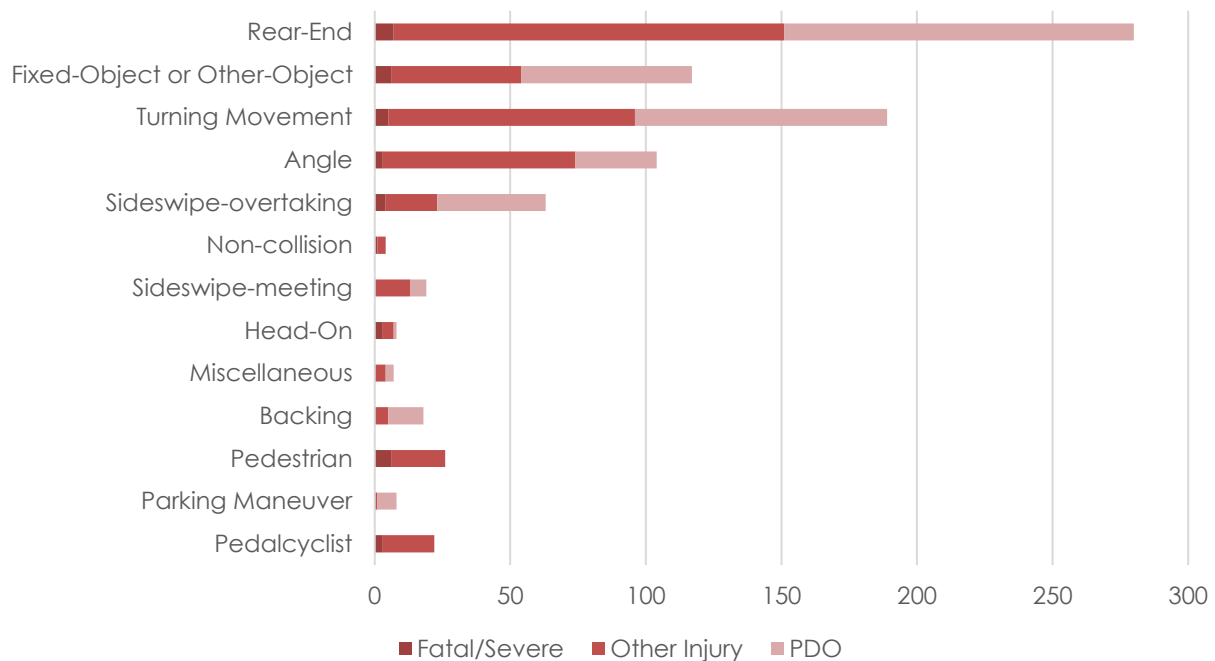




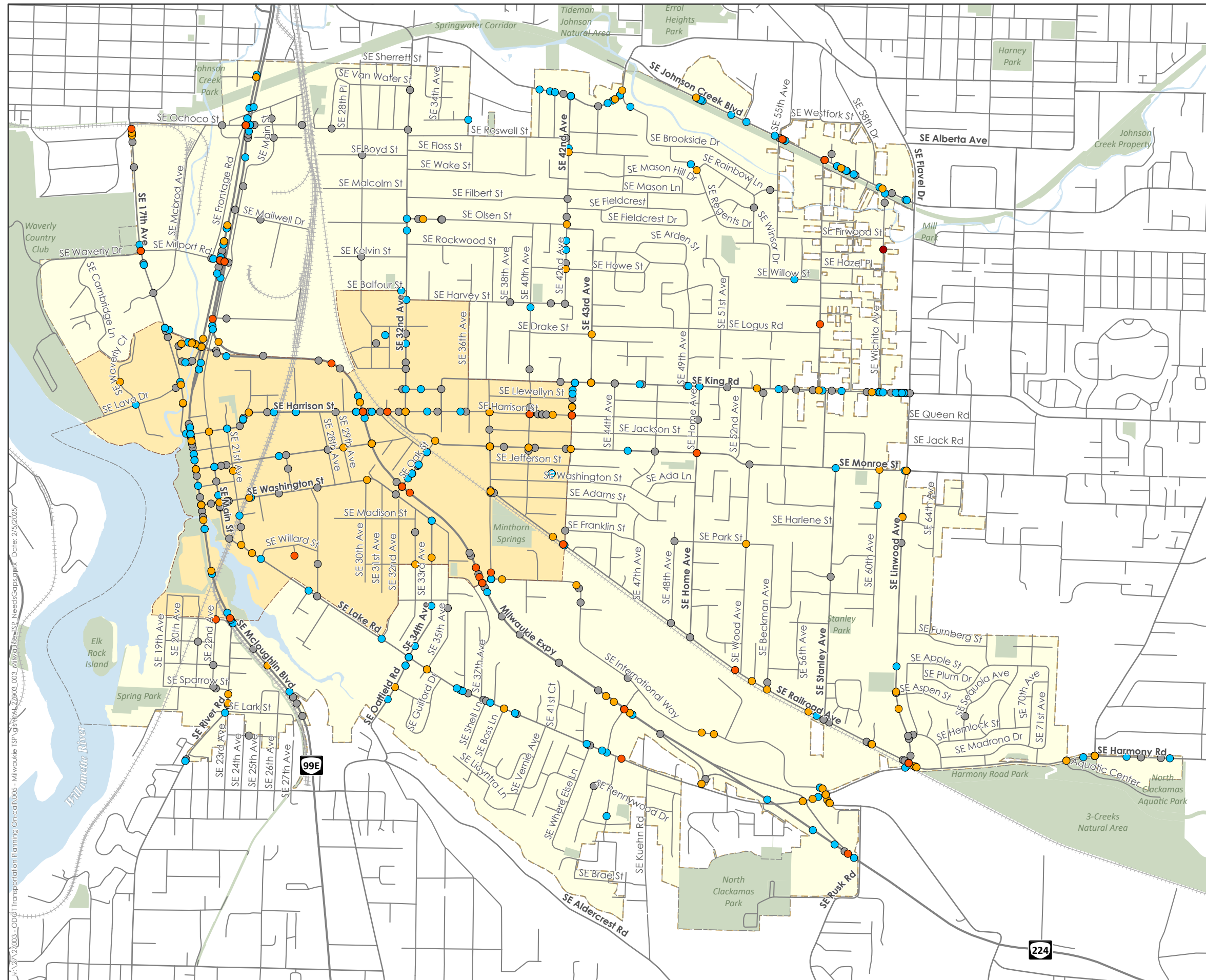
FIGURE 20

Crashes by Severity

January 1, 2018 to December 31, 2022

Legend

- Fatal
- Severe Injury
- Moderate Injury
- Minor Injury
- PDO
- ▭ Milwaukie City Limits
- ▭ Milwaukie Town Center
- ▭ Parks



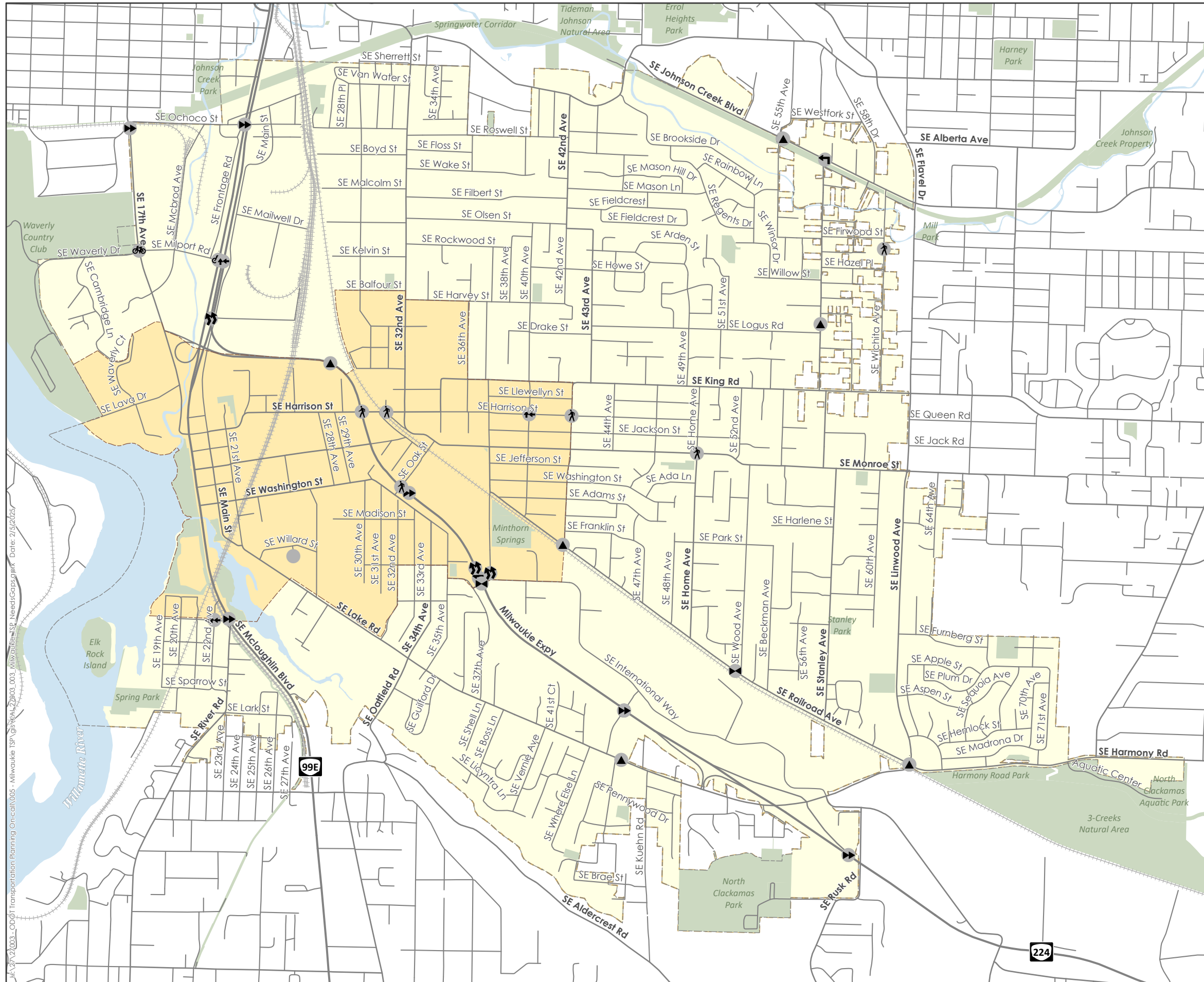
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**FIGURE 21**  
**Fatal and Serious injury Crashes**  
January 1, 2018 to December 31, 2022

Legend

- Angle
- Fixed-Object or Other-Object
- Head-On
- Non-collision
- Pedalcyclist
- Pedestrian
- Rear-End
- Sideswipe-overtaking
- Turning Movement
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



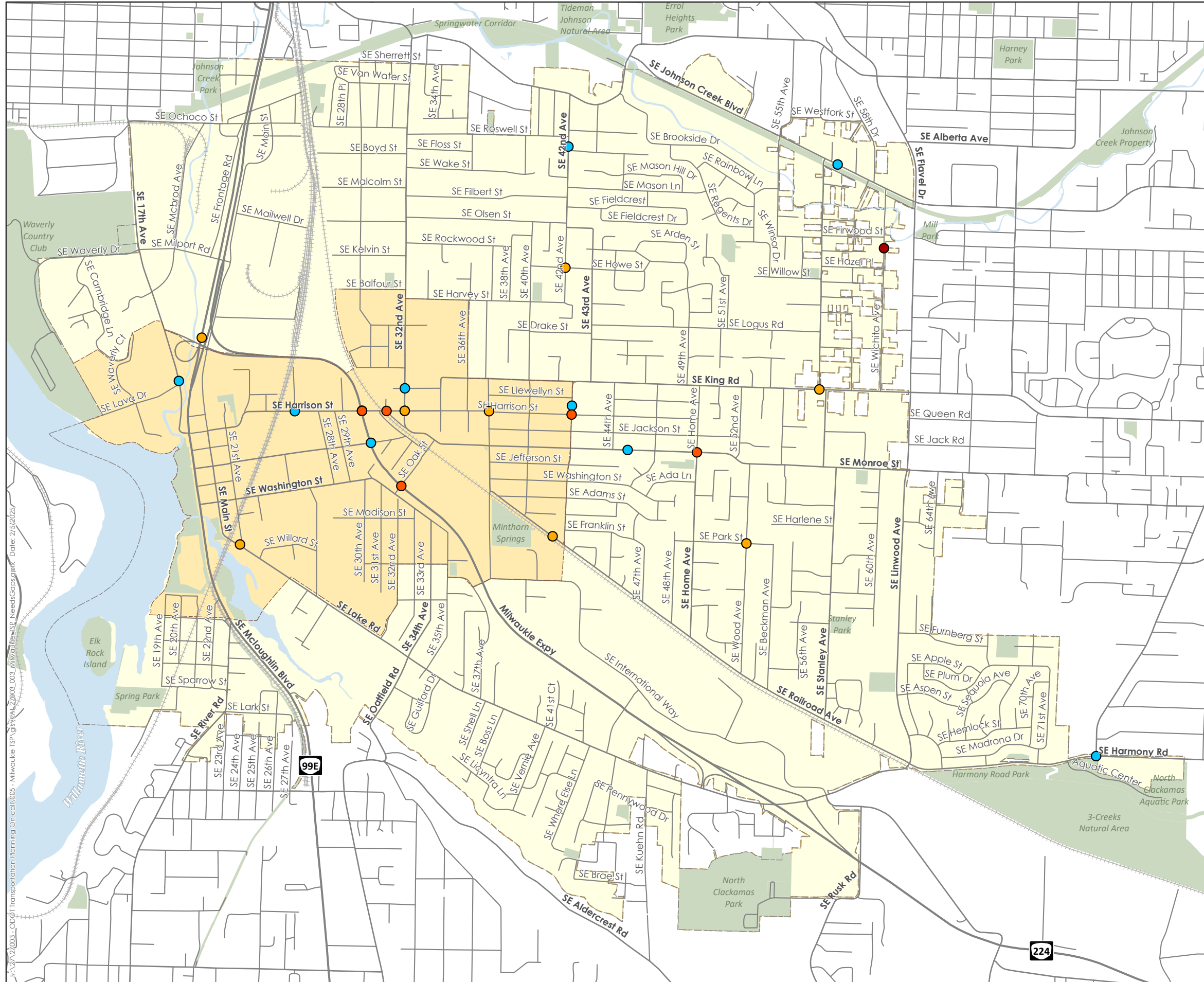
Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



**FIGURE 22**  
**Pedestrian Involved Crashes**  
 January 1, 2018 to December 31, 2022



**Legend**

- Fatal
- Severe Injury
- Moderate Injury
- Minor Injury
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks

Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles 

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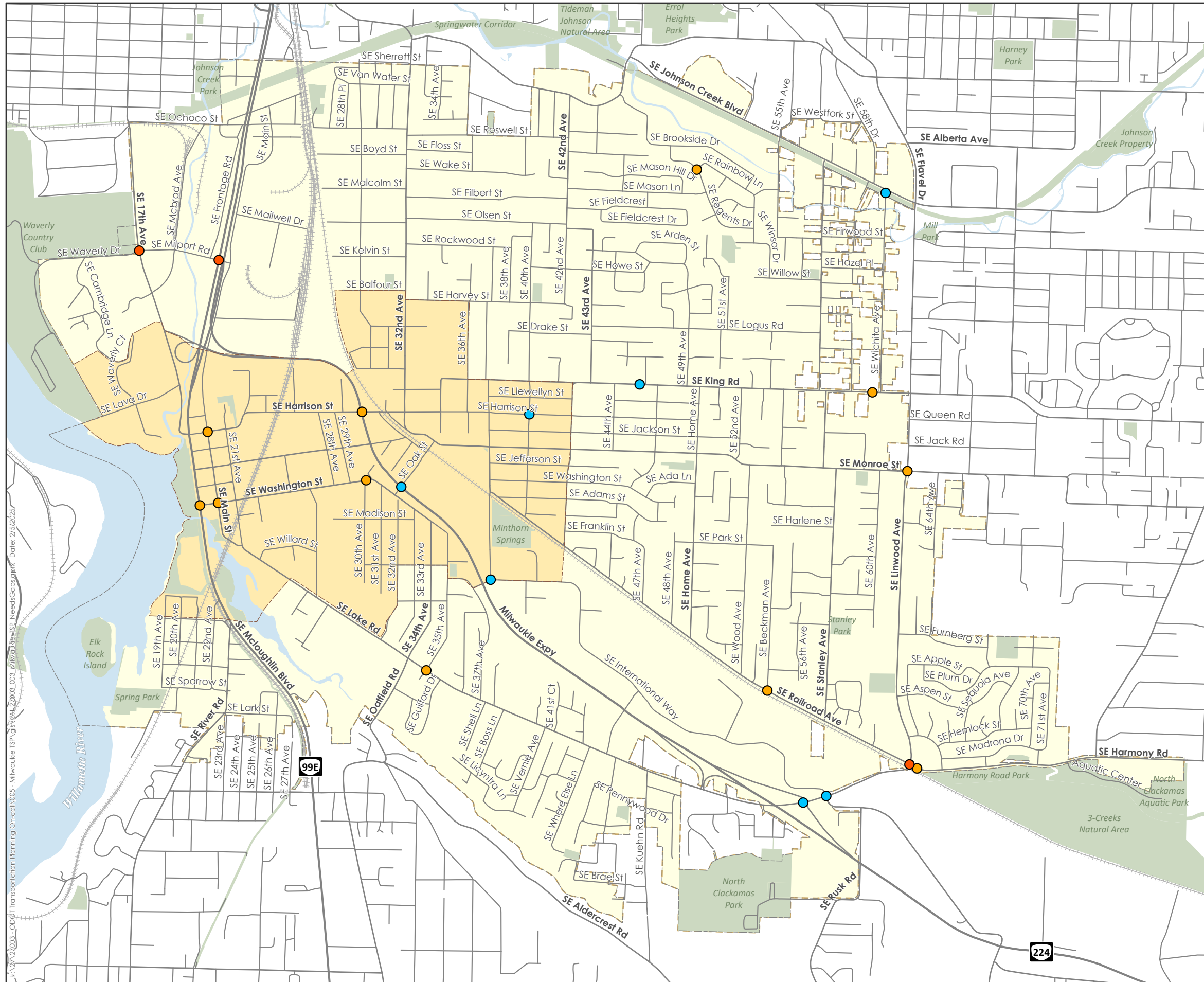
FIGURE 23

Bicycle Involved Crashes

January 1, 2018 to December 31, 2022

Legend

- Severe Injury
- Moderate Injury
- Minor Injury
- Milwaukie City Limits
- Milwaukie Town Center
- Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT



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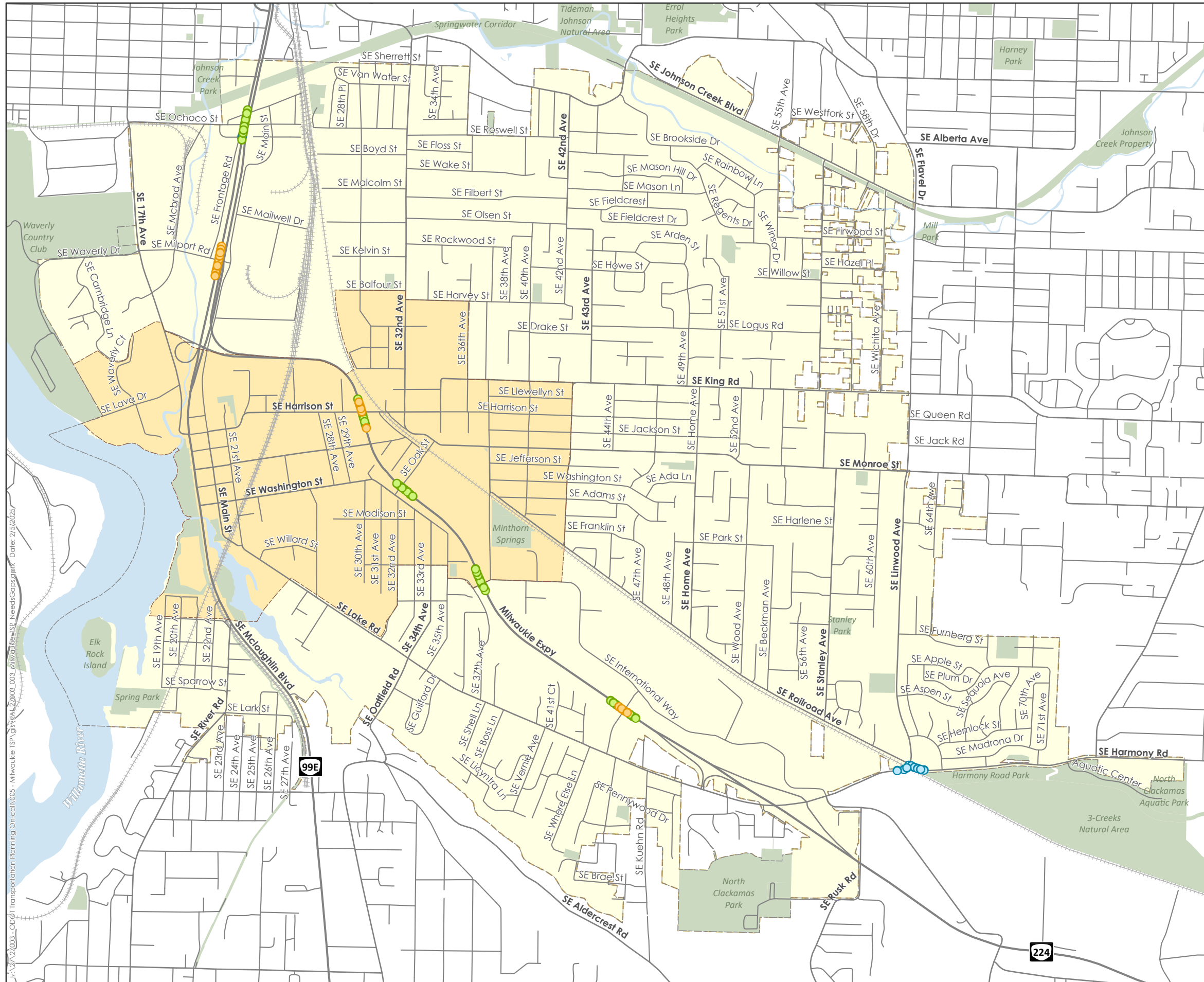


**FIGURE 24**

**ODOT Safety Priority Index System (SPIS) Sites**

**Legend**

-  85% - 89.99%
-  90% - 94.99%
-  95% - 100%
-  Milwaukie City Limits
-  Milwaukie Town Center
-  Parks



Generated On: 2/5/2025

Data Sources: City of Milwaukie, ODOT

0 0.25 0.5 0.75 Miles



## Safety Gaps Inventory

The locations of fatal and serious injury crashes involving people walking and biking are mapped in the pedestrian and bicycle gaps inventory in Figure 22 and Figure 23. As illustrated in Figure 20, most of the severe injury crashes are centered along the Harrison Street corridor or involve crossings of the OR 224 (Milwaukie Expressway) corridor (Harrison Street and Oak Street). As illustrated in Figure 21, there were several severe injury crashes at the OR 99E/SE Milport Road, SE 17<sup>th</sup> Avenue/Milport Road, and SE Linwood Avenue/SE Railroad Avenue/SE Harmony Road intersections. The Future Conditions and Solutions Memo will identify potential projects to reduce pedestrian and bicycle exposure and/or vehicular speeds at these locations. As noted in the current Milwaukie TSP, these corridors have identified projects that call for future corridor refinement plans, justifying the continued need for these projects in the new Milwaukie TSP.

The ODOT SPIS identifies sites along State highways where crash history may warrant further investigation. It identifies locations by considering crash frequency, crash rate, and crash severity. Sites identified within the top 5% are investigated by ODOT staff and reported to the Federal Highway Administration (FHWA). The SPIS locations shown in Figure 24 indicate potential locations for safety-focused projects to reduce crash risk and will be advanced as needs to include in the Future Conditions and Solutions Memo accordingly.

## Vehicle Miles Traveled

If a city includes in its TSP that is subject to “enhanced review”<sup>6</sup> under OAR 660-012-0830(1), then OAR 660-012-0160 stipulates that the TSP can only be adopted “*if the projected vehicle miles traveled per capita at the horizon year using the financially constrained project list is lower than estimated vehicle miles traveled per capita in the base year scenario.*” As noted in *Analysis Methodology and Performance Measures Memorandum*, none of the projects in Milwaukie’s currently adopted TSP were determined to be subject to “enhanced review”. While it is unlikely that the new Milwaukie TSP will include a financially constrained project that requires “enhanced review”, having an account of the City’s current and future vehicle miles traveled (VMT) is still relevant for the following reasons:

- Under OAR 660-012-0155, cities and state agencies shall prioritize transportation facilities and services based on meeting greenhouse gas reduction targets and reducing vehicle miles traveled per capita:
- Under OAR 660-012-0179, the prioritization of unconstrained TSP projects shall be based on the project’s ability to help reduce vehicle miles traveled.
- Under OAR 660-012-0180, the selection of projects on the financially constrained TSP project list shall reduce vehicle miles traveled as provided in OAR 660-013-0160.

Given the complexities of calculating VMT in a large urban setting, a travel demand model is typically required. While Milwaukie does not own or operate its own travel demand model, it is located within Metro which runs the Portland Metro Regional Travel Demand Model (RTDM) for the entire Portland metropolitan area.

The noted requirements to assess VMT, and more specifically VMT per capita, are relatively recent. As such, there was no established precedent or procedure for testing the RDTM’s ability to localize VMT calculations for a smaller defined area within the larger model boundary. To address this, ODOT commissioned a consultant team to work with Metro modeling staff to test and refine the necessary modeling procedures<sup>7</sup>. While intended as a demonstration project with the stipulation that the results are not to be used to make technical findings, the modeling results from this effort have been included in this memorandum as it represents the only readily available estimate of VMT specific to Milwaukie.

These results from this analysis are presented in Table 8 and show Milwaukie’s current household VMT to be 717,145 miles with a VMT/capita of 35. Additional details that went into the calculation process are available in the 2024 Milwaukie Climate Friendly Area Modeling Case Study report.

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<sup>6</sup> Enhanced review is a multi-step process that “prompts local agencies to develop and evaluate alternatives to roadway projects to determine if they could substantially meet the identified need without the implementation of the roadway projects.” It is triggered by projects increasing roadway vehicular capacity by adding through lanes or auxiliary lanes above capital cost of \$5 million. More details on the enhanced review process is available on [ODOT’s TSP Guidelines website](#).

<sup>7</sup> Milwaukie DRAFT Climate Friendly Area Modeling Case Study. April 2024. DKS Associates.

Table 8. Milwaukie VMT Per Capita Evaluation Results

<b>Scenario</b>	<b>Milwaukie Population</b>	<b>Estimated VMT</b>	<b>VMT/Capita</b>
2015	20,505	717,145	35

*Note: Results based on 2018 RTP Model Financially Constrained Network as the modeling for the 2023 RTP was still underway at the time the case study was prepared.*

## Next Steps

This memorandum will be reviewed by the Transportation System Technical and Advisory Committees to confirm the existing conditions and noted gaps/needs. Next, the project team will identify, score, and prioritize multimodal transportation improvement projects to address the needs and gaps.

## EXHIBIT C. MILWAUKIE TSP PROJECT EVALUATION MATRIX

Project #1 – SE Roswell Street Sidewalk Reconstruction. Reconstruct the sidewalk on the south side of the street to provide an obstruction free six-foot sidewalk from SE 32nd Avenue to SE 42nd Avenue.”

Goal Statement	Evaluation Criteria	Scoring Key		Score	Evaluation Comments	
<b>Safe System -</b> Improve the safety and comfort of the multimodal transportation network	Improve safety on Milwaukie's roadway network	+2	The project is expected to have a positive vehicular safety impact and is at a location with a history of serious vehicle-related injury crashes and fatalities.	0	Reconstruction of the south sidewalk is not expected to have an impact on vehicular safety.  A barrier-free sidewalk can be expected to have a positive multimodal safety impact. There is no recent history of multimodal crashes on this segment of SE Roswell Avenue.	
		+1	The project is expected to have a positive vehicular safety impact.			
		0	The project is expected to have no measurable safety benefit.			
	Improve safety for Milwaukie's vulnerable system users, including pedestrians, bicyclists, transit users, and rollers	+2	The project is expected to have a positive multimodal safety impact and is at a location with a history of serious injury crashes and fatalities.	+1		
		+1	The project is expected to have a positive multimodal safety impact.			
		0	The project is expected to have no measurable safety benefit.			
<b>Mobility, Accessibility, and Connectivity –</b> Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations	Fill existing infrastructure gaps in Milwaukie's multimodal network	+2	The project will fill/partially fill an existing multimodal network gap and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	0	SE Roswell Street already has a continuous sidewalk on the south side.  The project would remove sidewalk barriers on a primary walking route to Ardenwald Elementary and improve the corridor from its current PLTS 4 score to a PLTS 2 score.	
		+1	The project will fill/partially fill an existing multimodal network gap.			
		0	The project does not address an existing multimodal network gap.			
	Improve the quality of the connections to/from Milwaukie's neighborhoods, schools, parks, transit stops, employment centers, Neighborhood Hubs, and other key destinations	+2	The project will improve the facility to its target LTS score and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	+2		
		+1	The project will improve the facility to its target LTS score.			
		0	The project does not involve or impact multimodal connections.			
<b>Active, Healthy, Transportation Choices -</b> Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	Promote new walking, biking, or rolling on Milwaukie's transportation system	+2	The project will stimulate travel for all levels of pedestrians, bicyclists, or rollers and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	+2	The project would remove sidewalk barriers on a primary walking route to Ardenwald Elementary, thereby making the walking route ADA accessible and free of rolling obstructions.	
		+1	The project will stimulate travel for most levels of pedestrians, bicyclists.			
		0	The project does not involve or impact travel conditions for pedestrians, bicyclists, or rollers.			
<b>Equitable Transportation -</b> New investments in Milwaukie's transportation system are distributed fairly to reduce or	Improve multimodal access and connections to/from Milwaukie's underserved population groups,	+2	The project improves multimodal access and connections to/from underserved population groups and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	+2		The project improves multimodal access for Adenwald Elementary school kids

Goal Statement	Evaluation Criteria	Scoring Key		Score	Evaluation Comments
eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	lower-income neighborhoods, and/or transportation disadvantaged groups.	+1	The project improves multimodal access and connections to/from underserved population groups;		and those walking/rolling with a mobility device.
		0	The project does not impact underserved population groups.		
<b>Public Transportation -</b> Improve public transit service to, from, and within Milwaukie.	Improve Milwaukie's access to transit service	+2	The project measurably improves access to transit service and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	+2	The project would add sidewalks within a quarter-mile radius of a frequent bus route with bus stops. The project serves Ardenwald Elementary.
		+1	The project measurably improves access to transit service.		
		0	The project does not involve or impact access to transit service.		
	Improve the quality of Milwaukie's transit service	+2	The project improves the quality of transit service to/from and within Milwaukie and is either located in the Milwaukie Town Center or serves one or more priority focus areas.	0	N/A
		+1	The project improves the quality of transit service to/from and within Milwaukie.		
		0	The project does not involve transit service.		
<b>Climate Mitigation and Adaptation –</b> Create a transportation system that reduces greenhouse gas pollution and is responsive to a changing climate.	Preserve the natural environment through reduced vehicle miles traveled (VMT) and greenhouse gas emissions	+2	The project can be expected to lead to a reduction in VMT and greenhouse gas emissions and is either located within the Milwaukie Town Center or one or more priority focus areas.	+2	The project can be expected to increase walking opportunities to/from Ardenwald Elementary, replacing car trips.
		+1	The project can be expected to lead to a reduction in VMT and greenhouse gas emissions.		
		0	The project can be expected to have no measurable impact on VMT and greenhouse gas emissions.		
		-1	The project can be expected to result in an increase in VMT and greenhouse gas emissions.		
<b>Healthy Environment -</b> Create a transportation system that does not further degrade, and when possible, enhances the community's natural resources, such as clean air, clean water, and wildlife habitat.	Preserve Milwaukie's natural resources such as trees, streams, wetlands, wildlife corridors, and endangered species	+2	The project can be expected to have a positive impact on natural resources; and is located near environmentally sensitive areas.	0	The project is not expected to impact natural resources.
		+1	The project can be expected to have a positive impact on natural resources.		
		0	The project has no measurable positive or negative impact on natural resources.		
		-1	The project can be expected to a negative impact on natural resources.		
<b>Emergency Preparedness -</b> Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	Improve the redundancy and resiliency of Milwaukie's multimodal travel network	+2	The project increases or improves multimodal travel choices during normal or atypical conditions and serves key destinations or one or more priority focus areas.	+2	The project improves pedestrian travel choices for all pedestrians and rollers by removing existing barriers in the sidewalk

Goal Statement	Evaluation Criteria	Scoring Key		Score	Evaluation Comments
		+1	The project increases or improves multimodal travel choices during normal or atypical conditions.		environment. It also serves a school which is a key destination.
		0	The project has no positive or negative impact on system resiliency and redundancy.		
<b>Economic Vitality -</b> Develop a transportation system that supports and facilitates economic activity through the efficient movement of people, goods, and services.	Improve the transportation network to ensure the safe and efficient movement of freight to/from and within Milwaukie	+2	The project can be expected to measurably improve the safe and efficient movement of freight and is either located in an industrial area or accesses a key freight route.	0	The project is not expected to improve freight movement nor is it located in an industrial area / along a key freight route.
		+1	The project can be expected to measurably improve the safe and efficient movement of freight.		
		0	The project has no positive or negative impact on the movement of freight.		
<b>Fiscal Stewardship and System Management -</b> Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	Preserve the transportation network and system maintenance costs	+1	Project is expected to have minimal impacts on system maintenance costs.	0	This Project is expected to have no measurable increase in maintenance costs compared to existing conditions.
		0	Project is expected to have no impact on system preservation and maintenance costs.		
		-1	Project can be expected to significantly increase system maintenance costs.		
<b>Coordination with Local, Regional, and State Partners -</b> Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	Coordinate transportation improvements with partnering agencies	+1	Project is consistent with existing or planned transportation projects or is consistent with regional mobility policies.	+1	The project is a planned transportation project in the existing Milwaukie TSP.
		-1	Project is not consistent with existing or planned transportation projects or is inconsistent with regional mobility policies.		
<b>Total Score</b>				<b>14</b>	