

Salem Parkway/Kroc Center Access Study: Environmental Opportunities and Constraints

PREPARED FOR: Salem Parkway/Kroc Center Consultant Team

PREPARED BY: Sumi Malik, AICP
David Sokolowski, PE
Andy Howe, PE
Travis Munson, PE

DATE: August 10, 2012

Executive Summary

This document serves two purposes: 1) use data collected from local sources to describe the natural and built environment within the study area; and 2) evaluate that information as being opportunities or constraints for potential bicycle and pedestrian overcrossings or under-crossings to the Kroc Center and larger bicycle and pedestrian network.

Opportunities

The Southeast Keizer Neighborhood, northwest of Salem Parkway in Keizer, was once connected to the area surrounding the Kroc Center, prior to the construction of Salem Parkway. A bicycle and pedestrian crossing is an opportunity to reconnect the neighborhood to points east, including the Kroc Center.

A bicycle and pedestrian path is envisioned for the Claggett Creek Wetlands Area, (see Figure 8), and is included in the adopted City of Salem Transportation System Plan (TSP). A bicycle and pedestrian crossing to the Kroc Center could provide either a direct or indirect connection to this planned path.

Weddle Elementary School and Claggett Creek Middle School are located northwest of the Salem Parkway and BNSF railroad tracks. A crossing or undercrossing could connect students to the Claggett Creek Wetland Area and the Kroc Center. Claggett Creek also provides a potential unifying theme – the creek runs along the school property and beneath Salem Parkway. Reinforcing the natural connection Claggett Creek provides with a bicycle and pedestrian crossing could enhance the creek and wetlands area as a community asset.

Current right-of-way (ROW) ownership presents several opportunities for an under or overcrossing structure, lessening the need for additional ROW purchase. As depicted in Figure 9, ODOT owns the property around Mainline Drive, a strip of property south of Mainline Drive, and a large amount of property at the north end of Mainline Drive and Salem Parkway.

The City of Salem owns a strip of ROW to the west of the BNSF line that is currently used by the adjacent property owner, a recycling center (Figure 9). The adjacent property owner has

asked for the ROW to be vacated, but the City could use the land to swap for property elsewhere that would be beneficial for an overcrossing or undercrossing.

Salem Parkway is lower than the existing, parallel, multi-use path along the Parkway, and Mainline Drive. Based on a site visit, it appears that the slopes to the elevated multi-use path and elevated Mainline Drive are within the clear zone of Salem Parkway. The elevated path and Mainline Drive are advantageous for an overcrossing, because less steep grade would be required of a structure to get up to the required clearance over Salem Parkway. It is worth noting that the existing ditch/berm may not meet current standards, and if an overcrossing modified the ditch/berm, the project may be required to improve it to standards.

Constraints

Constraints exist in the study area that requires careful consideration going forward. Within the residential neighborhood to the northwest (Southeast Keizer) environmental justice populations exist, including those with income rates below the poverty threshold, a significant percentage of Hispanic and Latino population, minorities and the elderly. When planning a crossing or undercrossing, care must be taken to avoid disproportionate impacts to these populations, though the entire Salem Keizer area has been shown to be affected by transportation projects, and so the threshold for “disproportionate” would be very high. Moreover, a bicycle and pedestrian crossing over Salem Parkway would be a benefit to the environmental justice populations as it would safely increase their non-auto dependant access.

The wetlands northeast of the Kroc Center present constraints in that they must be preserved and protected. Any crossing or path that is constructed through the area must be carefully designed such that it does not disrupt the sensitive environmental habitat of the wetlands.

High voltage wires run along both sides of the BNSF track for the entire study area and pose a significant constraint. The wires hanging from these poles run parallel to and some of the distribution lines hang as low as 21 feet above the existing railroad tracks and in some locations cross the track(s). If a bridge were to cross the tracks, a clearance of 23 feet and 4 inches would need to be maintained over the tracks to the bottom of the bridge. Assuming the bridge would have a 2 foot minimum thickness from the bottom of the bridge to the finish grade of the bridge; Burlington Northern Santa Fe (BNSF) would require a 10 foot tall protective fence above the path surface, which would translate to the top of the fence being located 35 feet above the top of the track(s). Additional clearance is required between the top of the fence and the overhead wires. The low distribution wires would need to be relocated, either higher or undergrounded, and it is likely that the upper high voltage wires would need to be relocated even higher. The funding to relocate these wires would be a project cost. For planning purposes, this project should assume the need to raise the voltage wires to accommodate a bridge structure. The cost and feasibility of raising the wires will need to be reviewed in greater detail following the development of design concepts.

Personal safety concerns for an undercrossing would need to be addressed so pedestrians felt safe traversing an undercrossing, particularly at night. The same would be true, to a lesser extent, for an overhead crossing. Ample lighting and sight distances would enhance one’s feeling of security though or under a crossing. Lighting throughout the entire path to

the Kroc Center would be required, and would likely be similar to lighting used for the path from the west end of the Union Street Bridge to Wallace Road.

The original water and sewer grid, predating Salem Parkway, still exists at Brooks Avenue, Pleasant View Avenue and into the field south of Weddle Elementary School. Impacts to the system should be avoided with construction. The condition of the lines is unknown, and for planning purposes, this project assumes construction in close proximity to the old lines would necessitate their replacement.

Introduction

The Salvation Army Kroc Center was constructed in 2009. The Kroc Center is located in an industrial area southeast of the Burlington Northern Santa Fe rail line and Salem Parkway. The site is on 10 acres of former city-owned land within the Bill Frey Drive “loop” which connects Portland Road to Salem Industrial Drive. To the east of the Kroc Center is the Claggett Creek Wetlands area, which was created in 2005 and overtime will evolve into another community asset, although like the Kroc Center it is not easily accessible by walking or biking.

Access to the Kroc Center is only available from Portland Road via Bill Frey Drive or from Salem Industrial Drive. From Portland Road, Bill Frey Drive is grade separated above the Union Pacific rail line and has bike lanes and sidewalks. Salem Industrial Drive serves industrial businesses and truck traffic, has open ditches on both sides and is currently an undesirable road for walking and bicycling.

There is no direct access to the Kroc Center from the north or west (i.e. Keizer and north Salem), therefore residents in those areas are more likely to drive to the Kroc Center, or take transit (when available). From the south Keizer neighborhoods -- around Pleasant View Drive or Brooks Avenue -- travel distances via Hyacinth St. to Portland Rd. and Bill Frey Drive or via Cherry Avenue and Salem Industrial Drive is approximately 2 miles. A bridge over Salem Parkway or undercrossing could cut that distance to less than 1/2 mile.

The purpose of this feasibility study is to identify and evaluate alternative routes, alignments and capital projects (multi-use paths and/or bicycle/pedestrian bridges) that would improve pedestrian/bicycle access and safety across Salem Parkway and to the Salvation Army Kroc Center, as well as tie into the larger existing and future planned bicycle and pedestrian system in Salem and Keizer (Figure 1 and Figure 2).

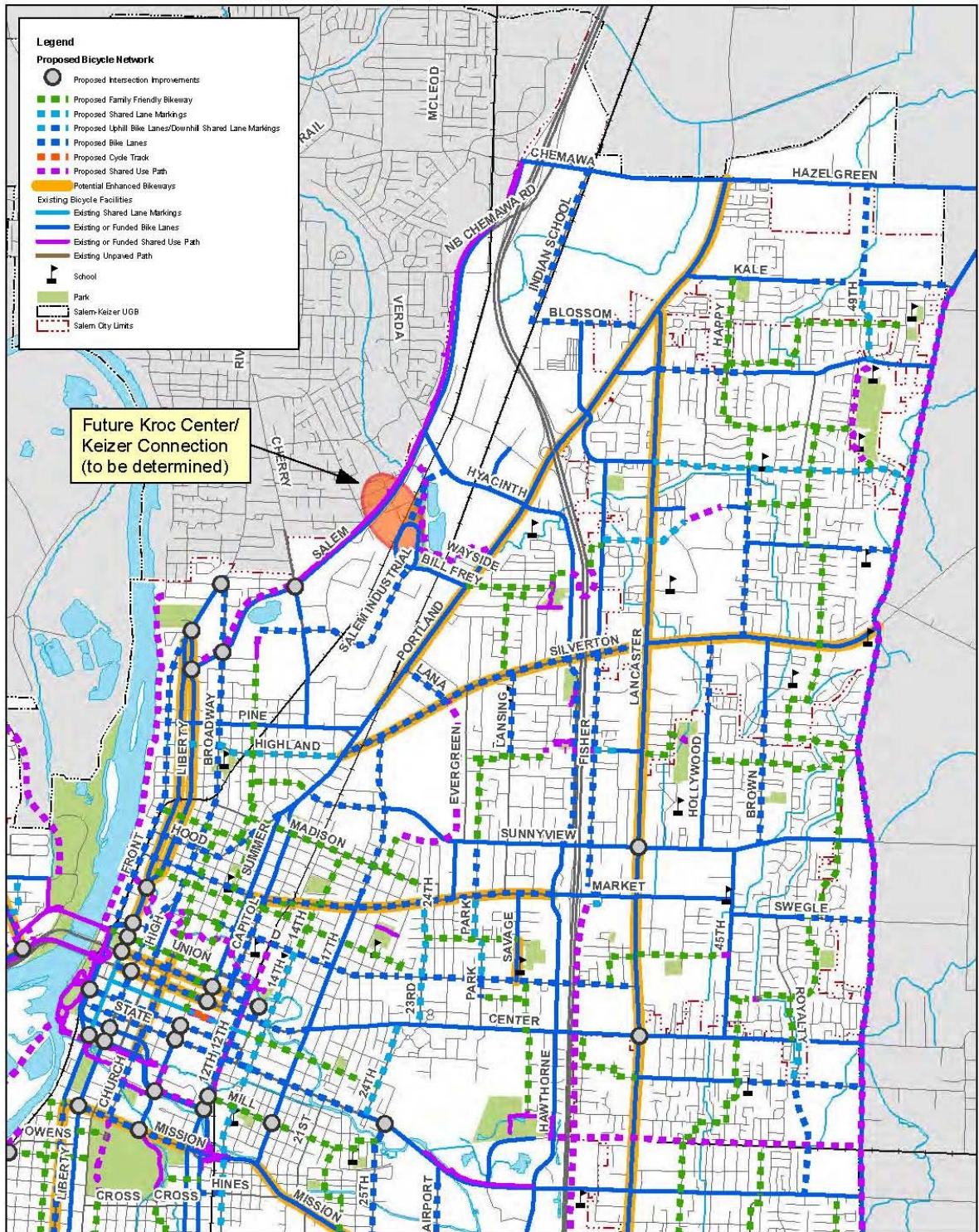


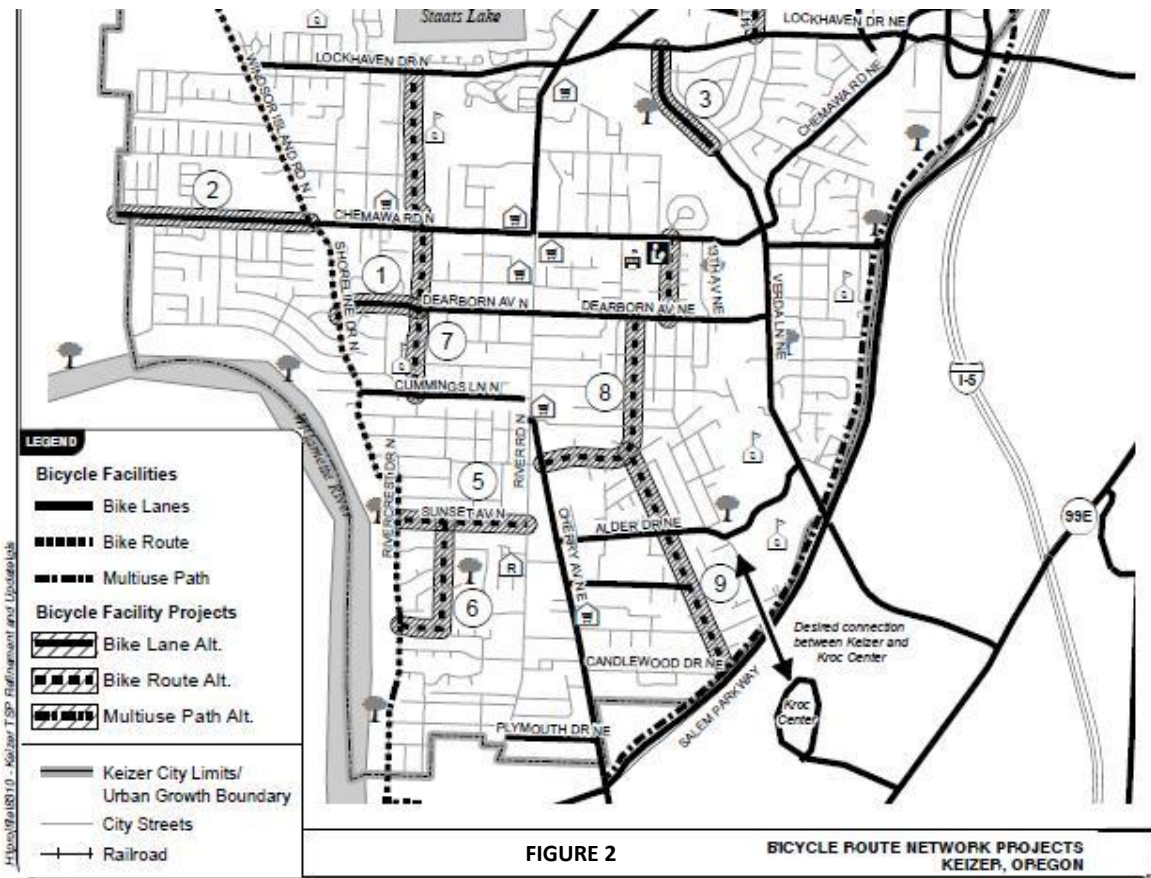
Figure 1: Bicycle Network - Northeast Salem

Bike & Walk Salem

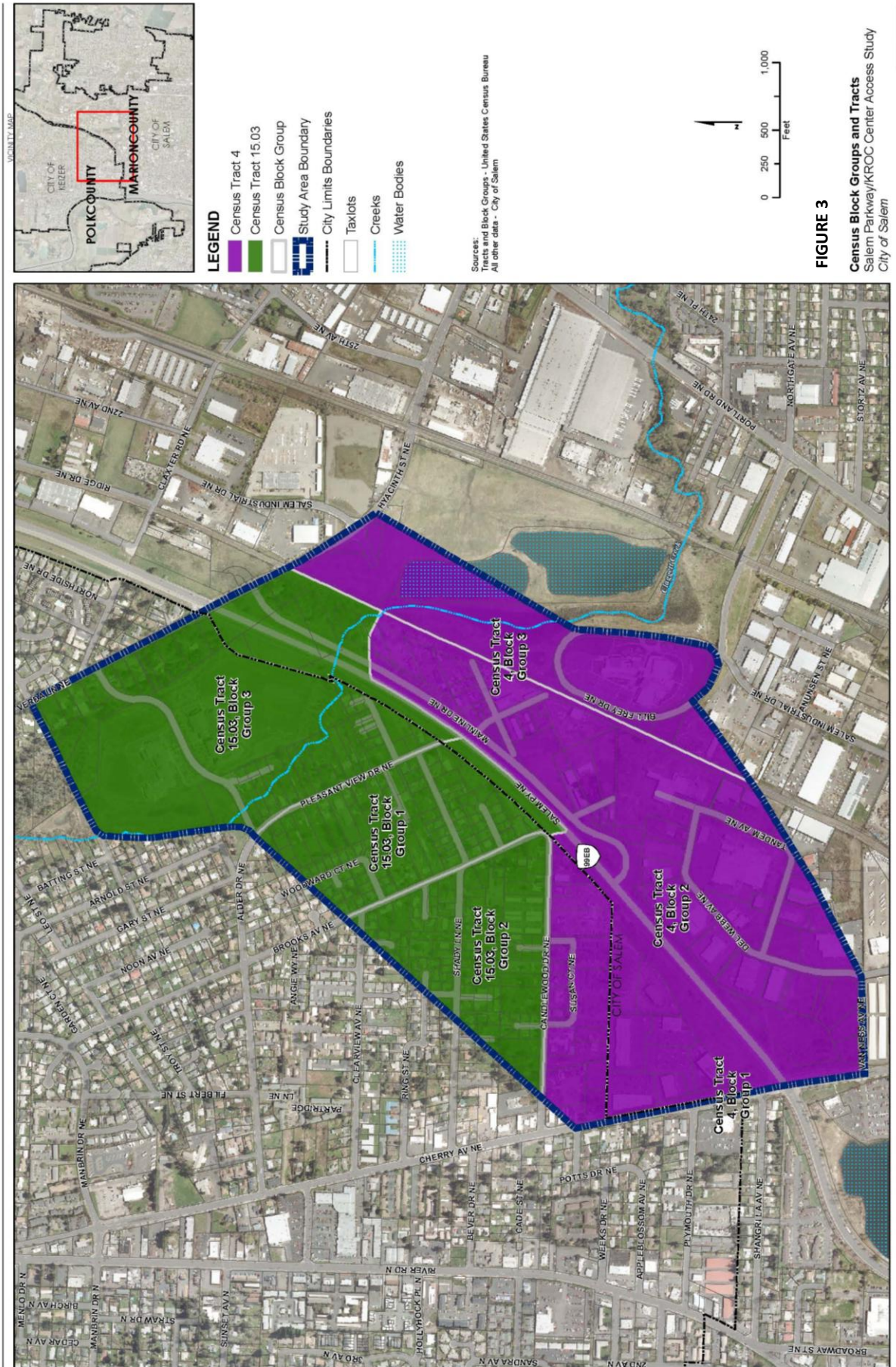
Source: City of Salem, ODOT, MWVCOG, Cherriots, Salem-Keizer School District
 Author: Alta Planning + Design



Disclaimer: The alignment of proposed facilities is shown at a conceptual level only. Final alignment and design will be determined through further analysis.



This memorandum documents existing constraints and opportunities within the built environment surrounding the Kroc Center. Constraints and opportunities are highlighted within the Kroc Center study area, Figure 3, and are described within specific topic areas: demographics and Title VI populations; schools, parks and places; land use and zoning; land ownership; transportation and circulation for all modes; safety; right-of-way; relevant engineering design criteria and standards; geology, soils, and seismic; drainage, erosion and flooding; utilities; hazards and hazardous materials; biological resources/wetland mitigation; and historic resources. Constraints and opportunities are highlighted within each subsection with a separate call-out.



Demographics and Title VI Populations

This section highlights general demographics within the study area as well as groups of particular interest, such as Title VI populations. Title VI of the 1964 Civil Rights Act (42 U.S.C. 2000d-1) states that "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on protected groups). This section documents the presence of Title VI populations to determine potential impacts of a project in the future.

The President's Executive Order on Environmental Justice (EJ) further amplifies Title VI by providing that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The planning process will seek participation by and consideration of federal Title VI communities. The boundaries for this project include Census Tract 4, Block Groups 2 and 3, and Census Tract 15.03 Block Groups 1, 2, and 3 (Figure 3). Over thirty five percent (36.97%) of the population within these census tract block groups are Hispanic or Latino according to the 2010 Decennial Census. Over seven percent (7.2%) of the population within the area is over the age of 65 (2010 Decennial Census). In addition, 25.3% of the population within Census Tracts 4 and 15.03 have income rates that fall below the federally established poverty level and 17.1% of households have no available vehicle. Within Census Tracts 4 and 15.03 respectively, 8.5% and 6.6% are linguistically isolated, meaning a household in which no person aged 14 or older speaks English, or speaks English "very well" (Geographic Profile of Transportation Disadvantaged Populations in the SKATS Area, 2006-2010 census data). Based on these data, the study area has a substantial presence of Title VI, EJ, and transportation disadvantaged populations. When planning a crossing or undercrossing, care must be taken to avoid disproportionate impacts to these populations, though the entire Salem Keizer area has been shown to be affected by transportation projects, and so the threshold for "disproportionate" would be very high.

Constraint: The study area has a substantial presence of Title VI, EJ, and transportation disadvantaged populations. When planning a crossing or undercrossing, care must be taken to avoid disproportionate impacts to these populations, though the entire Salem Keizer area has been shown to be affected by transportation projects, and so the threshold for "disproportionate" would be very high. Moreover, a bicycle and pedestrian crossing would be a benefit to the Title VI, EJ, and transportation disadvantaged population in that it would provide safe, non-motorized access.

Schools, Parks and Places

The presence of schools, parks, other community facilities, and places represent a constraint to avoid within the study area. While these locations may be a constraint to avoid for a

crossing facility itself, they also represent an opportunity to connect a crossing with other community resources within the study area.

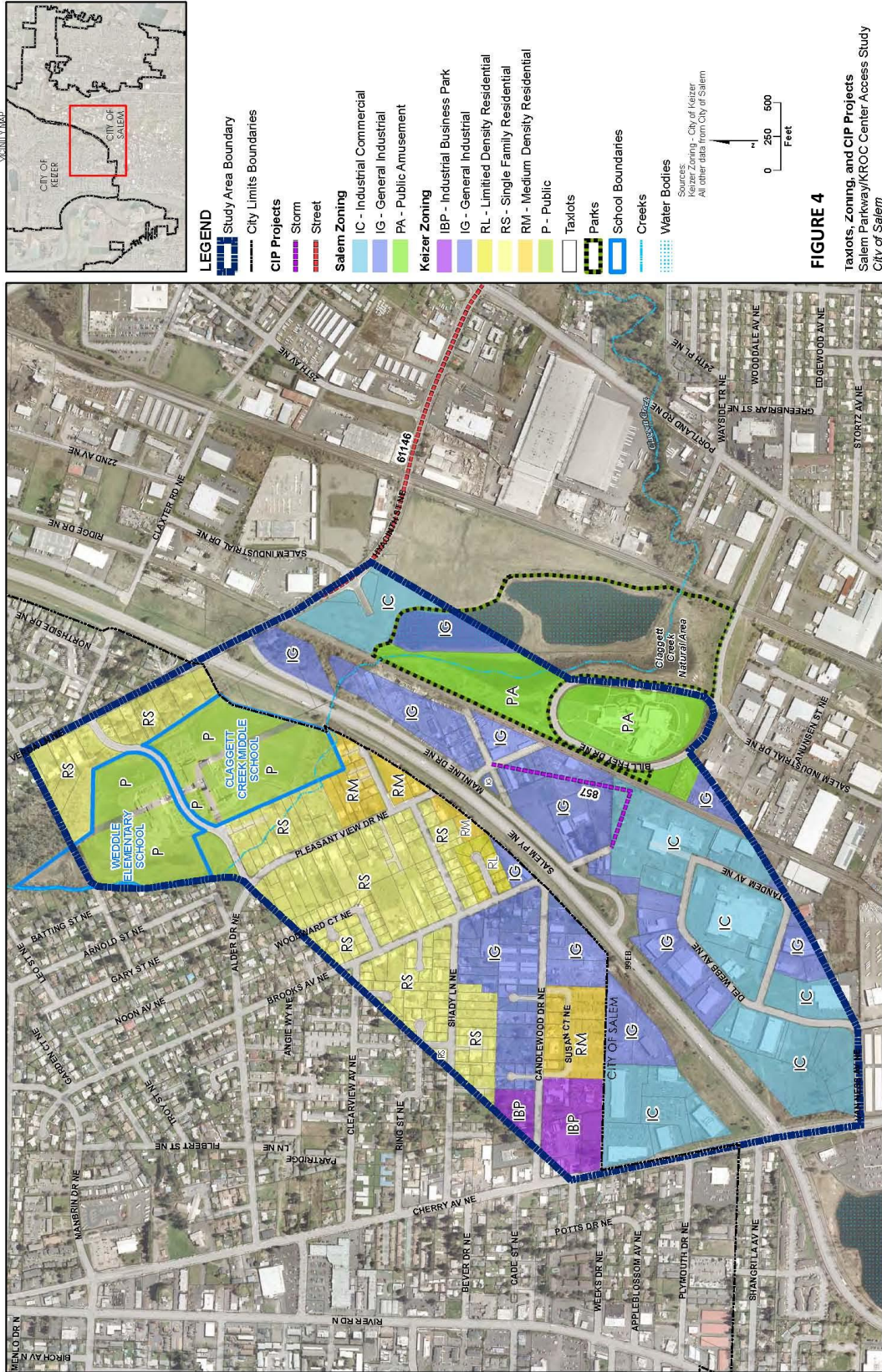
Kroc Center

The Salvation Army Ray & Joan Kroc Corps Community Center is LEED certified and features a water park, fitness center, gymnasium, game room, fine arts & education wing, amphitheater, chapel/performing arts center, 4000 square feet of event space and full in-house catering (salemkroc.org, 2012). The Kroc Center is a standout community asset, with approximately 7,200 members (April, 2012) from both Salem and Keizer. Bike parking is present at the Kroc Center at all public entrances, the east, south, and north; however, it is limited and a simple wave rack which is not the preferred type of bike parking as many bikes can become jammed in the racks.

Schools

Two public schools exist within the study area, Weddle Elementary School and Claggett Creek Middle School, which are directly adjacent to one another, at the northern end of the study area, and northwest of the Kroc Center (Figure 4). The grounds of the two schools include areas adjacent to Claggett Creek, which flows beneath Salem Parkway and is adjacent to the Kroc Center as well. Claggett Creek provides a link between the schools and the Claggett Creek Natural Area, just north of the Kroc Center (Figure 4).

Constraint: Two public schools exist within the study area, Weddle Elementary School and Claggett Creek Middle School, and impacts to these schools should be avoided.



CH2MHILL

Parks and Open Spaces

Just north and east of the Kroc Center, within the study area is the Claggett Creek Wetlands Area (established in 2005), which is a wetland mitigation area and has been left as open space. This wetland area is within the North Gateway Urban Renewal Area. A conceptual circular path around the wetland area is shown on Figure 8. Part of this path is located west of the mitigation area alongside the Burlington Northern Santa Fe rail line. The path represents an opportunity for a bicycle and pedestrian connection, which could possibly activate the space with users – the space is presently difficult to access by walking or biking. Like the Kroc Center, the Claggett Creek Wetlands Area, is to evolve into another community asset.

Constraint: Impacts, both permanent and during construction, to Claggett Creek Wetlands should be avoided.

Land Use and Zoning

The study area (Figure 4) is within both the City of Salem and the City of Keizer. The Salem city limit is west and alongside Salem Parkway within most of the study area. West of Salem Parkway is within the City of Keizer. The area east of Salem Parkway and Mainline Drive is generally industrial in use, and the area west of Salem Parkway is generally residential in use, although there are also industrial uses and commercial uses (see Figure 4).

City of Salem

Within the City of Salem, west of the Kroc Center and east of Salem Parkway and Mainline Drive, uses are primarily industrial, including a large recycling center (Figure 5), with access via Mainline Drive. Several residential units are scattered on parcels throughout the study area. Parcels are zoned either Industrial Commercial or General Industrial.

The industrial uses surrounding the Kroc Center are a stark contrast in use from the Kroc Center as a community center; however, the industrial uses within the study area, are separated by Bill Frey Drive the Burlington Northern Santa Fe rail line and landscaping surrounding the Kroc Center.



Figure 5: Overlooking Recycling Center

North Gateway Urban Renewal Area

The Kroc Center and portion of the study area within Salem city limits are within the North Gateway Urban Renewal Area. It is Salem's largest urban renewal area and most of the investments have focused on infrastructure improvements, including the "Northgate Extension," which constructed Bill Frey Drive, completed in 2005, and was key to attracting the Kroc Center. Within the study area, no overlay zone related to the urban renewal area exists.

City of Keizer

Parcels northwest of Salem Parkway within the City of Keizer are single family residential in use and primarily zoned residential (Figure 6). The area is referred to as the Southeast Keizer Neighborhood, although they are not represented by a neighborhood association. See the “Demographics” section for a description of residents within the study area, which primarily live in this area. This neighborhood used to be connected to points southeast across, what is now Salem Parkway. The neighborhood is more isolated from points southeast due to the parkway, and a bicycle or pedestrian connection across the parkway would be a neighborhood asset.



Figure 6 Single Family Residential Neighborhood northwest of Salem Parkway

Land Ownership

Northwest of Salem Parkway, within the single family housing area of southeast Keizer, ownership of taxlots is generally individual. The industrial area between Salem Parkway and the Burlington Northern Santa Fe rail line and Bill Frey Drive were examined more carefully because several parcels have been consolidated for a single use, and also owned by a single entity, as well as these are the parcels most likely to be impacted by a crossing. Although 64 taxlots exist in this area, generally six entities own parcels within this area and several parcels have been consolidated into a single use. Within this industrial area are less than ten, scattered residential units and an apartment complex.

Transportation/Circulation

Prior to the construction of Salem Parkway, the Southeast Keizer neighborhood was connected to the industrial area to the southeast via local roads, Brooks Avenue, Pleasant View Drive, and Candlewood Drive (Figure 4). These local roads are now dead-ended into an off-street path within the neighborhood, northwest of Salem Parkway, and Mainline Drive southeast of Salem Parkway. A connection across the parkway would restore this neighborhood’s access to points southeast, including the Kroc Center. With no direct access to the Kroc Center or points southeast from the north or west, residents in the areas are more likely to drive to the Kroc Center or cross the access limited Salem Parkway and the BNSF tracks on foot illegally, which is dangerous. From the Southeast Keizer neighborhood, travel distances via the closest signalized intersections at Hyacinth Drive to Portland Road and Bill Frey Drive or via Cherry Avenue and Salem Industrial Drive are approximately 2 miles; whereas, a direct crossing across Salem Parkway would be a distance of a ½ mile.

Access to the Kroc Center is only available from Portland Road via Bill Frey Drive or from Salem Industrial Drive. From Portland Road, Bill Frey Drive is grade separated above the Union Pacific rail line and has bike lanes and sidewalks. Salem Industrial Drive serves

industrial uses, has frequent driveway accesses, truck traffic, has open ditches on both sides and is currently an undesirable road for biking and walking.

Opportunity: A safe, bicycle and pedestrian connection across the parkway would restore this neighborhood's access to points southeast, including the Kroc Center.

Surrounding Roadways

This section describes roadways within the study area and the presence of sidewalks and bike facilities.

Salem Parkway is owned by ODOT and designated a Regional highway, with daily traffic of 25,000 and a posted speed limit of 55 miles-per-hour. It is access limited, and Cherry Avenue and Hyacinth Drive are the two signalized intersections that provide access to points east. The unsignalized intersection with Mainline Drive only allows right-in and right-out turns. The City of Salem classifies Salem Parkway as a parkway.



Figure 7: Bill Frey Drive

One option for an overcrossing bridge over the Salem Parkway would require the addition of a column in the median, which would require an approved design exception from ODOT. It is unlikely that ODOT would approve an exception for a median obstruction (bridge column) with the current substandard left shoulders at this location. As a result, an overcrossing bridge would likely require spanning the entire Salem Parkway from shoulder to shoulder, which would translate to a minimum span length of 82 feet, assuming a crossing of the Parkway at 90 degrees, with no skew. Crossing at a skew would require a longer clear span. For beam style bridges commonly used for these applications, a longer span requires a bigger beam, which means the ramps to reach the bridge deck are longer.

Bill Frey Drive is owned by the City of Salem, and is a circular roadway, surrounding and providing access to the Kroc Center. It is classified as a collector. Crossing Bill Frey Drive by bike or foot is difficult because of the continuous curves and limited sight-distance. Bill Frey Drive has complete sidewalks on both sides and striped bike lanes (Figure 7).

Both Cherry Avenue, the southwestern boundary of the study area, and Hyacinth Street, the northeastern boundary of the study area are classified as major arterials, and both have bike lanes southeast of Salem Parkway. Hyacinth Street, southeast of Salem Parkway has complete sidewalks on both sides. Cherry Avenue, east and south of Salem Parkway has partial sidewalks and the proposed Bike & Walk Salem Plan (2012) calls for the completion of sidewalks. North of Salem Parkway, Cherry Avenue and Verda (opposite of Hyacinth) have sidewalks and bike lanes.

Mainline Drive is a frontage road providing access to industrial uses, and is classified as a local roadway. No sidewalks or bike lanes exist on the roadway. Mainline Drive is at a higher grade than Salem Parkway. Based on the as-constructed plans for Salem Parkway, Mainline Drive is approximately four feet higher than the shoulder edge of pavement of

Salem Parkway, which means that Mainline Drive is likely the controlling factor for the vertical alignment of the multi-use path. It is worth noting that Mainline Drive shoulders are currently substandard.

Although outside of the immediate study area, Salem Industrial Drive presently provides important access to the Kroc Center. Salem Industrial Drive serves industrial uses, has frequent driveway accesses, truck traffic, has open ditches on both sides and is currently an undesirable road for biking and walking. It has incomplete sidewalks, and the proposed Bike & Walk Salem Plan (2012) calls for sidewalk completion and bike lanes.

Planned Roadways

The City of Salem TSP and the North Gateway Urban Renewal Area plan propose a new road, connecting Bill Frey Drive to Salem Industrial Drive, crossing Hyacinth Street (Figure 8). A partial roadway and intersection off of Hyacinth has been constructed for the planned road. However near term construction of this section of roadway is unlikely due to funding constraints.

Constraint: Overcrossing bridge would likely need to clear-span Salem Parkway, and for beam style bridges commonly used for these types of crossings, a longer span requires a larger beam, which means the ramps to reach the bridge deck are longer too.

Constraint: Crossing Bill Frey Drive by bike or foot is difficult because of the continuous curves and limited sight-distance.

Opportunity: Mainline Drive is approximately four feet higher than the shoulder edge of pavement on Salem Parkway, which would require less steep grade of an overcrossing to clear Salem Parkway.



Off-Street Paths

This section describes off-street paths, both present and planned within the study area.

On the west side of Salem Parkway is an off-street path that is between the residential neighborhood and Salem Parkway. It provides off-street bicycle and pedestrian access between Cherry Avenue and past Hyacinth Street. This path continues north of the study area along Salem Parkway and into northeast Keizer. There are short, rudimentary asphalt paths between this multi-use path and two local streets in Keizer (the end of Pleasant View Drive and where Candlewood Drive meets Brooks Avenue).

The North Gateway Urban Renewal Area plans for a conceptual off-street, circular path within the Claggett Creek Wetlands Area (see Figure 8). The path concept would include two bridge structures, a couple of docks for view points, and could activate the wetland area space. Providing a bicycle and pedestrian connection to the wetland area is an opportunity to further develop the area as a community asset by providing more access.

Opportunity: Providing a bicycle and pedestrian connection to the wetland area is an opportunity to reinforce the wetland as a community asset.

Transit

Cherriots (Salem Keizer Transit) began providing bus service to the Kroc Center, Route 14, in 2009. Daily ridership averages 191. Service is provided Monday through Friday, 6:15 a.m. to 9:00 p.m. There are no plans currently to provide Saturday or Sunday service.

Capital Improvement Projects

Between Candlewood Drive and Brooks Avenue, a Capital Improvement Project exists within the Stormwater category (#857): Salem Industrial Park, east of Tandem Avenue NE to Bill Frey Drive NE - Pipe Replacement. The project calls for the removal of an underground injection control (UIC) at old Sumco North Campus. It calls for the installation of 1,130 feet of 30" and 990 feet of 18" pipelines and necessary appurtenances to collect and convey storm water to the discharge point.

Railroad

The Kroc Center is located southeast of the Burlington Northern Santa Fe (BNSF) rail line. Any over or undercrossing of Salem Parkway to the Kroc Center would involve crossing the Burlington Northern Santa Fe rail line. The State of Oregon does not support new, at-grade bicycle and pedestrian crossings of railroad lines. It is an active line and most of the track is double through the study area with an area that is triple track. Portland & Western Railroad currently operates three scheduled trains that pass the area, with each making a reverse route, equating to six train movements within the study area. Of these three trains, one train operates seven days a week, while the other two operate five days a week. Future operations could include more trains at higher speeds (Anzur, 2012). Secondary tracks are used for car storage. The double and triple track of the line prevents any at-grade crossing, as the railroads accept at-grade crossings for single track lines only, and encourages grade separation when possible.

Towards the northern end of the study area, the railroad crosses over Claggett Creek using a train trestle. This area has limited potential as an undercrossing point (there is an underpass

of the creek beneath Salem Parkway as well). A crossing alongside Claggett Creek could thematically tie the creek area adjacent to the school grounds to the Claggett Creek Wetlands Area across Salem Parkway. The existing trestle would need extensive revisions to allow pedestrian traffic under it. These revisions would be both structural (reconfiguring the bracing of the trestle) and functional (placing containment under the tracks). The owner would most likely require the structure to be replaced. A new structure would need to comply with BNSF grade separation structure guidelines.

One potentially favorable condition or opportunity for an undercrossing of the BNSF track is north of Candlewood Drive up to the Claggett Creek Trestle. This section of the BNSF track is a single track, and the single track is on a berm, which elevates it higher than the adjacent land. This elevated section has some potential for an undercrossing.

Constraint: Railroads encourage grade-separated track crossings as much as possible, and the presence of double and triple track prevents the potential for an at-grade crossing.

Opportunity: Towards the northern end of the study area, the railroad crosses over Claggett Creek using a train trestle, which has limited potential as an undercrossing point. The existing trestle would need extensive revisions to allow pedestrian traffic under it, and the owner would most likely require the structure to be replaced.

Opportunity: North of Candlewood Drive and south of the Claggett Creek Trestle, this section of the BNSF track is a single track, and the single track is on a berm, which elevates it higher than the adjacent land. This elevated section has some potential for an undercrossing.

Safety

Several safety concerns are present in the Kroc center study area. The safe crossing of Salem Parkway is a key component of access to the Kroc Center from the west. Currently the two closest marked pedestrian crossings across Salem Parkway are located at Hyacinth Street and Cherry Avenue. However, once crossing Salem Parkway from the west there is not continuous sidewalk infrastructure to the Kroc Center. Also pedestrians have been observed to be crossing the high speed Salem Parkway at unmarked locations as evidenced by many cuts in fencing and worn paths in surrounding areas. The team observed people crossing the BNSF tracks during the site visit, which is also unsafe.

Industrial use in the study area creates potentially unsafe conditions for pedestrian and bicycle travel if not designed correctly. At-grade railroad crossings are located on Hayacinth Street and Salem Industrial Way. The Burlington Northern Santa Fe railroad lines are adjacent to the Kroc Center site, with the lines closest to Bill Frey Drive having three tracks (The city of Salem installed fencing to discourage people from crossing the rail-line to get to the Kroc Center, but the non-metal sections of this fence have been broken by people who want to cross or use the rail line to get to Kroc). Any pedestrian crossings will have to take these safety issues into consideration.

Sight distance is of concern on Bill Frey Drive due to the tight radius of its curves. Pedestrian crossings would be preferable on the east or west of this "oval" road, as opposed to north or south in order to cross on tangential sections of the roadway where the sight distance is best.

Crash data from the City of Salem indicates there were 6 crashes at the Bill Frey Drive/Portland Road intersection between 2005 and 2010. At least one driver or passenger was injured in 4 out of the 6 crashes. Crash data also shows there were 2 crashes at Bill Frey Drive/Salem Industrial Drive between 2005 and 2010. Neither of these crashes produced injuries for drivers or passengers involved.

Any crossing would need to be located such that it minimizes the likelihood of bicyclists or pedestrians from crossing the tracks. Crossing the tracks is generally considered to be dangerous.

Personal safety from crime is also a consideration when comparing possible locations of a crossing or undercrossing. A long undercrossing could isolate users from “eyes on the street,” making them more vulnerable in the event of any kind of emergency. Lighting throughout the entire path to the Kroc Center would be required, and would likely be similar to lighting used for the path from the west end of the Union Street Bridge to Wallace Road. Well-light conditions increases safety and visibility.

Constraint: Sight distance is limited on Bill Frey Drive due to the tight radius of its curves.

Constraint: Personal safety from crime is a consideration for both an under and over-crossing. When designing an under or over-crossing, care should be taken to avoid unlit, isolated areas.

Right-of-Way/Easements

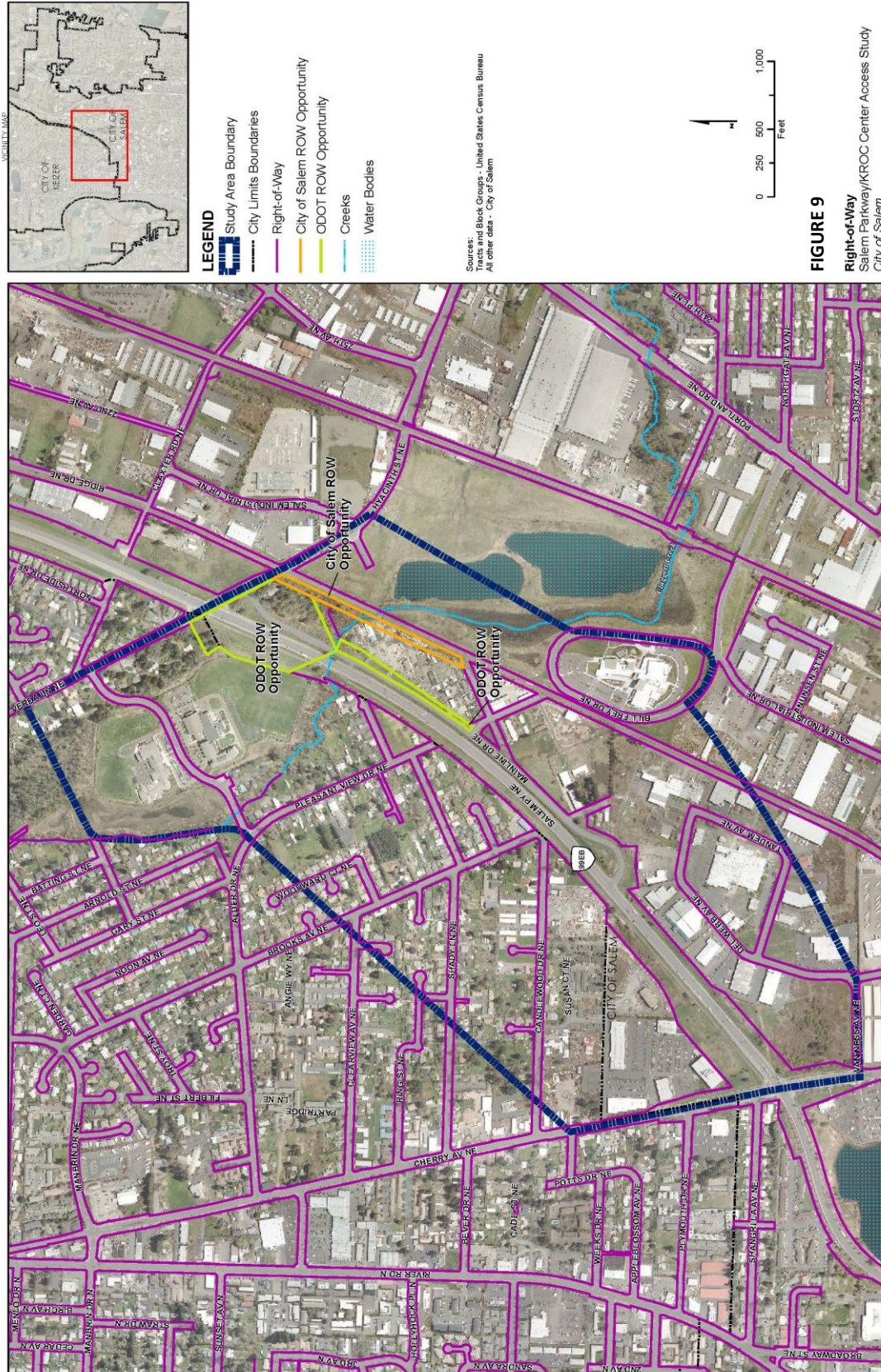
Figure 9 shows the right-of-way in the study area. Crossing the Salem Parkway and railroad easements would require significant coordination with the state and the Burlington Northern Santa Fe railroad.

Current right-of-way (ROW) ownership presents several opportunities for an under or overcrossing structure, lessening the need for additional ROW purchase. As depicted in Figure 9, ODOT owns the property around Mainline Drive, a strip of property south of Mainline Drive, and a large amount of property at the north end of Mainline Drive and Salem Parkway.

The ROW for the extension of Salem Industrial Drive to Hyacinth has been secured by the Urban Renewal Agency. The City has an easement agreement for 60 foot ROW for the entire length of the roadway between Bill Frey Drive and Hyacinth.

The City of Salem owns a strip of ROW to the west of the BNSF line that is currently used by the adjacent property owner, a recycling center (Figure 9). The adjacent property owner has asked for the ROW to be vacated, but the City could use the land to swap for property elsewhere that would be beneficial for an overcrossing or undercrossing.

Opportunity: ODOT owns property around Mainline Drive and City of Salem owns property west of the BNSF rail line which could be used to reduce the need for ROW acquisition.



Design Criteria and Standards

This section cites relevant standards that will become criteria to consider when designing an over-crossing or under-crossing.

The Oregon Bicycle and Pedestrian Design Guide (2011) calls for the following design standards to be used for construction of a multi-use bicycle/pedestrian path:

Table 1 – Oregon Bicycle and Pedestrian Design Guidelines

Design Standard	Quantity	Unit
Paved width	12	Ft
Cross slope	2%	Max
Shoulder	1	Ft (min)
Grade	5%	Max
Overhead clearance	10	Ft
Slope without fence	3H:1V	(Side Slope)
Rail Height	42	Inches (General rail height)
	48	Inches (To protect bicyclists from severe hazard)
	54	Inches (Used sparingly where bicycles may vault over rail)
Pavement Section		
AC	3	Inches
Base	5	Inches
	OR	Inches
PCC	6	Inches
Base	6	Inches

The AASHTO Guide for the Development of Bicycle Facilities (1999) calls for the following design standards to be used for construction of a multi-use bicycle/pedestrian path:

Table 2 – AASHTO Guidelines for the Development of Bicycle Facilities

Design Standard	Quantity	Unit
Lean angle	15	Degrees
Design Speed	20	Mph
Radius of Curve	100	Ft
Grade	5%	
Friction	0.25	
SSD (down)	127	Ft
SSD (up)	127	Ft
Eye Height	4.5	Ft
Object Height	0	Ft

The ODOT Highway Design Manual (HDM) calls for the following design standards to be used for construction of an urban expressway (i.e. Salem Parkway):

Table 3 – ODOT Highway Design Manual Guidelines for Urban Expressway

Design Standard	Quantity	Unit	Comments
Lanes	12	Ft	From aerial, ex. 12'
Shoulders	8	Ft	
Shy	2	Ft	
Striped Median	10	Ft	The Salem Parkway construction contract plans show it designed as a 10' wide striped median at this location.
Conc. Barrier Median	10	Ft	(4 lane section)
Vertical Clearance	17.33	Ft	(Designated high route)

The ODOT HDM calls for the following design standards to be used for construction of street on the urban/suburban fringe (i.e. Mainline Drive):

Table 4 - ODOT Highway Design Manual Guidelines for Streets on Urban/Suburban Fringe

Design Standard	Quantity	Unit	Comments
Lanes	12	Feet	
Shoulders	6	feet	
Shy	2	Feet	
Vertical Clearance	16	Feet	(non-NHS, non-high route, acceptability to be verified with stakeholders)

Reviewing the UPRR/BNSF Guidelines for Railroad Grade Separation Projects, the following citations apply:

- Minimum vertical clearance shall be 23 feet and 4 inches above the top of high rail within 25 feet of centerline track. Additional clearance may be required for construction or for flood considerations. The study area along BNSF tracks, north of Candlewood Drive NE is within a 100 and 500 year flood zone.
- The railroad discourages the construction of new underpass structures. If an underpass structure is the only feasible structure type of the proposed site, a detailed type selection report must be submitted to justify its use.

An additional design consideration is that a bridge structure would need protective screening and rails. Salem Parkway has a 10 foot painted median, and any crossing that would require a pier structure in the median would require a design exception. Vertical clearance requirement over the Parkway is 17 feet 4 inches and City roadways require a vertical clearance of 17 feet.

Preliminary Geotechnical Evaluation

A pedestrian crossing of the Salem Parkway is proposed to provide access to the Kroc Center in Keizer, Oregon. The purpose of this section is to provide a high-level, preliminary geotechnical evaluation for the project. Proposed improvements may include any or a combination of the following:

- A pedestrian bridge over the Salem Parkway
- A pedestrian bridge over the BNSF and under the High Voltage Transmission lines
- A pedestrian undercrossing beneath the BNSF Railroad tracks and High Voltage Transmission Line ROW
- Associated footpaths paved with asphaltic concrete

Subsurface Conditions

Available drawings show Soil Conservation Survey (SCS) soil types mapped by location in the study area. The SCS website was used to generate a brief report that includes descriptions for the various soil types within several feet of the ground surface. The two primary soil types mapped in this area are alluvial deposits; Bashaw clay (Ba), and Cloquato silt loam (Cm).

Logs for nearby water wells were reviewed to provide a preliminary understanding of the deeper soil profile. In general, the site appears to be underlain by inter-layered deposits of fine-grained and coarse-grained alluvium. The well logs suggest the static groundwater level could be within about 7 to 15 feet of the ground surface.

Geotechnical Design Considerations

Key geotechnical considerations for the project may include:

Mapped Geotechnical Hazards

Geotechnical hazard maps (Dogami, 2008) indicate the following risks for the project site:

- Relative Landslide Hazard – moderate. This mapped hazard is not expected to be applicable for the project because the native grades are relatively gentle. However, static and seismic stability of the existing raised embankment that supports the Salem Parkway, extending approximately 1,000 feet south from the intersection with Hyacinth Street, may need to be evaluated for a bridge crossing in that vicinity.
- Relative Ground-Shaking Amplification Hazard – high to very high. Seismic design parameters will be determined in accordance with AASHTO guidelines.
- Relative Liquefaction Hazard – low to moderate. Because the site is underlain by alluvial soils and shallow groundwater is present, liquefaction could result in soil strength loss and/or settlement during the design seismic event. Liquefaction will need to be evaluated as part of bridge design and embankment stability analyses.

Deep Foundations for the Pedestrian Bridge

Deep foundations are anticipated for the proposed pedestrian bridge to mitigate the presence of relatively soft near surface soils, and due to the potential for liquefaction.

Exploratory borings will need to be completed at each abutment and interior bent for the selected bridge site to characterize the soil conditions. The borings should be advanced deep enough for use in evaluating deep foundation alternatives, including seismic considerations such as site class determination and liquefaction screening. Based on the type of structure and available well log information, boring depths from 50 to 100 feet are anticipated. Additional borings may be required for embankment stability analyses.

Laboratory testing will be required for the determination of soil moisture content, plasticity, grain size, compressibility, and corrosivity.

Subgrade Stabilization

Plastic soils may be present along the proposed crossing location. Such soils have a high affinity for water and commonly result in shrink/swell behavior as a result of seasonal changes in moisture content. Shrink/swell can lead to increased maintenance and a shortened design life for shallow improvements such as pavement and sidewalks. A series of test pits should be completed along the proposed crossing alignment to characterize the subgrade conditions, including the risk of shrink/swell. Plastic soils are commonly mitigated by increasing the base rock thickness to about 18 to 24 inches to reduce the risk of excessive seasonal movements.

Even where plastic soils are not present, test pits should be performed to determine whether subexcavation will be required to mitigate soft subgrade conditions, such as the presence of relatively deep tilled soils in areas that have not previously been improved.

Constraint: Moderate landslide hazard that would require evaluation for a bridge crossing in the vicinity of the existing raised embankment that supports the Salem Parkway.

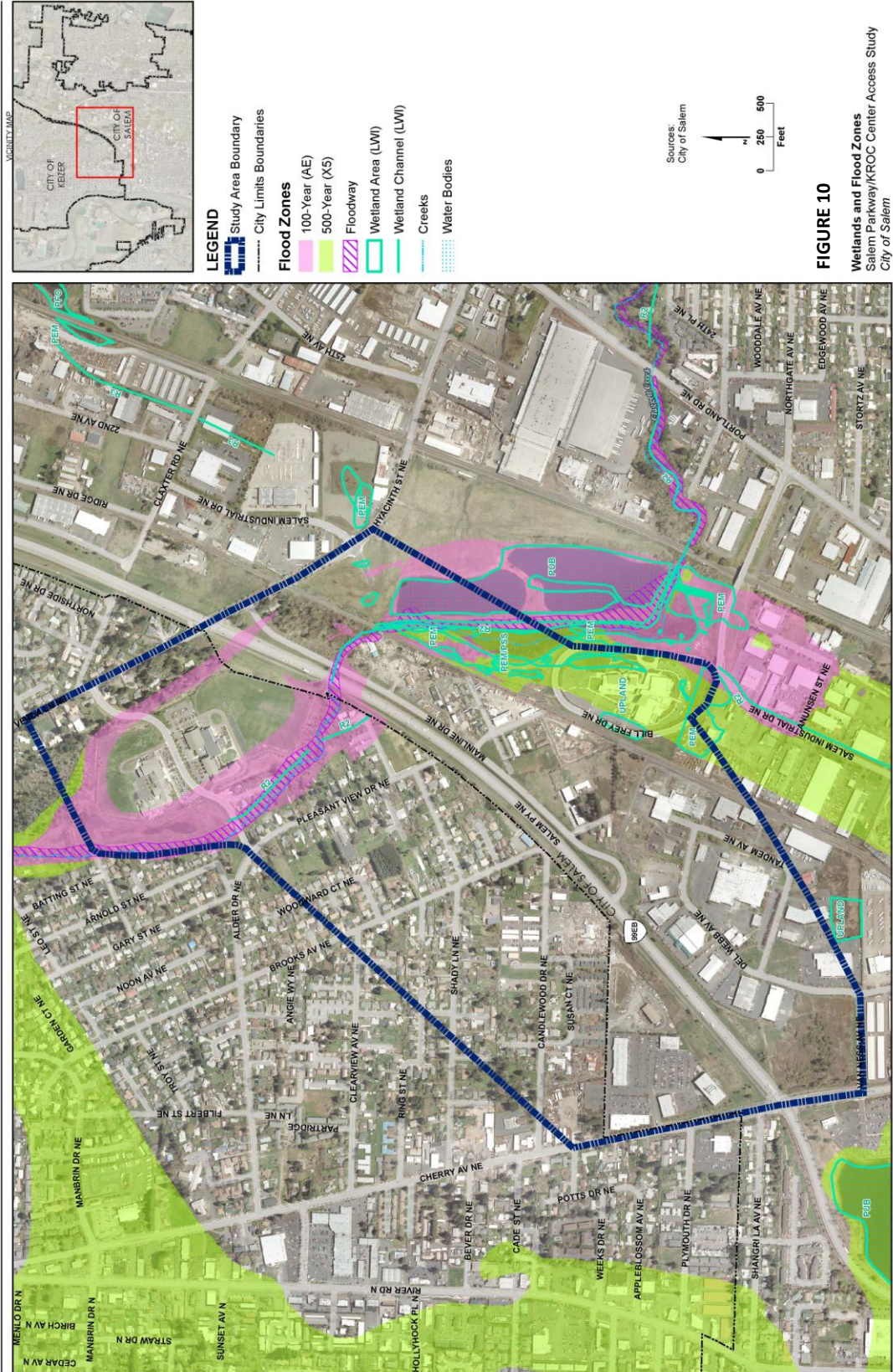
Constraint: High to very high relative ground-shaking amplification hazard.

Constraint: Anticipate boring depths between 50 and 100 feet.

Constraint: A series of test pits should be completed along the proposed crossing alignment to characterize the subgrade conditions, including the risk of shrink/swell.

Drainage, Erosion and Flooding

Figure 10 shows 100-year and 500-year flood zones in the study area. The 100-year zone encompasses the western portion of the Weddle Elementary School and Claggett Creek Middle School site along Claggett Creek. The 500-year zone fully encloses the Kroc Center. The floodway, defined by FEMA as a channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height, follows Claggett Creek and would need to be considered if building a crossing across Salem Parkway adjacent to the creek.



CH2MHILL

High Voltage Wires

High voltage wires run along both sides of the BNSF track for the entire study area and pose a significant constraint. The high voltage wires branch off to the north following the Pleasant View Street alignment. The wires hanging from these poles run parallel to and some of the distribution lines hang as low as 21 feet above the existing railroad tracks and in some locations cross the track(s). If a bridge were to cross the tracks, a clearance of 23 feet and 4 inches would need to be maintained over the tracks to the bottom of the bridge. Assuming the bridge would have a 2 foot minimum thickness from the bottom of the bridge to the finish grade of the bridge, Burlington Northern Santa Fe (BNSF) would require a 10 foot tall protective fence above the path surface, which would translate to the top of the fence being located 35 feet above the top of the track(s). Additional clearance is required between the top of the fence and the overhead wires. The low distribution wires would need to be relocated, either higher or undergrounded, and it is likely that the upper high voltage wires will need to be relocated even higher. Undergrounding the high voltage wires would require refrigeration of the vault and would be prohibitively expensive. The funding to relocate these wires would be a project cost. For planning purposes, this project should assume the need to raise the voltage wires to accommodate a bridge structure. The cost and feasibility of raising the wires will need to be reviewed in greater detail following the development of design concepts.

Constraint: This project should assume the need to raise the voltage wires to accommodate a bridge structure. The cost and feasibility of raising the wires will need to be reviewed in greater detail following the development of design concepts.

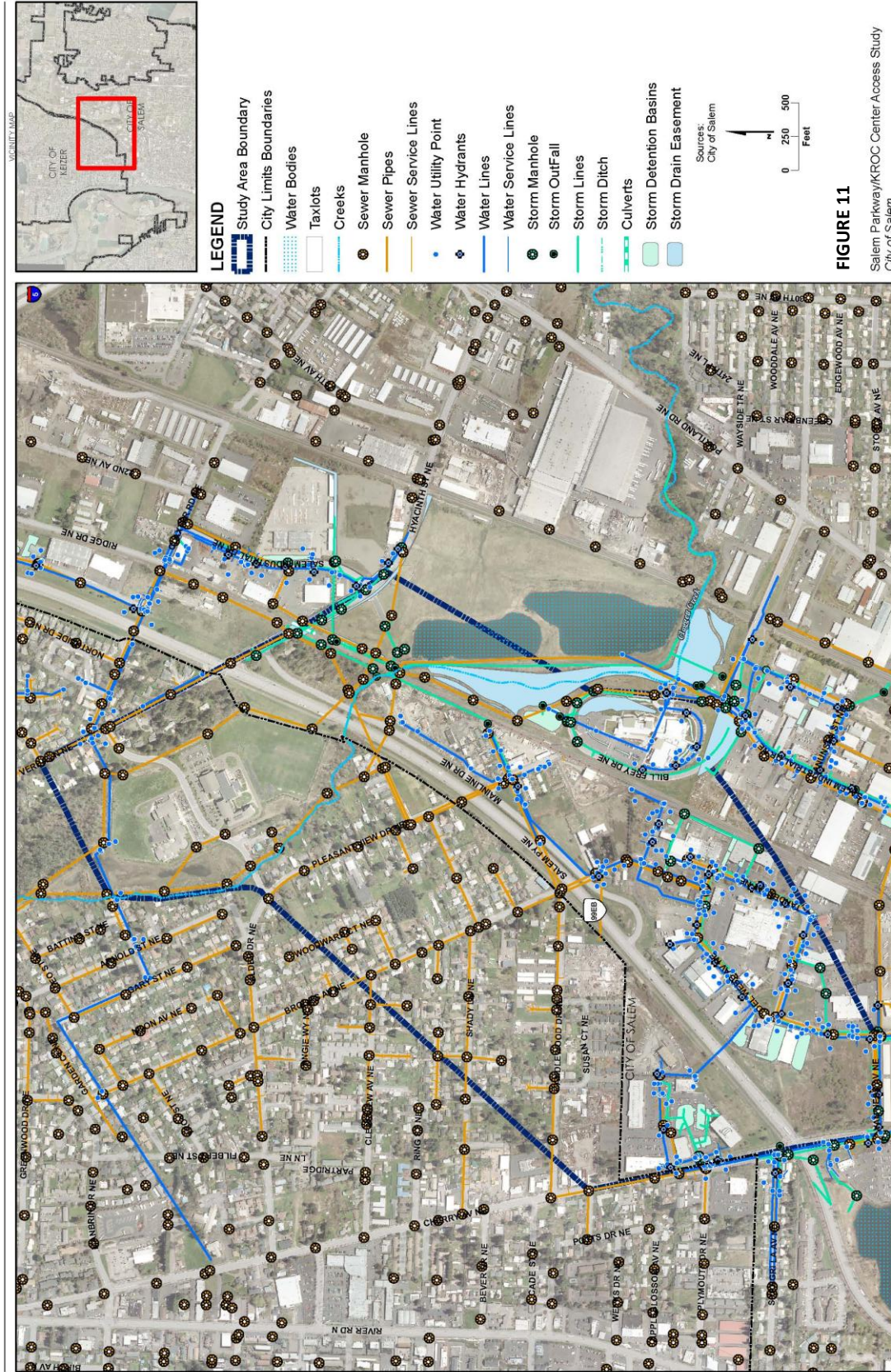
Storm, Sewer, and Water

The original water and sewer grid, predating Salem Parkway, still exists at Brooks Avenue, Pleasant View Avenue and into the field south of Weddle Elementary School. Impacts to the system should be avoided with construction. The condition of the lines is unknown, and for planning purposes, this project assumes construction in close proximity to the old lines would necessitate their replacement.

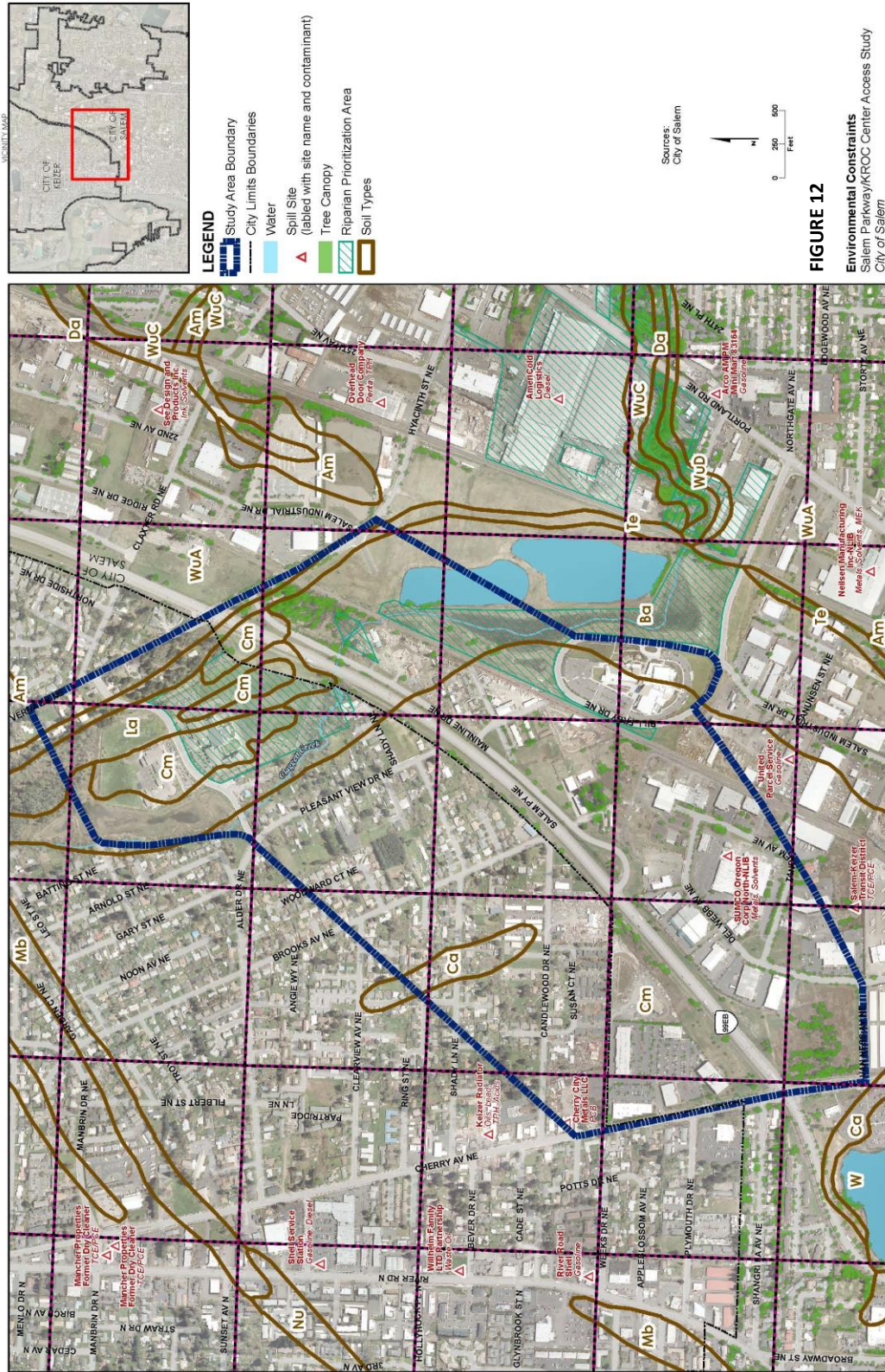
Constraint: This project assumes construction in close proximity to the old sewer and water lines would necessitate their replacement.

Hazards and Hazardous Materials

Several spill sites are located in the study area and can be seen in Figure 12. Two sites lie within the study area: Cherry City Metals located at Cherry Avenue NE/Candlewood Drive NE and SUMCO Oregon Corp North - NLIB Metals located at Del Webb Avenue NE/Tandem Avenue NE producing PCB and solvents, respectively.



CH2MHILL



CH2MHILL

Biological Resources/Wetland Mitigation

Claggett Creek is within the study area, which is within the Claggett Creek Watershed. Claggett Creek collects water from and flows through Salem, Keizer, and portions of Marion County. The main water course is Claggett Creek, but the watershed includes Labish Ditch and other water courses that flow into it. Claggett Creek is a tributary of the Willamette River connecting to the larger river at Clear Lake.

Claggett Creek has limited public access, areas thick with invasive plants, high levels of bacteria, low levels of oxygen, high temperatures, and high levels of Mercury from soil erosion. These characteristics inhibit the creek's ability to support fish and other wildlife and native plant species (Claggett Creek Watershed Council, 2012).

Making use of secondary research, this report reviews the ODOT OTIA III Statewide Bridge Delivery Program Environmental Baseline Report. Bridge #07855E on Salem Parkway is nearby, and the environmental screen provides a high level assessment. The screen states that there are no listed biological or fish species reported by the Oregon Natural Heritage Information Center (ORNHIC) within a two mile radius of the bridge.

Figure 10 shows wetlands that are located directly west, east and north of the Kroc Center. Opportunities exist to both protect and enhance these wetland areas while providing increased access to the Kroc Center.

Historic Resources

Many properties northwest of Salem Parkway were constructed in the early part of the 20th century and should be considered historic resources. In the study area there are 11 properties constructed between 1920 and 1931, 11 properties constructed between 1932 and 1943 and 50 properties constructed between 1944 and 1950. Many of the homes west of Salem Parkway are fifty years or older (Figure 13). Within the industrial area, between Salem Parkway and the Burlington Northern Santa Fe rail line, a few structures over 50 years old exist along Pleasant View Drive. A review of Oregon's Historic Site Database did not reveal any historic properties within the study area. Generally, impacts to structures over 50 years old will be avoided; however, none are listed as historic properties.



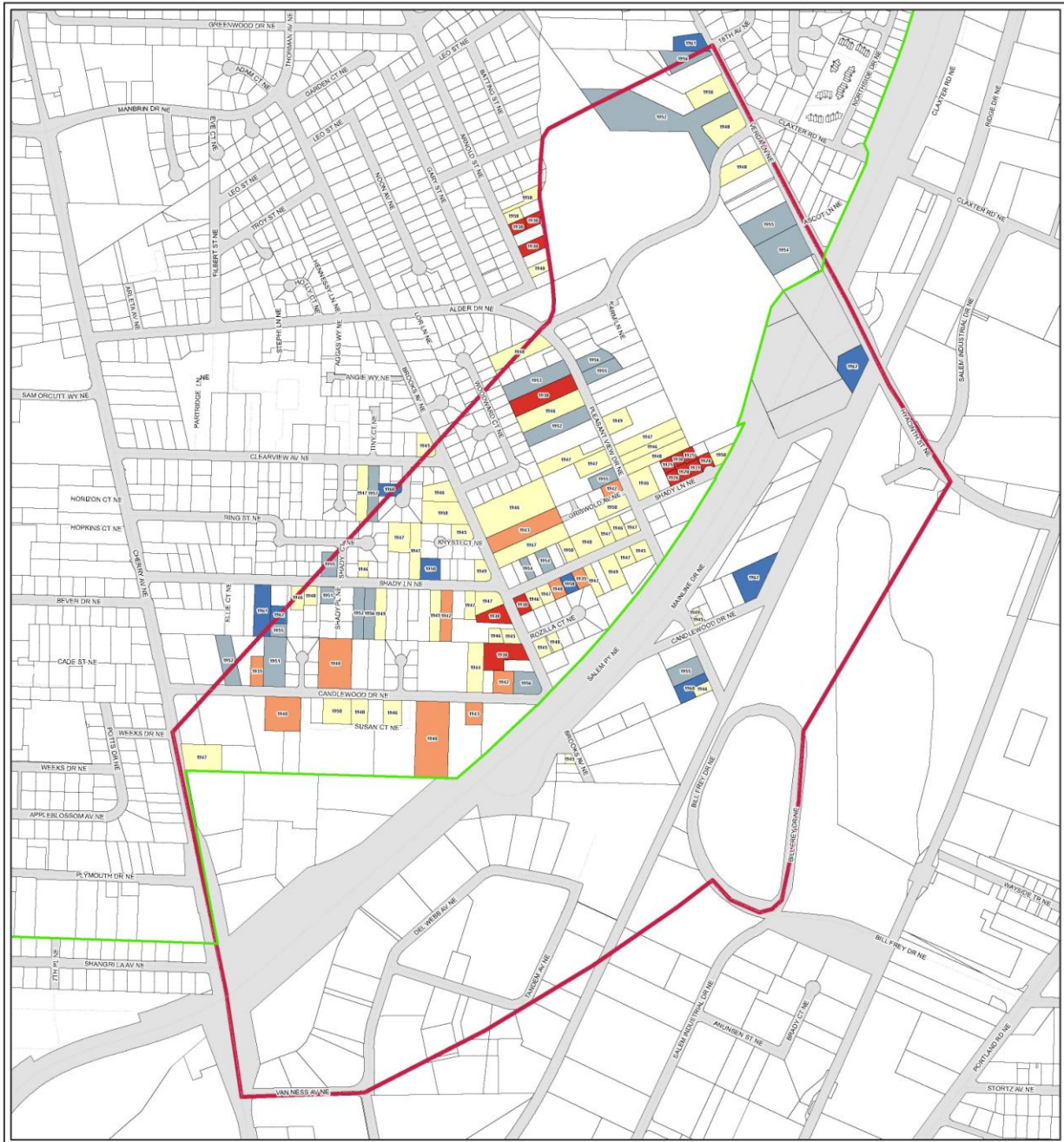
CITY OF Salem
AT YOUR SERVICE

Kroc Center Study Area

Construction 50 Years Old or Older

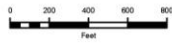
Community Development Department - Planning Division





Year Constructed

	1932 - 1943		1951 - 1957
	1920 - 1931		1944 - 1950
	1958 - 1962		Kroc Study Area



This product is provided as is, without warranty, to the extent that the City of Salem makes no guarantee, either written or oral, that this product, this product is subject to change and copyright legislation and further distribution of copies is prohibited.

FIGURE 13
Construction 50 Years Old or Older
Salem Parkway/KROC Center Access Study
City of Salem

N:\CD\Proj\CP\HistoricKrocStudy\KrocStudy_ANSI-C_Porrait.mxd - 2/14/2012 @ 11:14:54 AM

References

1. Geographic Profile of Transportation Disadvantaged Populations in the SKATS Area, 2006-2010 census data
2. Kroc Center Website, salemkroc.org, 2012, retrieved April 30, 2012
3. Anzur, David; Portland Western Railroad, email on May 30, 2012.
4. Oregon Bicycle and Pedestrian Design Guide, Oregon Department of Transportation, 2011.
5. AASHTO Guide for the Development of Bicycle Facilities, American Association of State Highway and Transportation Officials, 1999.
6. ODOT Highway Design Manual (HDM), Oregon Department of Transportation, 2003.
7. Burns, W.J., Hofmeister, R.J., and Wang, Y. Interpretive Map Series - No. 24, Geologic Hazards, Earthquake and Landslide Hazard Maps, and Future Earthquake Damage Estimates for Six Counties in the Mid/Southern Willamette Valley Including Yamhill, Marion, Polk, Benton, Linn, and Lane Counties and the City of Albany, Oregon. State of Oregon Department of Geology and Mineral Industries. July 14, 2008.
8. Claggett Creek Watershed Council, retrieved from <http://www.claggettcreekwatershedcouncil.org/> on May 28, 2012