



Existing Conditions Report

Basalt Creek Planning Area

October 2014



Table of Contents

Table of Contents.....	1
List of Figures.....	3
List of Tables.....	6
I. Introduction.....	7
Planning Area Boundaries.....	9
II. Local & Regional Planning Context.....	10
Current Zoning.....	10
Existing Land Uses.....	11
Adjacent Land Uses.....	12
Regional Plans and Regulatory Requirements.....	16
Local Plans.....	19
Area Plans.....	24
III. Natural and Historic Resources.....	26
Natural Features.....	26
Regulatory Framework for Conserving Natural Resources.....	33
Cultural and Historic Resources.....	37
IV. Public Facilities.....	38
Schools.....	38
Parks.....	39
Libraries.....	39
Fire.....	39
Police.....	40
V. Commercial, Industrial & Residential Real Estate Markets.....	41
Industrial and Office Market.....	41
Housing Market.....	43
Retail/Commercial Market.....	43
Industrial and Office Market Conditions.....	43

Tualatin and Wilsonville’s Economic Positioning and Goals	49
Target Industry Clusters	50
Sub-Regional Context	52
Established Employment Areas	53
Planned Employment Areas.....	53
Employment Strengths and Challenges	53
Housing Market Analysis	54
Recent Housing Development.....	56
Retail/Commercial Market Analysis	57
VI. Infrastructure.....	59
Policy Guidance on Infrastructure.....	59
Stormwater Infrastructure.....	59
Wastewater Infrastructure	60
Potable Water Infrastructure	62
VII. Transportation	72
Motor Vehicle System.....	72
Motor Vehicle Operations.....	76
Basalt Creek Transportation Refinement Plan Projects	78
East-West Connector Considerations	78
Pedestrian and Bicycle System	80
Transit System	81
VIII. Land Capacity Analysis	86
Methodology.....	86
Buildable Lands.....	86
Hard Constraints	86
Land Supply.....	94
Land Supply Findings	99
Land Capacity.....	100

List of Figures

Figure 1 Basalt Creek planning area, City of Wilsonville and City of Tualatin boundaries. Source: Fregonese Associates 2014..... 8

Figure 2 Planning area “islands,” Coffee Creek Correctional Facility and Horizon High School campus. Source: Fregonese Associates 2014..... 9

Figure 3 Existing land use in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014. 10

Figure 4 Locations of major businesses and residential areas in the Basalt Creek planning area. Source: Fregonese Associates, RLIS, Google Maps 2014. 11

Figure 5 Existing Housing Units and Employment in the Basalt Creek planning area Source: Fregonese Associates, ESRI Business Analyst 2014. 12

Figure 6 Land Uses Adjacent to Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014..... 13

Figure 7 Aerial image of the Horizon High School Campus (30 acres), just outside of the planning area. Source: Fregonese Associates 2014..... 14

Figure 8 Aerial image of Coffee Creek Correctional Facility (108 acres). Source: Fregonese Associates 2014..... 14

Figure 9 Planning and employment areas near the Basalt Creek planning area. Source: Fregonese Associates, Cities of Tualatin and Wilsonville 2014..... 15

Figure 10 Transportation Analysis Zones (TAZs) covering the Basalt Creek planning area Source: Fregonese Associates, RLIS 2014. 19

Figure 11 Projects identified in the Basalt Creek Transportation Refinement Plan (TRP). 20

Figure 12 Proposed Trail Alignment from Metro’s Ice Age Tonquin Trail Master Plan, 2013. 27

Figure 13 Basalt Creek planning area in the context of the Middle Willamette and Tualatin River Watersheds. Source: Fregonese Associates, RLIS 2014. 28

Figure 14 Hydrologic Classification of Soils in the Basalt Creek planning area. Source: Fregonese Associates, USDA Soil Survey 2014. 29

Figure 15 Natural, Underground and Intermittent Streams in Basalt Creek planning area. Source: Fregonese Associates, RLIS, City of Wilsonville field survey 2014. 31

Figure 16 Wetlands in Basalt Creek planning area. Source: Fregonese Associates, RLIS, City of Wilsonville field survey 2014. 31

Figure 17 FEMA 1% annual chance flood event area in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014, FEMA 2007. 32

Figure 18 Title 3 lands (116 acres; 14% of total area) in Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014. 33

Figure 19 Title 13 lands in the Basalt Creek planning area (431 acres total, 51% of total area). Source: Fregonese Associates, RLIS 2014..... 34

Figure 20: The Carlon Schoolhouse. Source: Martinazzi, Loyce. Tualatin Life Newspaper August 19, 2014..... 37

Figure 21 Schools, libraries and parks near the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014. 38

Figure 22 Fire station locations and service area boundaries near the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.	39
Figure 23 Photo of planning area: Grahams Ferry Road, looking north into the Basalt Creek planning area. Source: Leland Consulting Group 2014.	41
Figure 24 Market Analysis Area for the Basalt Creek area. Source: Leland Consulting Group, 2014.	42
Figure 25 Title 4 Industrial and Other Employment Areas in Portland Metro Area. Source: Metro 2014.	44
Figure 26 Industrial Development, Tualatin and Wilsonville, 1980 to 2014. Source: CoStar, Leland Consulting Group, 2014.	45
Figure 27 Office Development, Tualatin and Wilsonville, 1980 to 2014. Source: CoStar, Leland Consulting Group, 2014.	46
Figure 28 Example of typical building with a mix of office space and warehouse/distribution space.	48
Figure 29 Example of typical flex industrial building, located in Tualatin.	48
Figure 30 Mentor Graphics Headquarters Office Building in Wilsonville.	48
Figure 31 Lam Research Facility, Tualatin. Photo credit: Tualatin Chamber.	52
Figure 32 Major TRP road projects in relationship to the Basalt Creek planning area and planned areas nearby Source: Fregonese Associates 2014.	52
Figure 33 Existing Stormwater Infrastructure and Drainage Area near the Basalt Creek planning area Source: CH2M Hill, 2014.	65
Figure 34 Map of Existing Wastewater Infrastructure near the Basalt Creek planning area. Source: CH2M Hill 2014.	68
Figure 35 Map of existing potable water infrastructure and water pressure zones in and near Basalt Creek planning area. Source: CH2M Hill 2014.	70
Figure 36 2010 Existing PM Hour Traffic Volumes by intersection in planning area. Source: DKS Associates 2014.	73
Figure 37 2035 Future PM Hour Traffic Volumes by intersection planning area. Source: DKS Associates 2014.	74
Figure 38 Basalt Creek planning area TAZ Structure. Source: DKS Associates 2014.	75
Figure 39 Basalt Creek Transportation Refinement Plan (TRP)	80
Figure 40 Transit service boundaries for TriMet and SMART in and around Basalt Creek area.	81
Figure 41 Existing Pedestrian system in Basalt Creek planning area. Source: DKS Associates 2014.	83
Figure 42 Existing bicycle system in Basalt Creek planning area. Source: DKS Associates 2014.	84
Figure 43 Existing transit system in Basalt Creek planning area. Source: DKS Associates 2014.	85
Figure 44 Map showing classification of slopes by steepness in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.	89
Figure 45 Slopes over 25% in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.	90
Figure 46 Slope stability in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.	90

Figure 47 Infrastructure constraints in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014	92
Figure 48 Road constraints in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014	92
Figure 49 Map of development constraints (excluding roads) in the Basalt Creek planning area.	93
Figure 50 Map of all constrained area (hard constraints) in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.....	94
Figure 51 Graphic illustration of four-step methodology for analyzing land supply. Source: Fregonese Associates 2014.....	95
Figure 52 Map of existing land uses inside Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014	96
Figure 53 Vacant and Developed land as identified by Metro data. Source: Fregonese Associates, RLIS 2014	97
Figure 54 Map of Vacant and Developed land identified via visual survey in Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014	97
Figure 55 Vacant, Stable and Redevelopable Land in the Basalt Creek planning area, as identified by combining Metro data and visual survey data. Source: Fregonese Associates, RLIS 2014.....	98
Figure 56 Final Map of Vacant, Stable and Redevelopable Land in the Basalt Creek planning area, as identified by combining Metro data, visual survey data, and local input from property owners. Source: Fregonese Associates, RLIS, local property owner input 2014.....	99
Figure 57 Sequence of maps illustrating the data and steps used to determine the total acreage of developable land in the Basalt Creek planning area. Source: Fregonese Associates 2014.....	101

List of Tables

Table 1 Employment and Housing Forecast 2010-2035. Source: Metro 2014. 18

Table 2 Descriptions of Hydrologic Soil Classifications from Figure 14. Source: USDA Soil Survey 2014. 30

Table 3 Vegetated Corridor Widths Adjacent to the Sensitive Area Where Activity is Not Redevelopment. Source: Clean Water Services Design and Construction Standards, Chapter 3. 35

Table 4 Metro Water Quality Resource Area Slope Calculations. Source: Metro 2014..... 36

Table 5 Attributes of Industrial and Office Development in Tualatin and Wilsonville. Source: CoStar, Leland Consulting Group 2014. SF: Square feet; FAR: Floor area ratio, the ratio of a building’s size in square feet (or gross building area) to the size of the piece of land upon which it is built. 47

Table 6 Current Office Market Summary, Portland Metro Region. Source: CoStar, Leland 2014. 49

Table 7 Relevant Economic Development Plans. Source: Cities of Tualatin and Wilsonville. 49

Table 8 Demographic Summary of the Basalt Creek planning area. Source: ESRI Business Analyst, Leland Consulting Group. 2014 Data except where noted..... 55

Table 9 Demographic Summary of the Basalt Creek planning area (Continued). Source: ESRI Business Analyst, Leland Consulting Group. 2014 Data except where noted. 55

Table 10 Demographic Summary of the Basalt Creek planning area (Continued). Source: ESRI, Leland Consulting Group. 2014 data except where noted. 56

Table 11 Residential Development in Tualatin and Wilsonville by Housing Type. Sources: HUD; City of Wilsonville, New Home Trends, Leland Consulting Group. Due to data availability, Table 12 shows housing built in Tualatin between 2004 and 2014; and permits issued in Wilsonville between 2000 and 2012. 57

Table 12 Potential Points of Connection to Existing Stormwater Facilities for the Basalt Creek planning area. Source: CH2M Hill 2014. 66

Table 13 Potential Points of Connection to Existing Wastewater Systems for the Basalt Creek planning area. Source: CH2M Hill 2014. 69

Table 14 City of Tualatin Water System—Existing Pressure Zones. Source: CH2M Hill 2014..... 71

Table 15 City of Wilsonville Water System—Existing Pressure Zones. Source: CH2M Hill 2014. 71

Table 16 Basalt Creek planning area Estimated PM Peak Hour Trips. Source: DKS, Metro. 75

Table 17 P.M. Peak Hour Motor Vehicle Operations. Source: DKS Associates, Metro 2014. 76

Table 18 Comparing Housing and Employment Forecasts for 2025 in the Basalt Creek planning area. Source: Metro 2014. 77

Table 19 Basalt Creek Refinement Action Plan 79

Table 20 Comparing methodologies for buffering natural resources between Clean Water Services and Metro’s Title 3/City of Wilsonville. Source: Fregonese Associates, Clean Water Services, City of Wilsonville and Metro 2014. 87

I. Introduction

In the Metro region, areas brought into the Urban Growth Boundary are required to have a land use and transportation Concept Plan. The intent of the Concept Plan is to provide a roadmap for the development of the area consistent with state, regional and local land use planning laws. This Existing Conditions report is the first step in the development of the Concept Plan for the Basalt Creek planning area. It includes detailed information on the existing landscape, regulatory, infrastructure, social and economic conditions within and relevant to the planning area.

The information presented in this Report provides the foundation from which to understand development capacity within the planning area, and the regulatory context in which development will occur. Here, analysis paints a quantitative picture of future growth potential, and identifies both opportunities and constraints for development of the area, using the regulatory framework as a guide.

This Report will inform land use and transportation decisions related to the Basalt Creek planning area, and provide the basis for the Concept Plan. The report is organized into eight sections (including introduction):

II. Local and Regional Planning Context

Summarizes regional and local plans that influence the planning area. These plans also include regulatory requirements related to land development and provide an explanation of the area's regional role, as well as the constraints guiding the location of future development.

III. Natural and Historic Resources

Summarizes the natural and environmental features of the area and identifies historic or cultural resources within the planning area. This section provides a context for how environmental features might shape development in the planning area as both amenities and constraints.

IV. Public Facilities

Summarizes school, fire, library, park and police resources within or adjacent to the planning area. This information will inform decisions about additional resources that may be needed within the planning area to support projected growth.

V. Commercial, Industrial and Residential Real Estate Markets

Analyzes the existing markets for employment and residential development relevant to the planning area. This section provides a foundation for understanding future real estate demand to inform the development of a land use plan that can accommodate projected growth and promote economic development.

VI. Infrastructure

Provides a detailed assessment of water, sewer and stormwater infrastructure capacity relevant to the planning area. This information provides a foundation for developing an infrastructure plan that is integrated with the existing system and provides efficient and cost effective solutions to serve the area.

VII. Transportation

This section describes information on projects planned and under development within the planning area and provides an overview of the transportation planning that has been completed to date. This section describes the transportation framework from which to build the local network as part of the Concept Plan.

VIII. Land Capacity Analysis

The land capacity analysis is a quantitative and spatial analysis of the planning area that implements the regulatory framework and identifies infrastructure and transportation constraints. This analysis provides the canvas on which to paint the Concept Plan.

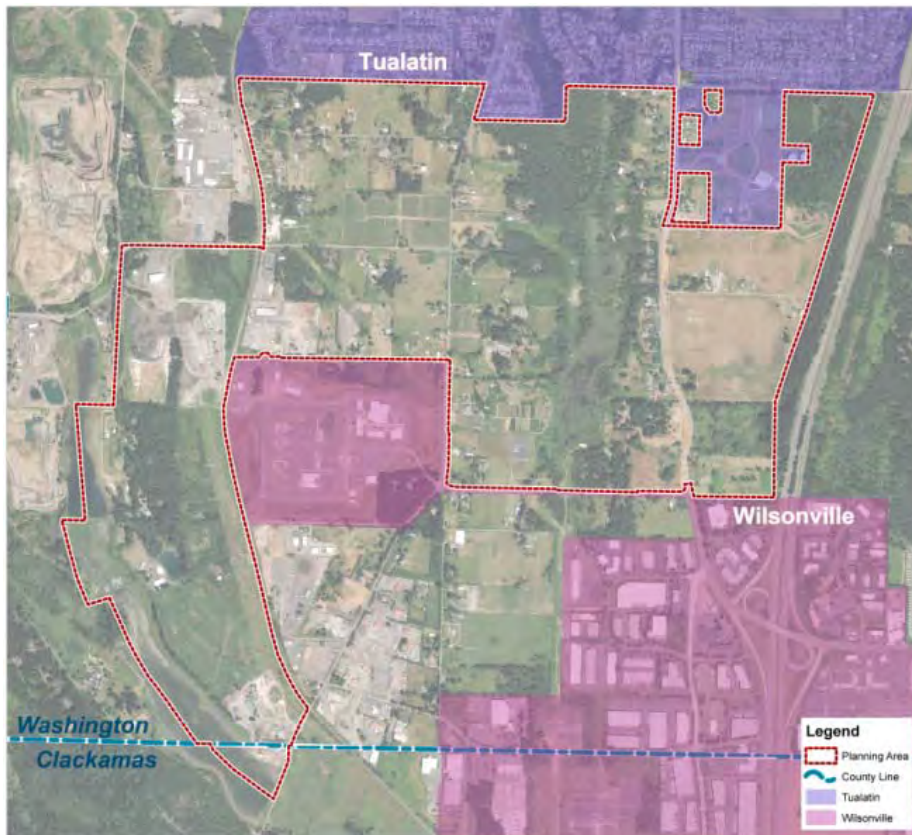


Figure 1 Basalt Creek planning area, City of Wilsonville and City of Tualatin boundaries. Source: Fregonese Associates 2014.

Planning Area Boundaries

The Basalt Creek planning area consists of 847 acres between the cities of Tualatin (to the north) and Wilsonville (to the south). It is primarily within Washington County, with a very small portion in the southwest corner located in Clackamas County (Figure 1).

The planning area is irregularly shaped, with a “finger” that extends southward from the western side. Generally referred to as the West Railroad area, this portion is divided from the rest of the study area by the Portland and Western Railroad (PNWR) and the Coffee Creek Correctional Facility. The majority of the Basalt Creek planning area is generally bounded by Norwood and Helenius Roads to the north, I-5 to the east, Coffee Lake Creek to the west, and Day Road to the south until it reaches Coffee Creek Correctional Facility, where the boundary turns north on Graham’s Ferry and then westward again on Clay Road.

The southern residential communities in Tualatin and Horizon High School are not included in the study area. However, three large noncontiguous parcels in the area around Horizon High School are included in the planning area, as they are privately owned (Figure 2).

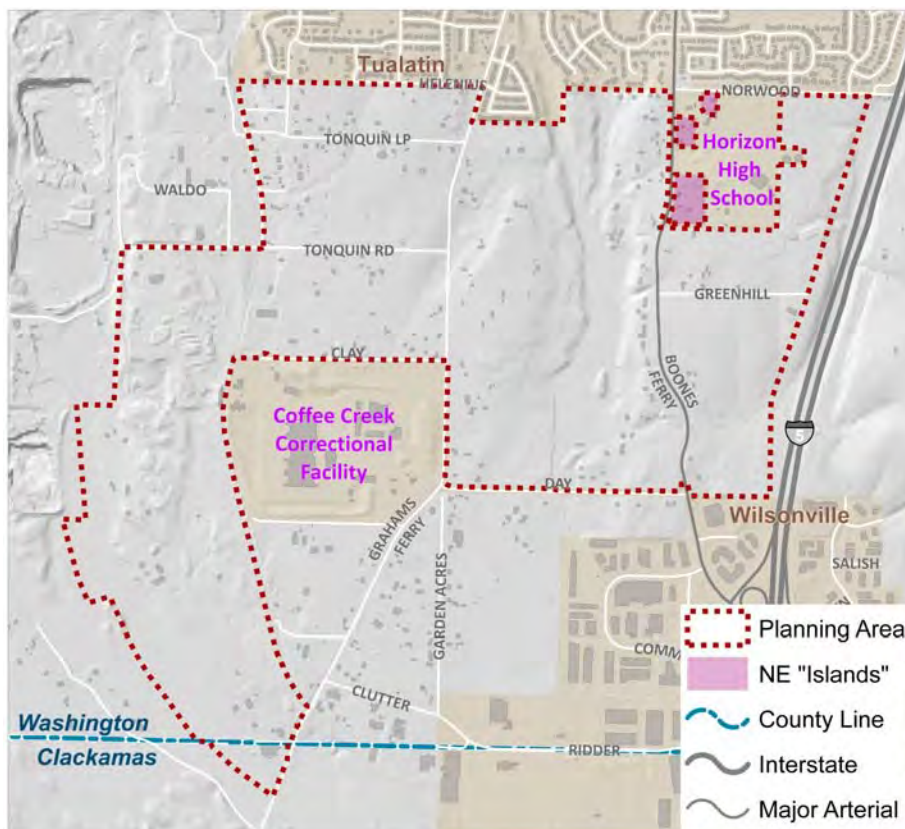


Figure 2 Planning area “islands,” Coffee Creek Correctional Facility and Horizon High School campus. Source: Fregonese Associates 2014.

II. Local & Regional Planning Context

Current Zoning

The majority of the Basalt Creek planning area falls within Washington County and is zoned as Future Development 20-Acre District (FD20). This interim designation was applied to the area following inclusion in the UGB (2004), through Washington County Ordinance No. 671 (2007). This designation will apply until the final Concept Plan is approved and Comprehensive Plan designations for the Basalt Creek area are adopted by each jurisdiction. The FD20 zoning designation is intended to encourage retention of existing land uses until these steps are complete. FD20 restricts subdivision of existing parcels into tax lots smaller than 20 acres.¹

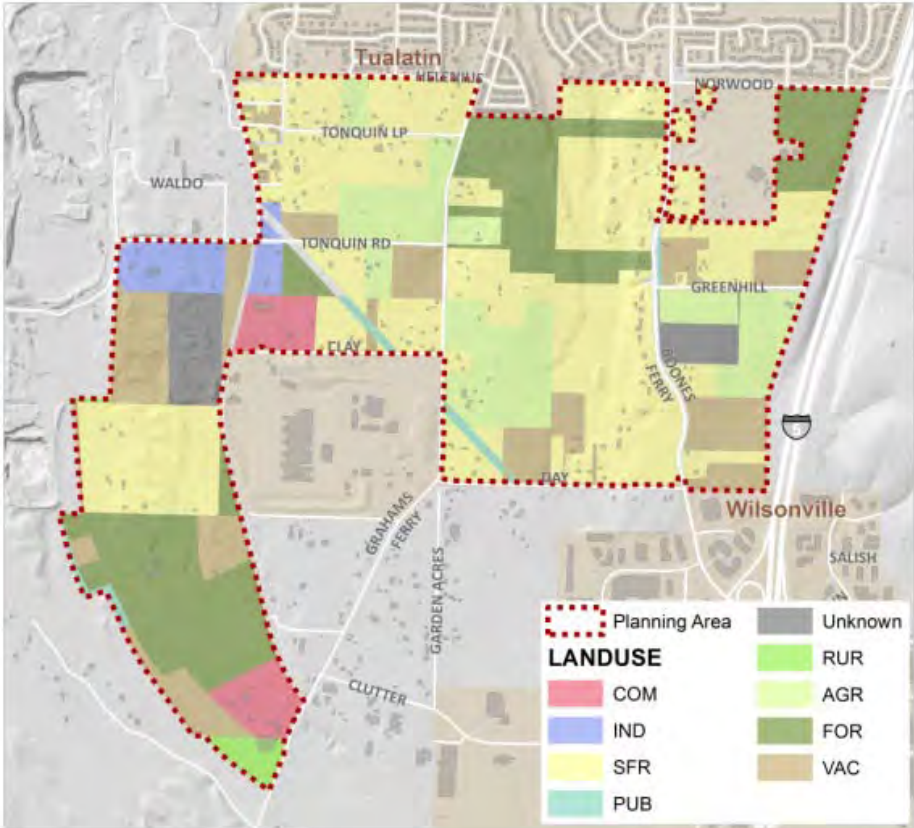


Figure 3 Existing land use in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

Each jurisdiction (Tualatin and Wilsonville) has a property owner-initiated annexation process, so changes to current zoning will happen at the time of annexation, on a parcel-by-parcel basis. A very small area (7.8 acres), in the southwest corner of the planning area falls within unincorporated Clackamas County (Figure 1), and is zoned as Rural Residential Farm Forest 5-Acre District (RRFF5).

¹ For a full description of allowed and prohibited uses in the FD-20 zone see the Washington County Community Development Code Section 308.

Existing Land Uses

The primary existing land uses in Basalt Creek are rural agriculture, industrial and some rural residential consisting of low-density single-family housing (Figure 3). There are substantial areas of agricultural uses, including nurseries (such as Chick-a-Dee Gardens Nursery), landscaping supply (Pro Gro, in the furthest southwest corner of the planning area) and blueberry farms, among others. Existing industrial land users include gravel quarries and cement manufacturing (Knife River Corporation) in the northwest corner (Figure 4).

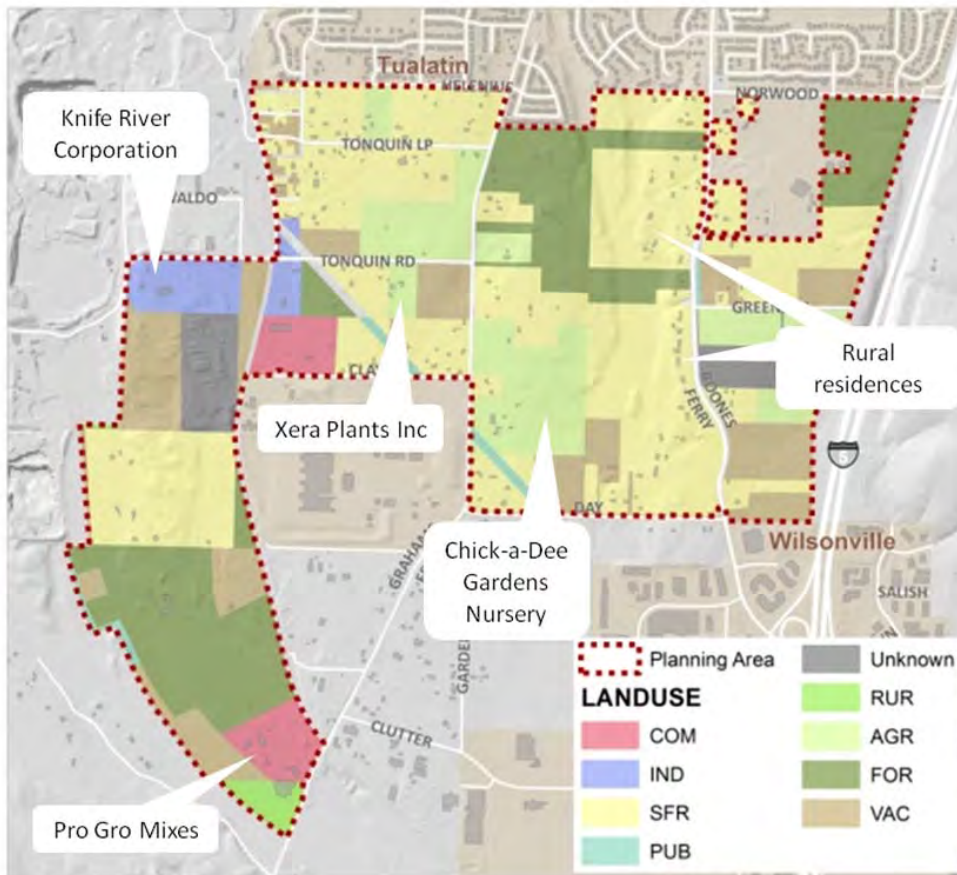


Figure 4 Locations of major businesses and residential areas in the Basalt Creek planning area. Source: Fregonese Associates, RLIS, Google Maps 2014.

Currently, 239 people live in the area in 90 single-family housing units, and 258 employees work in the area (Figure 5). The existing housing in the Basalt Creek area is detached single-family on large lots. Several single family homes are located on the eastern edge of the Basalt Creek ravine along Boones Ferry Road.

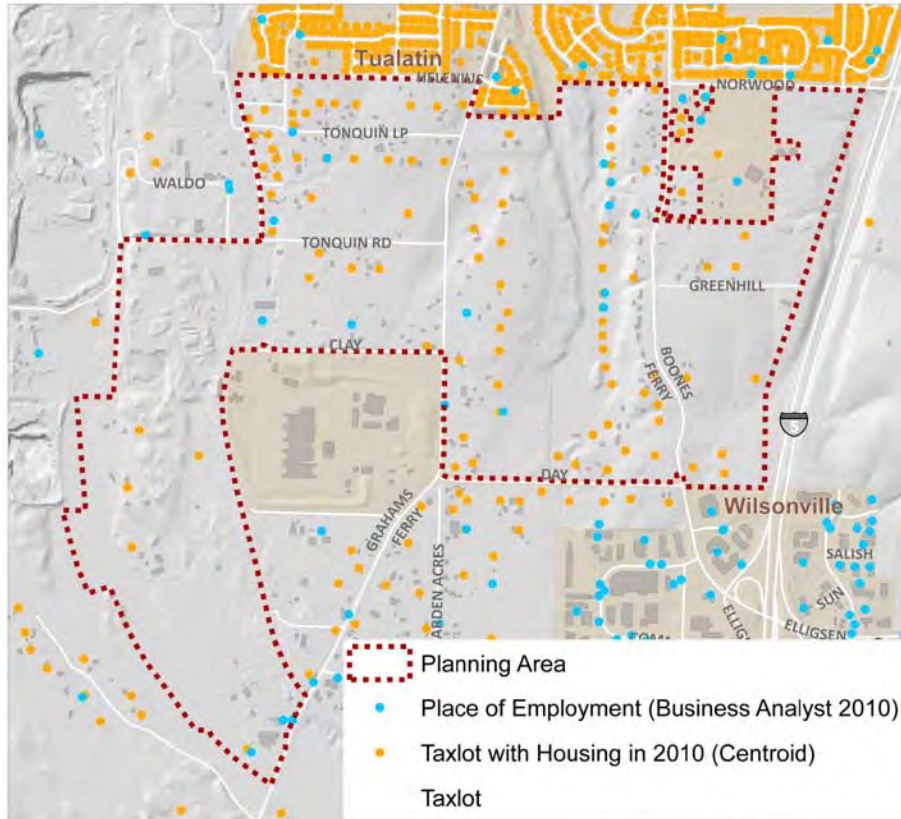


Figure 5 Existing Housing Units and Employment in the Basalt Creek planning area Source: Fregonese Associates, ESRI Business Analyst 2014.

Adjacent Land Uses

The planning area is bounded to the north by Tualatin residential neighborhoods, to the south by commercial and industrial uses, I-5 to the east, and to the west by Coffee Lake Creek, wetland habitat, and rural and industrial lands (Figure 6).

The southernmost residential neighborhoods of Tualatin, including recently-built subdivisions such as Victoria Gardens, are located to the north. These neighborhoods are comprised primarily of high-quality, detached, single-family homes. Also to the north is the 30-acre campus of Horizon High School. The campus is bordered on three of its sides by the planning area (Figure 7). To the west, the planning area is bordered by unincorporated portions of Washington County (within the Southwest Tualatin Concept Plan area) and active quarries--including the Knife River Corporation quarry and asphalt plant, which falls partially in the planning area along Western Railroad. Further west of the Southwest Tualatin Concept Plan area is the Tonquin Employment Plan area which falls within the City of Sherwood's urban planning area (though not yet fully annexed). Most of this land is undeveloped or vacant.

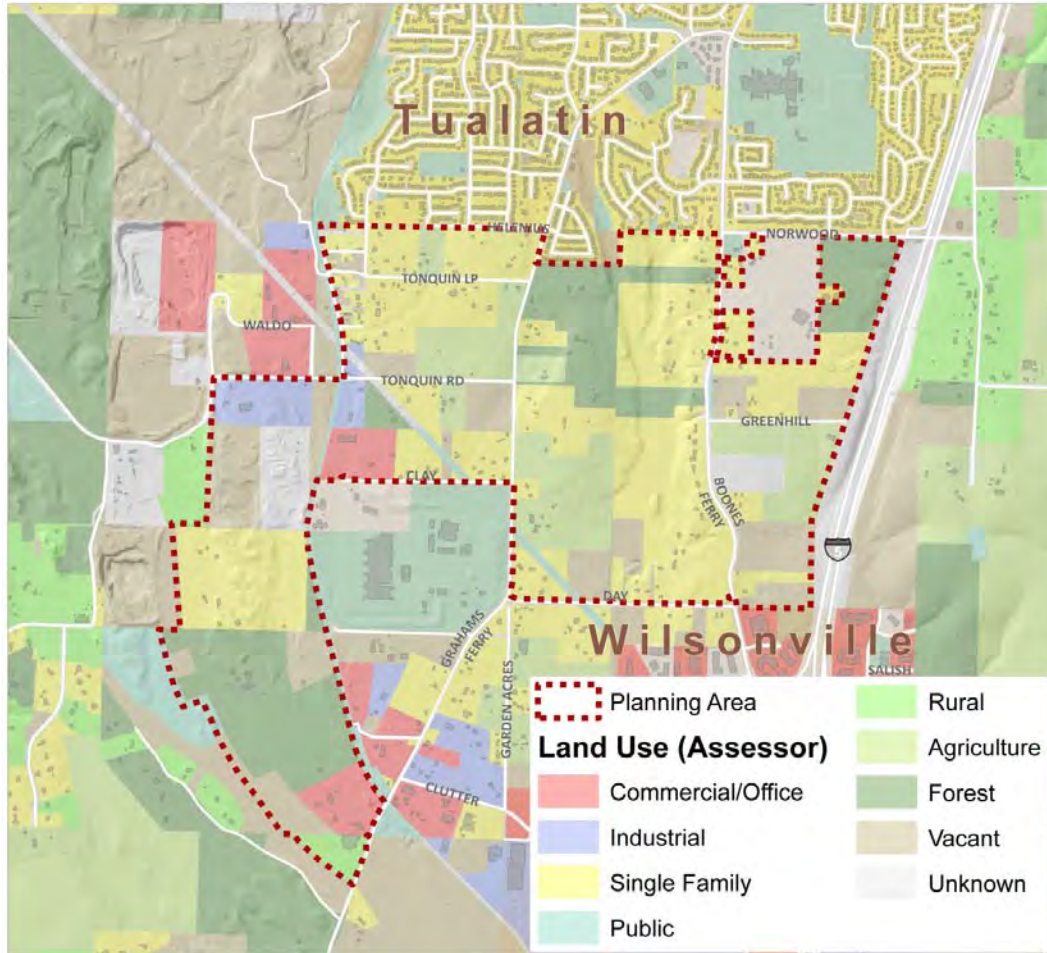


Figure 6 Land Uses Adjacent to Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

South of the planning area are commercial, office and industrial uses located within the City of Wilsonville. Also adjacent to the southern border of the planning area is Coffee Creek Correctional Facility (Figure 8). This is a state-owned correctional facility with 1,250 female inmates, and a fluctuating small number of male inmates (around 400) undergoing intake until they are transferred to another facility. The Correctional Facility employs 435 people with day and nighttime shifts comprising a 24-hour workforce.²

South of the Correctional Facility, also abutting the planning area, along the south side of Day Road, is the Coffee Creek planning area, for which the City adopted a Master Plan for industrial development. Figure 9 shows the Basalt Creek planning area and its geographic relationship to the Coffee Creek, Southwest Tualatin and Tonquin Employment planning areas. Figure 9 also shows existing commercial and industrial and employment areas.

² Reynolds, Vicki. Public Information Officer for Coffee Creek Correctional Facility. Personal communication, July 2nd, 2014.



Figure 7 Aerial image of the Horizon High School Campus (30 acres), just outside of the planning area. Source: Fregonese Associates 2014.

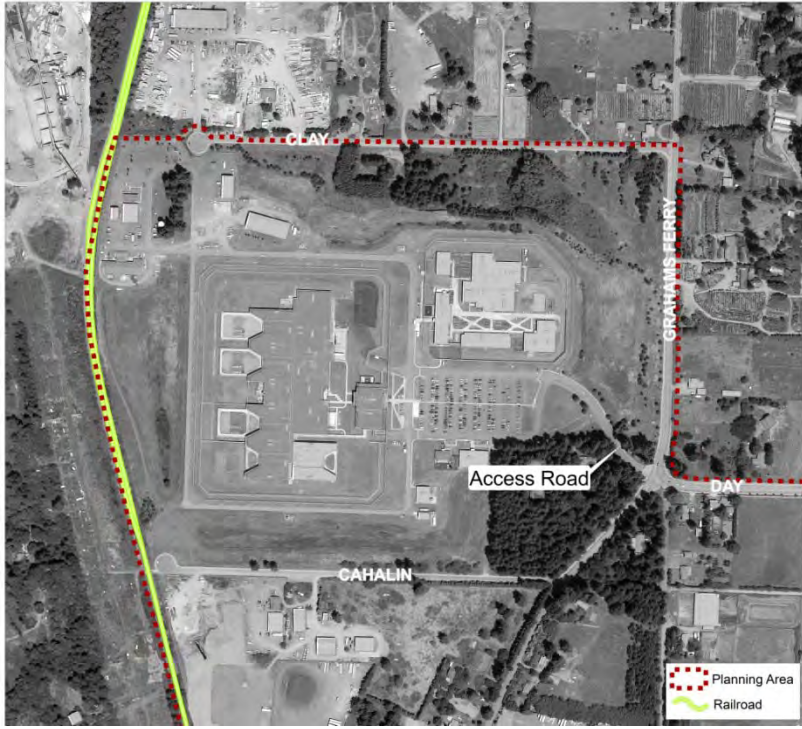


Figure 8 Aerial image of Coffee Creek Correctional Facility (108 acres). Source: Fregonese Associates 2014.

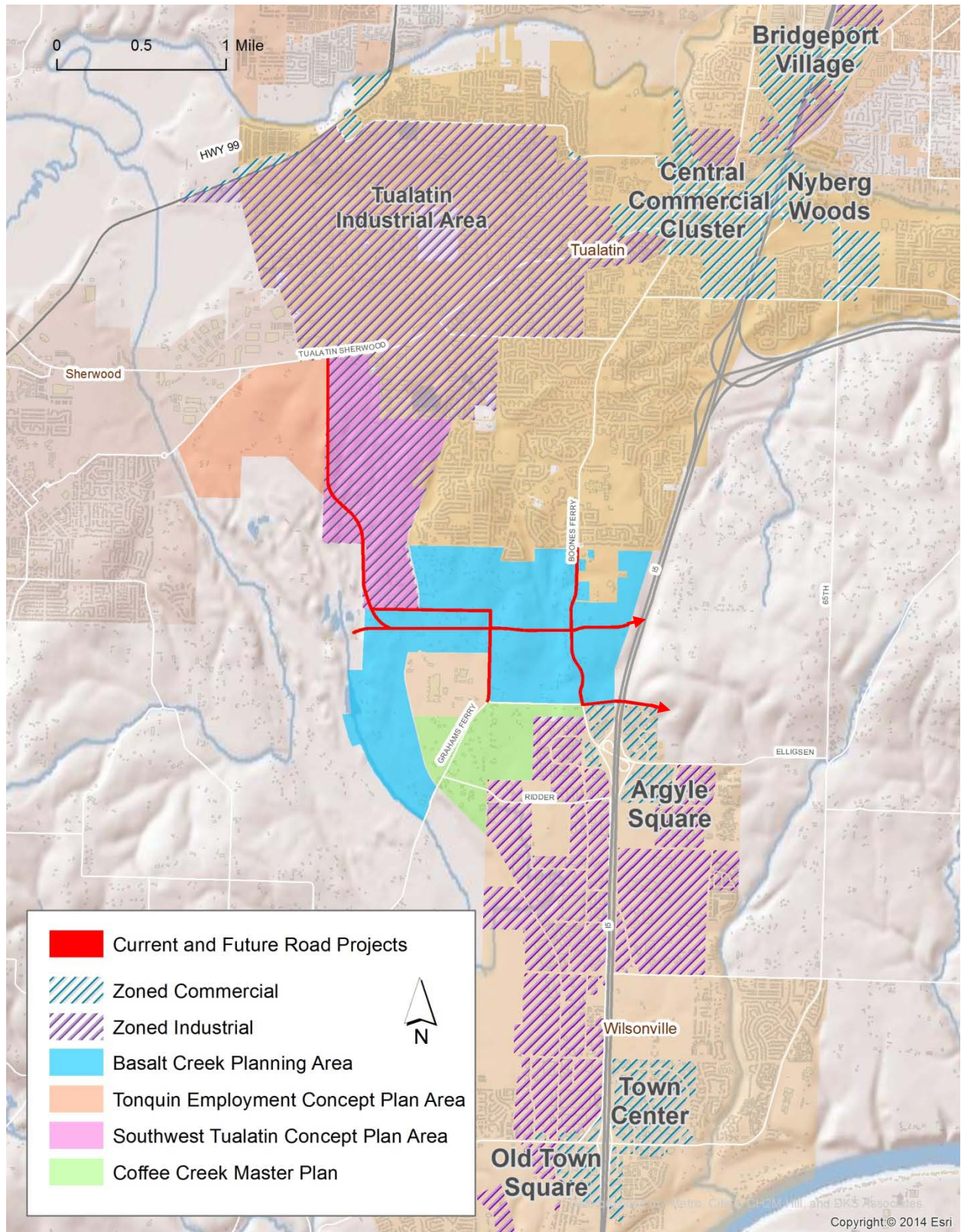


Figure 9 Planning and employment areas near the Basalt Creek planning area. Source: Fregonese Associates, Cities of Tualatin and Wilsonville 2014.

Regional Plans and Regulatory Requirements

The 25 cities and three counties within the Portland Metropolitan Area share a single Urban Growth Boundary (UGB), administered by the Metro Regional Government. As required by state law, Metro assesses its Urban Growth Boundary every five years to determine whether it includes sufficient land to accommodate 20 years of development for residential, commercial, and industrial uses. In 2002 Metro passed Ordinance No. 02-696B, expanding the UGB by over 20,000 acres to accommodate forecasted increases in housing and jobs through the year 2022. This brought land around Damascus, Oregon City, Tualatin, Wilsonville, Beaverton and Hillsboro into the UGB.

In reviewing the 2002 expansion ordinance, the Land Conservation and Development Commission (LCDC) found that “the Council added capacity to the UGB but did not add sufficient capacity to accommodate the full need for land for industrial use.” In 2003 the LCDC ordered the Metro Council to add capacity to the UGB for the unmet portion of industrial land needs. Metro evaluated land adjacent to the UGB to determine which land would be most suitable for industrial employment. In 2004 the Council released an appendix to the 2002 Urban Growth Report that included an Employment Land Need Analysis for the years 2002-2022, in addition to an Industrial Land Alternative Analysis Study. These studies were used to identify additional industrial lands to be included in the 2004 ordinance.

Criteria used by the Council to determine suitability of land for industrial uses included soil classification (with a preference for lowest suitability farmlands), earthquake hazard, slope steepness, and parcel size (with a preference for larger parcel size). Among those lands deemed suitable, further factors to identify Industrial Areas and Regionally Significant Industrial Areas included: distribution (area serves to support industrial land for major regional transportation facilities), service (availability and access to specialized utilities), access (within two miles of I5, I-205, I-84, State Route 224), proximity (located within close proximity of existing like uses) and primary use (predominately industrial uses).³

Two areas of land identified in the 2004 ordinance as good candidates for industrial development now comprise the Basalt Creek planning area. In Ordinance 04-1040B, these two areas are referred to as the Coffee Creek (partial) and Tualatin study areas. The main section of the Basalt Creek area (identified in the 2004 ordinance as the Tualatin study area) was identified as suitable for industrial development due to its proximity to the I-5 corridor, and to an existing industrial area (in Wilsonville). In addition, portions of the area are relatively flat. The ordinance notes that, due to these characteristics, “...the Tualatin study area is most suitable for warehousing and distribution, among other industrial uses.”⁴

At the time of the Ordinance’s adoption, two major concerns were identified that resulted in additional conditions being placed upon the planning area: First, residents expressed concerns about compatibility between Tualatin’s southern neighborhoods and the proposed industrial uses in the planning area. Secondly, the cities of Tualatin and Wilsonville desired to preserve the opportunity to choose an

³ A detailed description of the methodology used for identifying Industrial Land can be found in Exhibits D and E to Ordinance No. 04-1040B, an Industrial Land Alternative Analysis Study (a 2004 addendum to Metro’s 2002 Urban Growth Report).

⁴ Metro Ordinance No. 04-1040B Exhibit G P17

alignment for the I-5/99W connector as the southern portion of the alignment passes through the Tualatin study area. In response to these concerns the Metro Council extended the deadline for Title 11 planning. The revised deadline called for Title 11 Concept Planning to occur within two years following the final alignment for the I-5/99W connector or within seven years, whichever was shorter.⁵

It is further stated in the 2004 ordinance (in response to the community concerns about transitions from residential to industrial lands) that so long as the South Alignment of the connector falls close to the one shown on the 2040 growth concept map it will serve as a buffer between the residential development to the north and industrial development to the south. Within the Ordinance a special section dedicated to specific conditions for particular areas states that “If the selected right of way for the connector follows the approximate course of the ‘South Alignment’ as shown in the Regional 2040 Growth Concept map...the portion of the Tualatin Area that lies north of the right of way shall be designated ‘outer neighborhood’ on the Growth Concept map; the portion that lies south shall be designated ‘industrial.’ The ordinance further states, “The government responsible for Title 11 planning shall consider using the I-5/99W connector as a boundary between the city limits of the City of Tualatin and the City of Wilsonville in this area.”⁶

As defined in the Metro Regional Framework Plan, a designation of “outer neighborhood” describes areas outlying cities that are primarily residential, relatively further from employment and shopping areas than other residential areas, and have larger lot sizes and lower population densities than inner neighborhoods.⁷

The Metro Regional Framework Plan describes the industrial designation as “an area set aside for industrial activities. Supporting commercial and related uses may be allowed, provided they are intended to serve the primary industrial users. Residential development shall not be considered a supporting use, nor shall retail users whose market area is substantially larger than the industrial area be considered supporting uses.”⁸

As stated in the 2004 Ordinance, the planning timeline for the Basalt Creek area was extended to allow for the planning of the I-5/99W Connector. The I-5/99W Connector Study recommended an alternative that spreads east-west traffic across three smaller arterials rather than a single expressway. Although specific alignments for these arterials were not defined, the eastern end of the Southern Arterial was generally located within the Basalt Creek planning area, south of Tonquin Road. The Basalt Creek Transportation Refinement Plan (TRP) established the specific alignment for this arterial (now referred

⁵ Metro Ordinance No. 04-1040B Exhibit F P2. The relative complexity of planning for this area (due to its equidistance from two cities, and the regional infrastructure improvements being considered in and around Basalt Creek) led Metro to grant an extension for compliance, moving the deadline from 2012 to September 2016 (through a Urban Growth Management Functional Plan compliance request).

⁶ Metro Ordinance No. 04-1040B P3

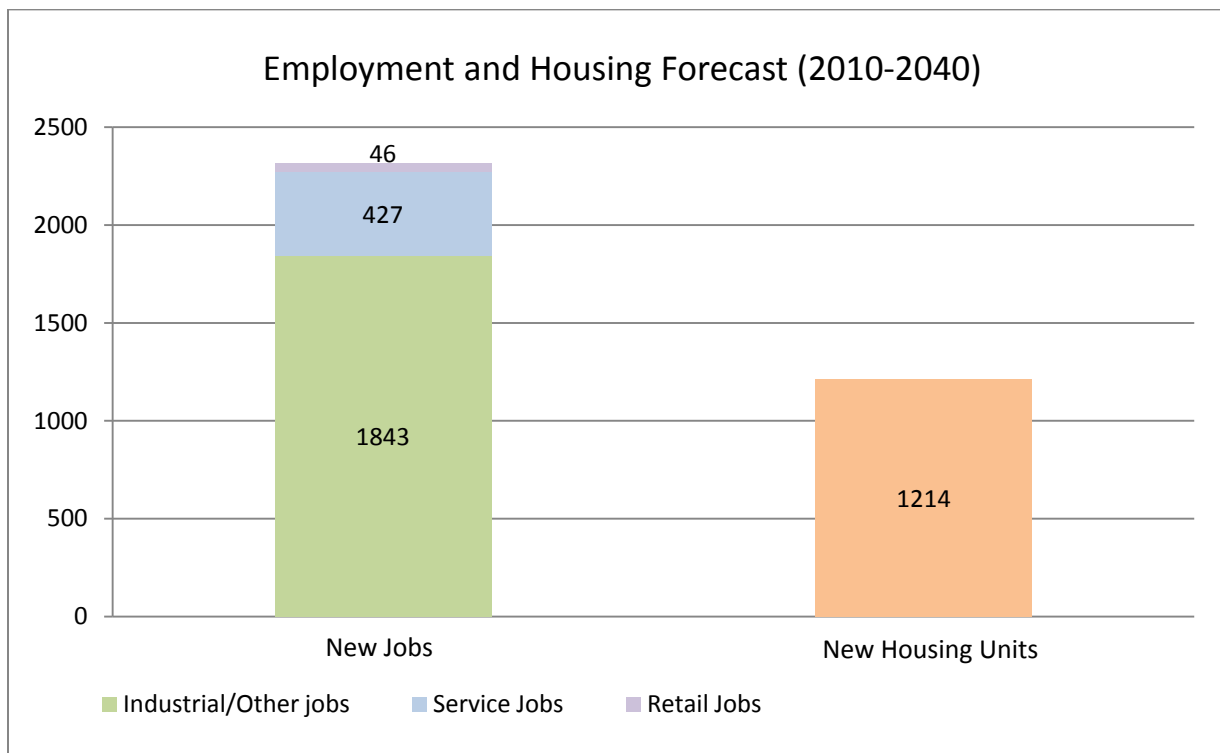
⁷ Metro Regional Framework Plan Appendix G-J Glossary P369

⁸ Metro Regional Framework Plan Appendix G-J Glossary P366

to as the East-West Connector). The TRP was completed in 2013 and several priority projects were adopted in the 2010 Regional Transportation Plan.⁹

The current 2040 Growth Concept Map identifies the Basalt Creek planning area as industrial, but the ordinance does provide some flexibility to include housing in the planning area. Table 1 summarizes the most recent forecast estimate (the Gamma Version) for the Basalt Creek planning area at the Transportation Analysis Zone (TAZ) level. An older forecast (the Beta Version), upon which the Basalt Creek Transportation Refinement Plan (TRP) was based, projected somewhat higher employment levels by 2035. Both forecasts will be used in concept planning for the Basalt Creek area, with the forecasts serving as “sideboards,” representing the high and low ends of the range of households and jobs the area may need to accommodate. The geographical units used for the forecasts are called Transportation Analysis Zones (TAZs). The boundaries and identification numbers of TAZs changed between the Beta (older) and Gamma (newer) forecast, and are both depicted on the map in Figure 10.

Table 1 Employment and Housing Forecast 2010-2035. Source: Metro 2014.



⁹ An update to the Regional Transportation Plan (RTP) was published July 18th, 2014. Because the analysis for this report was completed before that date, 2014 RTP updates are not considered here. The updated Regional Transportation Plan can be accessed here: <http://www.oregonmetro.gov/regional-transportation-plan>

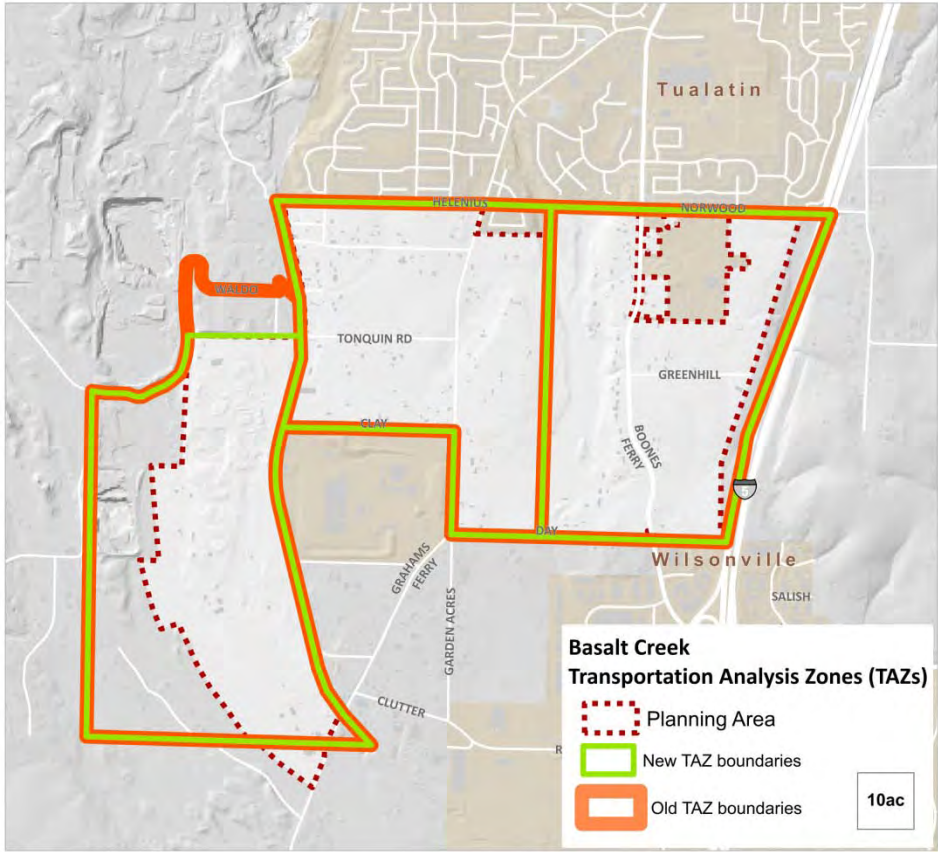


Figure 10 Transportation Analysis Zones (TAZs) covering the Basalt Creek planning area Source: Fregonese Associates, RLIS 2014.

Local Plans

The following section provides a brief summary of local plans, focused on identifying the policies and goals relevant to the Basalt Creek planning area. Within these plans are goals and policies for transportation, land use planning and economic development. These will be used to guide the development of the concept plan and comprehensive plan recommendations.

Joint Plans

Basalt Creek Transportation Refinement Plan (2013)

This plan was a joint effort between the Cities of Tualatin and Wilsonville, Washington County, and Metro. The primary purpose of the Refinement Plan is to establish a major transportation connection from Tualatin-Sherwood Rd to I-5 in North Wilsonville through the Basalt Creek planning area. This connection was identified as a regional transportation priority in order to connect and provide access to existing and future hubs of industrial land uses.

Through the Refinement Plan process, an alignment was established for what is, for now, being referred to as the East-West Connector (Project 11, Figure 11). It is intended to be a new major arterial with five

lanes and vehicle access limited to three intersections – 124th Avenue (anticipating a southward extension of 124th to Tonquin Road in the near future, see Projects 1 and 10 in Figure 11), Graham’s Ferry Road and Boones Ferry Road. Tonquin Road (Project 2 in Figure 11) will be improved but left as a parallel three-lane property-access road.

While the primary focus of the Refinement Plan was establishing the alignment of the aforementioned East-West Connector, it includes recommendations for an additional 17 transportation investments broken into short, medium, and long term phases. These include improvements to Grahams Ferry Road, Boones Ferry Road, and Day Road to adequately meet the need for improved regional freight mobility.

Improvements to the section of Boones Ferry Road between Norwood and Day Roads have already been completed. This new roadway includes bike lanes and sidewalks. These projects combined with the East-West Connector provide the foundation for a robust transportation network and ensure the Elligsen Road interchange will function at a high level. The project to extend 124th Avenue is in the design phase, with an estimated completion date of December 2016.

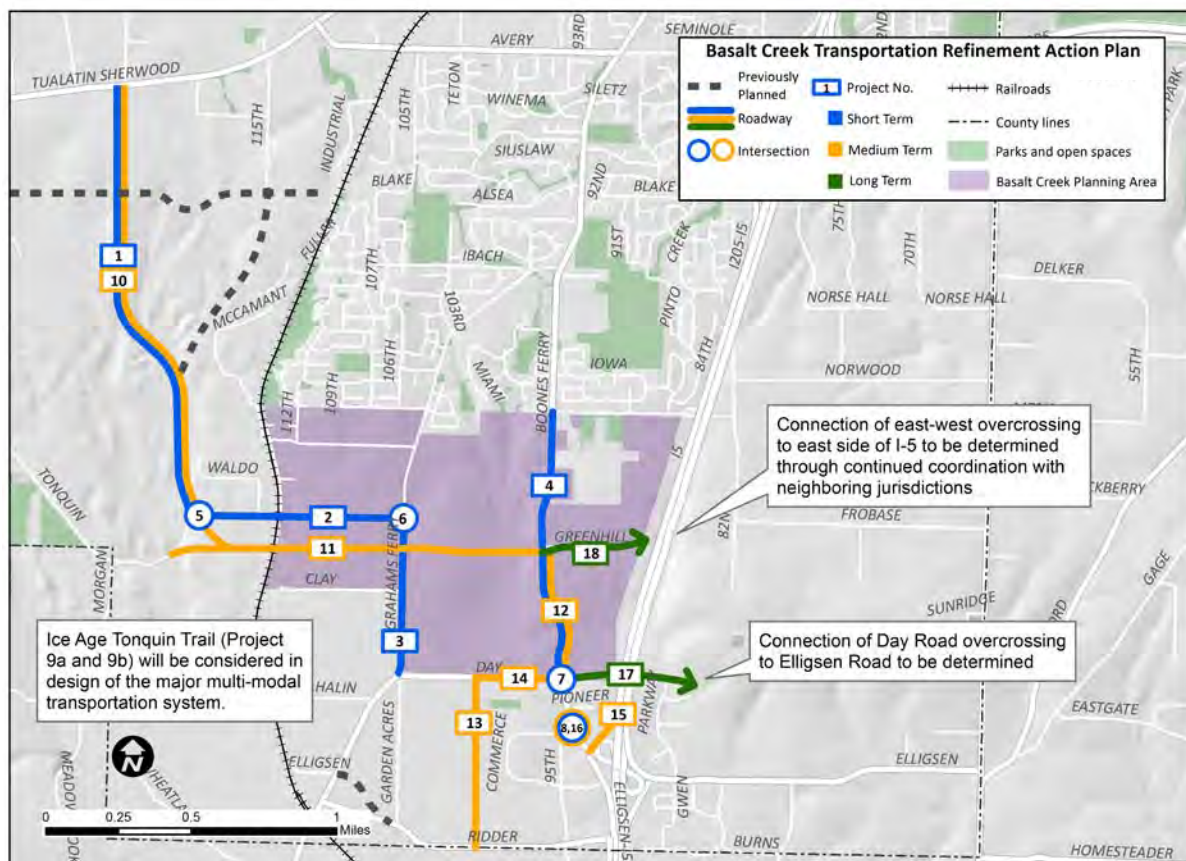


Figure 11 Projects identified in the Basalt Creek Transportation Refinement Plan (TRP).

Wilsonville

Transportation System Plan (2013)

The TSP integrates goals to reduce vehicle collision rates, decrease VMT (vehicle miles travelled) per capita, and minimize vehicle delays for truck trips per capita. Other objectives include significantly increasing connectivity for walking and biking trips. Policy 27 of the plan states an intention to “upgrade and/or complete the street network on the west side of I-5, including Coffee Creek and Basalt Creek areas, to serve the warehousing, distribution, and other industrial uses located there.” The TSP proposes widening of Grahams Ferry Road if called for by the Basalt Creek Transportation Refinement Plan.

Economic Development Strategy (2012)

This document was an update to a 2007 Economic Opportunities Analysis. The Strategy was produced to guide City investments and regulations as well as supporting efforts from the private sector. The resulting recommendations are long-term strategies oriented toward deliberative, balanced, efficient and fair economic development. These include: prioritizing land use and infrastructure planning, balancing economic development with quality of life, and treating all businesses fairly (whether they are new or established). The Strategy reviews factors impacting the Wilsonville economy, which will also have a substantial impact on economic development in the Basalt Creek planning area. Some of these include: regional and interstate accessibility; vacant land base; a balance between the number of jobs and available housing units, and local industry clusters. Actions from the Strategy include workforce development, promoting infill development and redevelopment, and streamlining the development code and permitting process, among others.

Parks & Recreation Master Plan (2007)

The goal of the Parks and Recreation Master Plan is to promote “active and passive recreation opportunities in a safe, accessible, and comprehensive system of facilities, parks, trails and open spaces to support the recreational interests of citizens of all ages.” The plan calls for implementation of the Ice Age Tonquin Trail Master Plan in partnership with Metro, the Cities of Sherwood and Tualatin, and Washington County.

Water System Master Plan Update (2012)

This update of the 2002 Water System Plan encompasses Wilsonville’s network of water pipelines, storage tanks, valves and hydrants. Its objective is to assure that good quality public facilities and services are available with adequate (but not excessive) capacity to meet community needs, serving all urban development within the incorporated City limits. In anticipation of future development, industrial demand estimates were increased by 25% to reflect potential redevelopment, infill, and higher-use water customers within existing structures. The planning process resulted in the creation and utilization of a “highly accurate and dynamic hydraulic model” of the water system that can be used to quickly investigate potential system impacts from new users. The plan does not specifically address the Basalt Creek planning area, though it includes the adjacent area on the south side of Day Road.

Stormwater Master Plan (2012)

This plan aims to implement a stormwater program that supports quality of life and meets regulatory requirements. It includes cross section illustrations of streetscape improvements recommended to mitigate stormwater issues. Stormwater patterns in the Basalt Creek planning area will impact stormwater management in Wilsonville, as Basalt Creek discharges into the Coffee Lake Creek wetlands west of the railroad, approximately midway between SW Freeman Drive and SW Boeckman Road. This plan notes that Basalt Creek overtops its banks during moderate storm events, flooding the parking lot along the western side of the Commerce Circle Business Park. Construction of a wetland for stormwater detention is a proposed flooding mitigation measure. The recommended location is at the crossing of Day Road over Basalt Creek, to provide temporary storage for increased runoff from future industrial development north of Day Road and decrease flooding around Commerce Circle.

Tualatin

Tualatin Tomorrow Vision and Strategic Action Plan (2014)

This Plan puts forth a vision for Tualatin in 2030. The plan includes an I-5/99W Connector to separate long-haul and regional commercial–industrial and commuter traffic from local traffic on Tualatin-Sherwood Road. Strategy TTC13 is to increase regional transit linkages (bus and rail, for example) with the cities of Sherwood, Lake Oswego, and Portland.

City Council Goals (2013-2015, updated Feb. 2014)

Basalt Creek is specifically mentioned in Goal #8 of this City Council goals document, which is to “expand opportunities for vibrant parks and recreational facilities including greenway trails and bike/pedestrian trails.” Sub-goal 8.4 is to “plan and preserve natural resources through the Basalt Creek Concept Plan,” with the Community Development and Community Services Departments identified as playing leading roles in achieving this goal. Other goals include: a connected, informed and engaged citizenry, enhanced transportation options, and an expanded tax base strengthened through smart, balanced growth.

Transportation System Plan Update (2014)

This update to the 2001 TSP includes seven project goals: access and mobility, safety, vibrant community, equity, economy, health and the environment, and feasible implementation. It includes recommendations to serve the varying needs of transit riders, bicyclists, pedestrians, freight traffic, and drivers. The Basalt Creek area was included within the Tualatin planning area boundary and thus is considered in this plan’s recommendations. The plan includes findings from the Basalt Creek Transportation Refinement Plan and includes the widening of Boones Ferry Road south of Norwood (now complete), the southward extension of 124th Avenue, and the upgrade of Grahams Ferry Road from a minor to major collector. It proposes looking for a potential shared use park-and-ride location in south Tualatin to expand transit access for residents of that area, which would also be useful for future residents of the northern part of the Basalt Creek planning area.

The TSP also includes adding more bus pullouts along Boones Ferry Road, possibly extending into the Basalt Creek planning area. The bike/pedestrian map indicates the addition of a multiuse path across the northern portion of the Basalt Creek planning area. WES service enhancements are also explored, including the possibility of extending the line south of Wilsonville, adding more frequent service, and construction of an additional WES station in the south of Tualatin (near the Basalt Creek planning area). The TSP also discusses possible expansion of the Tualatin Shuttle program.

[Linking Tualatin Market Study \(2012\)](#)

As part of the Linking Tualatin project a market study was prepared that outlines current and anticipated market conditions impacting viable development forms in the north part of the City. It covers housing, retail, office and industrial/flex space market conditions and demand projections. This study should be considered in planning for Basalt Creek because it is in the same general market area. This study also lists viable near-to-mid-term development forms,, which may also be appropriate for Basalt Creek. Key conclusions of the study include:

- The Primary Market Area (City of Tualatin) can expect continued growth in residential, retail, office and industrial uses
- The lower rents achievable in a suburban setting will limit some of the development types that the market is likely to bring into the area.
- Significant increases in density can be achieved without greatly raising construction costs.

[Economic Development Strategic Plan](#)

This plan describes a high-level strategy to direct local economic development efforts in the City of Tualatin. It recognizes priorities for infrastructure development and quality of life addressed by other master plans, in addition to identifying important industry clusters. The Plan recommends approaches to retain and expand existing businesses as well as attract new businesses. The five target industry clusters identified include: advanced manufacturing; health care and related businesses; corporate and business services; food processing, distribution and wholesale; wood, paper, printing and related businesses.

[Water Master Plan \(2013\)](#)

The Water Master Plan was a comprehensive analysis of the City of Tualatin’s water system. The plan covers Tualatin’s network of water pipelines, storage tanks, valves and hydrants. Its purpose is to identify system deficiencies, determine future water distribution system supply requirements, and recommend water system facility improvements that correct existing deficiencies and provide future system expansion. The Plan did not anticipate the Basalt Creek planning area, as concept planning and determination of the city limit boundary had not been complete. At the time of its writing, it was expected that the Water Master Plan would be updated in the future to include Basalt Creek.

Sanitary Sewer Master Plan (2014)

The 2014 Sanitary Sewer Master Plan is currently on hold until completion of the Basalt Creek planning process. It will provide a comprehensive analysis of the city's sanitary sewer system, including Tualatin's network of gravity & force main lines and pump stations. Its purpose is to identify system deficiencies, determine future collection system requirements, and recommend sanitary sewer system facility improvements that correct existing deficiencies and provide future system expansion.

Area Plans

Coffee Creek Master Plan (2007)

The Coffee Creek planning area is comprised of 216 acres to the south of the Basalt Creek area. It has been designated by Metro as a Regionally Significant Industrial Area (RSIA) and includes strict limits on the amount and size of retail, service, residential and office uses allowed to be developed there. Forecasts in the Plan suggest that between 1,736 and 1,890 jobs could be added to the area between 2006 and 2026, with over 90% identified as industrial.

No parcels in the planning area have been annexed yet; Wilsonville's process is property-owner initiated and the area has seen little development since the Plan's adoption. The City has identified form-based code as a tool to streamline the development process and is creating a Form Based Code (FBC) and pattern book to apply to the Coffee Creek area.¹⁰ More information about how new infrastructure in the Coffee Creek and Basalt Creek planning areas might be coordinated, see Section V: Infrastructure.

Southwest Tualatin Concept Plan (2010)

The Southwest Tualatin Concept Plan (SWCP) is a guide for the industrial development of a 614-acre area (448 net buildable acres) located outside the city south of SW Tualatin-Sherwood Road and generally between SW 115th and 124th Avenues. The Southwest Tualatin area is adjacent to and directly west of the Basalt Creek planning area, and is adjacent to/east of the Tonquin Employment Area. It extends south to Tonquin Road and is located in the vicinity of the Tigard Sand and Gravel quarry. A portion of the area was designated a Regionally Significant Industrial Area (RSIA) by Metro in 2004, with the assumption that it would be developed with a mix of light industrial and high-tech uses in a campus-like setting. The Concept Plan estimates that 3,500 new jobs will be located in the area by the year 2035 (2010 forecast).¹¹

Currently there is no water or sewer infrastructure in this planning area. However, the City of Tualatin Water and Sewer Master Plans both include the Concept Plan area in the hydraulic modeling and capital improvement project (CIP) identification. Recommended improvements include:

¹⁰ City of Wilsonville Community Development Department webpage: <http://www.ci.wilsonville.or.us/594/Light-Industrial-Form-Based-Code>. Retrieved August 21st, 2014.

¹¹ This number is slightly smaller than the result from Metro's model, which forecast in 2005 that 3,735 new jobs would be added to the area by 2035.

Water

- A new Level A reservoir (CIP Project R-1) and pipeline projects (P-6 and P-16)
- 13,000 linear feet of 16-inch-diameter pipe to provide a looped water supply

Sewer

- A new 24-inch pipeline located in Tualatin-Sherwood Road, extending from the Concept Plan area/URA easterly to SW Avery Street;
- Increase existing 12- to 21-inch pipe to 18-inch and 36-inch pipeline extending from near the SW Tualatin Sherwood Road/SW Avery Street intersection to the existing Bluff/Cipole Trunk
- Upsize existing trunk line pipe diameters.

Stormwater

- New conveyance system along roadways
- Facility(ies) to treat and detain (if necessary) site development runoff

The sequencing of infrastructure construction will be coordinated with the timing of development in the area, as well as with the Basalt Creek planning area.

Tonquin Employment Area Concept Plan (2010)

This planning area is comprised of 300 acres designated industrial land northwest of (but not adjacent to) the Basalt Creek planning area. It is bounded on its eastern edge by the future 124th Avenue extension. It was added to the UGB in 2004 and will be annexed to the City of Sherwood on a case-by-case, property owner-initiated basis. Creation of an Employment Industrial Zone is proposed to implement this plan. The regional employment forecast projects the addition of 2,290 more jobs during the next 20 years, 83% being industrial and 17% a mix of retail, commercial, services and office.

III. Natural and Historic Resources

The purpose of this section is to describe the natural and historic resources in the planning area, as well as the regulatory framework through which they may be protected, conserved or mitigated for.

Natural Features

The Basalt Creek planning area is named for the creek flowing north to south through the area, eventually draining into the Willamette River. Basalt Creek has alternatively been known as Seeley's Creek and Tappin Creek. The area primarily drains into the Willamette River; a small area in the northeast corner drains into the Tualatin River.

The general character of the area's landscape was shaped by the Glacial Lake Missoula Ice Age floods, a series of cataclysmic floods that formed the Columbia River Gorge and the Willamette Valley during the last Ice Age. Remains from the Ice Age floods that can be seen in and around the Basalt Creek planning area include glacial erratic, scablands, kolk ponds, flood channels and ripple marks. Today, the area has been described as being "comprised of upland prairie fragments, and oak and madrone woodlands. Rare wildflowers are found near basalt hummocks (scablands) to the west of the planning area, and rare reptiles (pond turtles) and amphibians (northern red-legged frogs) live in the kolk ponds."¹²

In 2009, federal legislation was passed to create the National Park Service's Ice Age Flood National Geologic Trail in order to bring the dramatic story of the Ice Age Floods to the public's attention. The Trail is intended to be a network of marked touring routes extending across parts of Montana, Idaho, Washington and Oregon, with several special interpretive centers located across the region. This federal legislation will help bring funding and tourism to local trails that will be a part of the region-wide Ice Age Trail network. Metro's Ice Age Tonquin Trail Master Plan provides a framework for local and regional jurisdictions to embark on trail implementation efforts. The proposed trail alignments show about 22 miles of trails connected through Tualatin, Wilsonville and Sherwood, and includes a several-mile section traversing the Basalt Creek planning area (Figure 12).

¹² Ice Age Tonquin Master Plan, 2012 P24:
http://www.oregonmetro.gov/sites/default/files/tonquin_trail_master_plan.pdf

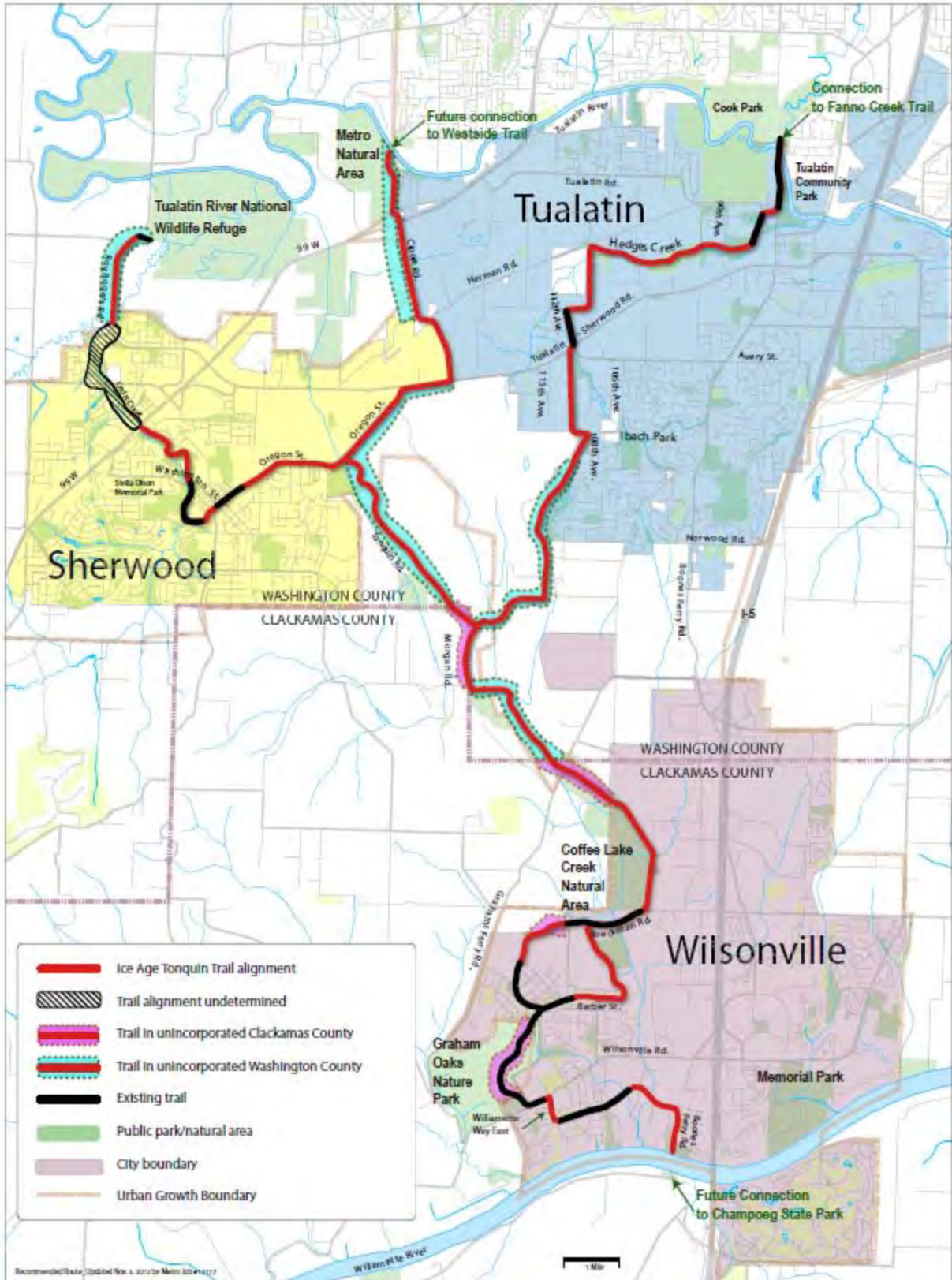


Figure 12 Proposed Trail Alignment from Metro’s Ice Age Tonquin Trail Master Plan, 2013.

Groundwater Hydrology

The Basalt Creek planning area falls primarily in the Middle Willamette Sub Basin, with a very small section in the northeast corner falling in the Tualatin Sub Basin (Figure 13). Within the Middle Willamette Sub Basin, the planning area is predominately in the Abernethy Creek Watershed (the small portion in the Tualatin Sub Basin is in the Fanno Creek Watershed). Abernethy Creek flows for approximately 16 miles through the hills east and north of Oregon City, joining the Willamette River from the east. The total drainage area of Abernethy Creek is 30 square miles.¹³

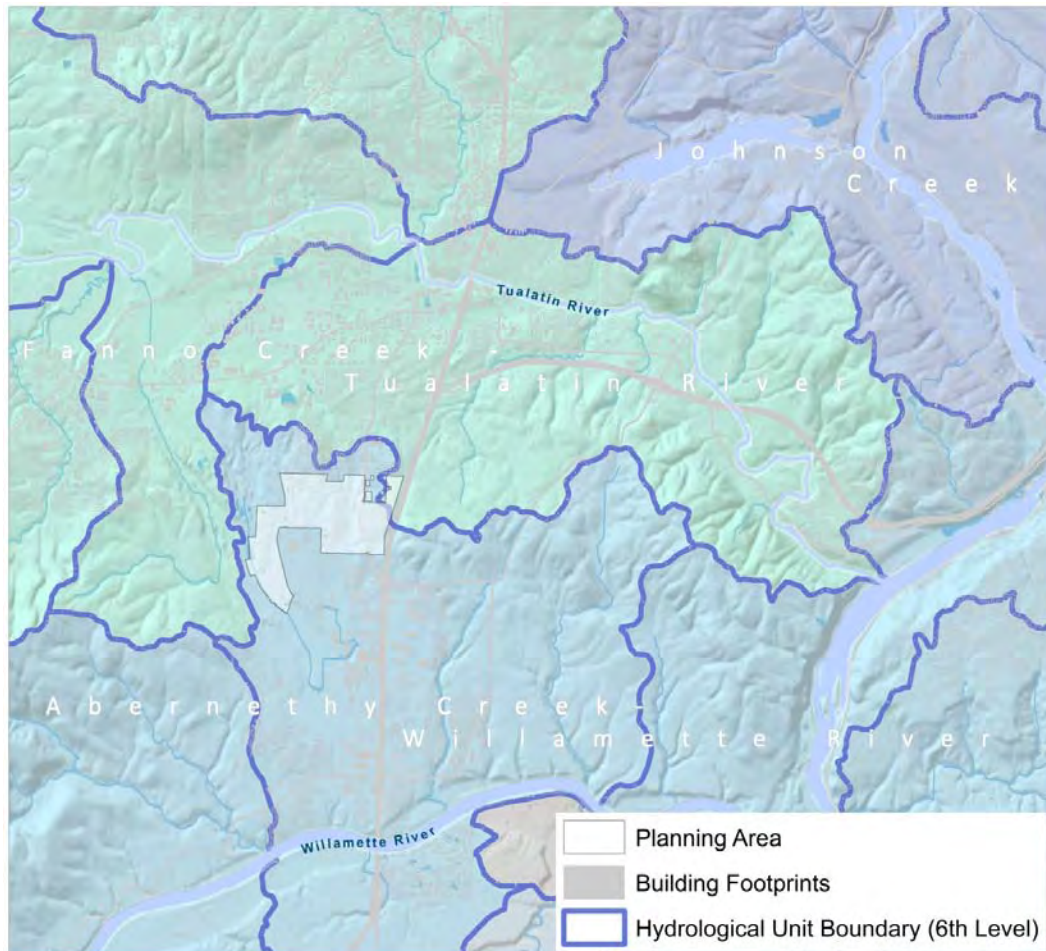


Figure 13 Basalt Creek planning area in the context of the Middle Willamette and Tualatin River Watersheds. Source: Fregonese Associates, RLIS 2014.

Soils

Hydrologic soils are assigned a letter designation of A, B, C or D, based on the rate of water transmission through the soil, or how well the soil drains. Class A soils have the best infiltration and drainage. Class B soils will infiltrate water into the soil somewhat quickly and drain marginally well. They have a lower

¹³ Flood Insurance Study for Clackamas County, Oregon, Vol. 1 (2008)
<http://oregonriskmap.com/index.php/mappingtools/all-downloads/pdf/37-clackamas-co-fis-vol1/file>

runoff potential. Class C soil infiltrates fairly poorly and drains poorly. Class D soils infiltrate water into the soil very slowly and have correspondingly high runoff potential. There is no Class A soil in the planning area (Figure 14). Well-drained soils comprise 85% of the area and 13% of the area is comprised of poorly draining soils. The remaining 1.7% is split between moderately well- and somewhat-poorly drained soils.

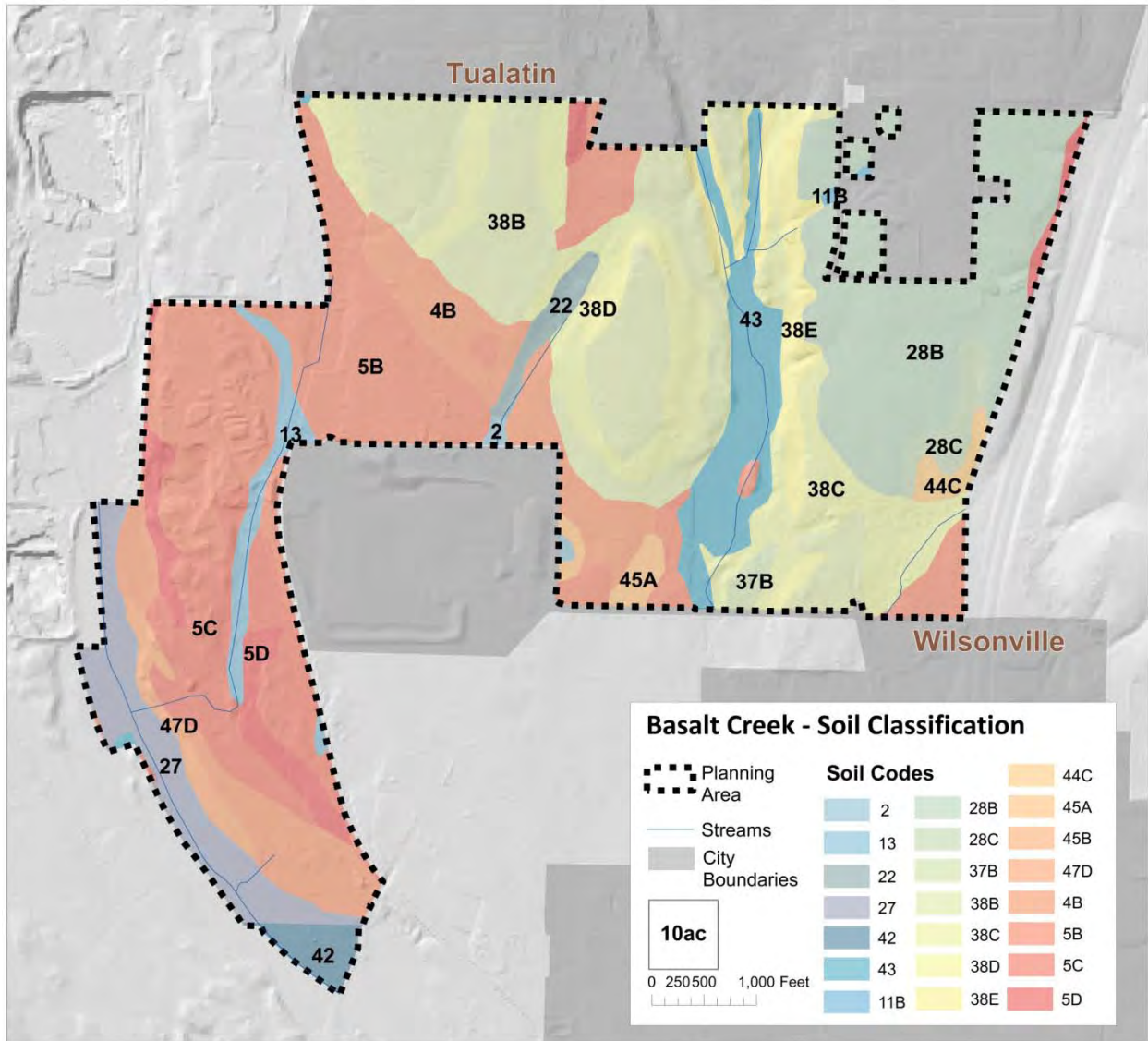






















Figure 14 Hydrologic Classification of Soils in the Basalt Creek planning area. Source: Fregonese Associates, USDA Soil Survey 2014.

Table 2 Descriptions of Hydrologic Soil Classifications from Figure 14. Source: USDA Soil Survey 2014.

Map Symbol	Soil Code	Soil Description	Acres	% of Planning Area	Drainage
	2	Amity silt loam	1.9	0.2%	Somewhat poorly drained
	13	Cove silty clay loam	15.2	1.8%	Poorly drained
	22	Huberly silt loam	8.2	1.0%	Poorly drained
	42	Humaquepts, ponded	7.5	0.9%	Poorly drained
	43	Wapato silty clay loam	41	4.8%	Poorly drained
	11B	Cornelius and Kinton silt loams, 2 to 7 percent slopes	0.9	0.1%	Moderately well-drained
	28B	Laurelwood silt loam, 3 to 7 percent slopes	109	12.9%	Well-drained
	28C	Laurelwood silt loam, 7 to 12 percent slopes	10.4	1.2%	Well-drained
	37B	Quatama loam, 3 to 7 percent slopes	4	0.5%	Moderately well-drained
	38B	Saum silt loam, 2 to 7 percent slopes	131.5	15.5%	Well-drained
	38C	Saum silt loam, 7 to 12 percent slopes	102.7	12.1%	Well-drained
	38D	Saum silt loam, 12 to 20 percent slopes	12.1	1.4%	Well-drained
	38E	Saum silt loam, 20 to 30 percent slopes	30.1	3.6%	Well-drained
	44C	Willamette silt loam, 7 to 12 percent slopes	5.7	0.7%	Well-drained
	45A	Woodburn silt loam, 0 to 3 percent slopes	7.2	0.9%	Moderately well-drained
	47D	Xerochrepts-Rock outcrop complex	10.3	1.2%	Well-drained
	4B	Briedwell silt loam, 0 to 7 percent slopes	50.2	5.9%	Well-drained
	5B	Briedwell stony silt loam, 0 to 7 percent slopes	148.7	17.6%	Well-drained
	5C	Briedwell stony silt loam, 7 to 12 percent slopes	55.1	6.5%	Well-drained
	5D	Briedwell stony silt loam, 12 to 20 percent slopes	25.9	3.1%	Well-drained
	Subtotals		839.4	99.1%	

Streams and Wetlands

There are two main streams running through the planning area – Basalt Creek (also known as Seeley’s Creek or Tappin Creek) and an unnamed, intermittent creek to the west. Coffee Lake Creek forms the western boundary of the planning area (Figure 15).

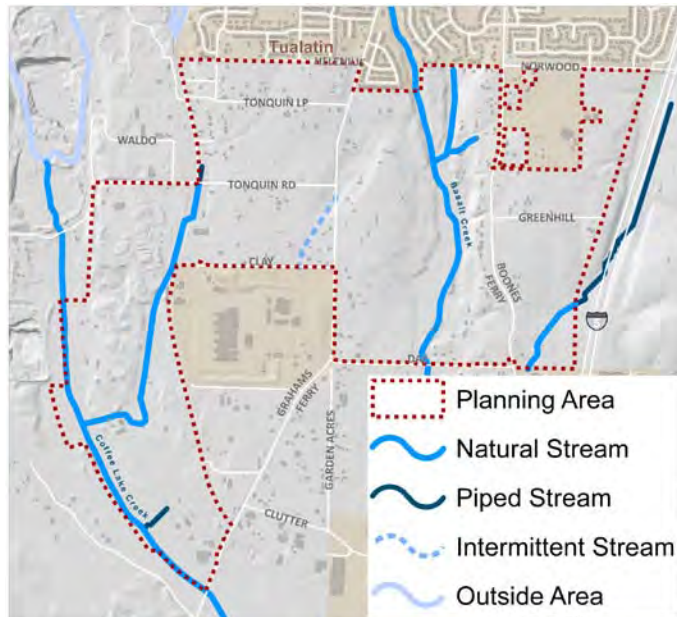


Figure 15 Natural, Underground and Intermittent Streams in Basalt Creek planning area. Source: Fregonese Associates, RLIS, City of Wilsonville field survey 2014.

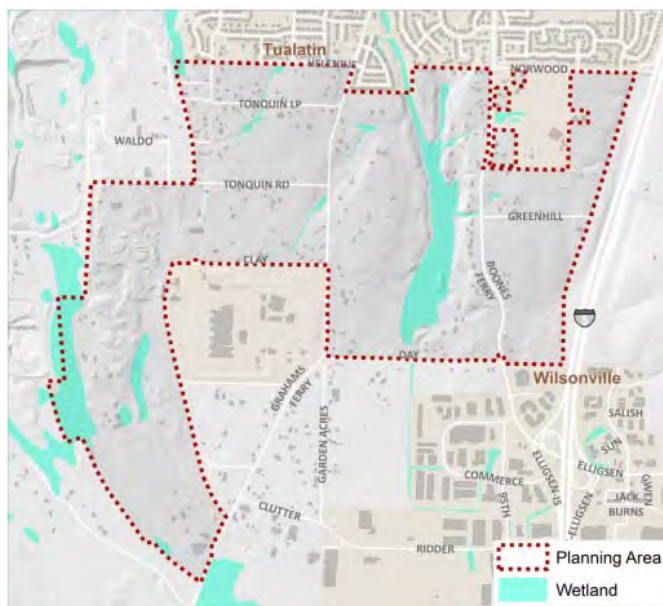


Figure 16 Wetlands in Basalt Creek planning area. Source: Fregonese Associates, RLIS, City of Wilsonville field survey 2014.

Through a combination of RLIS data and field work by the City of Wilsonville it has been determined that there are 11,478 feet of natural streams, 8,157 feet of underground streams and 1,402 feet of intermittent streams in the planning area.¹⁴ In the plan area there are 69 acres of wetlands (8% of the planning area (Figure 16), including 49 acres of open water.

Floodplain

On the western border of the planning area (Figure 17) there are 53 acres of land (6% of the area) around Coffee Lake Creek that are within the 1% annual chance flood event area, as designated by the Federal Emergency Management Agency (FEMA) in a 2005 revision of the Washington County Flood Insurance Study (FIS).¹⁵ The small portion of the planning area within Clackamas County is unaffected by the 1% annual chance flood event area, as identified in the Clackamas County FIS (2008).¹⁶

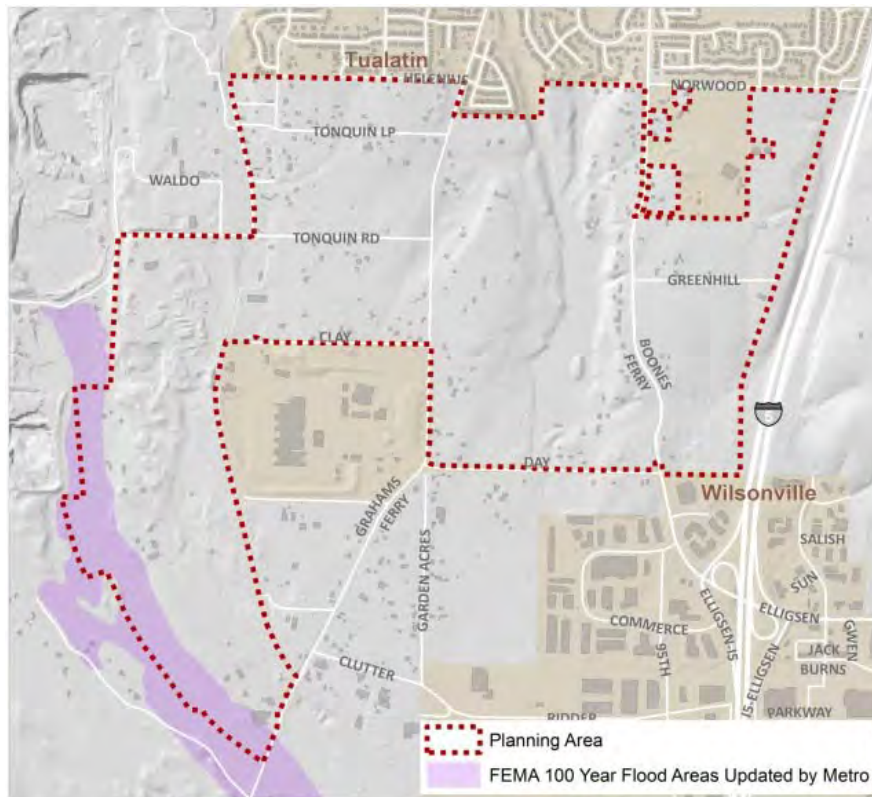


Figure 17 FEMA 1% annual chance flood event area in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014, FEMA 2007.

¹⁴ Data sources: RLIS, Wetland Delineation Report for proposed Boones Ferry widening, additional wetlands digitized by FA based on 2013 and 2012 (leaf free) aerials.

¹⁵ In 2005 the original 1980 FIS study was revised to incorporate new floodplain data for Ash Creek, Fanno Creek and Summer Creek in the unincorporated areas of Washington County in response to the largest flood event to occur since 1980, the November 1996 flood along Fanno Creek. Source:

<http://www.oregonriskmap.com/index.php/mappingtools/all-downloads/pdf/174-washington-co-fis-2005-part1/file>

¹⁶ FIS for Clackamas County, Oregon, 2008.

Regulatory Framework for Conserving Natural Resources

Oregon Land Use Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

The purpose of Goal 5 is to protect natural resources and conserve scenic and historic areas and open spaces. It directs local governments to adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. In the Metro region Titles 3 and 13 of Metro's Urban Growth Management Functional Plan provides a regional framework for local governments to implement Goal 5.

Metro Title 3: Water Quality, Flood Management and Fish and Wildlife Conservation

Metro's Title 3 requires local jurisdictions to limit or mitigate the impact of development activities on Water Quality and Flood Management Areas which include wetlands and riparian areas. In 2001 Metro conducted a regional inventory of wetlands and riparian areas protected by Title 3.

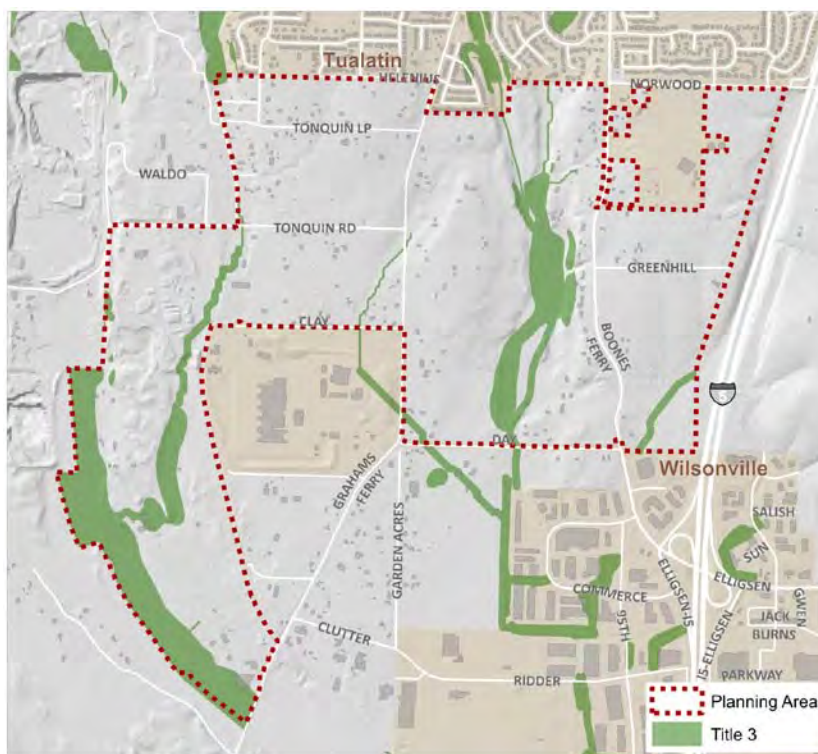


Figure 18 Title 3 lands (116 acres; 14% of total area) in Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

There are 116 acres of land in the Basalt Creek planning area that have been designated by Metro as Water Quality and Flood Management Areas under Title 3 (Figure 18). These lands are restricted for development and buffered by a vegetated corridor (the width of which is determined by factors described in the Natural Resources section of this document). Any development within the vegetated

corridor must be mitigated by environmental restoration and/or stormwater retention and water quality measures, as determined by the performance standards described in Metro’s Title 3. Both the City of Wilsonville and Clean Water Services have local ordinances in place that go beyond the level of conservation required by Title 3 and so existing local standards from each City would likely apply upon annexation of a planning area property into either Wilsonville or Tualatin.

Metro Title 13 – Nature in Neighborhoods

Title 13 is a policy requiring local jurisdictions to protect and encouraging them to restore a continuous ecologically viable streamside corridor system integrated with upland wildlife habitat and the urban landscape. In 2001 Metro conducted a regional habitat inventory and identified the location and health of fish and wildlife habitat based on different sets of criteria for waterside, riparian and upland habitat. These areas were named Habitat Conservation Areas (HCAs).

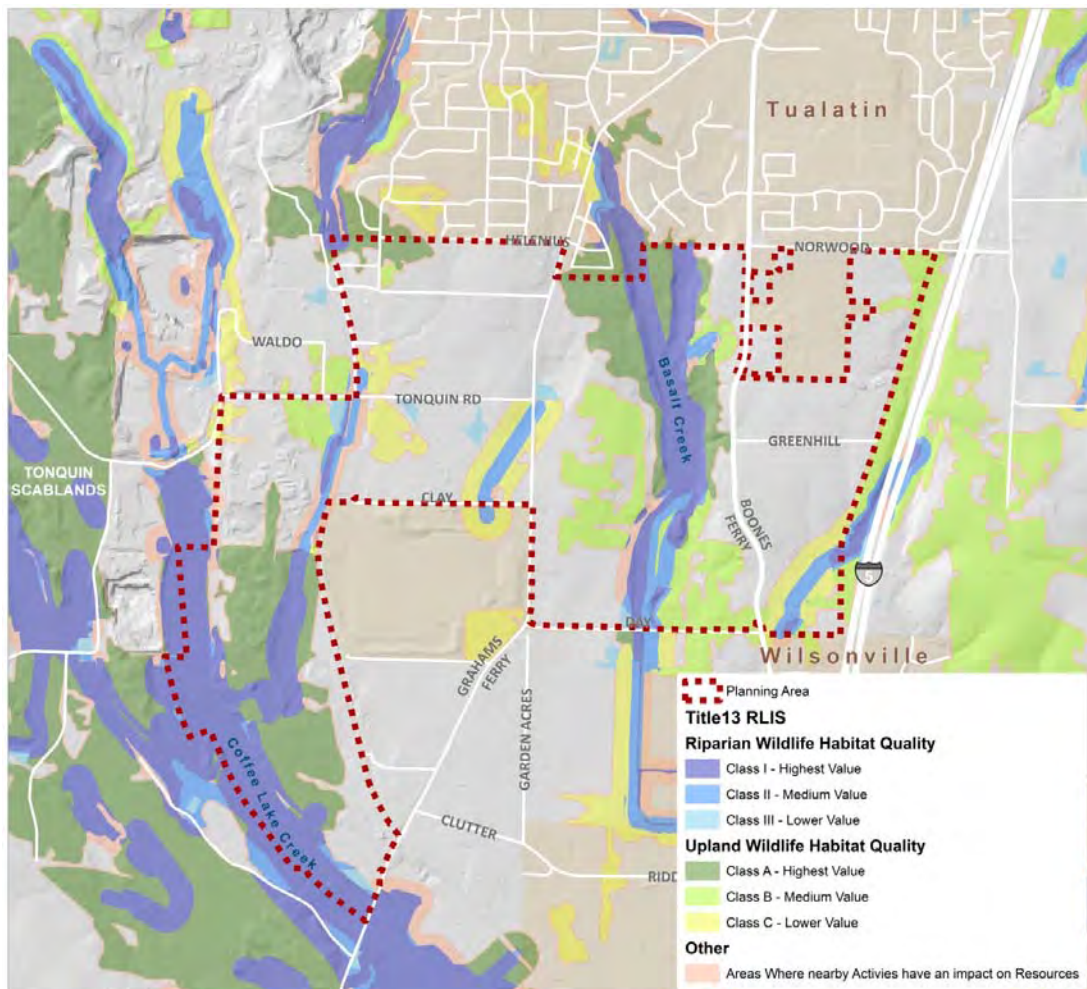


Figure 19 Title 13 lands in the Basalt Creek planning area (431 acres total, 51% of total area).¹⁷ Source: Fregonese Associates, RLIS 2014.

¹⁷ Note that most of these lands, other than Classes I and II of Riparian Habitat, can still accommodate some level of development.

Development is not restricted in HCAs on land that was brought into the UGB before December 28, 2005¹⁸. However, it is strongly encouraged that HCAs are taken into consideration during the concept planning process. Development in areas designated as protected under Title 13 in the Basalt Creek area is generally discouraged. If development does take place incorporation of low impact design and mitigation strategies to maintain the functionality of these important ecological areas will be important.

In the planning area there are 130 acres designated as Riparian Wildlife Habitat Class I, 31 acres designated as Class II, and 7 acres Class III. In addition, 103 acres are designated as Upland Wildlife Habitat Class A, 72 acres are Class B, and 37 acres are Class C (Figure 19). Designated impact areas comprise 52 acres.

Washington County Comprehensive Plan – Rural/Natural Resource Element

No land within the planning area is identified by the Washington County Comprehensive Plan as a Significant Natural Resource. The nearest Significant Natural Resource area is comprised of the Tonquin Scablands, to the west of Coffee Lake Creek.

Clean Water Services Design & Construction Standards (2007)

Clean Water Services (CWS) is the regional agency that manages stormwater in the urban areas of the Tualatin River Watershed, including the entire City of Tualatin. CWS holds a regional National Pollutant Discharge Elimination System (NPDES) storm water permit. *Chapter 3: Sensitive Areas and Vegetated Corridors* describes the methodology used by CWS to determine mitigation requirements in sensitive areas such as vegetated corridors surrounding streams and wetland habitat.

Table 3 Vegetated Corridor Widths Adjacent to the Sensitive Area Where Activity is Not Redevelopment. Source: Clean Water Services Design and Construction Standards, Chapter 3.

Sensitive Area Type	Width: Slope < 25%	Width: Slope ≥ 25%
Existing or created wetlands:		
< 0.5 acres and isolated	25 ft	Variable from 25-200 ft
< 0.5 acres and isolated	50 ft	Variable from 50-200 ft
≥ 0.5 acres	50 ft	Variable from 50-200 ft
Natural lakes, ponds, and in-stream impoundments	50 ft	Variable from 50-200 ft
Springs:		
Intermittent flow	0	15 ft.
Perennial flow	50 ft.	Variable from 50-200 ft
Intermittent Streams draining:		
< 10 acres	0	0
≥ 10 to < 50 acres	15 ft	Variable from 50-200 ft
≥ 50 to < 100 acres	25 ft	Variable from 50-200 ft
≥ 100 acres	50 ft	Variable from 50-200 ft
Perennial Streams:		
Other than Tualatin River	50 ft	Variable from 50-200 ft
Tualatin River	125 ft	Variable from 50-200 ft

¹⁸ Metro Title 13: Nature in Neighborhoods 2007, S3.07 P85.

These standards exceed the level of conservation required by Metro’s Title 3 (Table 3). Permitted development must comply with CWS’s Design and Construction Standards & Service Provider Letters (SPLs) for impacts to vegetated corridors.

City of Wilsonville – Significant Resource Overlay Zone (SROZ)

Within the City of Wilsonville, the Significant Resource Overlay Zone (SROZ) includes floodplains, wetlands, and riparian corridors around significant resources and upland habitat, as well as vegetated corridors around areas designated as Significant Resources. Impact areas are generally considered to be the areas within 25 feet of a Significant Resource area. Development is allowed in portions of the SROZ (i.e. upland forests), but can only be permitted through review of a Significant Resource Impact Report (SRIR). An SRIR is a report that delineates specific resource boundaries and analyzes the impacts of development within mapped significant resource areas.¹⁹ A table comparing these methodologies can be found in Section VIII: *Land Capacity Analysis*.

Table 4 Metro Water Quality Resource Area Slope Calculations. Source: Metro 2014.

Protected Water Feature Type	Slope Adjacent to Protected Water Feature	Starting Point for Measurements from Water Feature	Width of Vegetated Corridor (Setback)
Primary Protected Water Features	< 25%	Edge of bankful flow or 2-year storm level; Delineated edge of Title 3 wetland	50 ft
Primary Protected Water Features	≥ 25% for 150 ft or more	Edge of bankful flow or 2-year storm level; Delineated edge of Title 3 wetland	200 ft
Primary Protected Water Features	≥ 25% for less than 150 ft	Edge of bankful flow or 2-year storm level; Delineated edge of Title 3 wetland	Distance from starting point of measurement to top of ravine (break in ≥ 25% slope), plus 50 ft
Secondary Protected Water Features	< 25%	Edge of bankful flow or 2-year storm level; Delineated edge of Title 3 wetland	15 ft
Secondary Protected Water Features	≥ 25%	Edge of bankful flow or 2-year storm level; Delineated edge of Title 3 wetland	50 ft

¹⁹ Full requirements for an SRIR can be found in Section 4.139.05 of the Wilsonville Zoning Code (pp. B-133 - 138). Section 4.139 also outlines mitigation standards for development encroaching on an Impact Area or Significant Resource Overlay Zone as well as development activities that would trigger a Class I or II Administrative Review Process, in addition to a list of special provisions.

Cultural and Historic Resources

In addition to the unique geologic history of the Basalt Creek area, community members have identified the old Carlon Schoolhouse (Figure 20) as being historically significant. Off Grahams Ferry Road, behind Chick-a-Dee Nursery and not far from Day Road, the structure has often been overlooked as an important historic school that was used in the late 1800s, up until just before the first Tualatin schools. In 1939, the Carlon School District consolidated with Tualatin. It is still in good condition, maintained through a foundation.²⁰



Figure 20: The Carlon Schoolhouse. Source: Martinazzi, Loyce. Tualatin Life Newspaper August 19, 2014.

²⁰ Addington, Yvonne, Board Member of Tualatin Historical Society. Email communication, August 19th, 2014.

IV. Public Facilities

Schools

The study area falls within the Sherwood School District (88J), which has an estimated enrollment of 5,158 and includes four elementary schools, two middle schools, Sherwood High School, and Sherwood Charter School (Figure 21).

The planning area is near Tualatin High School, one of two high schools in the Tigard Tualatin School District. The district includes three middle schools and ten elementary schools. It serves 12,363 students overall. Horizon Christian High School (private) has 160 students enrolled on their campus with a vision of serving up to a 1,000 students in the future.²¹

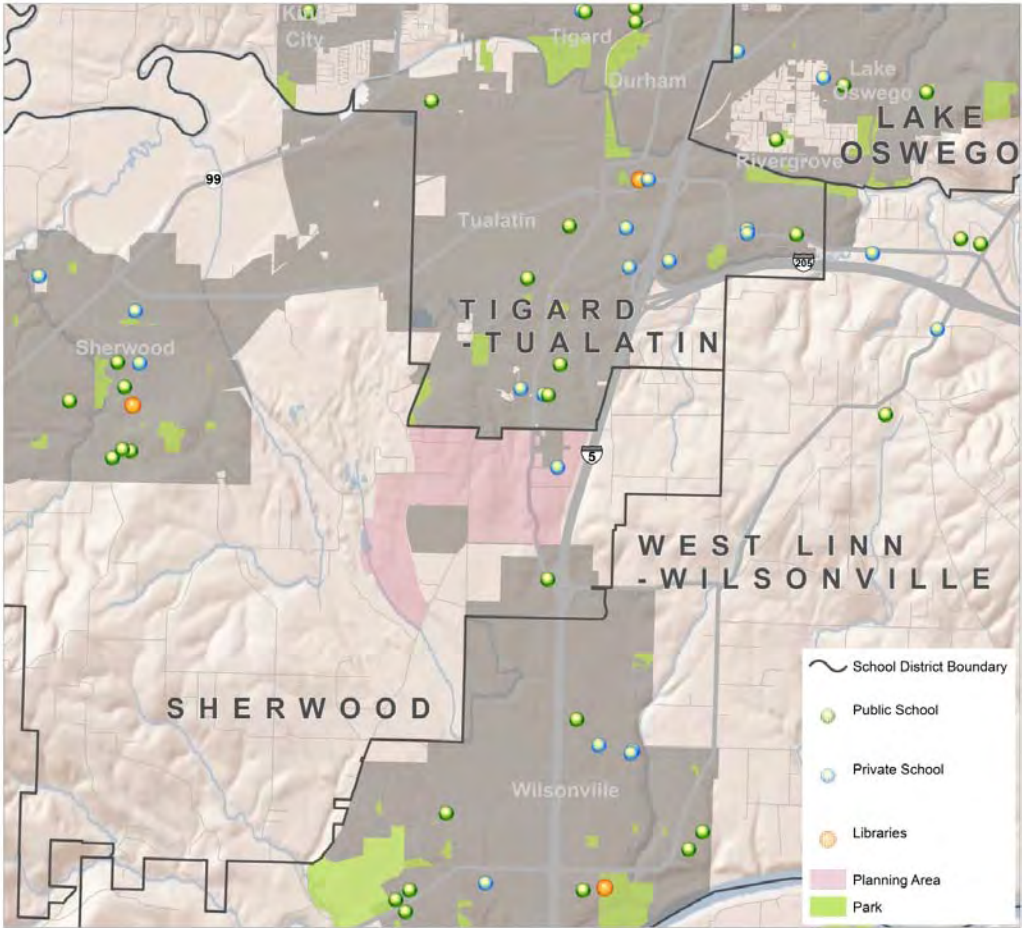


Figure 21 Schools, libraries and parks near the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

²¹ Levasa, Roger. Director of Development for Horizon Church. Personal communication July 31st, 2014.

Parks

Wilsonville Parks owns and maintains 16 different public parks. City of Tualatin Parks and Recreation owns and maintains 9 different parks (Figure 21).

Libraries

There are three libraries in the general vicinity of the planning area (Figure 21): the Tualatin Public Library located at 18878 SW Martinazzi Avenue, serving 24,420 residents, the Wilsonville Public Library located at 8200 SW Wilsonville Road, and the Sherwood Public Library at 22560 SW Pine Street, which serves 17,579 residents.

Fire

There are three Tualatin Valley Fire & Rescue (TVF&R) stations in general proximity of the Basalt Creek area (Stations 33, 34, 52). The TVF&R training center is just west of the planning area boundary (Figure 22).

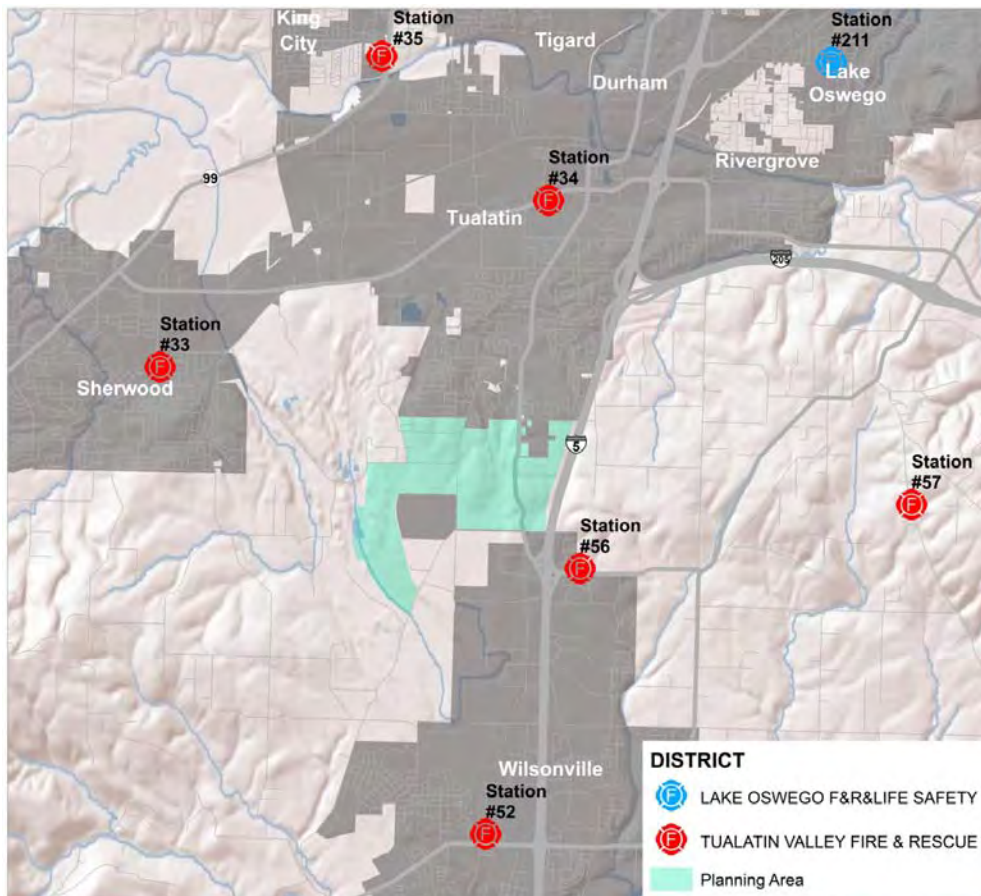


Figure 22 Fire station locations and service area boundaries near the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

Police

Currently the Washington County Sheriff's Office provides law enforcement services in the Basalt Creek planning area. The Washington County Sheriff's Department and Jail are located about twenty miles from the planning area, in downtown Hillsboro.

Wilsonville contracts with the Clackamas County Sheriff's Office to provide law enforcement services to the City. The contract makes certain special services available to the City as well, including its detectives division, hazardous materials team, special investigations unit and traffic team. It also provides the city with a dedicated chief of police, school resource officer, and detective, in addition to 15 deputies. The Clackamas County Jail facility is located about 20 miles east of Wilsonville, in Oregon City.

The Tualatin Police serve the area inside the city's limits. The police department consists of 38 sworn officers and an additional 8.5 professional staff members providing administrative support.²² The department includes a detective unit, police services unit, school resource unit, Honor Guard (volunteer-based), park rangers, police reserves and a traffic team. The Tualatin Police Department does not have a facility to hold prisoners, and utilizes the Washington County Jail in Hillsboro.

²² Tualatin Police Department Website: <http://www.tualatinoregon.gov/police/police-services-unit> retrieved July 31st, 2014.

V. Commercial, Industrial & Residential Real Estate Markets

The purpose of this section is to provide a picture of existing real estate market conditions and the outlook for office, residential, and retail development in Basalt Creek and adjacent areas.



Figure 23 Photo of planning area: Grahams Ferry Road, looking north into the Basalt Creek planning area. Source: Leland Consulting Group 2014.

Industrial and Office Market

Basalt Creek is located near the center of one of the region’s largest clusters of employment land, which includes existing developed areas in the cities of Tualatin, Wilsonville, and Sherwood, as well as the planned future employment areas of Southwest Tualatin, Tonquin, and Coffee Creek). A market area was defined for this report so results can be compared with future analysis (Figure 24). The market area includes the cities of Tualatin, Wilsonville, and Sherwood, as well as some surrounding areas.

The Metro Regional Government projects rapid employment growth of 2.3% annually for the market area through 2035—about 40% faster than the employment growth in the overall region (1.7 %). This pattern indicates that ongoing business expansion and job creation is expected for these three cities, comprising a large portion of the southwestern metropolitan area.

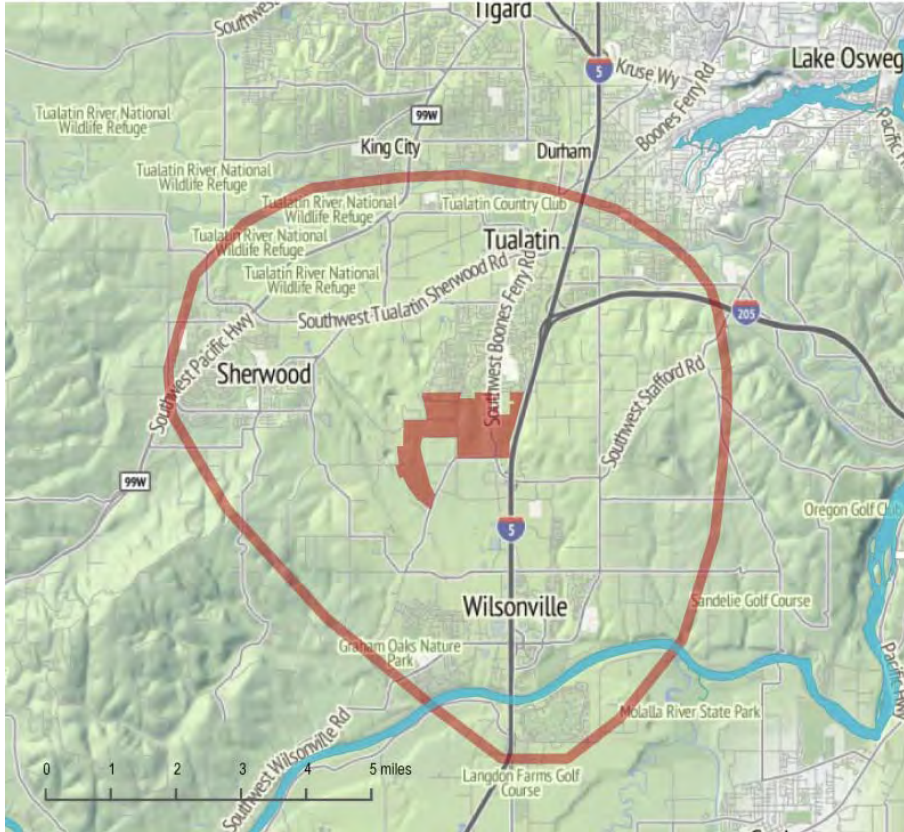


Figure 24 Market Analysis Area for the Basalt Creek area. Source: Leland Consulting Group, 2014.

Tualatin and Wilsonville have independently identified a series of industry clusters in which the two cities are already highly competitive, and in which they expect future significant business and job growth. These include advanced manufacturing, corporate and professional services, health care and related fields, and other specific industrial clusters such as food processing and light manufacturing. Leading organizations within these clusters include Lam Research, Legacy Meridian Park Medical Center, the Oregon Institute of Technology, Mentor Graphics, and Xerox Corporation. Businesses in these categories would be well-suited to locate in the Basalt Creek planning area.

Both Tualatin and Wilsonville have seen significant industrial and office development during the past three decades. Development peaked during the 1990's and has slowed following the recession; however, industrial development in particular is expected to resume and accelerate in coming years due to a desire to “onshore” jobs (bring employment back from overseas), shorten supply chains, and take advantage of lower domestic costs in some industries. Between 1980 and 2014, the cities of Tualatin and Wilsonville saw on average over 400,000 square feet of industrial and office building development annually, and 56.6 acres of industrial and office land development annually. The amount of industrial development (including warehousing, production, flexible office/industrial space, etc.) in both cities is significantly larger (more than seven times) than the amount of office development. This general dynamic is expected to persist for the foreseeable future.

Building types vary significantly within the market area: some industrial facilities contain more than 200,000 square feet of building area, while many other small office and industrial flex spaces are less than 20,000 square feet in size. The floor area ratio (FAR) of most buildings, however, generally falls within the range of 0.2 to 0.4, which generally indicates one- to three-story buildings with large areas for parking and/or freight movement. A small number of office buildings have higher FARs up to about 1.0, which indicates more dense buildings and some structured parking.

Going forward, employment development in the Basalt Creek area will benefit from a number of competitive advantages. These include its direct access to I-5, superior to other employment areas in the region; access to I-205, Highway 217, arterial roads, and transit service; a growing and educated workforce; and established and expanding industry clusters.

Housing Market

Basalt Creek's location is also an asset for residential development for housing: the planning area is immediately south of several South Tualatin residential neighborhoods, which contain attractive parks, street trees, and schools. The market area's current demographics are encouraging for new housing development. When compared to the Portland Metropolitan Area overall, this market area has a higher percentage of family households, larger households, higher household and per capita incomes, residents with college degrees, and residents who work in white collar jobs.

Retail/Commercial Market

There are already several major regional and sub-regional retail nodes located to the north and south of the planning area—at Bridgeport Village, central Tualatin, and in Wilsonville. Thus any commercial space built in Basalt Creek will most likely serve primarily local residents and employees. These larger centers are located at I-5 interchanges. Retail in the Basalt Creek area would not have this same advantage. Whereas regional retail is anchored by fashion, consumer electronics, entertainment, and furniture/household goods, neighborhood retail is typically anchored by grocery stores, pharmacies and restaurants, and supplemented by other local goods and services.

Industrial and Office Market Conditions

Regional Employment Context

As discussed in *Section I: Local and Regional Planning Context*, Basalt Creek is contiguous with a number of other employment and industrial areas in the southwestern part of the Portland Metropolitan Region, including those in the cities of Tualatin, Wilsonville, and Sherwood. Viewed together, these areas comprise one of the largest industrial and employment clusters in the region, comparable in size to the agglomeration in northern Hillsboro (though smaller than the employment lands near Portland International Airport).

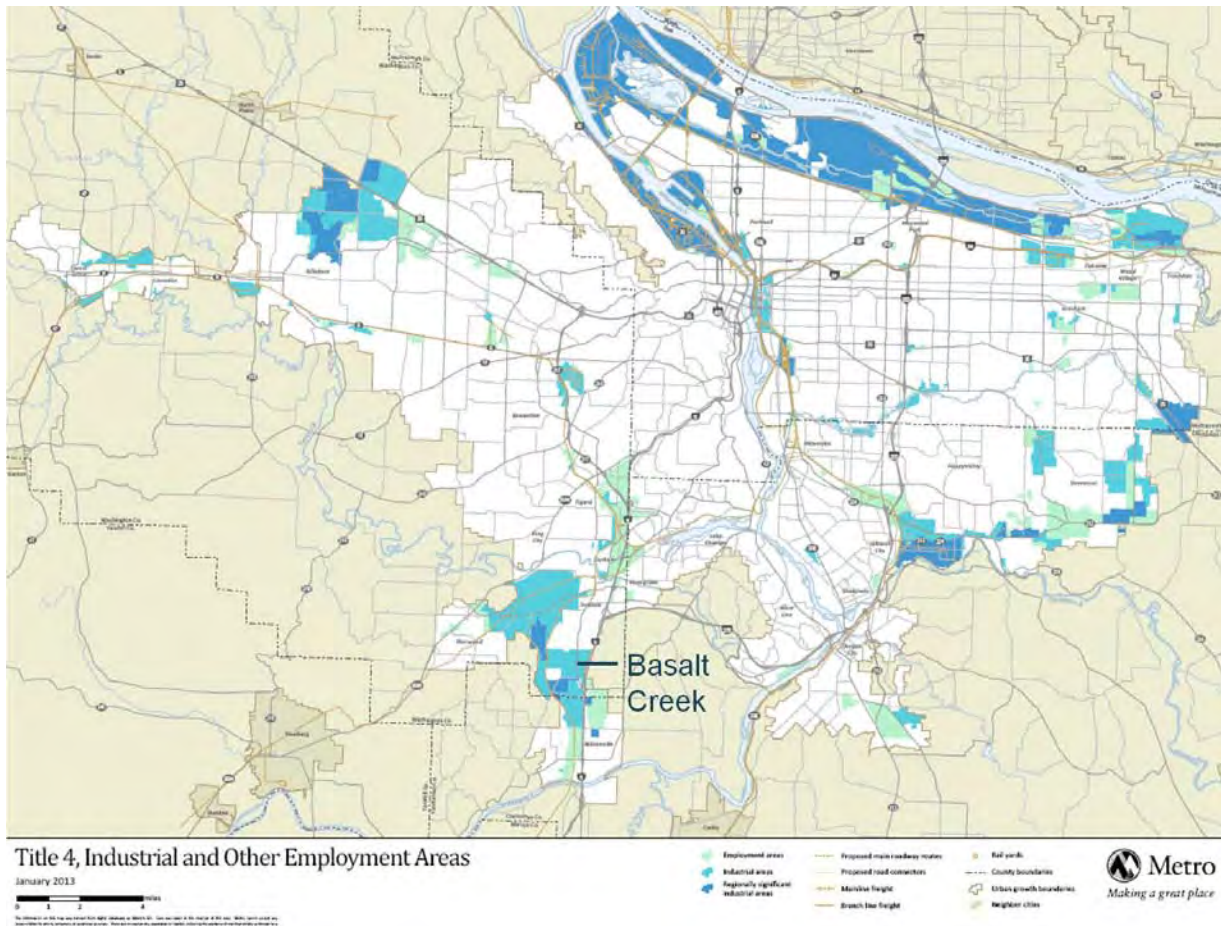


Figure 25 Title 4 Industrial and Other Employment Areas in Portland Metro Area. Source: Metro 2014.

A major feature and competitive advantage of this “Southwest Metro” employment cluster in general--and the Basalt Creek area in particular--is its immediate access to I-5, the west coast’s most important transportation route (Figure 25). Via I-5, the Basalt Creek area is closely connected to downtown Portland, numerous Willamette Valley communities, and major metropolitan areas in Washington and California. Interstate-205 and Highway 217 are also close by and easily accessible from the area. These freeway connections are a major benefit for industrial users (for whom distribution is an important site selection factor) and office-based businesses (which require access for their clients, suppliers, workforce, and collaborators).

Industrial and Office Development, 1980 to 2014

Figure 26 and Figure 27 below show the pace of industrial and office development in the cities of Tualatin and Wilsonville beginning in 1980. The vertical columns represent the building area (square feet) of development within each of the two cities in a given year, while the dashed line is a longer-term trend line, showing a five-year rolling average of built area for both cities combined. These historical

development trends are one data set that shapes expectations for future employment development in both cities and the Basalt Creek planning area.

Since 1980, both cities have seen considerably more industrial development than office development. Over this 34-year period, an average of 340,000 square feet of industrial space and 67,000 square feet of office space has been built in the two cities combined. Thus, the amount of industrial development has been about five times as great as office development.

Industrial Development, Tualatin and Wilsonville, 1980 - 2014

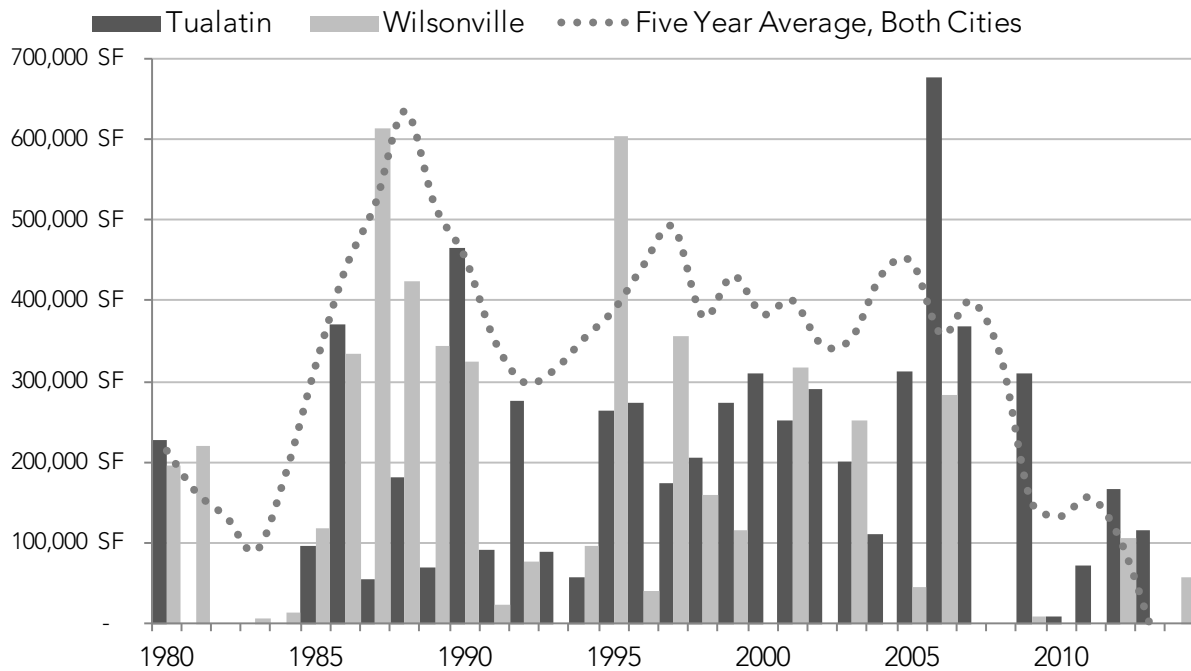


Figure 26 Industrial Development, Tualatin and Wilsonville, 1980 to 2014. Source: CoStar, Leland Consulting Group, 2014.

Office Development, Tualatin and Wilsonville, 1980 - 2014

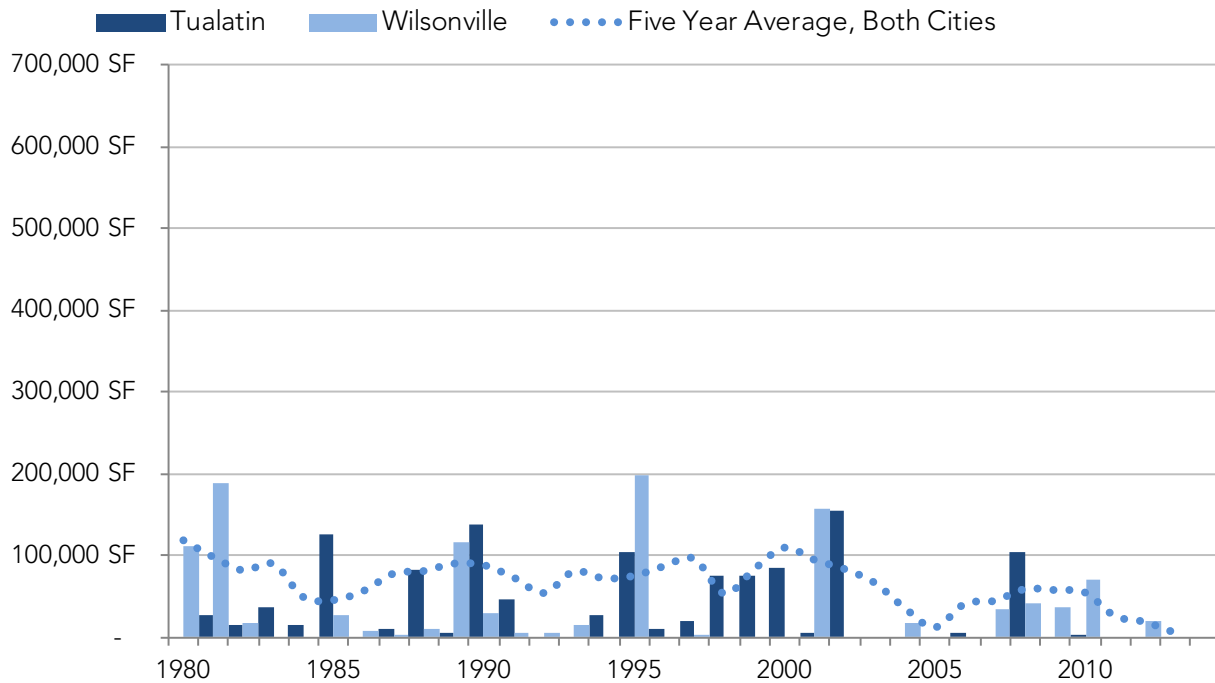


Figure 27 Office Development, Tualatin and Wilsonville, 1980 to 2014. Source: CoStar, Leland Consulting Group, 2014.

The past decade has been a slow period for both industrial and office development. The recession slowed industrial development beginning in 2008, particularly in Wilsonville. The pace of recent industrial development has been about half of development during the 1990s and early 2000s—considered to be a time of robust activity for industrial developers (see Figure 26). Office development has also slowed, although this trend began in 2003, before the recession. Office development in the past decade has also taken place at about half the pace of office development in the 1990s (Figure 27). Clearly, both industrial and office development go through significant peaks and troughs. By focusing on the five-year rolling-average trend line, however, a somewhat more consistent pattern of development can be seen.

Employment Building and Site Attributes

Table 5 shows some key attributes of industrial and office development in Tualatin and Wilsonville. From looking at these attributes, it can be determined that:

- On average, 43.1 acres of industrial land and 13.6 acres of office land per year have been developed in both cities combined. Wilsonville has seen about 25 acres of employment land development per year, 16.3 acres of industrial land, and 8.3 acres of office land. Tualatin has seen about 32 acres of employment land development per year, 26.8 acres of industrial land, and 5.3 acres of office land. Employment land in Basalt Creek is likely to develop more slowly than this pace because there is less

developable land in the study area than the cities as a whole. However, development in Tualatin and Wilsonville can be used to gauge the rate of employment land development in Basalt Creek.

- Average industrial building sites (9.1 and 6.5 acres in Tualatin and Wilsonville respectively) tend to be larger than office building sites. Industrial buildings also tend to be larger than office buildings. Floor area ratios (FAR) are helpful to understanding the physical form of buildings on their sites. Most industrial buildings have a FAR of 0.2 to 0.4. Most office buildings have FARs between 0.3 and 0.5; however, there are some newer office buildings in Tualatin that feature structured parking and FARs up to 1.0. These FARs are consistent with Metro’s analysis and future projections.

Table 5 Attributes of Industrial and Office Development in Tualatin and Wilsonville. Source: CoStar, Leland Consulting Group 2014. SF: Square feet; FAR: Floor area ratio, the ratio of a building’s size in square feet (or gross building area) to the size of the piece of land upon which it is built.

	Industrial			Office		
	Tualatin	Wilsonville	Total	Tualatin	Wilsonville	Total
Total Area (SF)	10,470,000	8,390,000	18,860,000	1,260,000	1,250,000	2,510,000
Av. Annual Development, 1980 - 2014						
<i>Square Feet</i>	186,960	150,980	337,940	34,632	32,985	67,617
<i>Acres</i>	26.8	16.3	43.1	5.3	8.3	13.6
Building Averages, 2000 - 2014						
<i>Square Feet</i>	60,224	80,000	-	31,807	35,000	-
<i>Acres</i>	9.1	6.5	-	4.2	2.0	-
Typical Floor Area Ratios (FAR)	0.2 to 0.4	0.2 to 0.4	-	0.4 to 1.0	0.3 to 0.5	-

It is of note that, while the averages shown here are useful for high-level planning purposes, both industrial and office buildings vary considerably in size, scale, and purpose. For example, the industrial building category includes flex buildings, which can often be divided into 5,000 square foot tenant spaces and feature significant amounts of office and showroom space. The industrial category also includes distribution and warehouse buildings, which can be hundreds of thousands of square feet in size. Sample industrial and office buildings are pictured below in Figures Figure 28, Figure 29 and Figure 30.

Typical Industrial Buildings: Office/Distribution and Flex

The first building pictured below (Figure 28) is located in the Wilsonville Business Center west of I-5 and contains a mix of office space (left foreground) and warehouse/distribution space, where freight trucks are parked. The second building pictured below (Figure 29) is a typical flex industrial building located in the Tualatin Industrial Center, which features high ceiling heights, freight loading, and small, flexible spaces that can serve as a combination of office, showroom, and/or industrial.



Figure 28 Example of typical building with a mix of office space and warehouse/distribution space.



Figure 29 Example of typical flex industrial building, located in Tualatin.

Headquarters Office Building (Mentor Graphics)

The Mentor Graphics building (Figure 30) is located east of I-5 between the Elligsen Road and Wilsonville Road interchanges. Despite its size and height, the FAR of the building is similar to other buildings in the area because of its extensive campus, landscaped areas, and surface parking.



Figure 30 Mentor Graphics Headquarters Office Building in Wilsonville.

Office Development Outlook

Office development—nationally and regionally—is not expected to bounce back from the recession with the same resiliency as industrial space. Office development in the short- and long-term faces several challenges. In the short-term, the Portland region’s employment levels have just recovered in 2014 to their pre-recession (2008) levels. While office vacancies are far lower than several years ago, there is not yet market pressure for new development. As Table 6 shows, the region is expected to add just 288,000 square feet of office in 2014, or 0.6% of the total regional inventory of nearly 47 million square feet. Tualatin’s current vacancy rate of 20.5% suggests a soft market, though that space will be occupied in the long term. The market is expected to improve as the region and nation continue to recover from the recession, and businesses grow and add jobs. However, office development is not expected to return to levels seen in the 1990s without a major upturn in the economy.

Table 6 Current Office Market Summary, Portland Metro Region. Source: CoStar, Leland 2014.

Market	Existing Inventory		Vacancy %	YTD Net Absorption	Under Const. & Complete YTD	Class A Rates
	# Blds	Total RBA				
Portland CBD	374	26,309,983	10.0%	(36,157)	288,000	\$25.58
Lake Oswego/West Linn	142	1,144,080	8.5%	13,170	0	\$25.50
North Beaverton	151	3,246,113	6.7%	37,420	0	\$26.33
Sunset Corridor/Hillsboro	359	10,374,721	6.2%	111,442	0	\$21.53
Tigard	226	3,313,116	10.4%	35,859	0	\$24.27
Tualatin	68	1,263,266	20.5%	10,099	0	\$22.28
Wilsonville	59	1,252,446	7.1%	9,476	0	\$20.50
Totals	1,379	46,903,725		181,309	288,000	

Tualatin and Wilsonville’s Economic Positioning and Goals

The Cities of Tualatin and Wilsonville are proactively pursuing economic development in order to provide high paying jobs for their residents, strengthen their tax bases, offer quality public services, and enable general prosperity in the communities. The two Cities’ main economic development plans relevant to Basalt Creek are shown in Table 7 below.

Table 7 Relevant Economic Development Plans. Source: Cities of Tualatin and Wilsonville.

Tualatin	Wilsonville
<ul style="list-style-type: none"> • Economic Development Strategic Plan (2014) • Industry Cluster Analysis (2014) • Linking Tualatin Market Study (2012) • Southwest Tualatin Concept Plan (2010) 	<ul style="list-style-type: none"> • Economic Development Strategy (2012) • Coffee Creek Master Plan (2007)

Target Industry Clusters

Tualatin and Wilsonville have both identified a series of targeted industry clusters. According to Tualatin's Industry Cluster Analysis, a cluster is an agglomeration of similar and related businesses and industries that are mutually supportive, regionally competitive, attract capital investment, encourage entrepreneurship, and create jobs. For example, 57% of Tualatin's jobs fall within its five key industry clusters, which also provide wages that are on average 70% (\$35,000) higher than those in all other industries.

Clusters reflect a community's strengths and competitive advantages, suggest which sectors of the economy are most likely to generate jobs in the future, and provide policy makers with guidance about the types of land, buildings, infrastructure improvements, and other actions needed to grow jobs in the future.²³

Both Tualatin and Wilsonville have determined that they excel in the following three industry clusters²⁴:

Advanced Manufacturing (and related activities)

This cluster is a significant driver of both cities' economies. It is Tualatin's largest cluster, accounting for 22% of jobs in the city. It accounts for a significant portion of Wilsonville's economy; computer and electronic product manufacturing was Wilsonville's largest industry sector as of 2012, and includes several of the city's largest employers such as Xerox, TE Connectivity, and Rockwell Collins.

The Oregon Institute of Technology (OIT), now educating students in the engineering, technology, management, and health sciences fields from its Wilsonville campus, is an important anchor institution for the Southwest Metro economy. The Cities are looking for ways to capitalize on OIT's presence and to strengthen partnerships between the school and private businesses.

Growth in this cluster will result in ongoing demand for industrial land and buildings in Basalt Creek and other areas. Freeway access, freight mobility, and access to a skilled workforce will be important to this cluster's continued success.

Corporate and Professional Services

This cluster accounts for 12% of Tualatin's jobs, and was the second-largest industry sector in Wilsonville as of 2012. Major employers include: Portland General Electric (PGE) and Express Employment Professionals in Tualatin, and Mentor Graphics in Wilsonville. Growth in this cluster will result in ongoing demand for office land and buildings in Basalt Creek and other areas. A variety of locational factors tend to be important to corporate and professional service firms, including: a

²³ Wilsonville's EOA uses the term industry "sectors." The terms cluster and sector are used interchangeably here

²⁴ The economic figures included below are drawn from the Cities' economic development plans.

skilled workforce, available land or office space, transportation connections, and nearby restaurants and commercial services.

Health Care and Medical-Related.

This cluster is important in both cities: it is the third-largest in Tualatin and fourth largest in Wilsonville. Tualatin's health care cluster is anchored by Legacy Meridian Park Medical Center (among Tualatin's largest employers), and also includes associated industries such as clinics, laboratories, physician offices, and assisted living centers. Wilsonville's largest health care-related employers (as of completion of the 2012 Economic Development Strategy) were Infinity Rehab and Avamere, both ambulatory (outpatient) service providers. Wages in this cluster are well above average.

Because of the diversity of health care businesses, firms in this cluster can operate in health care-specific zones (such as Tualatin's Medical Center zone), or general employment zones (such as Wilsonville's Planned Development Industrial zone). In some cases, health care firms that serve smaller, more localized populations can locate in retail/commercial zones.

In addition to the three clusters described above that have been identified as targets for both cities, Tualatin and Wilsonville have also identified these industry clusters:

Other Industrial Clusters.

Both Cities have identified additional industrial target clusters that could locate in the Basalt Creek area. Tualatin has identified two other industry clusters likely to generate demand for industrial land and buildings: food processing and distribution, and wood, paper, printing, and related industrial activities. Wilsonville identified a number of other industrial business types: light manufacturing and warehouse/showroom operations; specialty contractors and construction firms; sustainable product manufacturing and distribution; miscellaneous manufacturing; and wholesale trade.

Growth in these clusters will result in ongoing demand for industrial land and buildings in Basalt Creek and other areas. Freeway access, freight mobility, and access to a skilled workforce will be important to these clusters' ongoing success.

Other Professional and Commercial Services.

Wilsonville's 2012 Economic Development Strategy also identifies creative services (such as transportation logistics, legal services, management consulting, and accounting) as a target cluster. Similar to corporate and professional services, growth in this cluster should result in demand for office land and buildings in Basalt Creek and other areas.



Figure 31 Lam Research Facility, Tualatin. Photo credit: Tualatin Chamber.

Sub-Regional Context

Transportation is fundamentally important to these employment areas, and transportation connectivity has the potential to make a whole that is greater than the sum of its parts by enabling firms to trade goods and services easily. I-5 is the most important single transportation corridor. The 124th Avenue Extension and East-West Connector will also be very important in knitting the employment areas together. Regional connectivity will be challenged due to the limited access nature of the East-West Connector. This large agglomeration of employment areas has the potential to create economic momentum, and also the potential to be a source of competition for the Basalt Creek area. This is because the areas can project a powerful combined brand, while also competing for individual employers who are looking for sites.

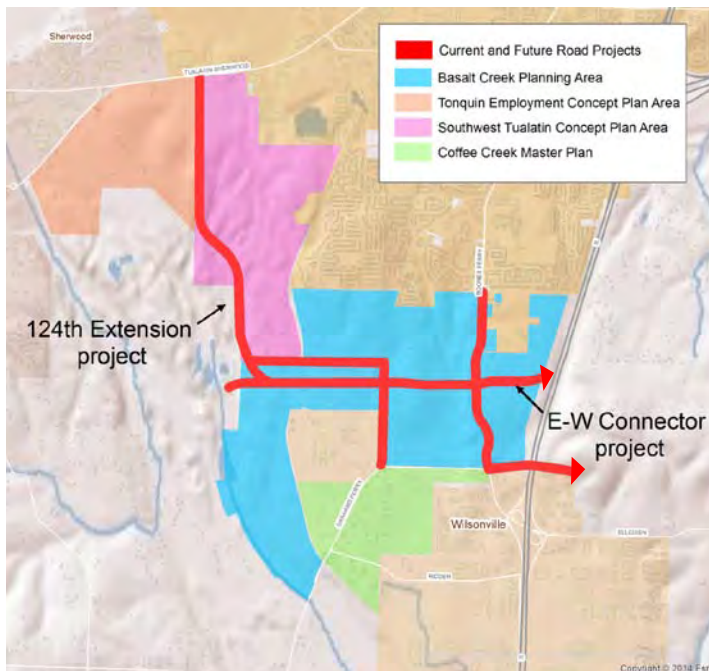


Figure 32 Major TRP road projects in relationship to the Basalt Creek planning area and planned areas nearby Source: Fregonese Associates 2014.

Established Employment Areas

The Tualatin and Wilsonville employment areas have capacity for additional businesses and jobs. To the west of I-5, Wilsonville's employment area tends to contain more industrial, manufacturing, distribution, and flex businesses and buildings; to the east of I-5, a larger share of businesses are office-based professional service firms, such as Mentor Graphics and Xerox Corporation. However, the zoning is the same (Planned Development Industrial) throughout the entire Wilsonville employment area.

Planned Employment Areas

Southwest Tualatin, Tonquin Employment Area, and Coffee Creek are planned employment areas located within the UGB that have yet to be served by infrastructure or see new private development. Annexation and development in the areas are property-owner initiated. The following summarizes the current activity in each of the planning areas.

- The Southwest Tualatin concept plan area: Most of the area remains an active quarry; the City expects this use to continue for an indeterminate period.
- The Coffee Creek industrial area: No development or annexation has taken place in Coffee Creek since the adoption of the master plan; land assemblage challenges, and lack of City services and a financing plan to build those services are the primary obstacles to development here.
- The Tonquin employment area is a 300-gross-acre area located in the City of Sherwood. It is planned for light industrial development with a small amount of ancillary retail/commercial services.

Employment Strengths and Challenges

Basalt Creek's primary strengths/competitive advantages and challenges vis-à-vis industrial and office development are as follows:

Strengths and Competitive Advantages

- Tualatin and Wilsonville's established and successful industry clusters in advanced manufacturing, professional services, and a variety of other industrial and office-based employment categories. Large contiguous cluster of existing and planned employment areas.
- Excellent access to I-5, as well as I-205 and Highway 217. Additional transportation strengths include existing and planned arterial roads, and local and regional transit service provided by TriMet, WES Commuter Rail, and SMART.
- Educated workforce
- Market success of recent industrial, office, and retail developments

Challenges

- Vision and regulation. This Concept Plan and subsequent Comprehensive Plan and zoning amendments need to be in place prior to development.
- Planning, financing, and construction of new infrastructure. This is because roads, water, sanitary sewer, and other infrastructure for urban expansion areas are expensive. Cities are often focused on maintaining and improving existing infrastructure and therefore do not budget to make extensive extensions. Developers of individual sites typically cannot afford to build out a comprehensive set of infrastructure to serve multiple properties.
- Lot sizes and property aggregation. There is a mix of large and small lots throughout the Basalt Creek area. The time and cost required to secure properties from multiple parties in order to aggregate developable industrial or office properties of adequate size can be a significant deterrent to developers.
- Natural features including wetlands and slopes. Basalt Creek and its surrounding slopes and wetland areas run north-south through the planning area, dividing it into east and west sections.
- The market for new office development continues to be slow. However, the planning area will not be ready for private development for several years, which may allow enough time for this market to recover.

Housing Market Analysis

Demographic Context

The City of Tualatin, compared to the Portland Metropolitan Statistical Area (MSA), has a higher percentage of family households (two or more related people), larger average households, higher household incomes, and higher per capita incomes. A larger share of residents has college degrees (42.3%) and is employed in white collar jobs (67.5%) compared to the region. Tables Table 8, Table 9 and Table 10 provide additional perspective on the demographics of the subject cities compared to the Portland MSA.

Wilsonville, compared to the Portland MSA, has a higher percentage of family households and smaller households--likely because the city has a higher share of young households (in the 25-34 age category) and seniors, Baby Boomers, and retirees. Each age group has different housing preferences. Wilsonville also has a larger share of residents with college degrees (39.3%) and white collar jobs (70.1%).²⁵

While the Basalt Creek market area includes both Tualatin and Wilsonville, its demographics are generally more similar to those in Tualatin. When compared to the Portland MSA, the market area has a

²⁵ Data shows information about *jobs held by residents of the given geographical areas*, not the jobs within those areas

higher percentage of family households, larger households, higher household and per capita incomes, more residents with college degrees, and more residents who work in white collar jobs. In general, these demographics are favorable to housing development in the Basalt Creek area; they also reflect the types of residents most likely to locate in the planning area.

Table 8 Demographic Summary of the Basalt Creek planning area. Source: ESRI Business Analyst, Leland Consulting Group. 2014 Data except where noted.

	Tualatin	Wilsonville	Basalt Creek
Comparison to Portland MSA:	<ul style="list-style-type: none"> • More families • Larger HHs • Higher HH Income • Higher PC Income • More college degrees • More white collar emp. 	<ul style="list-style-type: none"> • Fewer families • Smaller HHs • More Gen Y • More Boomers • More low-income HHs • More college degrees • More white collar emp. 	<ul style="list-style-type: none"> • More families • Larger HHs • Higher HH incomes • Higher PC incomes • More college degrees • More white collar emp.

Table 9 Demographic Summary of the Basalt Creek planning area (Continued). Source: ESRI Business Analyst, Leland Consulting Group. 2014 Data except where noted.

Demographic Attribute	Tualatin	Wilsonville	Basalt Creek	Portland MSA
Population	26,520	21,235	73,786	2,296,285
Number of Households	10,170	8,638	28,121	896,982
Family Households (2010 Census)	68%	59%	68%	64%
Household Size (Average)	2.60	2.32	2.57	2.52
Household by Size (2010 Census)				
1 and 2 person	57%	68%	58%	61%
3 and 4 person	33%	25%	32%	29%
5 + person	10%	7%	10%	10%
Median Household Income	\$64,324	\$59,812	\$70,256	\$57,441
Per Capita Income	\$32,672	\$31,995	\$33,336	\$30,135
Population By Age				
0 to 24	35%	31%	34%	32%
25 - 34	14%	16%	13%	15%
35 - 44	15%	14%	15%	14%
45 to 54	14%	13%	14%	14%
55 to 64	13%	11%	12%	13%
65 +	9%	15%	11%	13%
Median Age	35.7	37.0	36.6	37.5

Key: Low High

Table 10 Demographic Summary of the Basalt Creek planning area (Continued). Source: ESRI, Leland Consulting Group. 2014 data except where noted.

Demographic Attribute	City of Tualatin	City of Wilsonville	Basalt Creek Market Area	Portland MSA
Education and Employment				
Less than High School	9.7%	8.0%	8.0%	9.4%
High School or Equivalent	16.5%	20.4%	18.2%	22.1%
Associate's or some college	31.5%	32.3%	32.5%	34.2%
Bachelor's or Advanced Degree	42.3%	39.3%	41.3%	34.3%
Occupation				
"White Collar"	67.5%	70.1%	69.3%	63.1%
"Blue Collar"	11.3%	14.1%	13.5%	19.5%
Housing				
Median Home Value	\$331,190	\$349,927	\$337,289	\$275,516
Housing Tenure				
Owner Occupied Housing Units	51.9%	43.4%	55.0%	56.2%
Renter Occupied Housing Units	42.6%	50.5%	39.8%	37.7%

Key: Low High

Finally, the South Tualatin residential neighborhoods immediately to the north of Basalt Creek reflect many of the demographic attributes typical of Tualatin’s population. The neighborhoods—including low volume local roads, street trees, parks, and schools—create a positive environment for residential development within the Basalt Creek area, particularly along the northern edge.

Recent Housing Development

Table 11 below shows the recent residential permitting trends in the cities of Tualatin and Wilsonville, and in Villebois, a master-planned community in Wilsonville. Villebois is shown here because: it is the largest master planned community (482 acres) that has been developed recently in the Southwest Metro area; it is a defined area that has been planned to include a range of housing, parks, and commercial services; due to its success in the marketplace in recent years, housing absorption has been relatively rapid (adjusting for the recession), and many houses sell for a premium when compared to the competition in other areas. Naturally, recent housing built in these areas provides one benchmark from which to estimate future demand.

As Table 11 shows, the housing types that have been permitted and built in these areas correlate closely to the types of people and households who live there; the housing types also likely reflect zoning and other regulatory and market forces. Recent housing permitted in Tualatin is composed largely of large- and medium-lot single-family housing. No small lot single-family housing (lots smaller than 4,000 square feet) or attached single-family housing has been permitted since 2004. About 20% of the recently permitted housing in Tualatin is multifamily—market rate and affordable apartments, condominiums,

and senior housing. Very little existing multifamily housing is located in the neighborhoods immediately north of Basalt Creek; most of Tualatin’s multifamily housing is clustered further north near downtown Tualatin, between Tualatin-Sherwood Road and Avery Street, and the Bridgeport Village area. The majority were built prior to 2000, although the 367-unit Eddyline at Bridgeport (under construction) is a notable exception. Historically, this multifamily share is relatively typical; multifamily has comprised about 20% of total housing in many communities during the past five decades.

Wilsonville’s housing is more diverse and features a significantly higher percentage of small lot single-family and multifamily housing, and much less large- and medium-lot single-family housing. Again, this is likely to due to market, demographic, and regulatory reasons. The broad housing mix reflects the presence and growth of the four “S groups” in Wilsonville: seniors, singles, single-parent households, and starter households. The large multifamily share (66%) is partially due to the large number of new 20- and 30-something households recently formed, which will slow in coming years. Villebois’ housing mix is similar to that in Wilsonville overall. However, during the time period surveyed (2000 to 2012) a larger percentage of small-lot single-family homes, townhouses and duplexes were built in Villebois, along with a smaller percentage of multifamily housing. Villebois’ developers and National Association of Realtors (NAR) surveys show that most American households, Baby Boomers included, prefer single-family homes over multifamily homes, but that they are quite open to smaller lot and home sizes, especially when the surrounding neighborhood is attractive and walkable.

Table 11 Residential Development in Tualatin and Wilsonville by Housing Type. Sources: HUD; City of Wilsonville, New Home Trends, Leland Consulting Group. Due to data availability, Table 12 shows housing built in Tualatin between 2004 and 2014; and permits issued in Wilsonville between 2000 and 2012.

Housing Type	Tualatin	Wilsonville	Villebois
	Recent Permits	Recent Permits	Recent Permits
Large Lot Single Family	44%	9%	8%
Medium Lot Single Family	36%	10%	8%
Small Lot Single Family	0%	12%	35%
Attached Single Family	0%	2%	6%
Multifamily	20%	66%	43%
Total	100%	100%	100%

Retail/Commercial Market Analysis

In addition to new residents and employees that may locate in the Basalt Creek area, the residents of the Tualatin neighborhoods located immediately to the north are important sources of support for retail. Residents spend more of their retail dollars locally than employees or passersby, and therefore are generally a more important source of demand for retail goods and services. Approximately 4,000

households live in the area between Norwood Road and Tualatin-Sherwood Road. These households already have other places to shop, particularly on and near Tualatin-Sherwood Road. However, based on existing traffic counts and interviews with residents and developers, it is clear that some of these residents are already accustomed to driving south through the Basalt Creek area to access I-5 or other destinations.

Retailers also look at traffic counts as an important demand indicator, since retail relies on pass-by traffic for support. Boones Ferry Road carries average daily traffic (ADT) of about 15,000 in 2014²⁶, which is high enough to suggest that it will be a good retail location in the future. Traffic counts on Grahams Ferry Road are below 6,000 ADT, and therefore it is likely to be a less desirable retail location. Traffic counts such as these likely reflect trips being made by residents and employees of the Southwest Metro area and beyond. The 124th Avenue Extension, which will be built to the western edge of the study area, and the planned East-West Connector Road that will run across the study area, are also important transportation arterials along which retail will seek to locate. A prime location for retail may be at the intersection of Boones Ferry Road and the East-West Connector Road.

²⁶ Source: ESRI Business Analyst, 2014

VI. Infrastructure

The objective of this section is to identify existing stormwater, wastewater conveyance and treatment, and potable water infrastructure that could be used to provide services for the Basalt Creek planning area. Existing jurisdictions and service agreements are also described, in addition to discussion of important areas of special consideration in and near existing receiving waters.

Policy Guidance on Infrastructure

The discussion in this section is framed by the Cities' desire to have a better understanding of how provision of services such as wastewater collection and treatment and potable water distribution serving Basalt Creek can function in the most efficient and economical manner.

Specifically the Cities are interested in determining, from a technical standpoint, if wastewater can be conveyed and treated more efficiently and cost-effectively by relying on gravity or if pump stations are more appropriate. This should consider improvement costs related to the collection systems (such as incremental pipe capacity needs in both cities; pump station construction, long term operations and maintenance costs; and treatment capacity needs at both treatment plants). Should pump stations be less desirable from a technical standpoint, what are non-technical issues that would need to be resolved? Part of answering this question is to identify where specific areas of Basalt Creek naturally drain and whether it makes sense from a technical point of view for wastewater to cross jurisdiction boundaries. This evaluation raises a policy question for the City of Wilsonville of whether or not they are willing to collect and treat wastewater that could be generated by land outside of their City supposing the service lines and jurisdictional lines are not the same.

Additionally, the Cities desire to evaluate and determine if there are efficiencies for the water system if the source of water is from the Willamette River. Another topic to explore is if it is a good idea to interconnect the two systems. The Cities are asking if it makes more sense to provide water services to Basalt Creek from the south rather than from the City of Tualatin's existing system. This exploration presents another policy question for the City of Tualatin about accepting water from the Willamette River.

Stormwater Infrastructure

Existing stormwater infrastructure within the Basalt Creek planning area consists of roadside drainage ditches and culverts. Culverts in the planning area are under the jurisdiction of Washington County and range from 12 to 30 inches, as shown in Figure 33. It is assumed that the existing culverts may not have capacity for future urban conditions and will need to be upsized to provide adequate capacity for runoff from new impervious areas, unless onsite detention or infiltration is required. Roadway drainage for SW Boones Ferry Road was recently transferred from the jurisdiction of Oregon Department of Transportation (ODOT) to that of Washington County, but the County does not yet have the

geographical information system (GIS) data available. Culverts to the south of the planning area are part of the City of Wilsonville stormwater system.

Basalt Creek itself flows to the south into Wilsonville as part of the Coffee Lake Creek basin. Basalt Creek discharges into the Coffee Lake wetlands. Coffee Lake Creek flows south from the wetlands and combines with Arrowhead Creek before discharging to the Willamette River.

Existing stormwater drainage basins based on existing topography and infrastructure are also shown in Figure 33, along with Oregon State Planning Goal 5, Significant Resource Areas near receiving waters. As can be seen in Figure 33, large portions of the planning area are Significant Resource Areas. The City of Tualatin has jurisdiction over the stormwater conveyance system to the north of the planning area.

The City of Tualatin is a co-permittee of Clean Water Services (CWS) watershed-based National Pollutant Discharge Elimination System (NPDES) permit, which includes the municipal separate storm sewer system (MS4) stormwater discharge permit. The City of Tualatin owns and operates the stormwater system within the city.

The City of Wilsonville owns and operates the public stormwater conveyance system to the south of the planning area. The City of Wilsonville is an NPDES MS4 co-permittee with Clackamas County and twelve other cities and service districts within the County (Permit Number 101348).

The City of Wilsonville's 2012 Stormwater Master Plan identifies a capital improvement project to restore a portion of the Basalt Creek channel to increase capacity to accommodate impacts caused by a reverse grade south of Day Road near the Commerce Circle area. The project is programmed for mid-term (6 to 10 years) implementation in the July 2014 Prioritized Stormwater Capital Improvement Plan (July 2014 Prioritized Project list). The master plan also identifies a regional detention facility to serve an area that includes the Basalt Creek planning area. This project is identified in the July 2014 Prioritized Project List as a long-term project (10 to 20 years).

Locations where stormwater runoff from the Basalt Creek plan area could connect to existing stormwater infrastructure in the future are shown in Figure 33 and summarized in Table 12. Should these locations be considered to receive stormwater discharge from the Basalt Creek plan area, the downstream conveyance system will need to be evaluated for capacity and condition.

Wastewater Infrastructure

Currently, no sewer service is provided to the planning area. Existing homes are, therefore, assumed to be using individually permitted and managed septic systems, but a public records request has not been made to confirm this assumption for each property in the planning area.

Wastewater Collection and Conveyance

Wastewater conveyance to the north of the planning area is under the jurisdiction of the City of Tualatin, who maintains a service agreement with CWS for wastewater collection and treatment at the Durham Advanced Wastewater Treatment Facility located at 16060 SW 85th Avenue in Tigard, a straight line distance of approximately 2.5 miles north of the Basalt Creek planning area. The City owns the

wastewater conveyance system (up to 18-inch diameter) within the City, while CWS owns larger pipes, pump stations, force mains, and treatment facilities.

Eight gravity mains exist near the north planning area boundary and could provide connection points for wastewater from the Basalt Creek plan area into the Tualatin collection system. The 200 gpm Victoria Woods Pump Station and associated force main are also located just to the north of the planning area boundary, west of the southern end of SW Eno Place. From these connection points, wastewater flows by gravity toward the treatment plant, crossing the Tualatin River via the Lower Tualatin Pump Station in Tualatin Community Park and associated force main. Pumping would be required to lift flows from the planning area into the existing gravity system.

Wastewater conveyance to the south of the planning area is under jurisdiction of the City of Wilsonville. Wastewater from the City of Wilsonville is conveyed to and treated at the Wilsonville Wastewater Treatment Plant located at 9275 SW Tauchman Street, approximately 3.2 miles south of the planning area.

The City of Wilsonville's Coffee Creek Industrial Area Plan identifies a new sanitary main line to be constructed in a future segment of Kinsman Road between Ridder and Day Roads. These lines are intended to provide conveyance of wastewater within the Coffee Creek area and are also intended to serve flows from the Basalt Creek planning area. Three existing possible connection points into the Wilsonville collection system were also identified. From these connection points, wastewater flows by gravity to the Wilsonville Wastewater Treatment Plant. The ongoing Sanitary Sewer Collection System Master Plan project has analyzed a range of flows from the planning area to identify trunk capacity, pipe size, and improvements needed to accept flow from the planning area. Connection Point 10 at Pioneer Road in Commerce Circle would require a lift station to deliver flow from the planning area into the Wilsonville system.

A brief description and location of the eight potential points of connection to the Tualatin conveyance system and three existing potential points of connection to the Wilsonville conveyance systems are shown in Figure 34 and summarized in Table 13. Wilsonville's planned sanitary main line in Kinsman Road is also shown in Figure 34.

Consideration of the Basalt Creek Planning Area in Sanitary Sewer Master Plans

The *Tualatin Sanitary Sewer Master Plan Update* has been put on hold until the Basalt Creek planning process is complete. The City of Wilsonville is in the process of updating its Sanitary Sewer Collection Systems Master Plan (MSA, 2014) and is including Basalt Creek as a contributing area. The resulting updated master plans will identify improvements needed to increase the capacity of each system to convey flow from the Basalt Creek planning area.

Clean Water Services conducted a system capacity evaluation to accept flows from the Basalt Creek planning area and the SW Concept Plan Area in addition to flows from the City of Tualatin (CH2M HILL, 2012). This study assumed that flow contributions would be routed to the Sherwood trunk line (located north of Tualatin-Sherwood Road) rather than through local service lines. A lift station would be required to convey flow from the Basalt Creek area to the Sherwood trunk line. The distribution of flow

to each of the cities and where connections need to be made will be determined as part of the Basalt Creek Concept Plan.

Wastewater Treatment

The nearest treatment facility to the north of the planning area is the CWS Durham Advanced Wastewater Treatment Facility (AWTF). This facility currently receives about 22.6 million gallons per day (mgd) in dry weather flow (CWS, 2013). Future flow projections, updated in 2011, did not include any areas outside of the existing Durham AWTF service area (CH2M HILL, 2011). Therefore, treatment of Basalt Creek wastewater flows at the Durham facility will require review of the plant capacity and analysis of impacts to level of service within the existing service area. In addition, expansion of the service district area to include the Basalt Creek planning area (or any portions thereof) needs to be evaluated.

The nearest treatment facility to the south of the planning area is the City of Wilsonville Wastewater Treatment Plant (WWTP). This facility was recently expanded to an average dry weather flow capacity of 4 mgd, with flow projections and design bases of improvements accounting for an ultimate buildout capacity of 7 mgd. The current 4 mgd is capacity designed to accommodate growth within the current city limits, and the 7 mgd buildout capacity is designed to accommodate additional growth areas outside the city limits. Expansion to 7 mgd can be achieved by adding a third primary clarifier and adding a membrane bioreactor to the aeration basins. Approximately half (300 acres) of the Basalt Creek planning area (identified as the “North Wilsonville” area in the technical assessments) was accounted for in the year 2030 buildout capacity assessment (7 mgd). Early development of the Basalt Creek planning area, in conjunction with other planned developments will require review of the timing of the next WWTP expansion phase.

Potable Water Infrastructure

The delivery of potable water to customers is impacted by many factors. Of the many requirements, pressure and flow are two that are closely tied and impact all water infrastructure decisions. Residential water service typically has a minimum pressure of 30 pounds per square inch (psi) and a maximum dictated by plumbing code of 80 psi. The pressure in a gravity fed system similar to the Wilsonville and Tualatin systems is constantly fluctuating based on the demand on the system at any given time. As demand goes up, reservoir levels go down, causing pressure in the system to be reduced. When demand reduces, water is placed/pumped back into the reservoirs, bringing the system pressure back. Storage requirements on a system are driven by customer demand and fire flow requirements because these reservoirs are not only providing system pressure, but also emergency storage.

In order to evaluate how the Basalt Creek area will be served with water, the existing City of Wilsonville and City of Tualatin Water Master Plans were reviewed. Below is a summary of the information gathered from those reports, and how that might impact water service to the Basalt Creek planning area.

City of Tualatin

The City of Tualatin water system currently provides drinking water to approximately 26,000 people, through 6,700 residential, commercial, industrial and municipal connections. The system consists of four hydraulically connected pressure zones that include five steel storage reservoirs with a combined storage capacity of 13 MG. A sixth storage reservoir with an additional 1.0 MG capacity (in level C) is anticipated to be online in fall 2015. The water supply is purchased wholesale from the Portland Water Bureau with a maximum available capacity of 10.8 mgd. The current (2013) MDD is 9.5 mgd, providing approximately 1.3 mgd of excess capacity at this time. Projected MDD in 2039, without the Basalt Creek planning area, is 14.2 mgd. Table 14 shows the City's existing pressure zones.

City of Wilsonville

The City of Wilsonville's water system currently provides drinking water to approximately 21,000 people. The system consists of three hydraulically connected services areas (A, B, and C) supplied by three steel storage reservoirs and a small underground concrete reservoir (Charbonneau) with a capacity of 7.6 million gallons (MG). Table 15 shows the capacity and hydraulic grade of each of the pressure zones.

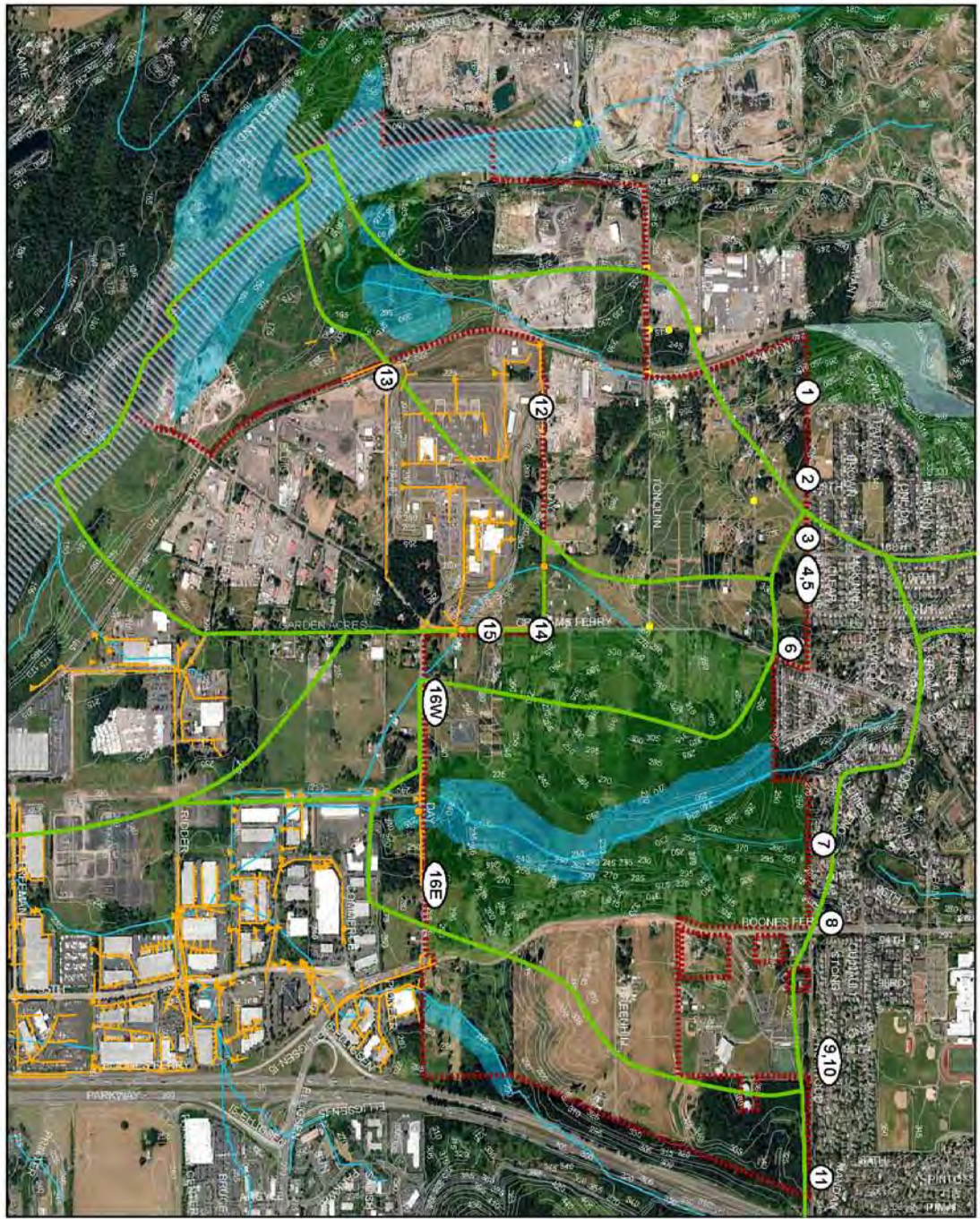
The water supply source is the Willamette River Water Treatment Plant jointly owned by the City of Wilsonville and the Tualatin Valley Water District (TVWD). The plant has a current rated capacity of 15 mgd, but the buildings and piping and some of the unit processes were designed for an ultimate supply capacity of 70 mgd, with Wilsonville owning 20 mgd and TVWD owning 50 mgd of that capacity. The plant was designed for on-site expansion. TVWD sold 5.0 mgd of treated water capacity to the City of Sherwood in 2006. Based on Wilsonville's 2012 Water Master Plan, projected (2020) maximum day demands (MDDs) for the plant is 14.9 mgd, which includes the 5.0 mgd delivery to Sherwood, plus a 0.75 mgd allowance for new industrial users.

Basalt Creek Planning Area

The Basalt Creek planning area currently has no municipal water infrastructure in place. The area topography ranges from approximately 250 feet above mean sea level (msl) to a maximum elevation of 350 feet msl. Based on the topography, the Basalt Creek planning area could be served from the south through The City of Wilsonville's distribution system (Pressure Zones B and C) or from the north through the City of Tualatin's distribution system from Pressure Zone B and C. Lower elevations of the Basalt Creek planning area (below elevation 285) can be adequately served by Wilsonville's Pressure Zone B through existing 15-inch and 18-inch distribution lines that are adjacent to the area. A political factor in determining service boundaries is Tualatin's requirement for a public vote before switching to water supply from the Willamette River; the City currently receives its potable water primarily from the Bull Run reservoir near Mount Hood. A vote would only be required if Willamette River water was used to serve a part of Basalt Creek that ended up within Tualatin's jurisdiction.

Tualatin's and Wilsonville's Pressure Zone C reservoirs are located adjacent to each other on the East Side of I-5. The I-5 pipe crossings that connect to these reservoirs are in different locations. Analysis

needs to be completed to determine if the existing pipe configurations from each of these reservoirs provide adequate pressures to serve the higher elevations of Basalt Creek with emergency water demands. To provide for the additional flow to these higher elevations, it may be necessary to add booster pumping capacity within each City's water system. The City of Wilsonville master plan identifies a future I-5 crossing for their Zone C reservoir as well as a future Pressure Zone D reservoir that would address pressure needs to the higher elevations. Figure 35 identifies the potential pressure zones and existing adjacent infrastructure.



- LEGEND**
- Planning Area
 - No Resource
 - Water Area and Wetland
 - Wildlife Habitat
 - Water Area/Wetland&FW Habitat
 - Significant Natural Area
 - 100-year Floodplain
 - Washington County Culverts
 - Wilsonville Culverts
 - Wilsonville Stormwater Outlets
 - Wilsonville Stormwater System
 - CONTOUR_SFT
 - Stream channels
 - Delineated Drainage Basin
 - Potential Point of Connection to Existing System (see Table 1)

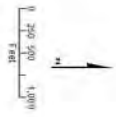


FIGURE 1
Existing Stormwater Infrastructure
and Drainage Area
Basalt Creek Planning Area

CH2MHILL.

Figure 33 Existing Stormwater Infrastructure and Drainage Area near the Basalt Creek planning area
Source: CH2M Hill, 2014

Table 12 Potential Points of Connection to Existing Stormwater Facilities for the Basalt Creek planning area. Source: CH2M Hill 2014.

Map ID	Description	Location	Outlet	
1	12-inch PVC	112 th Ave.	Outfall at SW Cowlitz Dr. to Kolk Pond, approximately 900 feet from planning area.	
2	12-inch PVC	109 th Ave. and in Helenius Rd. to the east of	Detention facility at SW Helenius Rd. between 109 th Ave. and SW 108 th Ave.	
3	12-inch PVC	108 th Ave.	Connection Points 3 through 6 all outlet to Basalt Creek, which runs through the eastern portion of the planning area. The outfall is located west of Lodgepole Rd. Basalt Creek runs south through the planning area, then through piped and natural channels for approximately 3 miles to the confluence with Coffee Lake Creek, which then flows another 1.5 miles through natural and straightened channels to the Willamette River. Basalt Creek forms a part of the City of Wilsonville's stormwater drainage system.	
4	12-inch PVC	106 th Ave.		
5	12-inch PVC	Helenius Rd., east of 106 th Ave.		
6	12-inch PVC	Grahams Ferry Rd. at Whitebark Ln. and at Helenius St.		
7	Detention and/or water quality facilities	South of Eno Pl. and Erio Pl.		Both facilities outlet to Basalt Creek.
8	15-inch ADS	Boones Ferry Rd. at Stono Dr.		Connection Points 8 through 10 ultimately outfall to a natural watercourse approximately 0.5 mile to the north of the planning area near Columbia Dr. and Chehalis St. in Tualatin. This watercourse then flows north for approximately 2.5 miles through natural and piped conveyance to the Tualatin River.
9	15-inch CSP	Stono Dr. between Boones Ferry Rd. and 89 th Pl.		
10	18-inch CSP	89 th Pl.		
11	12-inch CSP	Mandan Dr.	Outfalls at the Chieftain/Dakota Greenway outfall to a natural watercourse, which then flows 2.6 miles northeast to the Tualatin River.	
12	12-inch capped lateral (N)	Clay Rd.	Capped lateral connects to 12-inch main line in Clay Rd., which connects to private 12-inch line. This system outlets to a tributary of Coffee Lake Creek.	
13	42-inch pipe	Cahalin Rd. south of Coffee Creek Correctional Facility	Outlets to a tributary to Coffee Lake Creek, 3.4 miles upstream of the Willamette River (via natural and straightened reaches).	
14	12-inch capped laterals (N and E)	Intersection of Grahams Ferry Rd. and Clay Rd.	Two capped laterals connected to 12-inch main line in Grahams Ferry Road. Outlets to Basalt Creek tributary crossing north of Day Rd.	
15	12-inch capped laterals (E)	Grahams Ferry Rd. between Clay Rd. and Day Rd.	Two capped laterals connected to main line in Grahams Ferry Rd, connected to 12-inch main line, which outlets to Basalt Creek tributary	

Map ID	Description	Location	Outlet
16E and 16W	12-inch and 15-inch pipe	Day Rd, east of Grahams Ferry Rd.	crossing north of Day Rd. 12-inch pipe connects curb inlets east and west of Basalt Creek culverts to 15-inch main line, which outlets to detention/water quality facility west of the Basalt Creek culverts, then connects to open and piped Basalt Creek channel to join Coffee Lake Creek after approximately 2 miles, which then flows an additional approximately 1.75 miles to the Willamette River.

ADS = Advanced Drainage Systems; CSP = corrugated steel pipe; PVC = polyvinyl chloride.

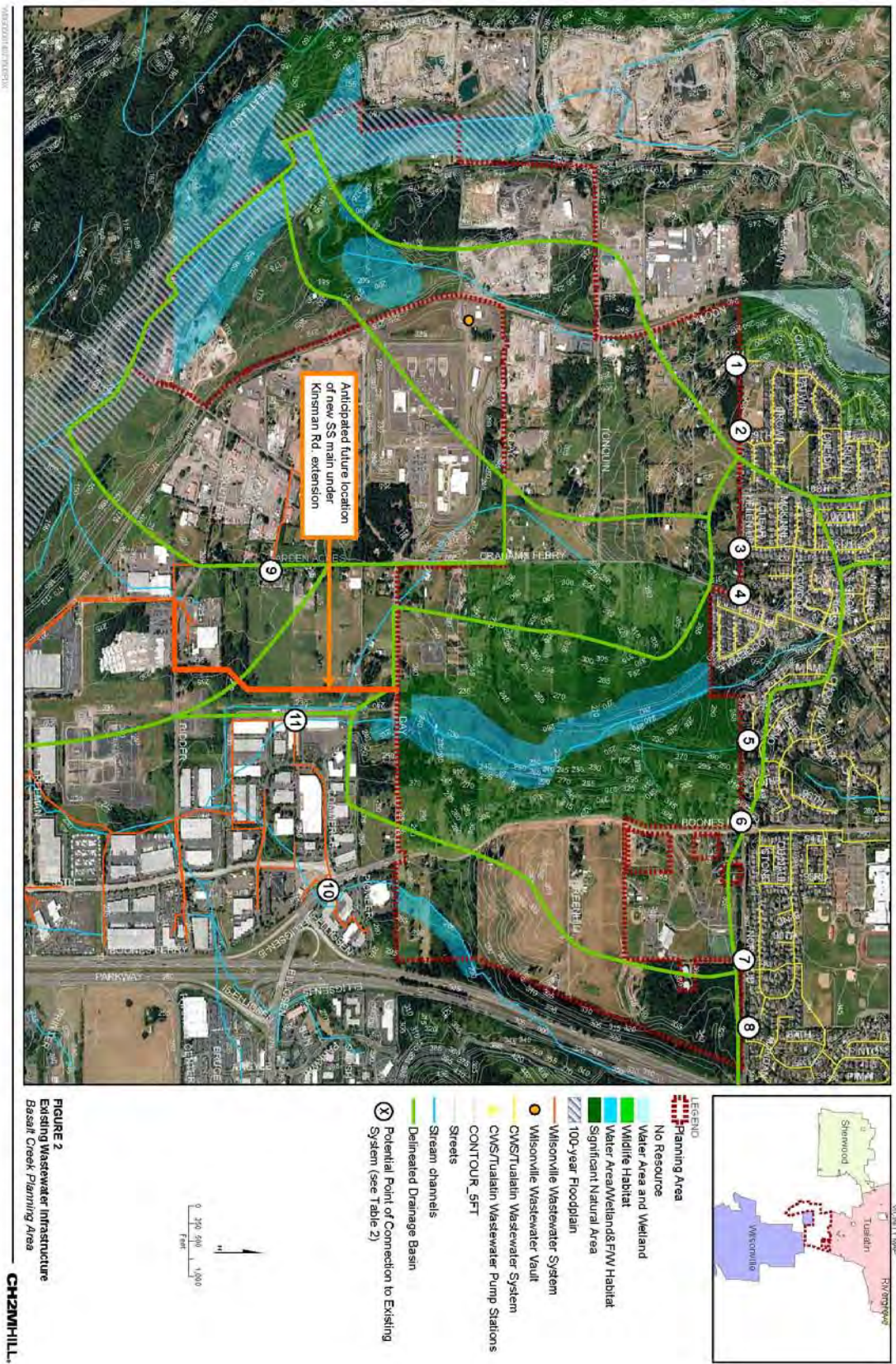


Figure 34 Map of Existing Wastewater Infrastructure near the Basalt Creek planning area. Source: CH2M Hill 2014.

Table 13 Potential Points of Connection to Existing Wastewater Systems for the Basalt Creek planning area. Source: CH2M Hill 2014.

Map ID	Facility Description	Location
1	10-inch gravity main	112 th Ave.
2	8-inch gravity main	109 th Ave.
3	8-inch gravity main	106 th Ave.
4	8-inch gravity main	Grahams Ferry Rd. @SW Helenius Rd
5	Victoria Woods Pump Station	Eno Pl.
6	8-inch gravity main	Boones Ferry Rd.
7	8-inch gravity main	Southwest of the intersection of Norwood Ave. and 89 th Ave.
8	8-inch gravity main	Vermillion Dr.
9	18-inch gravity main	Garden Acres Rd.
10	8-inch gravity main	Boones Ferry Rd. at Pioneer Court (Commerce Circle area)
11	12-inch gravity main	West of Commerce Circle

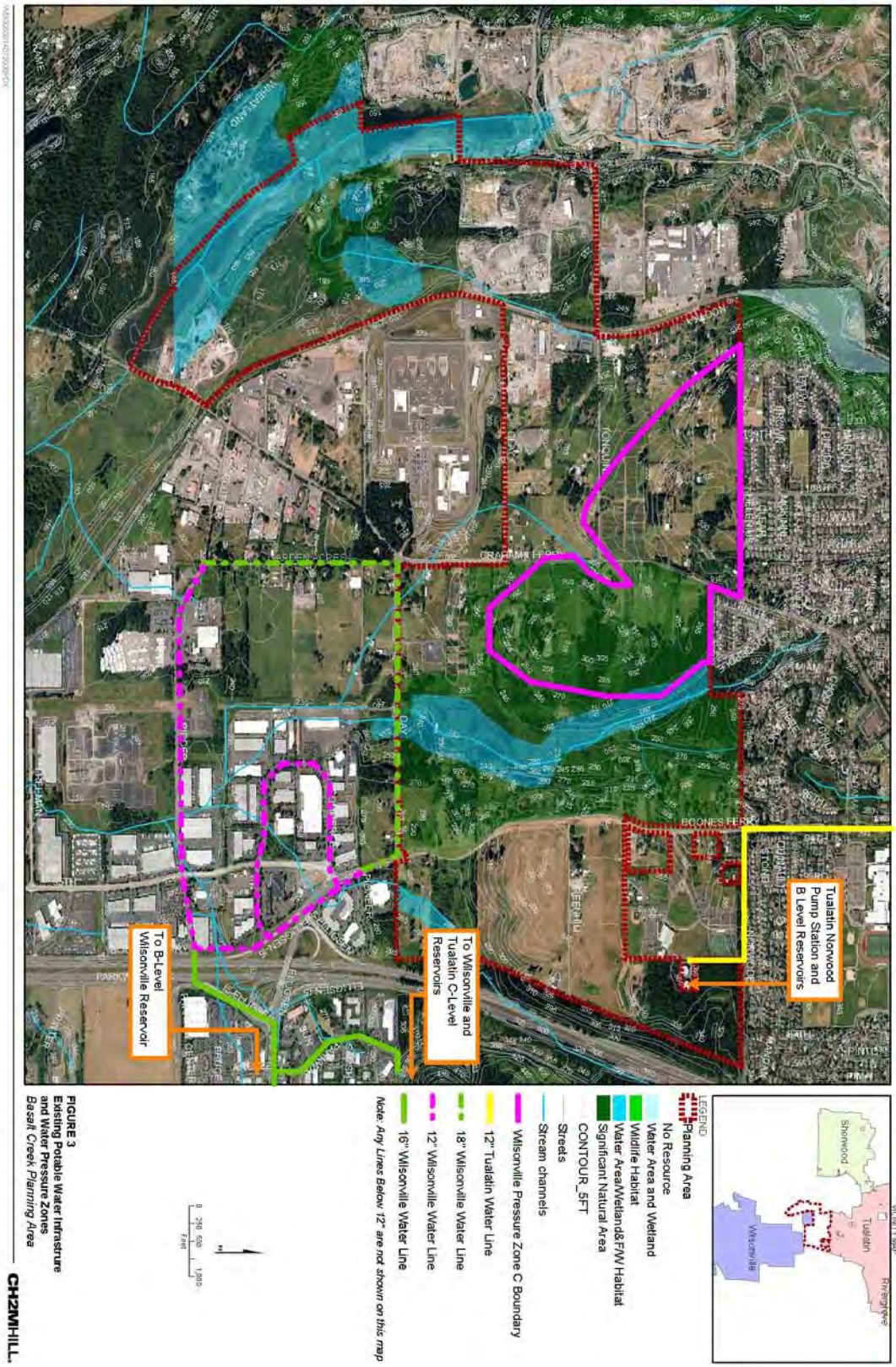


Figure 35 Map of existing potable water infrastructure and water pressure zones in and near Basalt Creek planning area. Source: CH2M Hill 2014.

Table 14 City of Tualatin Water System—Existing Pressure Zones. Source: CH2M Hill 2014.

Pressure Zone	Maximum/Minimum Hydraulic Grade Line (feet mean sea level)	Storage Volume (million gallons)
A	295	7.2
B	399	5.0
C	506	1.8
Bridgeport	360	-

Table 15 City of Wilsonville Water System—Existing Pressure Zones. Source: CH2M Hill 2014.

Pressure Zone	Static Hydraulic Grade Line (feet mean sea level)	Storage Volume (million gallons)
A	320	0.6
B	400	5
C	506	2

VII. Transportation

This section documents the existing transportation system and presents the planned transportation system developed as part of the Basalt Creek Transportation Refinement Plan (TRP). The purpose of the TRP was to identify a major transportation connection between 99W and I-5, in furtherance of the I-5/99W Connector Studies which call for additional east-west traffic alternatives. The plan provides 18 transportation investments broken into short, medium and long term phases, all of which are critical to ensuring that the transportation network functions at acceptable levels over time. The key element is the East-West Connector to 124th Avenue extension. This section discusses the pedestrian and bicycle existing and planned facilities, the current transit system and planned improvements to transit, and details the motor vehicle conditions for base year (2010) and future year (2035) conditions based on the Basalt Creek TRP.

Motor Vehicle System

This section documents base year and future year motor vehicle demand, presents intersection operations, and describes the planned improvements for the motor vehicle system.

Motor Vehicle Demand

Existing a.m. and p.m. peak hour (2010) motor vehicle volumes in the Basalt Creek planning area were collected for the Basalt Creek Transportation Refinement Plan, the SW 124th Avenue Extension Study, the Tualatin TSP, and the Wilsonville TSP. The 2010 volumes, along with percentage of truck traffic, are displayed in Figure 36. These plans applied the Metro Regional travel demand model to estimate 2035 future year p.m. peak hour motor vehicle volumes. The resulting 2035 volumes are displayed in Figure 37.

The Basalt Creek Transportation Refinement Plan applied the Metro regional travel demand model (2009 RTP), which provides estimates of both existing year (2005) and future year (2035) p.m. peak hour trips entering and exiting Transportation Analysis Zones (TAZs). TAZs divide the Portland Metro region into areas that represent sources of vehicle trips within the area, based on a combination of the roadway network, land use information, the Urban Growth Boundary (UGB), zoning, and comprehensive plan designations. Because the demand model covers both TAZs within and around the Basalt Creek planning area, the 2035 model volumes account for both local and regional growth.

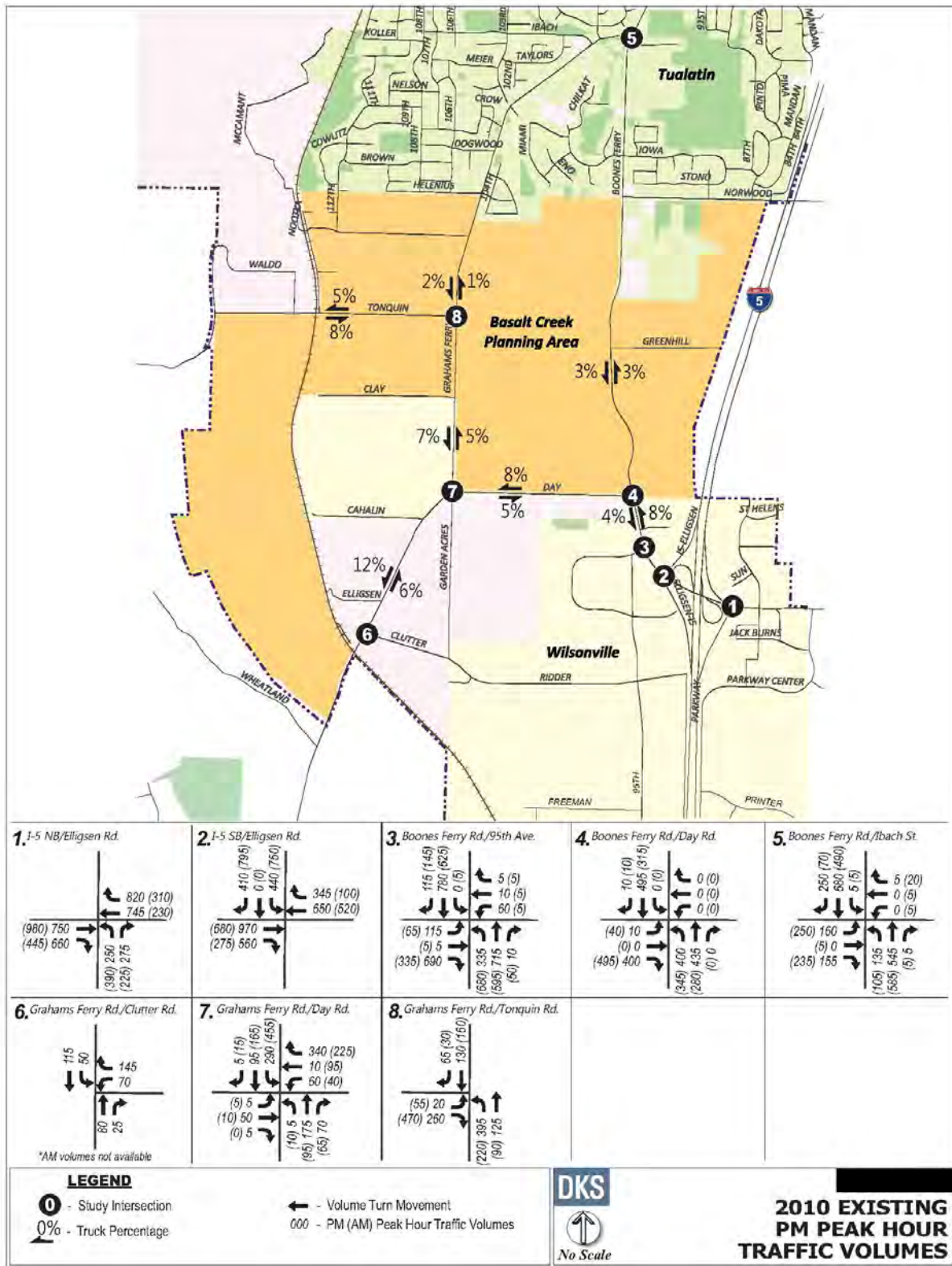


Figure 36 2010 Existing PM Hour Traffic Volumes by intersection in planning area. Source: DKS Associates 2014.

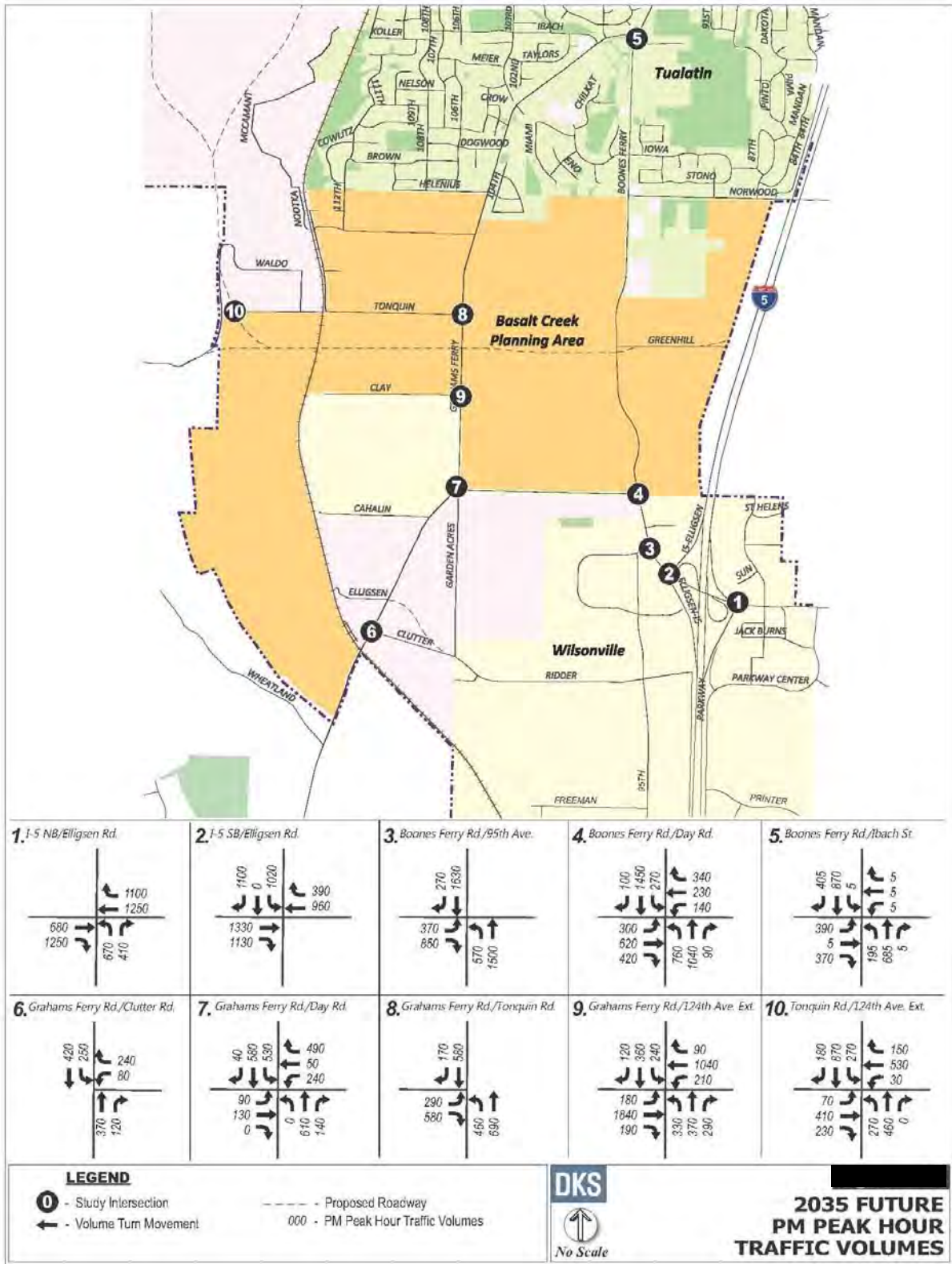


Figure 37 2035 Future PM Hour Traffic Volumes by intersection planning area. Source: DKS Associates 2014.

As shown in Figure 38, the Basalt Creek planning area is made up of three TAZs. Table 16 provides model trip p.m. peak hour estimates for each of the three TAZs. Between 2005 and 2035, the planning area is expected to generate an additional 2,255 trips—a 460% increase from the 2005 estimate of 490 trips.

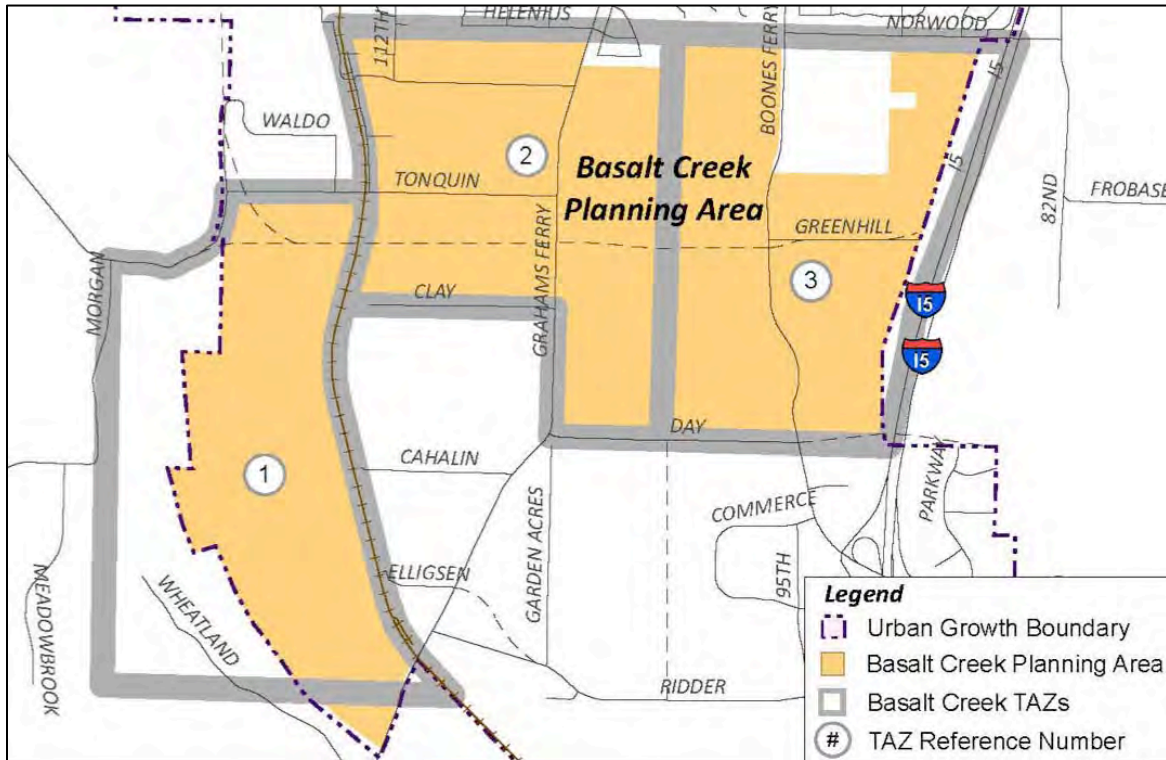


Figure 38 Basalt Creek planning area TAZ Structure. Source: DKS Associates 2014

Table 16 Basalt Creek planning area Estimated PM Peak Hour Trips²⁷. Source: DKS, Metro.

TAZ	2005			2035		
	Entering	Exiting	Total	Entering	Exiting	Total
1	99	267	366	308	559	867
2	50	32	82	528	416	944
3	27	15	42	506	428	934
Total	176	314	490	1,342	1,403	2,745

²⁷ Within Metro’s regional model, TAZs 1-3 are represented by regional TAZs 1019, 1013, and 1014, respectively.

The growth between the 2005 and 2035 model volumes was interpolated to represent model growth for the smaller 2010-to-2035 time increment. This interpolated growth was added to the base year (2010) traffic volumes shown in Figure 36, resulting in the forecast 2035 volumes shown in Figure 37.

Motor Vehicle Operations

Based on the volumes shown in Figure 36 and Figure 37, previous planning studies have documented motor vehicle conditions near the Basalt Creek planning area for existing conditions and for the future planning horizon year 2035. The 2035 motor vehicle conditions assume that the 18 projects in the Basalt Creek Transportation Refinement Plan’s Action Plan, shown in Table 18 and Figure 39, will be constructed by 2035.²⁸ The resulting 2010 and 2035 p.m. peak hour intersection operations are shown in Table 17.

Table 17 P.M. Peak Hour Motor Vehicle Operations. Source: DKS Associates, Metro 2014.

Intersection	Jurisdiction	Mobility Target	Existing Year (2010)		Future Year (2035)	
			PM LOS	PM V/C	PM LOS	PM V/C
I-5 NB/Elligsen Rd ^A	ODOT	0.85	A	0.55	B	0.82
I-5 SB/Elligsen Rd ^A	ODOT	0.85	C	0.60	C	0.89
Boones Ferry Rd/95th Ave ^A	Washington County	0.99	C	0.84	C	0.87
Boones Ferry Rd/Day Rd ^A	Washington County	0.99	C	0.64	E	0.99
Boones Ferry Rd/Ibach St* ^B	Washington County	0.99	B	0.70	D	0.98
Grahams Ferry Rd/Clutter Rd* ^C	Washington County	0.99	A/B	0.31	A/F	>1.50
Grahams Ferry Rd/Day Rd ^A	Wilsonville	D	B	0.55	D	0.95
Grahams Ferry Rd/East-West Arterial ^A	Washington County	0.99	-	-	E	1.00
Grahams Ferry Rd/Tonquin Rd ^A	Washington County	0.99	A/B	0.44	C	0.88
124th Ave/Tonquin Rd ^D	Washington County	0.99	-	-	F	>1.50

Bolded and Red indicates intersection does not meet mobility targets

Worst mainline LOS/worst side street LOS reported for unsignalized intersections

*Existing year is 2011 for these intersections

^A Operations from: Basalt Creek Transportation Refinement Plan, November 2012.

^B Operations from: Tualatin Transportation System Plan, February 2013.

^C Operations from: Wilsonville Transportation System Plan, June 2013.

^D Operations from: SW 124th Ave Extension Traffic Impact Analysis Hybrid Scenario Report, January 2013.

²⁸ Not all 18 projects may be included in the 2014 financially constrained RTP project list.

As shown in the above table, five of the ten study intersections are expected to operate worse than the accepted level of mobility in the 2035 p.m. peak hour.²⁹ While the mobility target shown for the I-5 ramps is 0.85, it may be increased to 0.90 if it can be shown with at least 95 percent probability that queues will not spillback onto the mainline or to the portion of the ramp needed for safe deceleration. Therefore, it is possible that the I-5NB/Elligsen Road intersection may meet the mobility target if queuing is not an issue. Further study is needed for a higher level of certainty.

It is important to note that the forecasting for Basalt Creek Transportation Refinement, 124th Avenue Analysis, and the two city TSPs was performed using earlier versions of the regional travel demand model that assumed more intense development in Basalt Creek and other adjacent areas. The regional model has since been updated (with Metro's "Gamma" model version, for the 2014 Regional Transportation Plan). While the new model was not used for the analysis summarized in this report, it is significant that the overall trip numbers for the planning area are lower due to a decreased forecast for housing units and retail jobs (which produce far more trips than industrial or other commercial employment). This decreased trip forecast (Table 18), in combination with a concept plan that will strategically consider appropriate land uses, multimodal transit networks, local road connections and existing plans for road expansions, will likely mitigate some of the operational deficiencies shown in Table 17.

Table 18 Comparing Housing and Employment Forecasts for 2025 in the Basalt Creek planning area.
Source: Metro 2014.

	New Households	New Retail Employment	New Service Employment	Other New Employment	Total New Employment
Forecast used in Basalt Creek TRP (Beta Version)	1386	467	581	1514	2562
New Forecast (Gamma Version)	1214	46	427	1843	2316
Change between Beta and Gamma forecasts	-172	-421	-154	+329	-246

The 124th Avenue extension is planned to be a five lane roadway; however, the operations shown for the 124th Avenue/Tonquin Road intersection assume 124th Avenue as a three lane facility. As a five lane facility, it is possible that the intersection may meet the mobility target.

At the time of the Basalt Creek Transportation Refinement Plan, the 2035 operational analysis assumed that the East-West Connector (i.e., 124th Avenue south of Tonquin Road) would be located north of Tonquin. However, the arterial is currently planned to be located south of Tonquin. Therefore, operations in Table 17 may vary—especially the Grahams Ferry Road/East-West Connector and Grahams Ferry Road/Tonquin Road intersections—assuming the south alignment of the arterial.

²⁹ Operational issues may also exist in the a.m. peak hour for one or more of the study intersections. Morning peak hour analysis was not available for this study.

Basalt Creek Transportation Refinement Plan Projects

The Basalt Creek Transportation Refinement effort included a recommendation for phased investments to support regional and local transportation needs through 2035. The resulting Action Plan includes the projects shown in Table 18 and Figure 39. Analysis showed that the entire set of projects would be needed to support the local and regional growth reflected in the adopted 2035 RTP model (discussed earlier), and all projects on the list are included in the assumed network on which the operations results shown in Table 17 were based.

The Action Plan project list represents the transportation framework needed to accommodate the RTP's future growth assumptions. However, this framework is different from a list of "reasonably likely" projects (i.e., projects from a financially constrained plan) that would inform a Transportation Planning Rule analysis that would support changes to comprehensive plan/zoning designations. Table 18 includes information on whether each project is identified in the Federal RTP (i.e., reasonably likely) or whether the project was from the State RTP or another source (i.e., not reasonably likely).

Major capacity improvements beyond those listed in Table 18 are not anticipated. Therefore, the trips generated in the study area, as shown in Table 16, are considered "sideboards" for the Basalt Creek planning area, meaning that trip generation lower than these totals should allow the Action Plan network to operate acceptably in 2035. Within this framework, the East-West Connector is a special case requiring further discussion.

East-West Connector Considerations

While the East-West Connector project is not part of the federal financially constrained project list in the adopted RTP, the first phase of this facility has been fast-tracked and funding has been identified for construction between 124th Avenue/Tonquin Road and Grahams Ferry Road and is recommended to be included in the 2014 financially constrained RTP list. Therefore, this section (part of Washington County's 124th Avenue Extension project) can be considered "reasonably likely" for TPR purposes.

Partner agencies on the Basalt Creek Transportation Refinement Plan identified key characteristics that should be included in the East-West Connector in order to support development. These included:

- Design for 45 mph and posted speed limit of 45 mph
- Access spacing of one-half mile to one mile

This means the only accesses provided within the study area would occur at the Grahams Ferry Road and Boones Ferry Road intersections. Additional roadway or pedestrian/bicycle crossings between the north and south sides of the facility would need to be grade-separated.

Table 19 Basalt Creek Refinement Action Plan

ID	Project	Short-Term	Medium-Term	Long-Term	Cost (\$2012)	Previously Planned?
1	124 th Avenue Extension (Tualatin-Sherwood Road to Tonquin Road): Construct three lane road extension with bike lanes and sidewalks	x			\$20,000,000	Federal RTP
2	Tonquin Road (124 th Avenue to Grahams Ferry Road): Widen to three lanes with bike lanes and sidewalks, grade separate at railroad, improve geometry at Grahams Ferry Road ¹	x			\$10,500,000	Federal RTP
3	Grahams Ferry Road (Tonquin Road to Day Road): Widen to three lanes with bike lanes and sidewalks	x			\$5,400,000	Federal RTP
4	Boones Ferry Road (Norwood Road to Day Road): Widen to three lanes with bicycle and pedestrian improvements	x			\$10,800,000	In design
5	124 th Avenue/Tonquin Road Intersection: Signal (may include Tonquin Trail crossing)	x			_ ₂	-
6	Grahams Ferry Road/Tonquin Road Intersection: Signal	x			\$500,000	Federal RTP
7	Boones Ferry Road/Day Road Intersection: Add second southbound through approach lane	x			_ ₃	-
8	Boones Ferry Road/95 th Avenue Intersection: Construct dual left-turn and right-turn lanes; improve signal synchronization, access management and sight distance	x			\$2,500,000	Federal RTP
9a	Tonquin Trail (Clackamas County Line to Tonquin Loop Road): Construct multi-use trail with some segments close to but separated from road	x			\$8,900,000 ⁴	Federal RTP
9b	Tonquin Trail (Tonquin Loop Road to Tualatin-Sherwood Road): Construct multi-use trail with some segments close to but separated from road		x		\$7,100,000 ⁴	Federal RTP
10	124 th Avenue Extension (Tualatin-Sherwood Road to Tonquin Road): Widen from three to five lanes with bike lanes and sidewalks		x		\$14,000,000	Federal RTP
11	East-West Arterial (124 th Avenue to Boones Ferry Road): Construct 5 lane roadway with railroad and creek crossings, integrate segment of Tonquin Trail ⁵		x		\$57,900,000	State RTP
12	Boones Ferry Road (East-West Arterial to Day Road): Widen to five lanes with bike lanes and sidewalks		x		\$1,100,000	State RTP
13	Kinsman Road Extension (Ridder Road to Day Street): Construct three lane road extension with bike lanes and sidewalks		x		\$10,400,000	Federal RTP
14	Day Road (Kinsman Road to Boones Ferry Road): Widen to five lanes with bike lanes and sidewalks		x		\$5,800,000	Similar to RTP project
15	I-5 Southbound off-ramp at Boones Ferry Road/Elligsen Road: construct second right turn lane		x		\$500,000	No
16	Boones Ferry Road/95 th Avenue Intersection: Access management		x		_ ₆	-
17	Day Road Overcrossing: Extend new four lane crossing over I-5 from Boones Ferry Road to Elligsen Road			x	\$33,700,000 - \$44,100,000 _ ₇	State RTP
18	East-West Arterial Overcrossing: Extend new four lane crossing over I-5 from Boones Ferry Road to Stafford Road. Integrate multi-use path in corridor that connects to Tonquin Trail			x	\$38,000,000	State RTP
TOTAL		\$59M	\$97M	\$72-82M	\$228-238M	

¹ Grade separation for Tonquin Road is optional. An at-grade crossing would reduce cost by around \$2,000,000

² Cost included in Project 1

³ Coordinate with Project 4. Cost of approach lane included in estimate for Project 12

⁴ Tonquin Trail cost estimated by Metro as part of trail planning effort

⁵ Project 11 can potentially be built in two phases funded separately, west and east of Grahams Ferry Road. However, traffic benefits needed in the medium term (around 2030) will not be realized unless entire project is completed

⁶ Project details to be determined by further coordination between City of Wilsonville and ODOT. Cost expected to be minimal

⁷ Specific alignment approaching Elligsen Road will determine project cost. Alignment to Parkway Center Drive is estimated at \$33,700,000, and alignment to Canyon Creek Road is estimated at \$44,100,000

* Time frames may shift with updates to the RTP

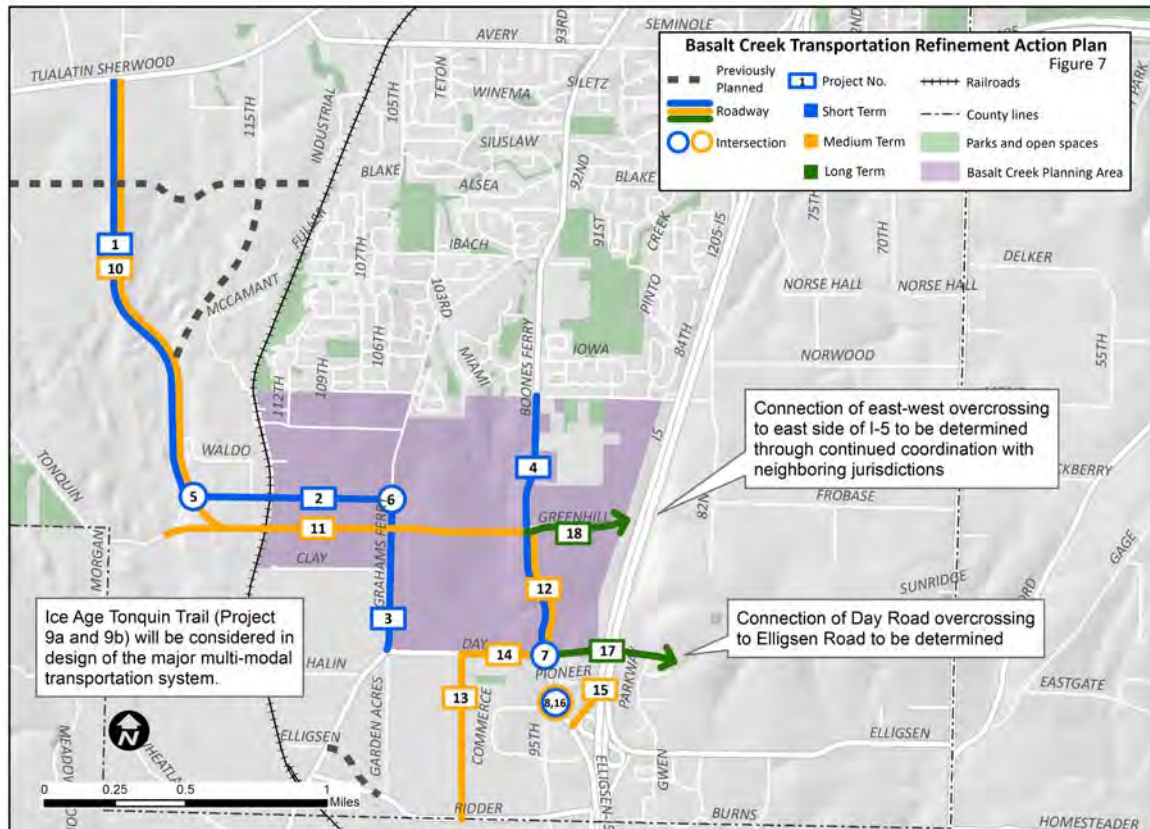


Figure 39 Basalt Creek Transportation Refinement Plan (TRP)

Pedestrian and Bicycle System

The Basalt Creek planning area is primarily served today by Tonquin Road, Grahams Ferry Road, and Boones Ferry Road. However, except for Boones Ferry Road, as shown in Figure 41 and Figure 42, these roads generally do not provide adequate pedestrian and bicycle connections to the Basalt Creek planning area.

While there are adopted design standards and several planned projects that address deficiencies in the existing pedestrian and bicycle system, there are a few rural roads in the Basalt Creek planning area without planned pedestrian and bicycle improvements, including:

- 112th Avenue south of Brown Street
- Clay Street

- Grahams Ferry Road north of Tonquin Road
- Tonquin Loop

As the area develops, these rural roads should be improved to meet urban standards.

Transit System

TriMet currently runs a bus route on Boones Ferry Road through the Basalt Creek planning area (Route 96). This route connects north Wilsonville (at Commerce Circle), Tualatin, and downtown Portland with frequent commuter service during the weekdays. As shown in Figure 39, the route runs along Boones Ferry Road with stops spaced approximately ¼ mile through the Basalt Creek planning area. Weekend transit service, however, is not provided in the planning area.

South Metro Area Regional Transit (SMART) runs transit service to Commerce Circle via Route 2X (Barbur Boulevard Transit Center to SMART Central with a stop at the Tualatin Park & Ride and Route 5 (Commerce Circle to SMART Central). Route 2X runs limited service to Commerce Circle Monday through Friday; Route 5 runs with frequent service Monday through Friday.

TriMet’s WES commuter rail service runs along the rail tracks through the planning area, connecting Wilsonville to Beaverton. While it stops in Wilsonville and Tualatin, it currently does not stop in the planning area.

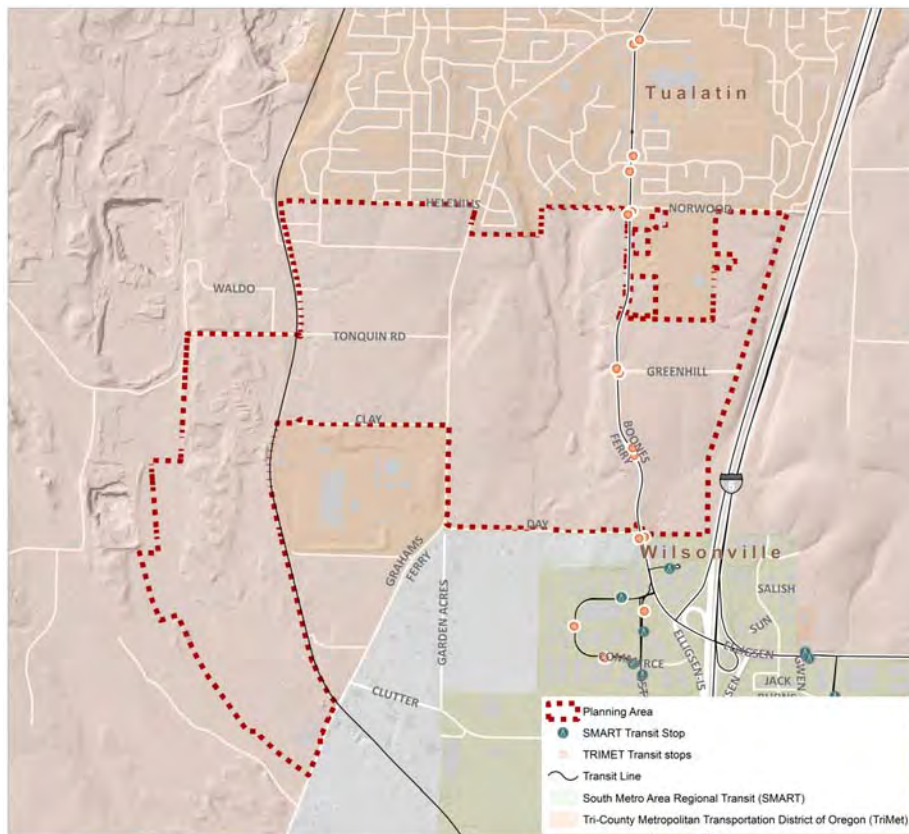


Figure 40 Transit service boundaries for TriMet and SMART in and around Basalt Creek area

Overall, the combined TriMet/SMART transit system meets the needs of the typical commuter—outside of typical commute hours, however, transit service in the Basalt Creek plan area is nonexistent. Two projects have been identified to enhance the transit system adjacent to the Basalt Creek planning area. These projects are from the Tualatin Transportation System Plan, which did not plan for projects in the planning area, and are estimated with a medium-term planning horizon (i.e., five to ten years):

- Look for potential park-and-ride locations south of Bridgeport Village.
- Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible

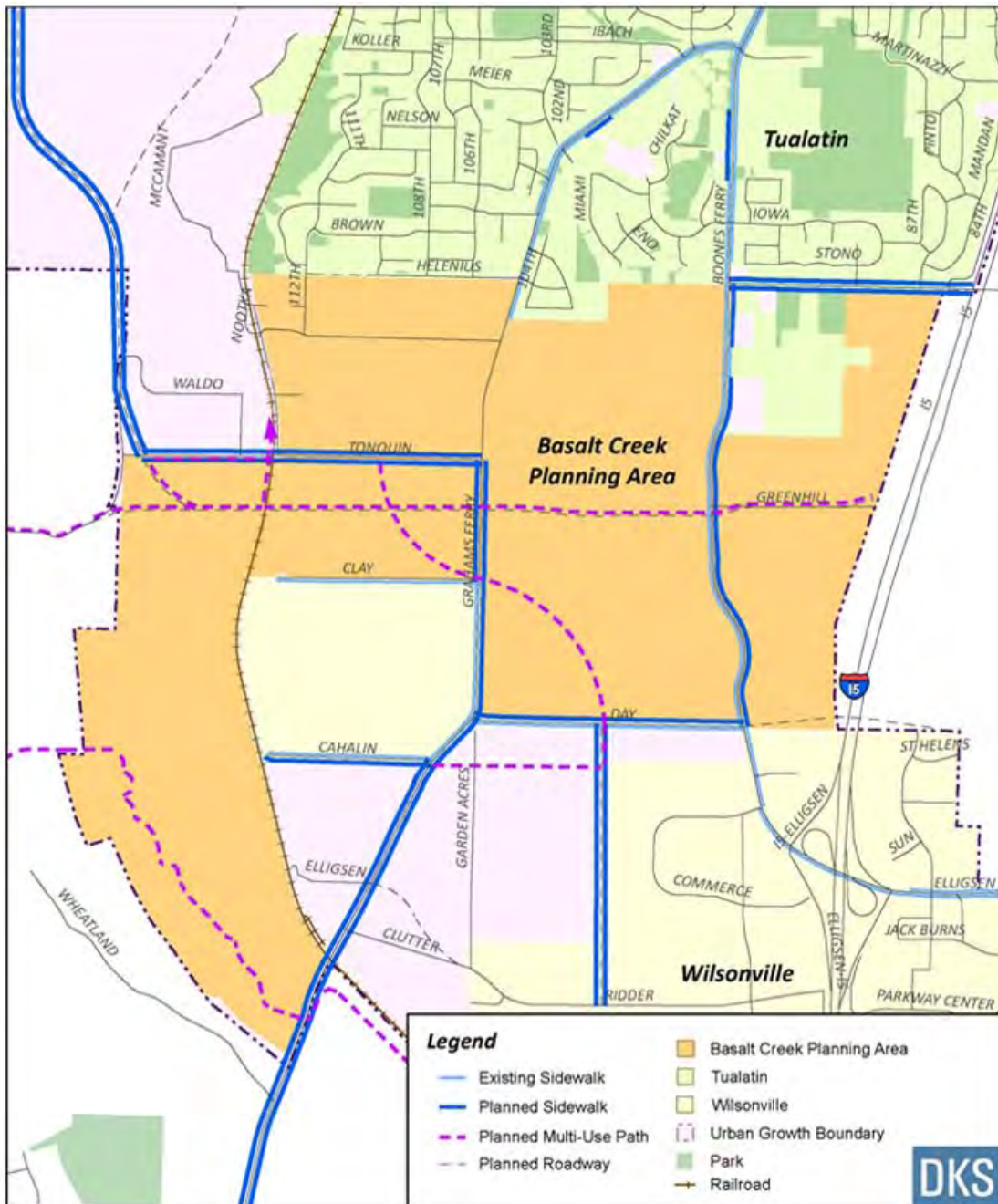


Figure 41 Existing Pedestrian system in Basalt Creek planning area. Source: DKS Associates 2014

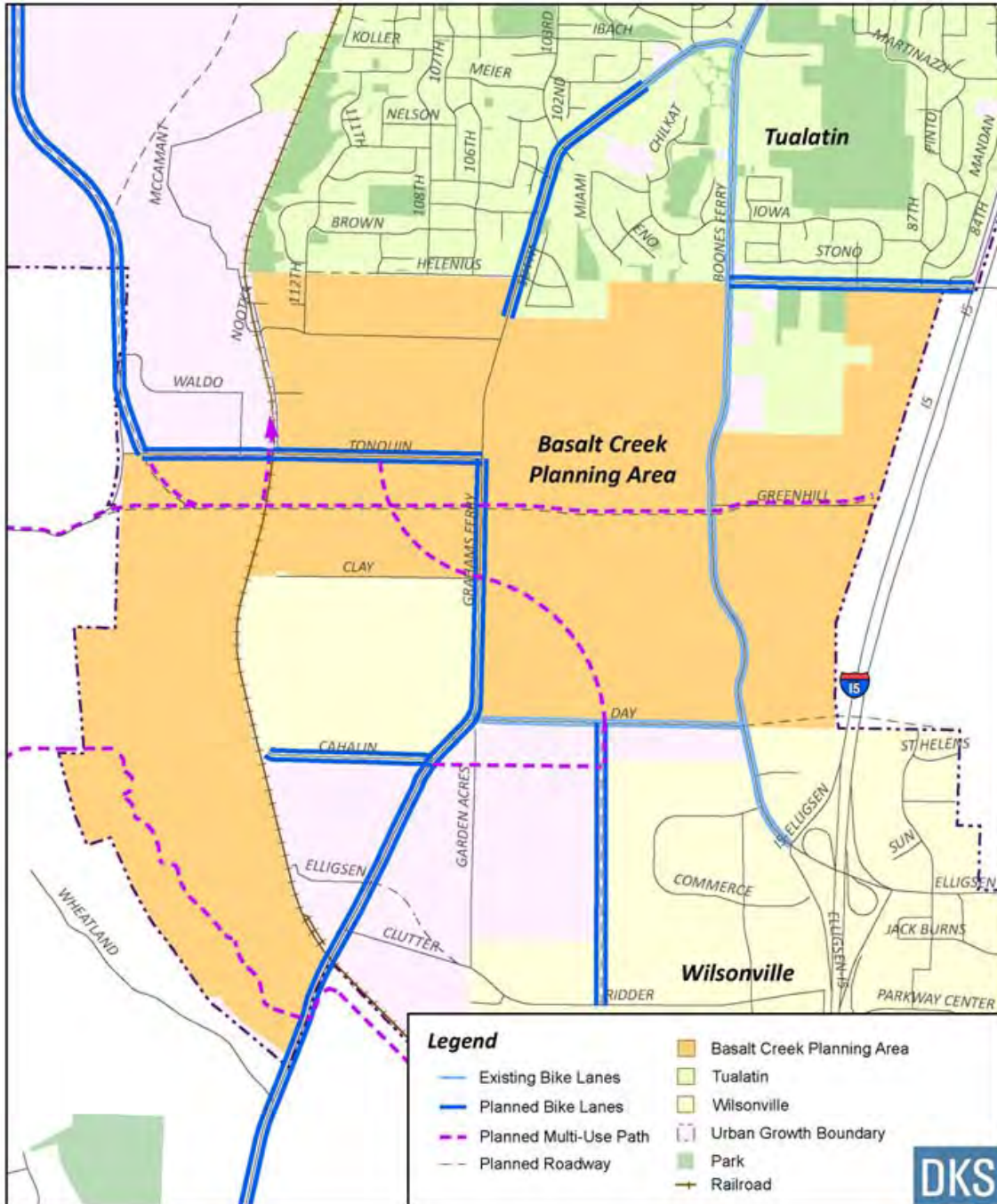


Figure 42 Existing bicycle system in Basalt Creek planning area. Source: DKS Associates 2014

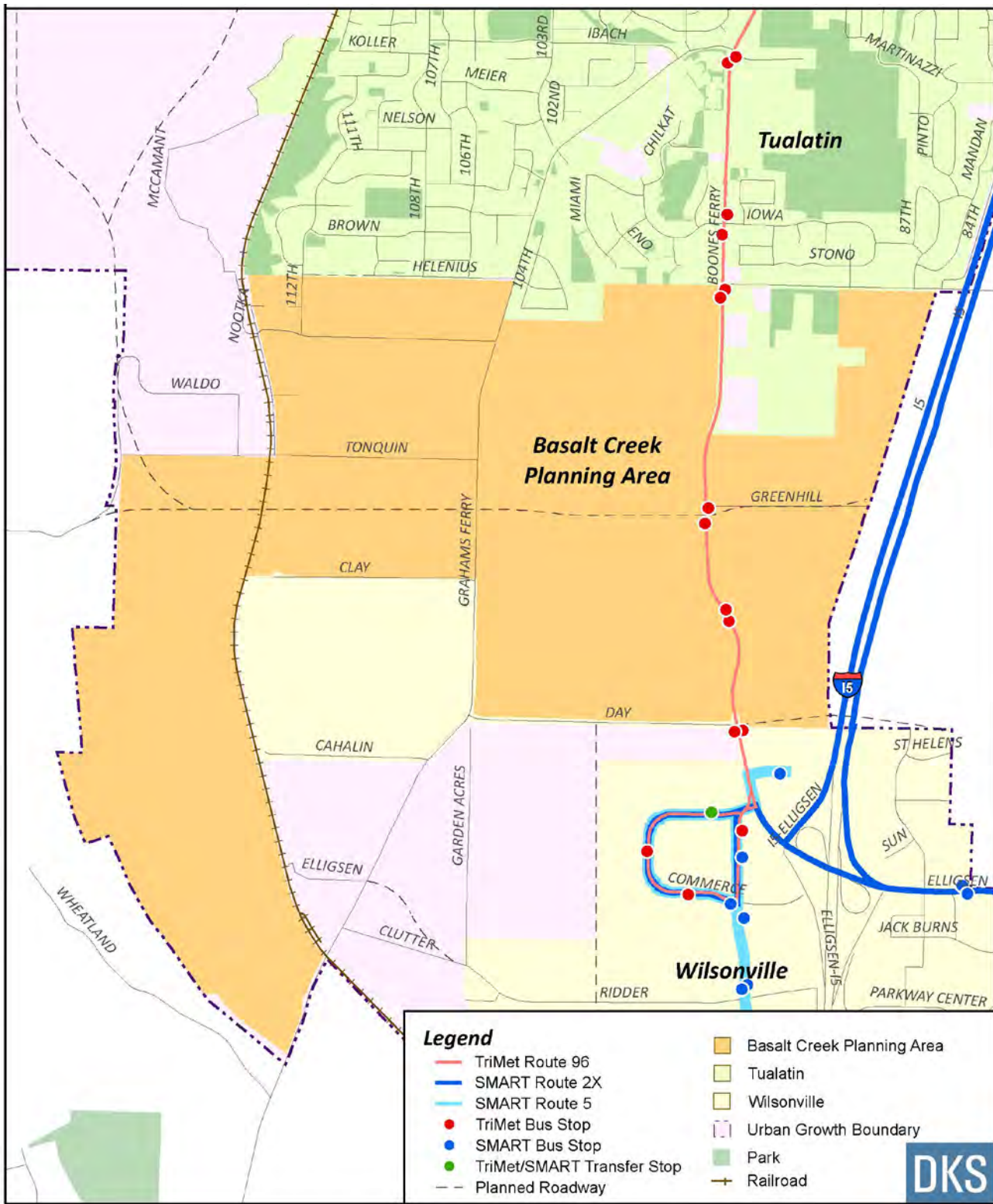


Figure 43 Existing transit system in Basalt Creek planning area. Source: DKS Associates 2014

VIII. Land Capacity Analysis

The bulk of this section describes the methods and data sources used to perform the land capacity analysis for the Basalt Creek planning area. The results of the analysis are presented toward the end of the section.

Methodology

The land capacity analysis is an estimate of the development potential within the planning area to provide a realistic estimate of where and how much land can be developed. The analysis is twofold: an assessment of “buildable lands” – areas that are suitable for development given the physical and regulatory constraints on the land, and two, an assessment of the land supply within the planning area. Land supply is an assessment at the parcel level that identifies areas that are not constrained and are either vacant or redevelopable.

Buildable Lands

The buildable lands assessment focuses primarily on identifying places where there is limited or no development potential. These areas are screened out from the analysis to identify the places where development is most suitable given the environmental and regulatory context. There are a range of factors that influence development potential within the planning area, but they can be generally divided into two categories: hard and soft constraints. Hard constraints are either physical or legal requirements that prohibit new development. These areas will be fully excluded from the analysis with the assumption that no new development will occur in them. Soft constraints are also based on physical or legal requirements but do allow for some development, and provide guidance for assigning appropriate land uses and intensities. The analysis of constraints for the purpose of assessing land capacity focused primarily on environmental and manmade constraints. A conservative approach is taken in this analysis toward development in and around environmental constraints to emphasize preservation of natural resources.

Hard Constraints

State, regional and local laws provide a range of protections for environmental features and habitat. This analysis provides a framework that meets:

- Oregon Statewide Planning Goal 5
- Metro Regional Functional Plan Requirements (Titles 3 and 13)
- Clean Water Services (CWS) Regulations
- City of Wilsonville Significant Resource Overlay Zone (SROZ) Development Code

Since local regulations are compliant with state and regional land use requirements, and in some cases go above and beyond what is required, this analysis uses the CWS and Wilsonville SROZ requirements as

the foundation for determining constraints. For the purpose of this analysis, where methodologies differ the approach that offers more protection is taken into account. The major differences between CWS and Wilsonville’s SROZ requirements are summarized in Table 20 below. The chief difference between the two is that Wilsonville differentiates for size and location of wetland and includes more drainage area classes.

Table 20 Comparing methodologies³⁰ for buffering natural resources between Clean Water Services and Metro’s Title 3/City of Wilsonville. Source: Fregonese Associates, Clean Water Services, City of Wilsonville and Metro 2014.

COMPARING BUFFERING METHODOLOGIES

WATER FEATURE	CWS	SROZ and Title 3
Primary Water Feature	50 ft	50 ft
Primary Water Feature -- With steep slope	Up to 200 ft	Up to 200 ft
Secondary Water Feature	15 ft/25 ft/50 ft	15 ft
Secondary Water Feature -- With steep slope	Up to 200 ft	50 ft
Slope Stability	Top of ravine plus 35 ft	

It should be noted that when actual development takes place, a more detailed and site-specific analysis will be undertaken and will include application of local regulations. The analysis in this report provides a detailed but high-level assessment of buildable lands for the purpose of creating the concept plan.

Hard constraints are split into two major categories: environmental and manmade. Basic environmental constraints are summarized below:

- Open Water
- Streams
- Wetlands
- Floodplains (50% reduction of developable area)
- Title 3 Water Quality and Flood Management protections
- Title 13 Nature in Neighborhoods (20% reduction of developable area in areas designated Riparian Habitat Classes I and II)
- Steep Slopes (25% slopes and greater)

Unless otherwise noted all of the constraints described above are fully excluded from the land being considered for development in this analysis.

³⁰ For definitions of features, please refer to CWS’s Design and Construction Standards - Chapter3, City of Wilsonville’s Significant Resource Overlay Zone (SROZ) Ordinance, and Metro’s Urban Growth Management Functional Plan

The following describes the environmental hard constraints methods and findings in more detail. Maps showing the environmental constraints (open water, wetlands, streams, floodplains, and Title 3 and 13 areas) can be found in *Section III: Natural and Historic Resources*.

Open water

All areas of open water in the planning area were digitized by Fregonese Associates based on 2013 and 2012 leaf-off aerials.³¹ Forty-nine (49) acres of open water (which includes a 50-foot buffer surrounding water features) were excluded from the analysis.

Streams

Three categories of streams were defined for the analysis and include:

- Natural streams (18,845 feet)
- Underground streams (789 feet)
- Intermittent streams (1,402 feet)

Stream categories determined by visual survey of 2013 and 2012 leaf-off aerials and intermittent stream and through field checks conducted by the City of Wilsonville. For the constraints analysis the following buffers were applied:

- Natural streams (50 foot buffer)
- Intermittent streams (15 foot buffer)

Underground streams were not considered in the analysis. A total of 31 acres of streams and associated buffers were excluded from the analysis.

Wetlands

Wetlands were identified using RLIS, the Wetland Delineation Report for Proposed Boones Ferry Widening, and additional wetlands digitized by Fregonese Associates based on 2013 and 2012 (leaf-off) aerials. For the constraints analysis the following wetland buffers were applied:

- Wetlands (50-foot buffer)
- Isolated wetland and smaller than a half acre (25-foot buffer)

A total of 69 acres of wetlands and buffer areas were excluded from the analysis.

³¹ Leaf-off aerials are aerial photos taken during a season (usually winter) when there is a lack of foliage on deciduous tree and shrub species, and ground features (including water bodies) can be seen more distinctly.

Floodplains

Areas identified by FEMA as being within the 1% annual chance flood event area were constrained by 50% for the analysis, resulting in a total of 53 acres of land within the 100 year floodplain.

Title 3-Designated Land

Title 3 is a regulatory designation used by Metro to protect riparian resources such as streams, wetlands and floodplains. Title 3 restricts development within these areas to protect natural resources as well as life and property threatened by flooding. There are 116 acres of Title 3 land within the planning area.

Steep Slopes

Steep slopes were analyzed using RLIS data and digitized slopes by Fregonese Associates using a 3-foot digital elevation model (DEM) provided by Metro (Figure 44). Using RLIS, only 41 acres of steep slopes were identified. The 3-foot DEM provides additional accuracy and added nine additional acres of steep slopes, for a total of 50 acres of slopes. The analysis includes non-isolated slopes, greater than half an acre, natural and or along a riparian area. These areas are excluded from the analysis.



Figure 44 Map showing classification of slopes by steepness in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

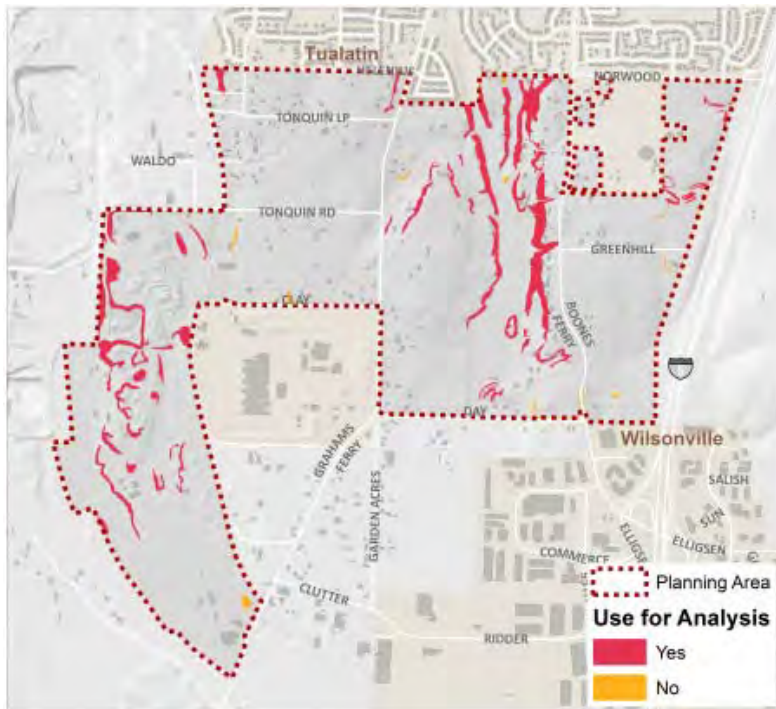


Figure 45 Slopes over 25% in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

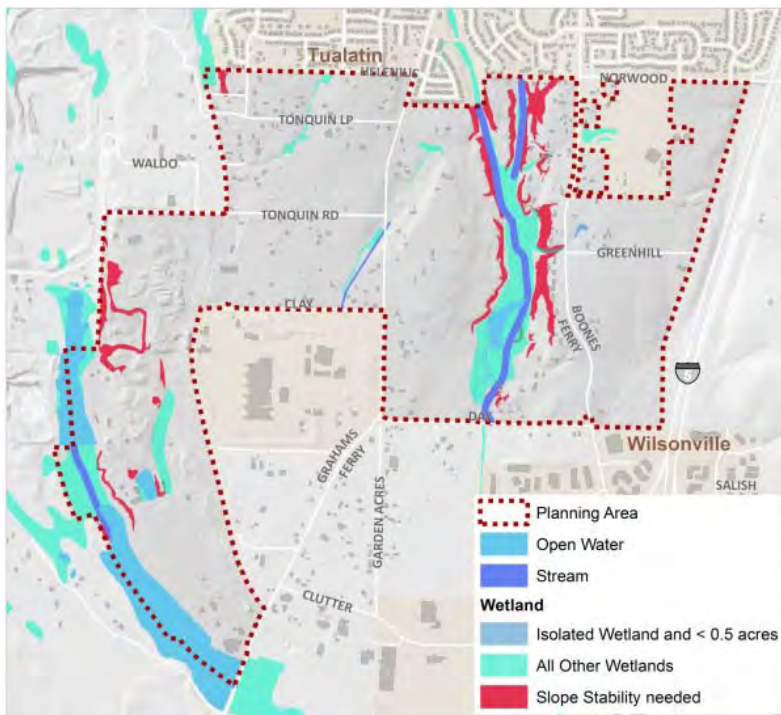


Figure 46 Slope stability in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014.

Slope Stability

Clean Water Services has a requirement for slope stability within vegetated corridors. CWS requires an additional 35 feet for steep slopes within a vegetated corridor from top of ravine. This affects streams, open water and wetlands. The slope stability is in effect for a distance of up to 200 feet. This removes an additional area of 11 acres from the analysis (Figure 46).

Manmade Constraints

Basic manmade constraints include:

- Easements
 - BPA easements
 - PGE easements and substation
 - Natural Gas Pipeline
- Roads
 - Existing
 - Future/planned roads and expansions included in the Basalt Creek Transportation Refinement Plan

All of the manmade constraints are fully excluded from the buildable lands. The following describes the methodology and findings for the manmade constraints:

- Almost 16,000 feet of transmission lines crossing the area
- Two Easements:
 - BPA: 42.3 acres
 - PGE: 18.0 acres plus 4.1 acres substation
- Two Natural Gas lines:
 - 25.7 acres
- For constraints analysis:
 - Remove from buildable land

Roads

There are four major road projects:

- East-West Connector (6,460 feet)
- 124th Ave. Extension (890 feet)
- Boones Ferry Road (4,860 feet)
- Two 2035 I-5 Overcrossings (approx. 4,000 feet)

Soft constraints:

- Inverse buffering of tax lots along the alignments by 10-foot increments to accommodate for projects

Additional road projects:

- 11,512 feet

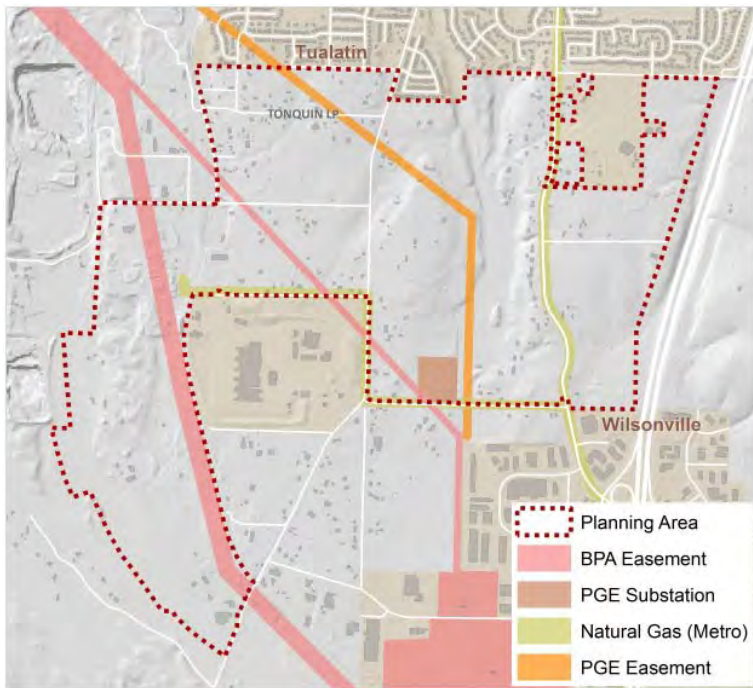


Figure 47 Infrastructure constraints in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

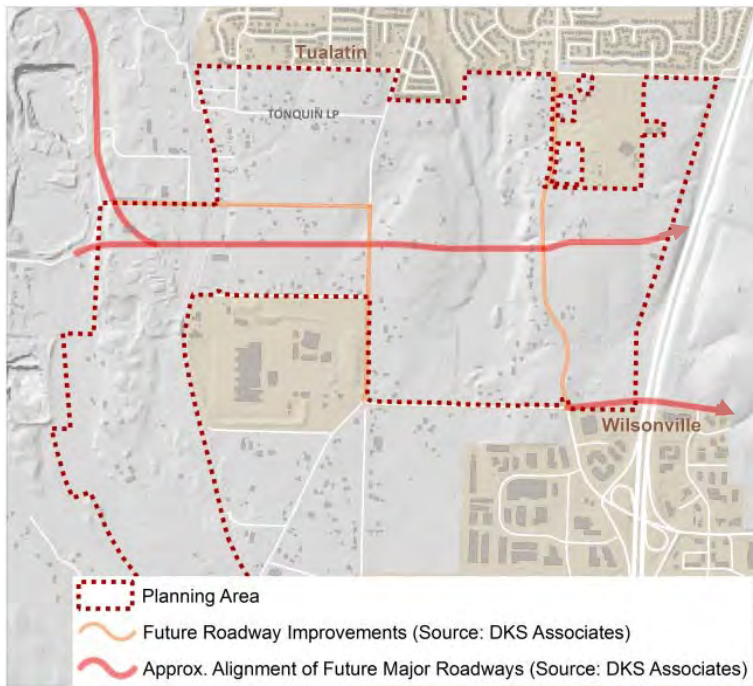


Figure 48 Road constraints in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

Soft Constraints

Soft constraints provide guidance for determining suitability for different land uses in areas that are environmentally constrained. Two key soft constraints are included in the analysis: Slopes greater than 10% (as a constraint for industrial suitability) and Title 13 protections of upland habitat

Title 13 – Designated Land

Title 13 refers to Nature in Neighborhoods. It was adopted by Metro in 2007 as an enhancement to Title 3. Title 13 encourages the protection of habitat and conservation efforts. For our analysis we restricted development within the Riparian Class I and II. There are 431 acres of Title 13-designated land in the planning area. For the constraints analysis, the developable acreage was reduced by 20%. Title 13 is considered a soft constraint, as it is a policy guidance designation but not regulatory.

Constraints Summary

Overall 35% (297 acres) of the total land area within the Basalt Creek planning area is constrained.

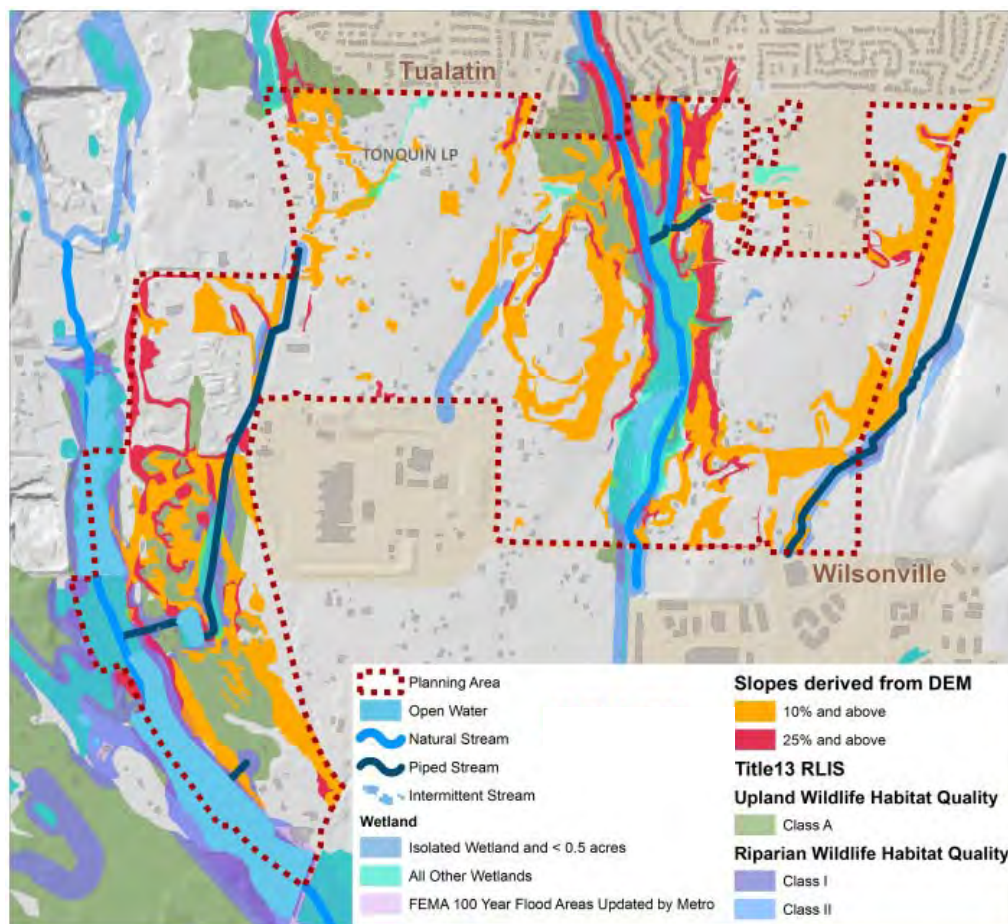


Figure 49 Map of development constraints (excluding roads) in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

Figure 50 below illustrates the land area that is either fully or partially constrained based on the methodology described above.

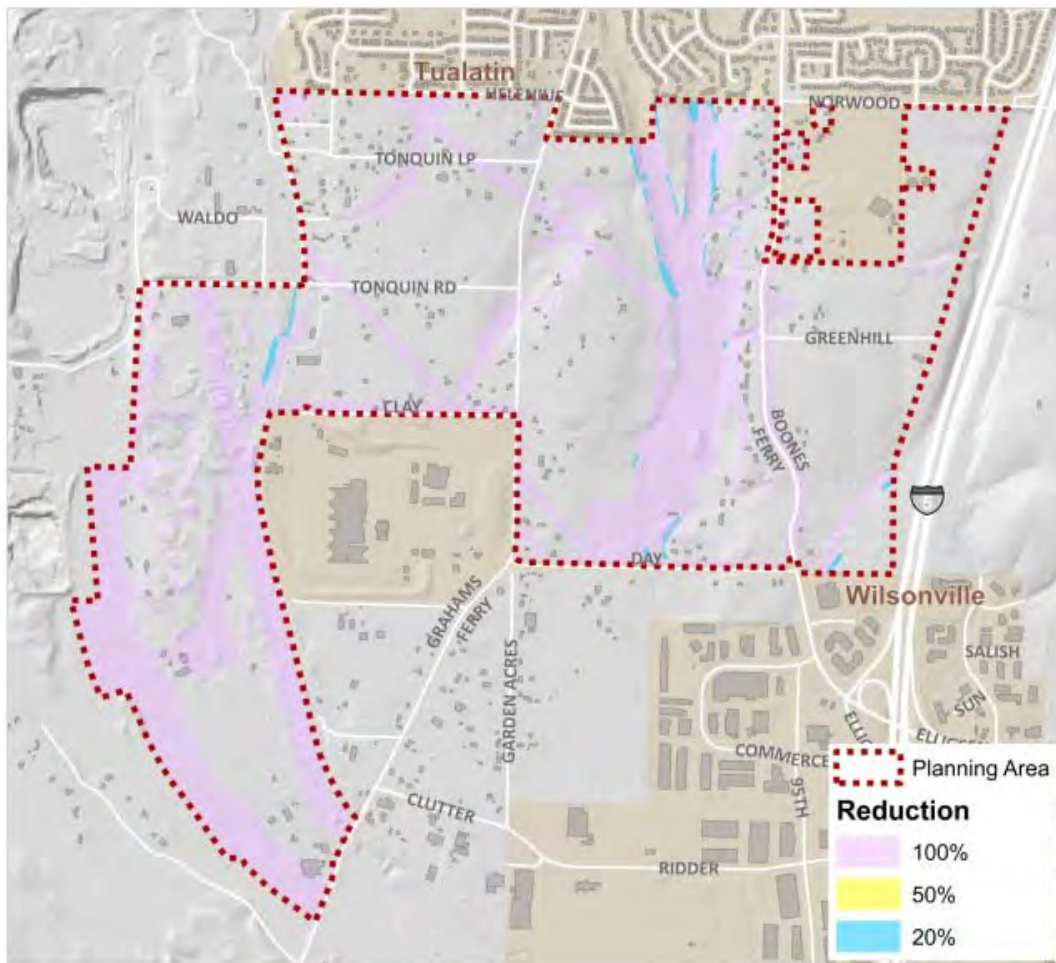


Figure 50 Map of all constrained area (hard constraints) in the Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

Land Supply

The second step in the buildable lands analysis examines the potential for new development or redevelopment of existing uses within the planning area. While much of the land within the planning area is vacant, there are existing businesses, homes and other uses within the area that are considered. This part of the analysis brings together the buildable lands analysis with an assessment of developable land within the planning area to provide an estimate of land supply available for development. This analysis is conducted at the tax lot level because land uses are tied to property lines.

The outcome of this analysis is to classify every parcel within the planning area into one of the three categories described below:

- Vacant Land – Land ready to build, no major structure on site
- Redevelopable Land – Land with existing uses but have redevelopment potential
- Stable Land – Land and structures on it will not change in the future

The land supply analysis is then combined with the buildable lands to create a geographically referenced database of land capacity within the planning area.

The land supply analysis is based on four major steps (Figure 51):

- Existing Land Use – Land use provided by tax lot data via RLIS
- Visual Survey – Ground proofing via aerials and online tools
- Building Value – Define “stable” and redevelopment potential via building value
- Local Input – Refine analysis with local input

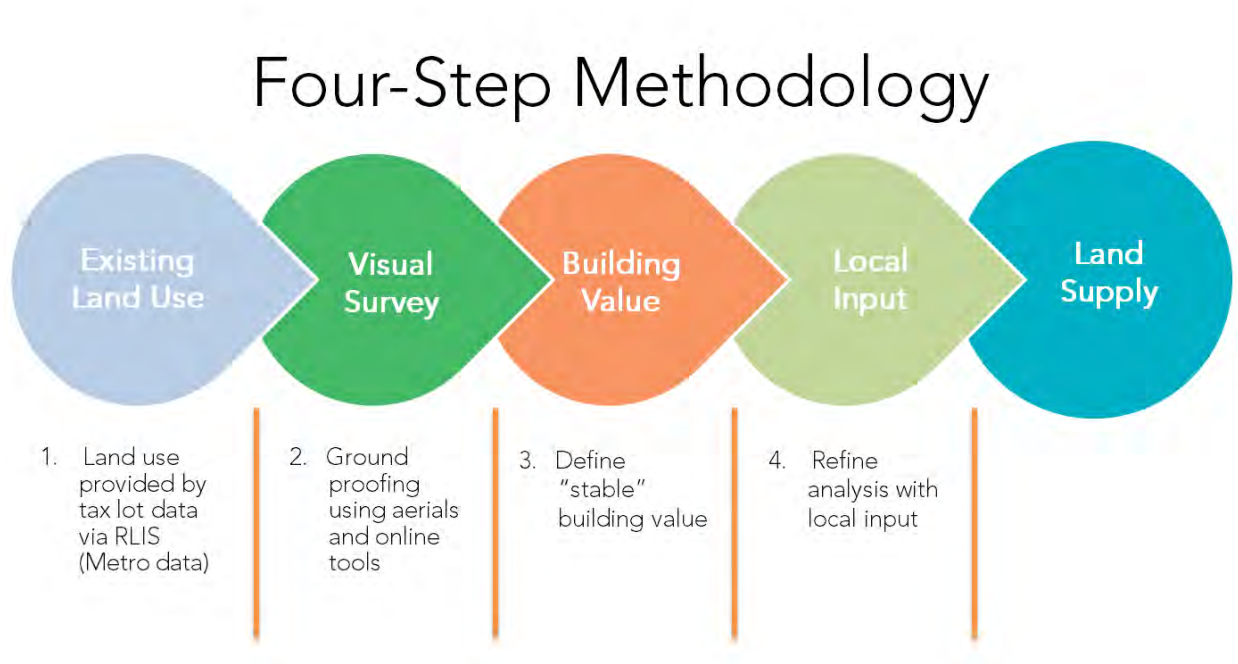


Figure 51 Graphic illustration of four-step methodology for analyzing land supply. Source: Fregonese Associates 2014.

Existing Land Use

In this step parcels are categorized into either developed or vacant land. Step one is based on existing land use using tax lot data provided by RLIS. Parcels that are considered developed are classified in RLIS as:

- Commercial
- Industrial
- Public
- Residential

Parcels that are considered vacant are classified in RLIS as:

- Rural
- Forest
- Agriculture
- Unknown
- Vacant

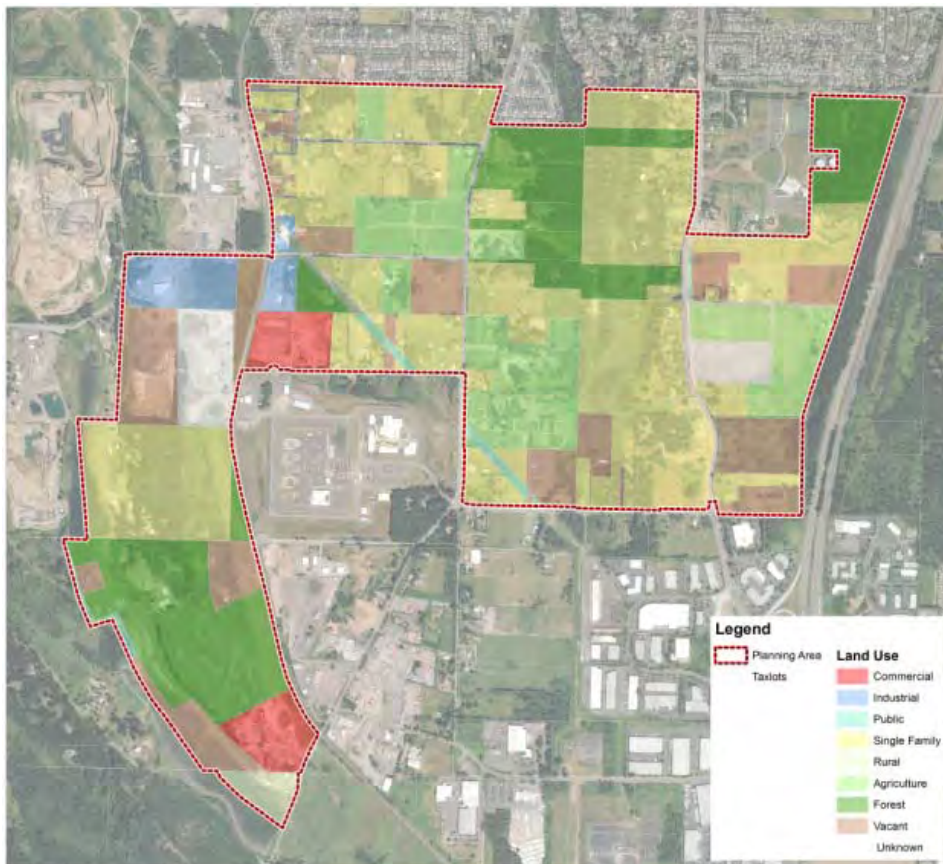


Figure 52 Map of existing land uses inside Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

Visual Survey

In step two Fregonese Associates used a visual survey, other data resources and online tools to confirm and refine tax-lot-based classification of developed and vacant land. First, the vacant and developed land inventory (RLIS March 2014) was utilized to further refine the tax-lot-based analysis. The vacant and developable lands inventory is not limited to the tax lot lines and uses a “cookie cutter approach” around buildings to adjust for large amount of “unused” land on a development lot that may have an existing structure. Using this dataset as a guide in parallel with aerial photography, Google Map Street View, and Bing Map Bird’s Eye the parcel dataset was refined.

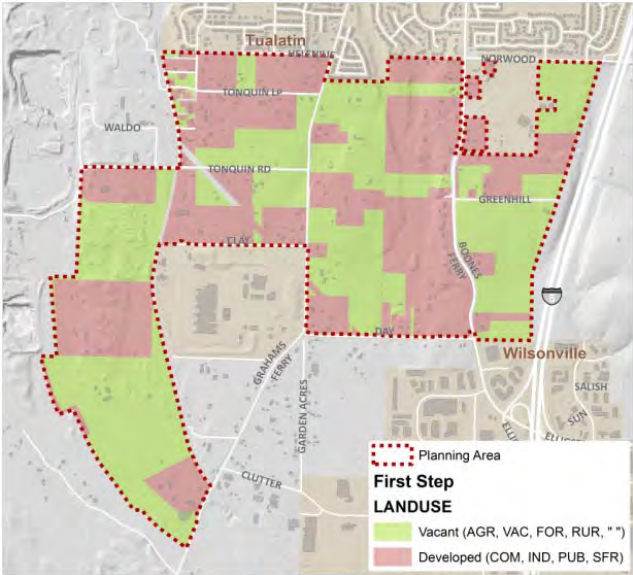


Figure 53 Vacant and Developed land as identified by Metro data. Source: Fregonese Associates, RLIS 2014

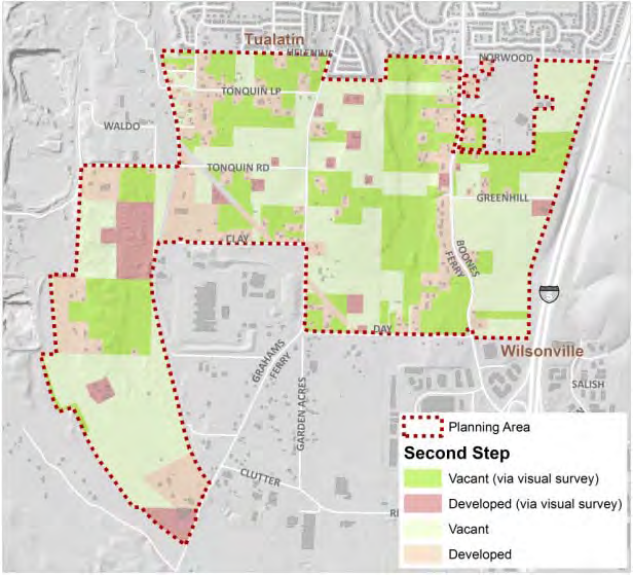


Figure 54 Map of Vacant and Developed land identified via visual survey in Basalt Creek planning area. Source: Fregonese Associates, RLIS 2014

Building Value

Once vacant and developed lands were identified an assessment of redevelopment potential was conducted. This step analyzes developed parcels classified under steps 1 and 2 and subdivides them into two categories: redevelopable or stable. Redevelopable means there is an existing use that will likely redevelop over the planning period and can thus be considered as part of the land capacity. Tax lots defined as stable are where no changes in existing land use are expected, so no additional growth in households and employment are expected. Tax lots classified as stable are fully excluded from the buildable lands.

First, tax lots with non-commercial structures on developed land were classified as stable. This captures residential uses in the planning area. The average building value (\$125,474) was then used to create a break point for building value to estimate redevelopment potential. Tax lots with a building value of \$150,000 or more were included in the analysis as “stable” the remainder are classified as redevelopable. This cutoff point was based on a combination of average building value and input from local property owners about their interest in redeveloping.³²

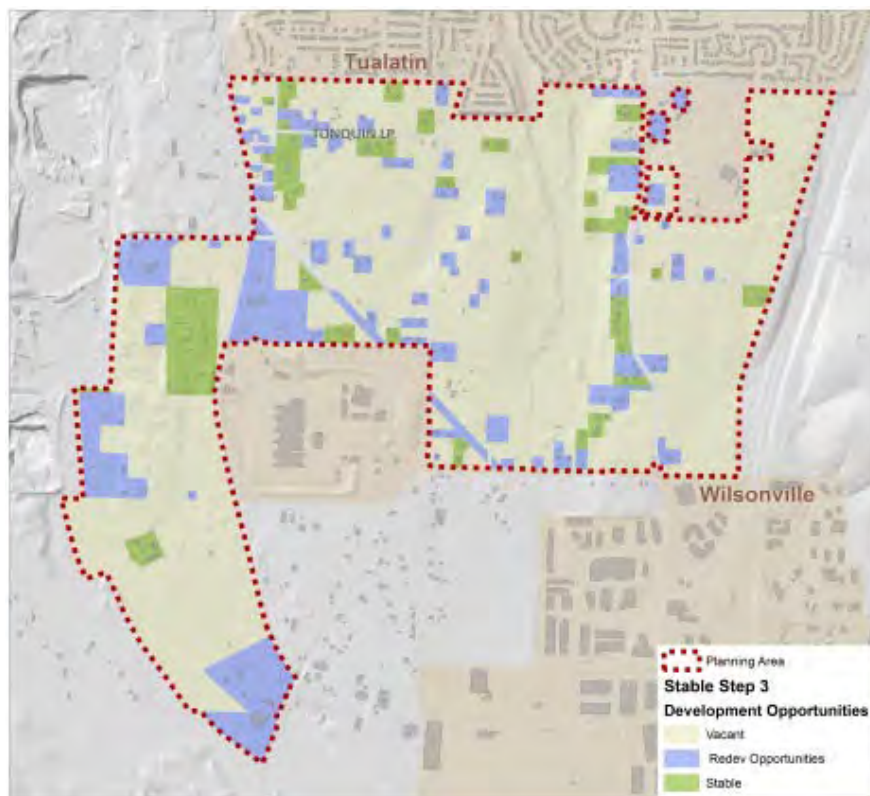


Figure 55 Vacant, Stable and Redevelopable Land in the Basalt Creek planning area, as identified by combining Metro data and visual survey data. Source: Fregonese Associates, RLIS 2014.

³² Raising the cutoff from \$125,000 to \$150,000 makes an assumption that most properties will redevelop as they have been developed previously under rural circumstances. There are a reasonable number of properties in the third and fourth quantiles of property values that are stable, but not as many as are likely to redevelop.

Local Input

The final step refines the stable and redevelopable tax lot inventory using information gathered through the planning process. A number of stakeholder interviews and focus groups were held with property owners in the planning area. Input gathered from these meetings was used to refine the assumptions from steps 1-3.

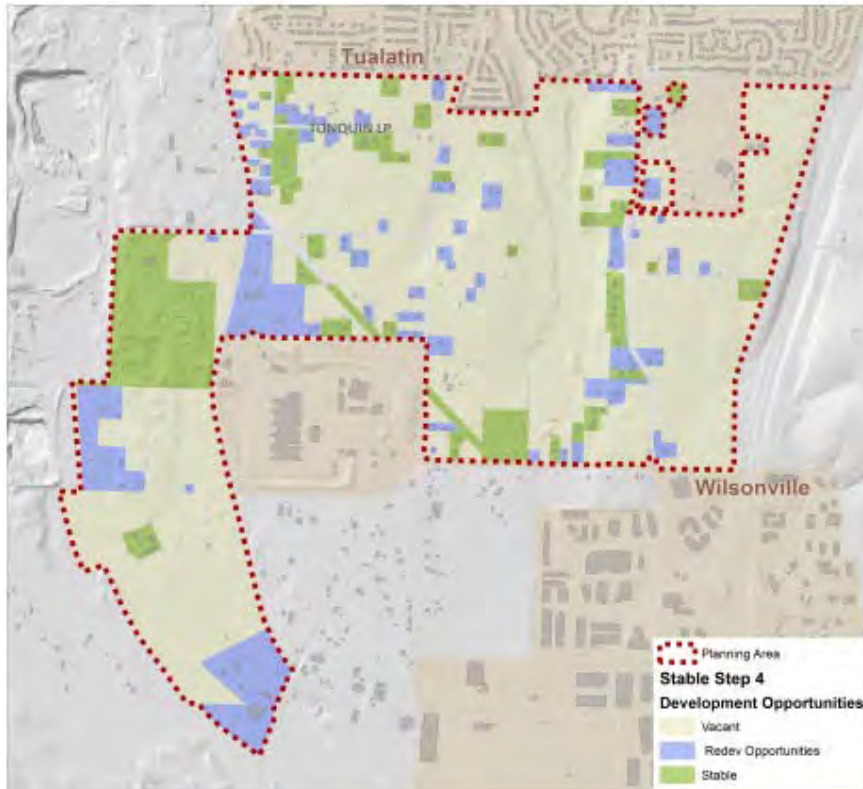


Figure 56 Final Map of Vacant, Stable and Redevelopable Land in the Basalt Creek planning area, as identified by combining Metro data, visual survey data, and local input from property owners. Source: Fregonese Associates, RLIS, local property owner input 2014.

Land Supply Findings

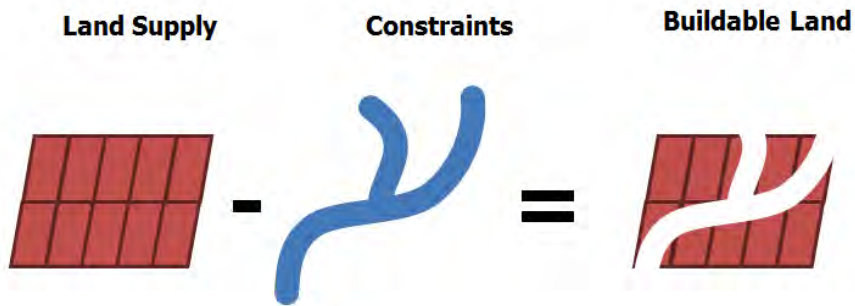
Through the process described above 43 tax lots within the planning area are defined as stable. Absent any constraints the land supply for the planning area includes:

- 596 acres of vacant land
- 117 acres of land with redevelopment potential
- 109 acres of stable land

The remaining acreage is covered by roads.

Land Capacity

The final step in determining the land capacity for the planning area brings together the buildable lands and the land supply analysis to provide a robust estimate of land development capacity within the planning area.



The land capacity estimate for the planning area is 391 acres. This land capacity analysis will form the foundation for determining land use suitability and creating the development alternatives in the next phase of the project.

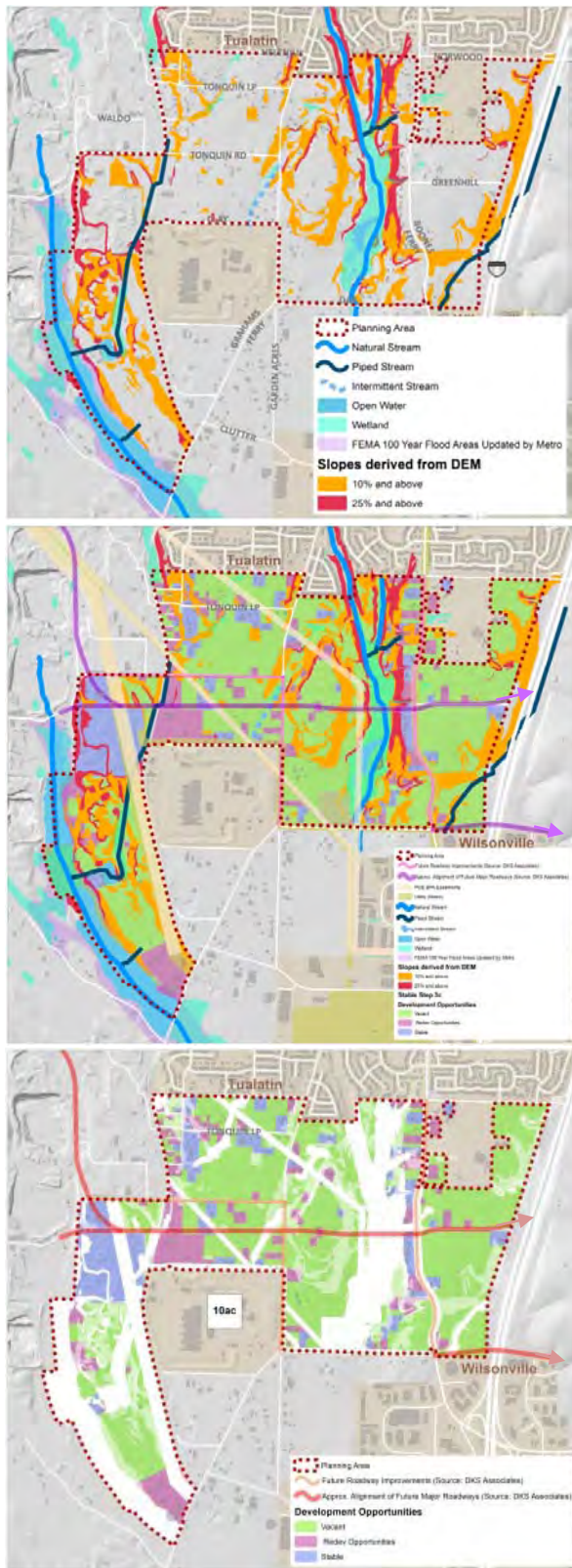


Figure 57 Sequence of maps illustrating the data and steps used to determine the total acreage of developable land in the Basalt Creek planning area. Source: Fregonese Associates 2014.

Public Involvement Plan
Basalt Creek Concept Plan
April 2014

OVERVIEW

This document outlines the Public Involvement Plan for the Basalt Creek Concept Plan and includes in detail the outreach, education and communication services that the project team, comprised of the Fregonese Associates Team (FA Team) and staff from Tualatin and Wilsonville, will use to engage the public and stakeholders in development of the Concept Plan. The FA team will work closely with cities of Tualatin and Wilsonville Project Management Team (PMT) to coordinate and develop a transparent planning process based on the best available data, including meaningful public engagement strategies to prioritize critical issues. The FA Team will communicate clear and realistic growth scenarios and ultimately develop consensus around an achievable preferred land use strategy.

This memo is organized around four **major tasks**:

- I. Engagement Materials
- II. Targeted Stakeholder Outreach
- III. Public Events and Online Surveys
- IV. Informational Updates & Announcements

Within each of the major tasks, **task deliverables** from the detailed scope of work are included and outlined in detail. For each **task deliverable**, the Public Involvement Strategy includes the following information:

- **Description and Purpose**
Describes the purpose of the deliverable to provide context for the activity and its relationship to the overall project
- **Materials**
Each task deliverable may contain one or more than one set of materials, which will be identified in this section
- **Roles**
Anticipated roles are identified for the PMT and FA Team within each task

Roles and Responsibilities Framework

- The **Fregonese Associates Team** (FA Team) refers to the prime project consultant, Fregonese Associates, and includes the sub-consultants CH2M Hill (CH2M), Leland Consulting Group (LCG),

and DKS Associates (DKS), collectively referred to in this document as the FA Team. As the prime consultant, Fregonese Associates staff will lead the consultant team, working as the point of contact for the PMT, identifying methods and analysis approach, developing the outreach strategy, and managing the project timeline based on the agreed-upon work program.

- **Project Management Team (PMT)** consists of the project managers from the Cities of Tualatin and Wilsonville. The project managers from each city will make decisions as a team and communicate with the FA Team as one decision-making entity. To streamline the revision process throughout the project, the FA Team requests that all feedback is consolidated through the PMT. Once established, the agreed-upon deadlines for review must be met to keep the project on schedule. The PMT will manage the process of keeping staff from their respective individual cities informed during plan development. The PMT will also coordinate information distributed to the community. Any information distributed publicly for the Basalt Creek Concept Plan will be reviewed in advance by the PMT.
- The **Agency Review Team (ART)** is tasked with the primary role of advising staff members of both cities about regulatory and planning compliance. Input gathered from the ART will be included in regular staff updates to the Planning Commissions and City Councils. Involvement in this group will be required for some key agencies that need to approve or agree with the concept plan, while other agencies will be invited to participate in the planning process when their advice is needed on specific issues. The ART will include members from the following organizations:
 - Essential Agencies
 - Metro
 - ODOT
 - Tualatin Valley Fire & Rescue
 - Washington County
 - Bonneville Power Administration
 - Invited Agencies
 - City of Sherwood
 - City of Tualatin (Departments other than Community Development/Planning)
 - City of Wilsonville (Departments other than Community Development/Planning)
 - Clackamas County
 - Clean Water Services
 - Northwest Natural
 - Portland General Electric
 - Sherwood School District
 - SMART
 - Tigard/Tualatin School District
 - Tri-Met
 - Wilsonville/West-Linn School District

Major agreements will be discussed at meetings, but some elements or decisions for moving forward with technical work may be made outside of team meetings. As appropriate, the ART

will be consulted with and informed. As requested, additional staff from each agency will be copied on communications for meetings, review of materials, and general coordination.

- **Joint Council** refers to Council Meetings involving Councils from both the City of Tualatin and the City of Wilsonville. The Tualatin and Wilsonville City Councils will be the ultimate decision-making body for the final Basalt Creek Concept Plan. Both City Councils are tasked with approving the guiding principles, selecting the preferred land use scenario (which will also include the provision of public services), identifying future jurisdictional boundaries, and approving the Final Basalt Creek Concept Plan.
- The **Tualatin City Council** and the **Wilsonville City Council** will convene independently to review and discuss issues that require greater input from their respective City Councils. Specifically, measures, ordinances, and resolutions to amend the individual Cities' Codes will be needed to implement the final plan. The Tualatin City Council and the Wilsonville City Council will receive regular briefings from their respective staff throughout the planning process.
- The role of the **Tualatin Planning Commission** and the role of the **Wilsonville Planning Commission** will be to consider input gathered through community engagement and from the ART and make recommendations to their respective City Councils. In addition, they will serve in their advisory capacity to respectively amend the Tualatin Community Plan Map and the Wilsonville Development Code and Comprehensive Plan to implement the final Basalt Creek Concept Plan.

Revision Process

For all deliverables there will generally be two rounds of review and document editing, with approximately one week for each round (one week for the PMT to review an initial draft, and another week for the consultant to make revisions and submit to PMT for final comments and edits). This timeframe, however, is general. The exact timeframe for the revision process of each deliverable will be determined on a case-by-case basis according to the level of complexity and lead time necessitated by respective public meeting laws of each City. For example, materials for use at Individual and Joint Council meetings must be submitted to city recorders' offices at least one week in advance of the meeting date. In some cases, the PMT may need more than one week to submit comments to the consultant, as they will be coordinating and consolidating comments between the Cities of Wilsonville and Tualatin.

Public Involvement Strategy Goals

The Cities of Tualatin and Wilsonville are committed to public involvement that:

- Provides early and ongoing opportunities for stakeholders to raise issues and concerns
- Facilitates equitable and constructive communication between the public and project team
- Empowers residents to become involved with the project
- Encourages participation with other planning efforts in both cities
- Provides the public with balanced and objective information to help them understand the problem, alternatives, opportunities and solutions

- Offers alternative accommodations to encourage participation of all stakeholders regardless of race, ethnicity, age, disability, income, or primary language
- Builds on existing communication networks and resources of both cities

Types of Involvement

The following categories can be used to group public participation activities by depth of engagement. A table below organizes these activities by stakeholder group, while the “Communication Methods” section presents the same information, organized by milestones. It is important to note that many outreach activities can achieve multiple levels of engagement, depending on the activity objective, design, and contextual factors.

Informing

This level of participation will focus on educating and informing all interested parties (even those who are just peripherally interested) about the project background, status updates, public events and participation opportunities and major milestones and decision points. The level of technical detail about a given topic will be tailored to be audience-appropriate. For example, the level of detail about environmental constraints analysis methodology will be greater at an ART meeting than at a public open house, because ART members are staff or regulating and enforcing agencies. However, more detailed information will often be made available to the public should a reasonable request for it be made. Informing is the most broadly used level of engagement in many cases because it is a precursor to higher levels of engagement and must reach a large number of stakeholders.

Consultation

Consultation with stakeholders entails asking them to provide input on the goals, alternatives and plan. This level of engagement is critical for identifying major issues and concerns among particular stakeholder groups as well as the general public. Different opportunities for providing input will be designed to be appropriate for a range of stakeholders. In essence, this level involves “checking in” with stakeholders to say, “did we get it right?” Surveys and open houses can achieve this level of engagement, among others.

Participation

Participation requires that stakeholders are helping to define and shape project goals, evaluating options and alternatives, and possibly helping to shape recommendations to be included in the plan. Public meetings, workshops, or work sessions can achieve this level of engagement.

Collaboration

Stakeholders help to craft alternatives in collaborative engagement activities. It involves a high level of project detail and usually long-term commitment to reviewing background documents. Technical experts as well as elected officials and decision-makers are commonly leaned upon to perform these duties, though citizen advisory committees and stakeholder group representatives may also contribute substantial efforts. The audience for this level of engagement includes stakeholders who have a higher

level of interest in the project and those who will be interested and impacted by the outcomes of the project.

Partnership

The most engaged level of participation, partnership entails shared responsibility for developing and implementing solutions, as well as decision-making authority. This level of engagement frequently occurs at the institutional level, with public agencies and elected bodies, as well as private-sector representatives, cooperating to agree upon and apply solutions to realize the best possible outcomes for the public interest. The City Councils of Tualatin and Wilsonville will have the final decision making authority for the project. Informed by the input from the public workshop and staff, the City Councils will review information and make their recommendations.

Communication Methods

The project team will utilize online and print communication methods to inform stakeholders about public events and opportunities to participate in the development of the plan. The following list identifies public activities and the expected communication methods which will be used to advertise these activities and events.

Council meetings for either City:

- Community calendars for individual cities
- Basalt Creek project website

Public workshop and open house announcements, including online surveys:

- Community Calendars for both Cities
- City of Tualatin and City of Wilsonville Facebook pages
- Basalt Creek Twitter feed
- Basalt Creek project website
- Press releases to local media

Release of draft plan document for review:

- City of Tualatin and City of Wilsonville Facebook pages
- Basalt Creek Twitter feed
- Basalt Creek project website
- Press releases to local media

Release of final plan document for review:

- City of Tualatin and City of Wilsonville Facebook pages
- Basalt Creek Twitter feed
- Basalt Creek project website
- Press releases to local media

STAKEHOLDER GROUP	OUTREACH ACTIVITY	PROJECT TOPICS	PARTICIPATION LEVEL				
			Partner	Collaborate	Involve	Consult	Inform
Property Owners	1. Focus group	Project background, Existing conditions, Guiding principles, Alternative scenarios			X		X
	2. One-on-one interviews	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	X
	3. Online Survey	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	X
Business Owners	1. One-on-one interviews	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	
	2. Online Survey	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	X
Developers	1. Focus group	Project background, Existing Conditions, Development opportunities & barriers				X	X
Residents	1. One-on-one interviews	Existing conditions, Guiding principles, Alternative Scenarios				X	X
	2. Online Survey	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	X
General Public	1. Project website	Project background, Project Calendar, Project FAQ, Public event announcements/reminders, Online survey link, Comment form					X
	2. Posted flyers	Workshop & open house announcements/reminders					X
	3. Email	Project updates, Public event announcements/reminders, Online survey link, Link to comment form, Results of public events, results of Elected Officials and Agency decision points, Link to Concept Plan draft, Link to final Concept Plan					X
	4. Facebook/Twitter	Link to project website, Brief project updates, Link to Online Survey, Link to online comment form, Public event announcements/reminders, Results of open houses & Workshops, Results of elected officials' and public agency decision points, Link to draft Concept Plan, Link to final Concept Plan					X
	5. Newsletters	Project background, Project updates, Public event announcements/reminders, Results of public events, Results of Elected officials and public agency decision points					X
	6. Online Survey	Project background, Existing conditions, Guiding principles, Alternative Scenarios				X	
	7. Online Comment form	All				X	
Informed Public	1. Open House	Alternative scenarios, Draft preferred scenario		X			
	2. Workshop	Project background, Existing conditions, Guiding principles, Alternative scenarios		X			
	3. Draft Review	Draft preferred scenario		X			
	4. Public Hearings	Final preferred scenario, Jurisdictional boundary			X		
Hard-to-reach Groups	1. Phone calls	Project background, Public event announcements/reminders					X
	2. Mailers	Project background, Public event announcements/reminders					X
	3. Multi-lingual materials	Project background, Public event announcements/reminders					X
Elected Officials	1. Informational briefings	Project updates, Public feedback, Major milestones (existing conditions, draft and preferred scenarios), Preparation for decision points					X
	2. Work sessions	Concept plan discussion, Jurisdictional boundary discussion		X			
	3. Draft review	Jurisdictional boundary, Final concept plan		X			
	4. Plan acceptance	Jurisdictional boundary, Final concept plan	X				
Non-profits, schools, religious and advocacy groups	1. Email	Project updates, Public event announcements/reminders, Online survey link, Link to comment form, Results of public events, results of Elected Officials and Agency decision points, Link to Concept Plan draft, Link to final Concept Plan					X
	2. One-on-one interview	Existing conditions, Guiding principles, Alternative scenarios				X	
	3. Open House	Alternative scenarios, Draft preferred scenario			X		
	4. Workshop	Project background, Existing conditions, Guiding principles, Alternative scenarios			X		
Media	1. Press releases	Project updates, Public event announcements/reminders, Online survey link, Link to comment form, Results of public events, results of Elected Officials and Agency decision points, Link to Concept Plan draft, Link to final Concept Plan					X

I. OUTREACH MATERIALS

Deliverables

1. General Milestone Calendar
2. Project Branding (Logo)
3. Stakeholder Contact List
4. Periodic Email Updates
5. Press Releases
6. Newsletter Articles
7. Materials for Project Website
8. Social Media

1. General Milestone Calendar

Description and Purpose

A milestone calendar will be created to communicate an overview of the project process and timeline to the general public, key stakeholders and decision makers. The General Milestone Calendar will be an attractive, easy-to-understand flow diagram communicating the timing and sequence of major project milestones, public engagement opportunities and decision points. This graphic will be utilized in print, online and in presentations.

The purpose of a general milestone calendar is to:

- a) Facilitate public understanding of the general flow and sequencing of project tasks
- b) Alert the public, key stakeholders and decision makers in advance of critical junctures where their input is needed, including but not limited to:
 - a. Public meetings and events
 - b. Review/comment periods for draft concepts and documents
- c) Communicate updates in the timing or sequencing of key milestones

Materials

Key dates to show on the General Milestone Calendar will include but not be limited to the following:

- ART meetings
- Joint Council Meetings
- Planning Commission Meetings
- Development of Guiding Principles
- Existing Conditions Report
- Public Workshop
- Development of Alternative Scenarios
- Public Open House

- Development of Final Plan
- Plan Acceptance Decision
- Availability of draft jurisdictional boundary memo for public review (review/comment period)

Roles

Project Management Team

- Review and provide feedback on General Milestone Calendar
- Distribute the final General Milestone Calendar to agency leads and other decision makers

FA Team

- Design the Draft General Milestone Calendar
- Integrate comments and feedback
- Deliver final Calendar (electronic format) to the PMT and upload to project webpage

2. Project Branding

Description & Purpose

The FA Team will develop a project logo which will be used on all outreach materials, reports and the website to create and reinforce the project identity. The purpose of branding is to establish a recognizable identity for the project. The FA Team will provide web and print-ready formats of the final logo to the PMT. File formats will include JPEG, Adobe Illustrator and PNG.

Materials

A project logo and associated graphics will include attractive, easy-to-understand visual elements that reinforce agreed-upon guiding principles and project priorities.

Roles

PMT

- Provide feedback on the project logo

FA Team

- Design project logo
- Distribute a web- and print-ready version of the logo for use by the PMT; upload and incorporate into project website
- Incorporate the project logo in PowerPoint presentations, outreach materials, reports and the project website materials

3. Interested Persons Contact List

Description & Purpose

The FA Team will collaborate with the City of Tualatin and City of Wilsonville to effectively utilize the existing contact list of interested persons. Stakeholders on the contact list will receive periodic email updates corresponding to major project milestones, including notices of public events. The stakeholder contact list will be managed by the City of Tualatin and used to send project update messages via email.

Materials

The master contact list will include names, email addresses, phone numbers, and addresses of stakeholders. This contact list should also track stakeholder types (i.e. property owner, business owner, resident) and organizational affiliations. The contact list can be used to track additional stakeholder information, such as identifying interview candidates, focus group members, or workshop attendees.

The contact list should include but not be limited to the following:

- Property Owners and Neighbors
- Other residents and tenants
- Tualatin Community Representatives (CIOs)
- Wilsonville Community Representatives
- Tualatin Business Representatives
- Wilsonville Business Representatives
- Westside Economic Alliance Representatives
- Horizon School Representatives
- Agency Review Team
- Stakeholder Interviewees

Roles

PMT

- Collect new contact information from stakeholders by providing and collecting sign-in sheets at the public workshop and open house
- Manage and update master email distribution list
- Reach out to community groups to request permission to add their members to the outreach contact list
- Protect the addresses and privacy of individuals on the contact list
- Provide the FA Team with existing project email distribution lists. May necessitate merging of lists between organizations

FA Team

- Protect the addresses and privacy of individuals on the contact list
- Provide PMT with access to contact information collected through online surveys

4. Email Updates

Description & Purpose

The purpose of on-going communications via email (using the Interested Persons contact list described above) is to highlight positive momentum toward achieving community goals. Email updates will be sent to the email distribution list described above to communicate project milestones and to notify stakeholders of the public workshop, open house, online surveys, online public draft documents, etc, as needed.

Materials

General project updates may include, but not be limited to the following information:

- Status of the project in relation to the General Milestone Calendar
- Upcoming opportunities for public engagement
- Links to results and images from recent outreach activities
- Links to the online surveys
- Links to the project webpage
- Public availability of draft or final documents
- Outcomes of Joint Council meetings or major decision points
- Contact information for project management

Roles

PMT

- Establish a PMT strategy for review of email content
- Review and approve a template for email updates
- Review and approve content for email updates
- Establish a project email address and contact for email blasts

FA Team

- Prepare an email template in Mailchimp (or similar service) to manage messaging to email distribution list
- Prepare content for email updates in consultation with the PMT
- Send email blasts prior to public meetings and at key milestones, once content is approved by PMT

5. Press Releases

Description & Purpose

Project press releases will be issued jointly by the City of Tualatin and the City of Wilsonville on project-branded letterhead to reach local and regional media contacts at key milestones. The City of Tualatin, City of Wilsonville and the FA Team will jointly prepare and review press releases prior to issuing them.

Each City will send the releases to their local media contacts and they will also be shared with regional media contacts via the FlashAlert Newswire (www.flashalert.net). Press releases will also be shared via the project's Twitter account, each City's Facebook page, and each City's website. Each press release will have two contacts—one from the City of Tualatin and the other from the City of Wilsonville. The FA Team will post the press releases on the project website.

Materials

Press releases will be posted on each City's websites, Facebook pages, project-specific Twitter feed, and on the Basalt Creek project website.

Roles

PMT

- Draft press releases at key project milestones
- Review, edit and approve content
- Issue press releases to local and regional media contacts
- Post press releases to project Twitter feed, City Facebook pages, City websites, and the project website.
- The project contacts for each City will respond to media inquiries in a timely manner and report back to the PMT
- Media coverage will be shared on the project-specific Twitter feed

FA Team

- In coordination with the PMT, draft and edit press releases and post press releases and media coverage to project website

6. Newsletter Articles

Description & Purpose

Both the City of Tualatin and the City of Wilsonville have monthly newsletters that are mailed to their residents. Each City will be independently responsible for drafting and running articles in their newsletter at key milestones throughout the project. These articles may be based on the project press releases, but also may include information about upcoming meetings and other related content.

Materials

Newsletter articles will be run in each City's newsletter at key milestones throughout the project.

Roles

PMT

- Draft articles at key milestones based on press releases or other content
- Review, edit and approve articles
- Run and distribute articles in each City's monthly newsletter and on the project website

FA Team

- In coordination with the PMT draft and edit articles and post to project website

7. Materials for Project Website

Description & Purpose

The existing project website will be utilized to provide project information such as background, objectives, milestones, and key engagement opportunities, as well as a venue to post draft and final documents for public review.

The overarching goals of the project website are distributing information to the public and key stakeholders and gathering their feedback at decision making points. The website should include the following:

- Project background and timeline
- Updates on milestones and key decision points
- Announcements of public involvement opportunities
- Results of outreach efforts
- Downloadable PDFs of website content and other engagement materials including project background and timeline, event announcements, etc.
- Links to the project's Facebook page and Twitter feed, as well as other relevant projects such as the SW Tualatin Concept Plan, Coffee Creek, 124th, Boones Ferry Road, etc.

Materials

The FA Team will update, manage and provide text and images for website updates to the PMT corresponding to key milestones and decision points, public involvement opportunities, and draft and final documents as identified in this Public Involvement Plan. These updates will be tracked on a detailed (internal) Project Team Timeline and coordinated on an as needed basis.

Roles

PMT

- Review, edit and approve website content
- Provide and host website URL
- Prepare and update a FAQ about the project

FA Team

- Provide initial review of the website structure and content and implement any changes or additions with PMT oversight
- Establish an RSS feed on the project website
- Provide draft and finalized content updates including PDFs, text and graphics to the PMT for approval

- Coordinate email blasts and website updates
- Manage and upload new materials for the website that are included as part of the Public Involvement Plan

8. Social Media

Description & Purpose

Facebook page and Twitter feeds will provide another means for stakeholders to stay connected with the project progress. The Cities of Tualatin and Wilsonville will utilize their existing Facebook pages and Twitter feeds to provide Basalt Creek Plan updates and links to the Basalt Creek webpage including notices of public events and when new material is posted to the Basalt Creek project website. Posts will be added throughout the project at major milestones and as there are noteworthy updates to report. The City of Wilsonville will also develop a twitter feed specific to the Basalt Creek project which will help further advance public information and guide interested parties to the Basalt Creek Website.

Materials

Facebook and Twitter content posted to City sites and a Basalt Creek specific Twitter feed.

Roles

PMT

- Create brief, periodic Facebook and Twitter posts
- Review, edit and approve content
- Post content to Facebook and Twitter
- Content for updates will be generated by the PMT in collaboration with the FA Team.

FA Team

- In coordination with the PMT generate content and provide advice for Facebook and Twitter posts

II. TARGETED STAKEHOLDER OUTREACH

Task Deliverables

1. Interviews
2. Stakeholder Groups
3. Agency Review Team (ART)
4. Planning Commission Briefings
5. Individual Council Information Sessions
6. Joint Council Decision Information Sessions

1. Interviews

Description & Purpose

The purpose of stakeholder interviews is to gain a better understanding of stakeholder goals and interests. These meetings will serve to highlight key issues of concern within the planning area, and other issues that relate to development and implementation of a project vision for the concept plan. These interviews will likely take place within the first six months of the project.

The FA Team will interview a selection of four community members, property, and business owners and other stakeholders identified by the PMT, selected from the following community groups:

- Property and business owners in Basalt Creek
- Community representatives from both Cities
- Residents of Basalt Creek
- Business owners/ representatives from both cities
- Westside Economic Alliance
- Horizon Church

Materials

Materials will include an interview guide with general interview questions and topic areas for discussion.

Roles

PMT

- Identify interview candidates
- Make initial contact with interview candidates, assess willingness to participate
- Identify priority questions and topic areas to discuss with interviewees
- Help identify and secure locations for interviews

FA Team

- Identify interview candidates in partnership with the PMT
- Review list of interview candidates with PMT
- Lead and facilitate the stakeholder interview discussions
- Create and print maps to guide interview conversations
- Keep a written record of interview conversations
- Provide notes of interview findings to the PMT

2. Focus Group Meetings

Description & Purpose

Focus group meetings will be conducted with 6-7 participants and will be based on an open discussion format facilitated by the FA Team. These meetings will serve to highlight key issues of concern within the planning area, and other issues that relate to development and implementation of a project vision

for the concept plan. These meetings should take place within the first six months of the project. The FA Team proposes to conduct two focus groups meetings, one with developers and one with key property owners. Focus group member candidates will be identified through collaborative efforts between the FA Team and the PMT.

Focus Group #1: Developer Roundtable

The Developer Roundtable is a forum which will be used to gather valuable information related to general and specific development opportunities and barriers in Basalt Creek. Involving developers at the local and regional level will help characterize and contextualize development potential and constraints in the area.

Focus Group #2: Property Owner Meeting

The Property Owner Meeting is a stakeholder meeting for a small group with 6-7 property owners from the area (preferably a mix of both commercial and residential property owners). This meeting will provide a forum to learn about property owner priorities, concerns and suggestions for the future of Basalt Creek.

Materials

A short presentation will be made to both groups on the overall project. Materials will include a facilitator's guide including questions and topic areas for discussion.

Roles

PMT

- Identify stakeholder group candidates
- Work with the FA Team to expand and revise list
- Make initial contact with candidates, assess willingness to participate
- Identify priority questions and topic areas to discuss
- Identify and reserve meeting locations
- Track responses and confirm attendance of invitees

FA Team

- Identify stakeholder group candidates, advise on developers to include
- Work with the PMT to expand and revise list
- Develop a facilitators guide
- Lead and facilitate the stakeholder group discussions
- Create and print maps to guide conversations
- Keep a written record of group discussions
- Provide meeting notes to PMT

3. Agency Review Team (ART)

Description & Purpose

An Agency Review Team (ART) will be formed to guide the development of the Concept Plan. The primary role of the ART is to advise the project team about regulatory and planning compliance. The ART will consist of representatives from regulatory agencies identified in the “Roles and Responsibilities Framework” section at the beginning of this document. They will meet preceding major project milestones to provide technical input for Concept Plan development.

Materials

For all ART meetings:

- Meeting agenda
- Materials/documents for review
- PowerPoint presentations
- Presentation technology (projector, screen, etc.)

Roles

ART members

- Provide guidance to project team on specific technical questions and issues
- Act as liaisons to their own agencies
- Review and provide feedback on draft concept plan

PMT

- Identify and invite individuals to join the ART
- Distribute meeting agenda and meeting materials to ART members prior to meetings
- Keep the official written record of meetings including attendees, notes, comments, outcomes and next steps
- Write and distribute meeting summaries to ART members
- Provide space and printed materials for meetings
- Provide periodic updates on feedback from the ART to the Planning Commission and City Councils

FA Team

- Create meeting agendas
- Facilitate meeting discussions, which may include short presentations
- Create meeting materials to support agenda
- Provide PMT with FA team notes to support the development of the official written record

4. Planning Commission Briefings

Description & Purpose

Planning Commission Briefings are intended to provide project updates to the Cities individual Planning Commissions prior to major decision points to identify any issues and gather feedback from the Commissions. These briefings will include, at a minimum:

- Project Updates
- Concept Plan Discussion
- Jurisdictional Boundary Discussion
- Concept Plan Acceptance

Briefings to the Planning Commissions will take place prior to Individual Council briefings. The Planning Commission engagement is important to set the stage for future comprehensive plan amendments and other planning actions that will happen within each jurisdiction as a result of the concept plan acceptance.

Materials

Meeting agendas will be developed to focus on gathering feedback and information from the Planning Commissions including:

1. Jurisdictional Boundaries Recommendation
2. Draft Preferred Scenario
3. Draft Concept Plan

Roles

PMT

- Schedule briefings
- Create meeting agendas
- Keep written record of meetings and provide FA Team with meeting notes

FA Team

- Provide feedback on meeting agenda

5. Individual Council Information Briefings

Description & Purpose

Individual Council briefings are intended to provide project updates at key points throughout the planning process. Briefings will include:

- Project updates
- Discussions about major milestones (Existing Conditions, draft and preferred scenarios)
- Identification of Council concerns and gathering feedback to inform the concept planning process

- Preparation of Council members for upcoming Joint Council decisions points

The FA Team assumes that PMT staff will brief their Councils as the project progresses. Individual Council update sessions with the FA Team will focus on building the capacity of each Council to make informed decisions when Joint Council action is required. The staff of each City will present materials to the Individual Councils.

Materials

Meeting agendas will mirror major project elements that require a more detailed level of understanding among the Councils. Detailed briefings will allow Councils to validate project direction and provide guidance to the PMT and FA Team. Following are the suggested meeting topics for the FA Team to present to each Council for their input:

1. Draft Existing Conditions
2. Draft Alternative Scenarios
3. Draft Preferred Scenarios

Roles

PMT

- Schedule informational briefings (3 presentations to each Council with FA present; 6 meetings total)
- Keep written record of meetings and provide FA Team with meeting notes

FA Team

- Attend meetings and present to Councils (or provide materials for PMT staff to present)
- Provide PowerPoint presentation or other written materials in advance, consistent with the individual cities' requirements

6. Joint Council Decision Information Sessions

Description & Purpose

The Joint Council meetings will include informational presentations, facilitated discussions, and action regarding key decision points. There are four key decision points:

- Adoption of Guiding Principles and Review of Existing Conditions
- Decision on a Preferred Scenario
- Decision on Jurisdictional Boundaries
- Approval of Concept Plan

These meetings will be critical for Joint Council decision-making. The FA Team will collaborate with the PMT to determine which content to present. The FA Team will develop presentations to illustrate the evolution of the project process and provide key data and information critical to relevant decision

points. The Individual Council briefings will be coordinated with Joint Council meetings to deliver information in an efficient manner conducive to informed and effective decision-making.

In addition to meetings focused on the four key decision points, the FA Team will participate and lead a discussion with the Joint Council to elicit feedback for the development of the final concept plan and jurisdictional boundaries. These meetings will serve as informative discussion sessions to guide concept plan development, as well as a decision on a jurisdictional boundary. These sessions will cover:

- Alternative scenarios. The FA Team will present findings from the alternative scenarios, organized by relationship to Guiding Principles. The FA Team will facilitate a discussion of alternatives and solicit feedback. This feedback will be used to craft a preferred scenario oriented toward adoption by the Joint Council.
- Draft Preferred Scenario. The FA Team will present the draft preferred scenario. The Joint Council will have the opportunity to provide feedback on the direction of the preferred scenario. This will build on previous efforts to ensure key issues and concerns related to the concept plan are addressed.

The FA Team will collaborate with the PMT to determine the most effective methods for gathering Joint Council feedback. Methods may include instant polling questions and/or facilitated discussions.

Materials

For each Joint Council meeting:

- Meeting agenda
- PowerPoint presentation
- Background documents
- Key discussion questions and instant polling (if used)

Roles

PMT

- Schedule Joint Council meetings (up to 6)
- Keep a written record of the meetings and provide FA Team with meeting notes

FA Team

- Draft and revise presentations for meetings
- Present key materials and facilitate discussions, as needed
- Integrate Joint Council feedback into preferred scenario and subsequent revisions

V. PUBLIC EVENTS & ONLINE SURVEYS

Deliverables

1. Public Workshop
2. Public Open House
3. Online Surveys

1. Public Workshop

Description & Purpose

The FA Team will work with the PMT to design and run a public workshop that will inform the creation of a range of scenarios. We will understand stakeholder priorities through instant polling and a mapping exercise. The workshop will also inform stakeholders about the project objectives and background (through the brief presentation at the outset). Subsequent activities will be aimed at eliciting feedback about the community's vision for the Basalt Creek area. This feedback will help clarify priorities for the concept plan and inform the development of alternative scenarios.

Workshop Format

Group Presentation

The meeting will start with a brief PowerPoint Presentation from the PMT and the FA Team. The presentation will cover the planning process from start to finish, and include a description of project goals, activities and guiding principles. A project timeline with key public involvement dates will be shared with participants.

Instant Polling

The group presentation will transition into a set of 10 – 20 instant polling questions, which will ask stakeholders to respond to multiple choice questions about their priorities for the project. The polling results will be collected using clickers – remote devices that send instant polling results to the computer of the presenter. The tallied results can be shown immediately on the screen for all the audience to see. The FA Team will work with the PMT to develop the instant polling questions.

Example questions may include:

- Of these listed ideas, which is the most important for the future of Basalt Creek?
- Which is the least important?

To what extent do you agree or disagree with the following statements? (Scale of 1-5)

- Conservation is the top priority
- Economic development is the top priority
- Balance between conservation and development is the top priority

Mapping Exercise

The FA Team will utilize a custom map-based exercise to gather information on community aspirations for future land uses, multimodal transportation network, employment, parks and open spaces. Following the group presentation and instant polling exercise participants will divide into small groups to perform a collaborative mapping exercise. Each group will be facilitated by a FA Team/PMT member, with assistance from other project team staff. Participants will work together in small groups using maps and icons representing future development and transportation investments. The FA Team will use the Envision Tomorrow (ET) suite of planning tools to digitize and analyze maps and comments from the public workshop to uncover themes and unique solutions to guide the scenario development and the development of a final concept plan and vision for the planning area.

Materials

- PowerPoint presentation, including project background, objectives and timeline
- Instant Polling questions – responding to suggested guiding principles, prioritizing future policies and actions for Basalt Creek area
- Basemap – Basalt Creek project area chipsets for mapping activity
- Additional materials on boards in the meeting room as defined by FA Team and PMT
- Event flyer
- Event email announcement
- Agenda
- Sign in sheet
- Instant polling clickers and TurningPoint software
- Facilitator instructions
- Scissors, markers, and pens

Roles

PMT

- Identify and reserve a venue for the workshop
- Advertise workshop; print and distribute flyers announcing workshop
- Review workshop materials (workshop flyer and email announcement, agenda, presentation, instant polling questions, maps, chips)
- Assist and organize volunteers to serve as facilitators for the event
- Provide light refreshments

FA Team

- Produce agenda for workshop
- Produce marketing materials to advertise public open house approximately one month in advance of the event. Materials include email announcements, project website announcements, announcement flyer or postcard.
- Prepare workshop agenda

- Develop and revise presentation, including instant polling questions
- Present at workshop
- Facilitate workshop activities, including instant polling and mapping exercise

2. Public Open House

Description & Purpose

The public open house will provide participants with a comprehensive look at how each of the alternative scenarios performs, as measured against the project's evaluative criteria and guiding principles. General performance categories include transportation, housing choice, employment and infrastructure. In the brief Summary Presentation the FA Team will describe the project's public outreach and stakeholder engagement process and how public feedback was used to inform the development of the alternative scenarios.

The presentation will also briefly cover project background and objectives followed by a presentation of the alternative scenarios, accompanied by descriptions of how they each performed in different evaluative areas and indicators. The presentation will be followed by instant polling questions to understand people's preferences for different elements of each scenario, and the degree to which they support or do not support alternatives in the context of performance measures.

The FA Team will process and analyze results of the open house. Results will be communicated at ART meetings and informational Council meetings, as well as through email and website updates. Results will also be integrated into the Summary Presentation to be delivered at ART and Joint Council meetings.

Materials

- PowerPoint Presentation, including a brief description of the project background, description of each scenario and its outcomes relative to project guiding principles and projected impacts on transportation, housing choice, employment and infrastructure indicators.
- Instant Polling questions – responding questions about support or lack of support for different elements of different scenarios (the results of which will feed into the development of the preferred scenario)
- Event flyer
- Event email announcement
- Agenda
- Sign in sheet
- Instant Polling clickers & TurningPoint software

Roles

PMT

- Discuss open house approach
- Identify and secure location for open house

- Review open house content
- Provide staff to assist at open house
- Provide light refreshments
- Provide open house related updates to the Planning Commission and City Council
- Integrate workshop results into Summary Presentation on public outreach

FA Team

- Produce agenda for public open house
- Produce maps and other print materials for one public open house
- Produce marketing materials to advertise public open house approximately one month in advance of the event. Materials include email announcements, project website announcements, announcement flyer or postcard.
- Provide summaries of feedback (instant polling) from the open house event in PowerPoint

3. Online Surveys

Description & Purpose

The purpose of the online surveys will be to electronically replicate the engagement opportunity of the public workshops and in-person outreach events in order to engage a broader group of stakeholders. To the extent possible, the online survey will follow the presentation and include instant polling questions from the public workshop and open house. The online format will allow participants to click through the presentation at their own pace, and then to answer the same instant polling questions asked at the workshop and open house.

The analysis of the survey results will be integrated with the feedback from the public workshop and other outreach opportunities, and used as a guide both to develop scenarios and then to select or create a preferred scenario.

The online surveys will be designed to be user-friendly and straightforward. Each survey will be open for approximately two weeks following the public events. The FA Team will process and analyze results of the survey. Survey results will be communicated at ART meetings and informational Council meetings, as well as through email and website updates.

Materials

The FA Team will develop, conduct, and analyze the results from two online surveys. Links to the online surveys will be distributed to the stakeholder contact list via email as well as posted on the project website. Materials will include an online version of the workshop presentation, a survey posted to the project website, and a summary of survey results in PowerPoint presentation slide format.

Roles

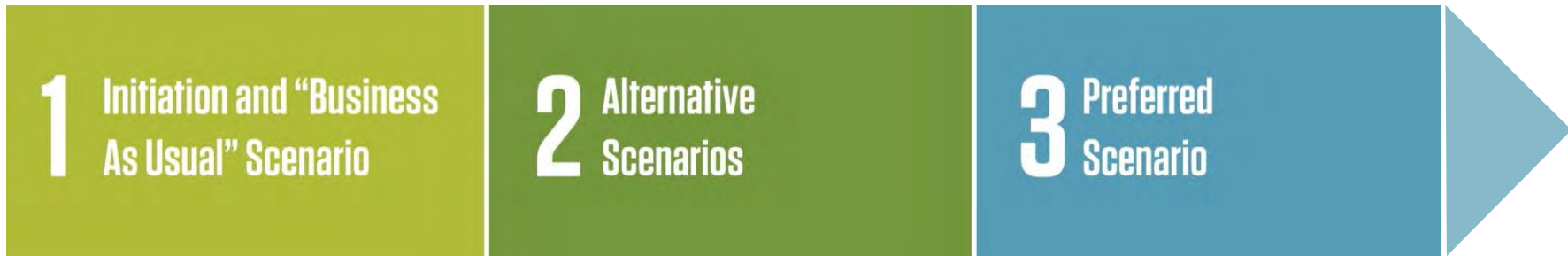
PMT

- Provide a list of initial ideas for survey content
- Review, edit and approve website content

FA Team

- Draft survey
- Incorporate edits from PMT
- Convert the survey into an online format and include on the project website
- Email survey link to stakeholder contact list
- Collect survey results
- Organize survey results into a summary
- Provide survey results summary to City Staff and present results to the ART; staff will present at individual Council sessions

Scenario Planning Overview



“Where are we headed currently?”

“What are the possibilities?”

“Where do we want to go?”

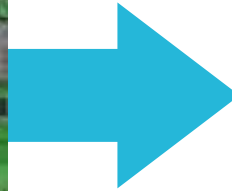
The Present



Where we are today

Understand Existing Conditions

The Present



The Future



Planning the future

The Traditional Approach



Imagine where you want to go
The Scenario Approach

A



B



C



D



The Scenario Approach

Scenarios are Crash Test Dummies

- We can test a variety of different ideas to see how each performs



Scenario Process

- Develop Guiding Principles
- Analysis: Metro Forecast, Constraints, Land Suitability
- Seek Public Input: Design Workshop
- Create Base Case Scenario
- Create Scenario Alternatives (iteratively)
- Evaluate and Communicate
- Select Preferred Alternative

Testing Scenarios and Choosing a Preferred Scenario

- Create and evaluate several scenarios
- Present scenarios and evaluation results to public and decision makers
- Determine jurisdictional boundary between two cities
- Select preferred scenario to inform final land use concept for the Basalt Creek Concept Plan

Why create Guiding Principles?

- Represent **collective interests** and goals for planning area
- Provide **framework** for gathering input
- Help to develop **evaluation criteria** (indicators)

Basalt Creek Guiding Principles

- Maintain and complement the Cities' unique identities
- Capitalize on the area's unique assets and natural location
- Explore creative approaches to integrate jobs and housing
- Create a uniquely attractive business community unmatched in the metropolitan region
- Ensure appropriate transitions between land uses
- Meet regional responsibility for jobs and housing
- Design cohesive and efficient transportation and utility systems
- Maximize assessed property value
- Incorporate natural resource areas and provide recreational opportunities as community amenities and assets

Scenarios help us explore big questions...

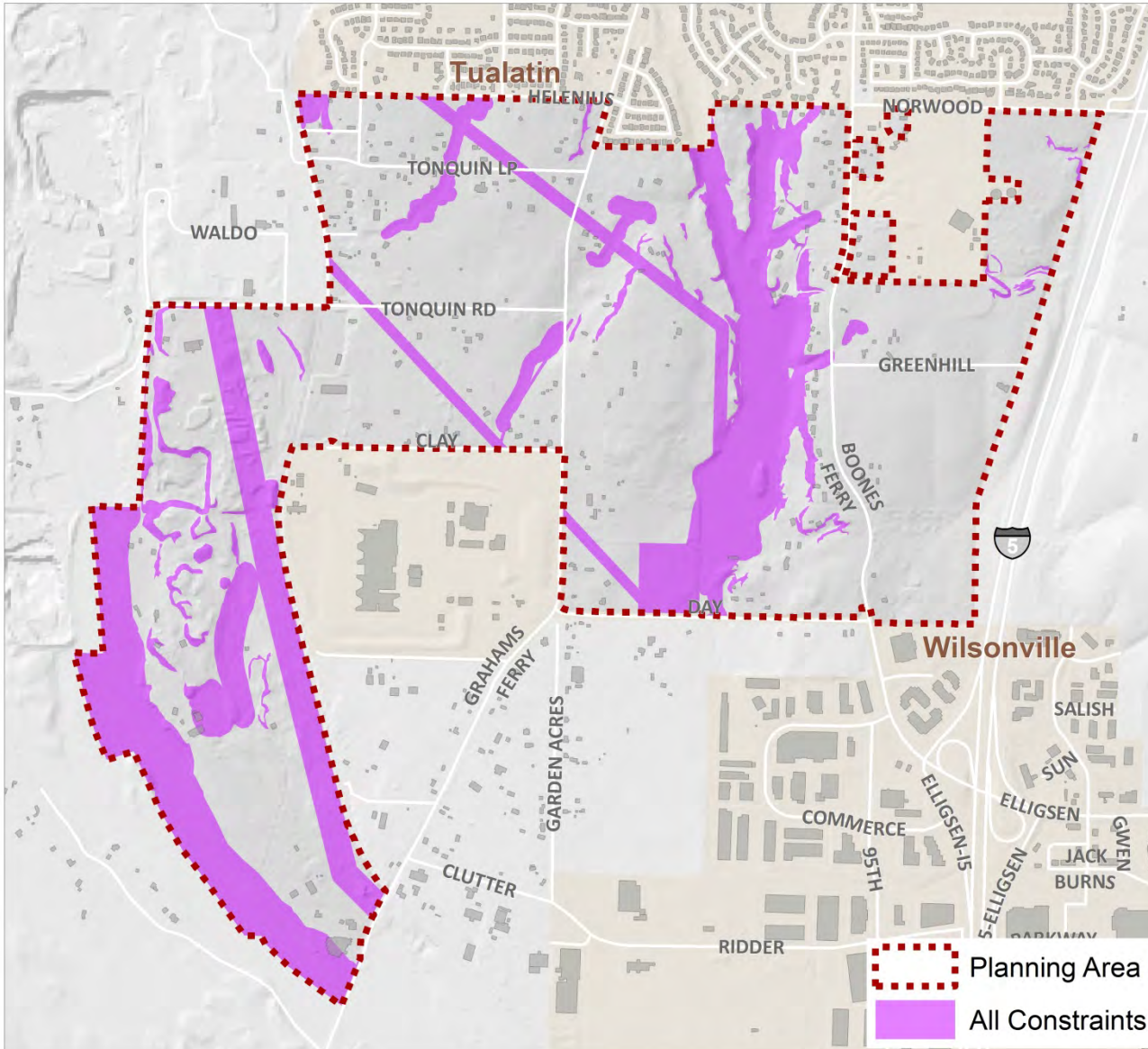
- Where should the boundary between Tualatin and Wilsonville be?
- What combination of land uses is most appropriate for the area?
- What infrastructure is needed to support future development, and what will be the cost of that infrastructure?
- Which agencies will provide public services to different parts of the area?
- How will traffic generated by new development in this area impact traffic flows and congestion levels, both locally and regionally?
- How will the benefits and costs of serving the area be balanced fairly between Tualatin and Wilsonville?

Constraints

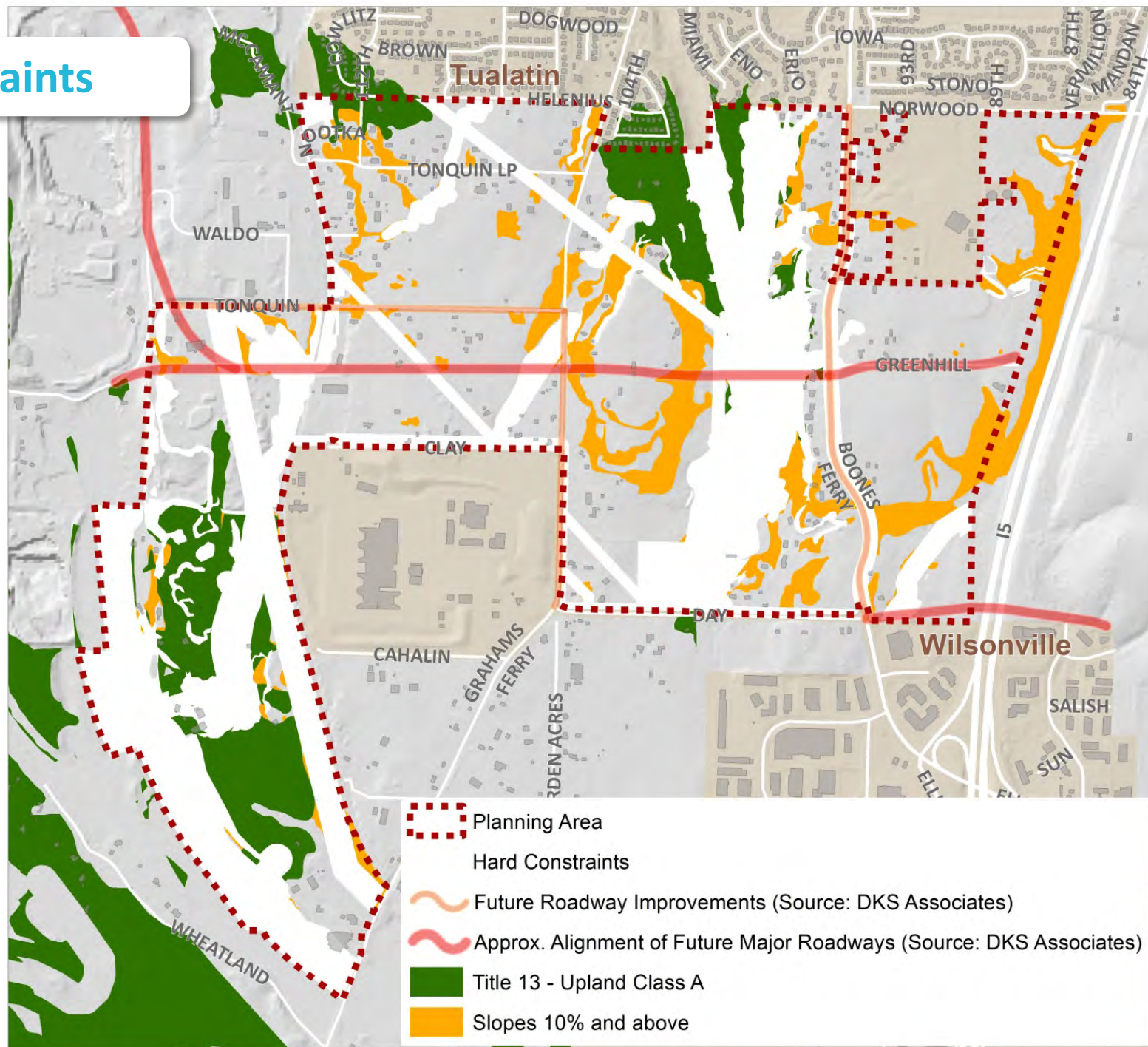
- Hard constraints are areas where development is not feasible because of policy or physical condition.
- Soft constraints are areas where development intensity may be reduced because of policy or physical conditions.

All Hard Constraints

- **234** acres constrained
- Study area total is **847** acres
- **28%** constrained



Soft Constraints



Land Supply

Vacant Land



Ready to build, no major structure on site

Redevelopable Land



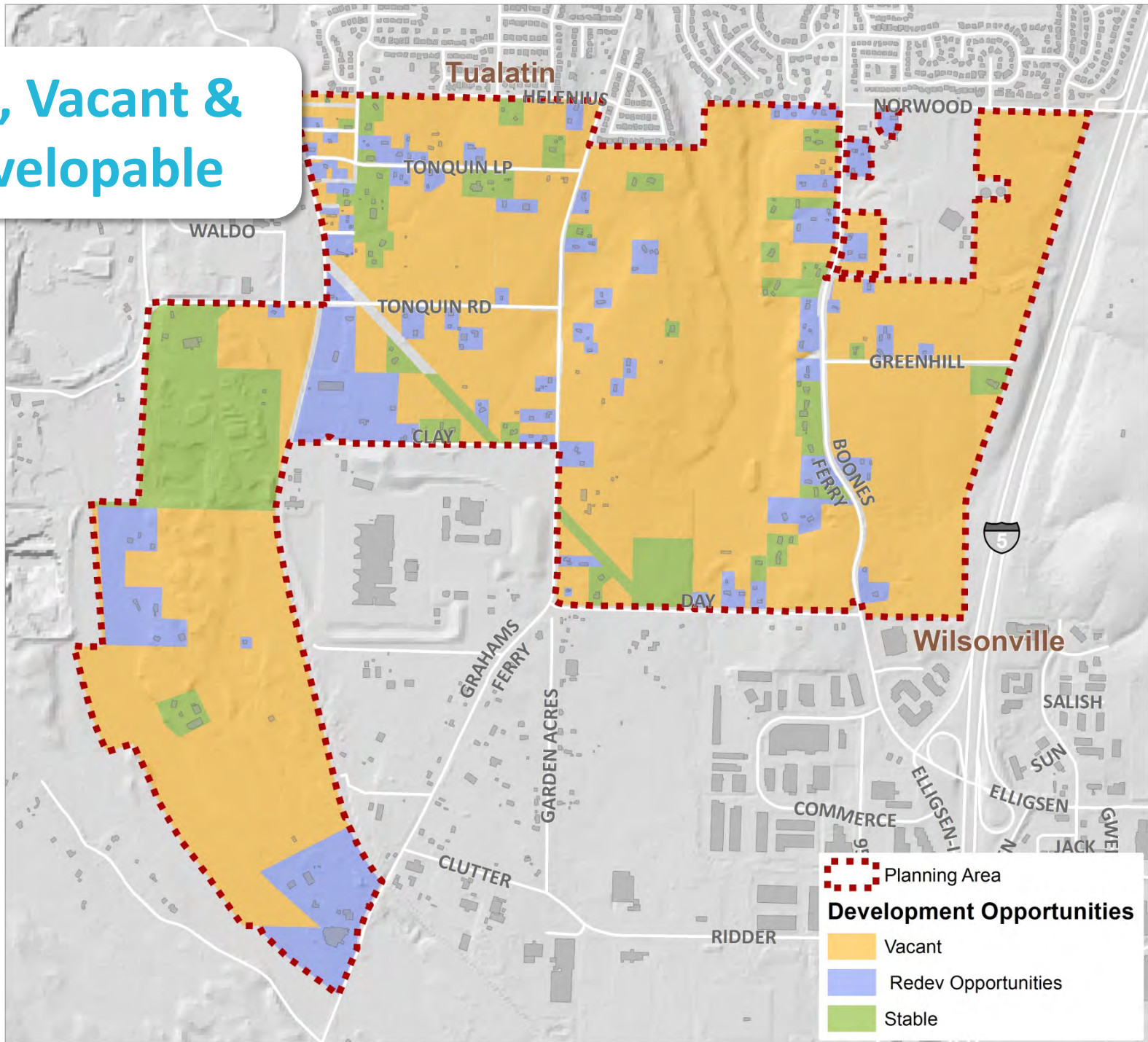
Some redevelopment potential (expansion of current use or change in use)

Stable Land

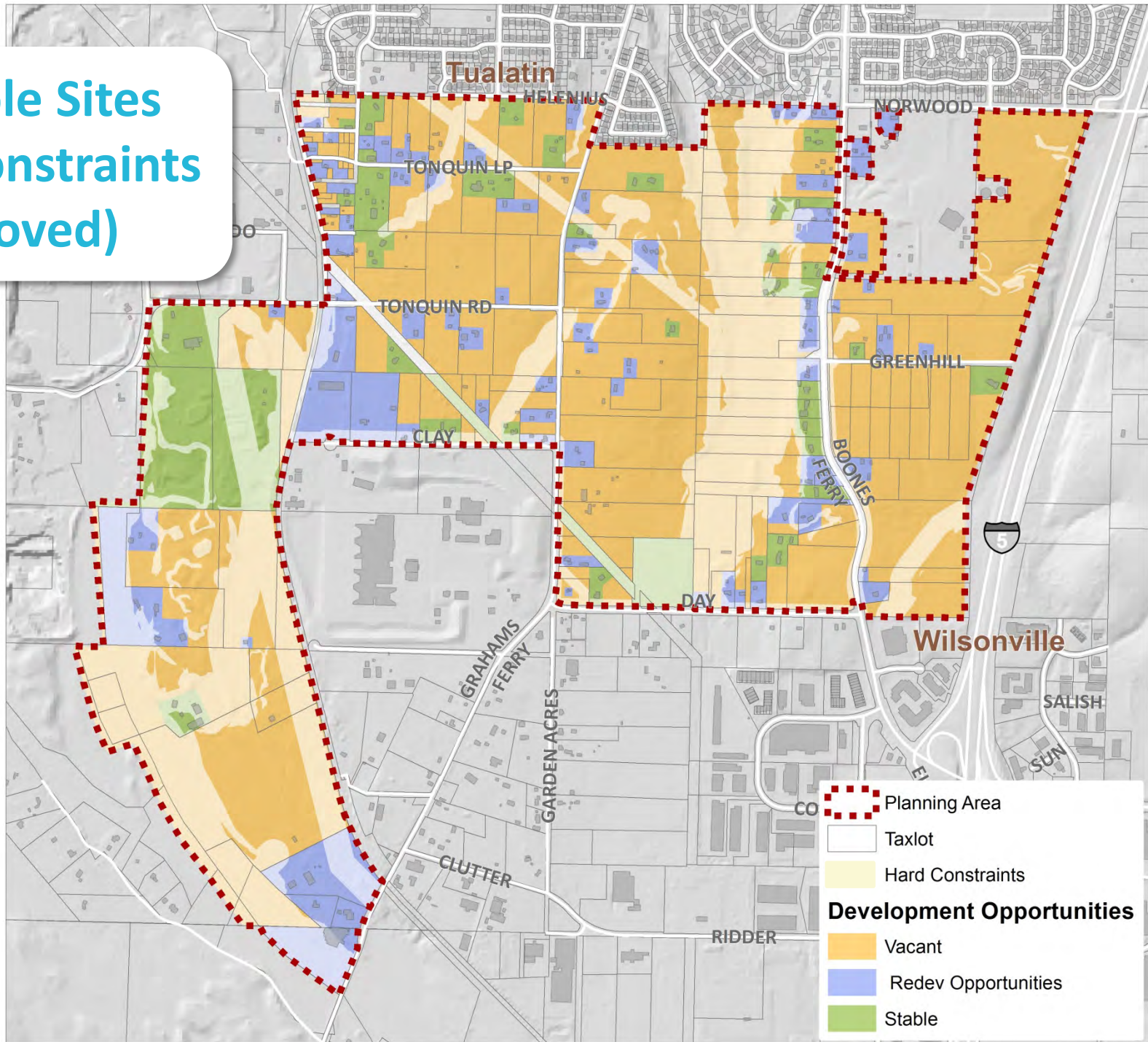


Structures on land, will not change uses in the near future

Stable, Vacant & Redevelopable

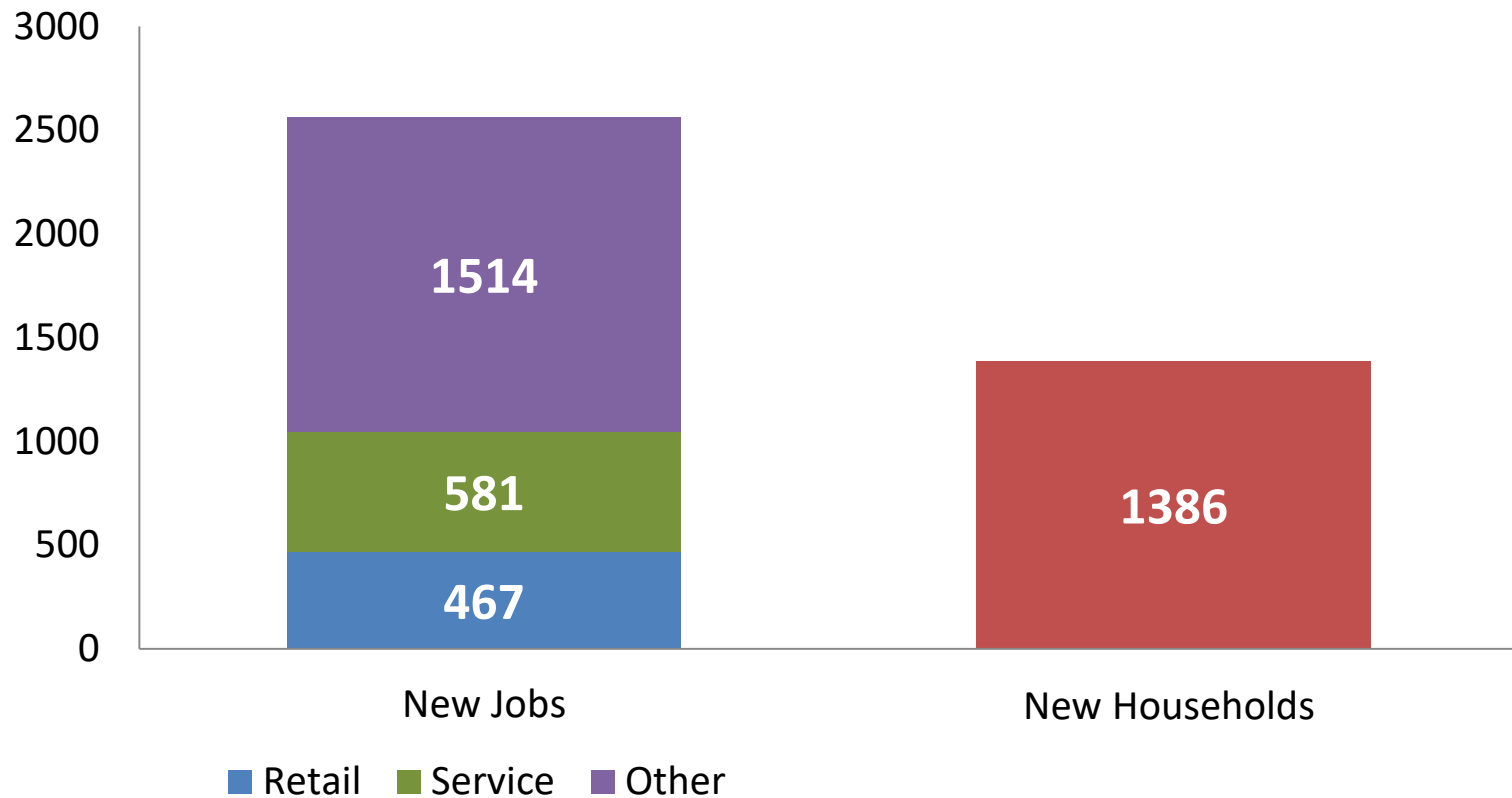


Suitable Sites (hard constraints removed)



Metro Forecast for Basalt Creek

2035 Forecast (based on 2005)



Public Input at Design Workshop

- Community input helps guide scenario development and design process
- April 2014



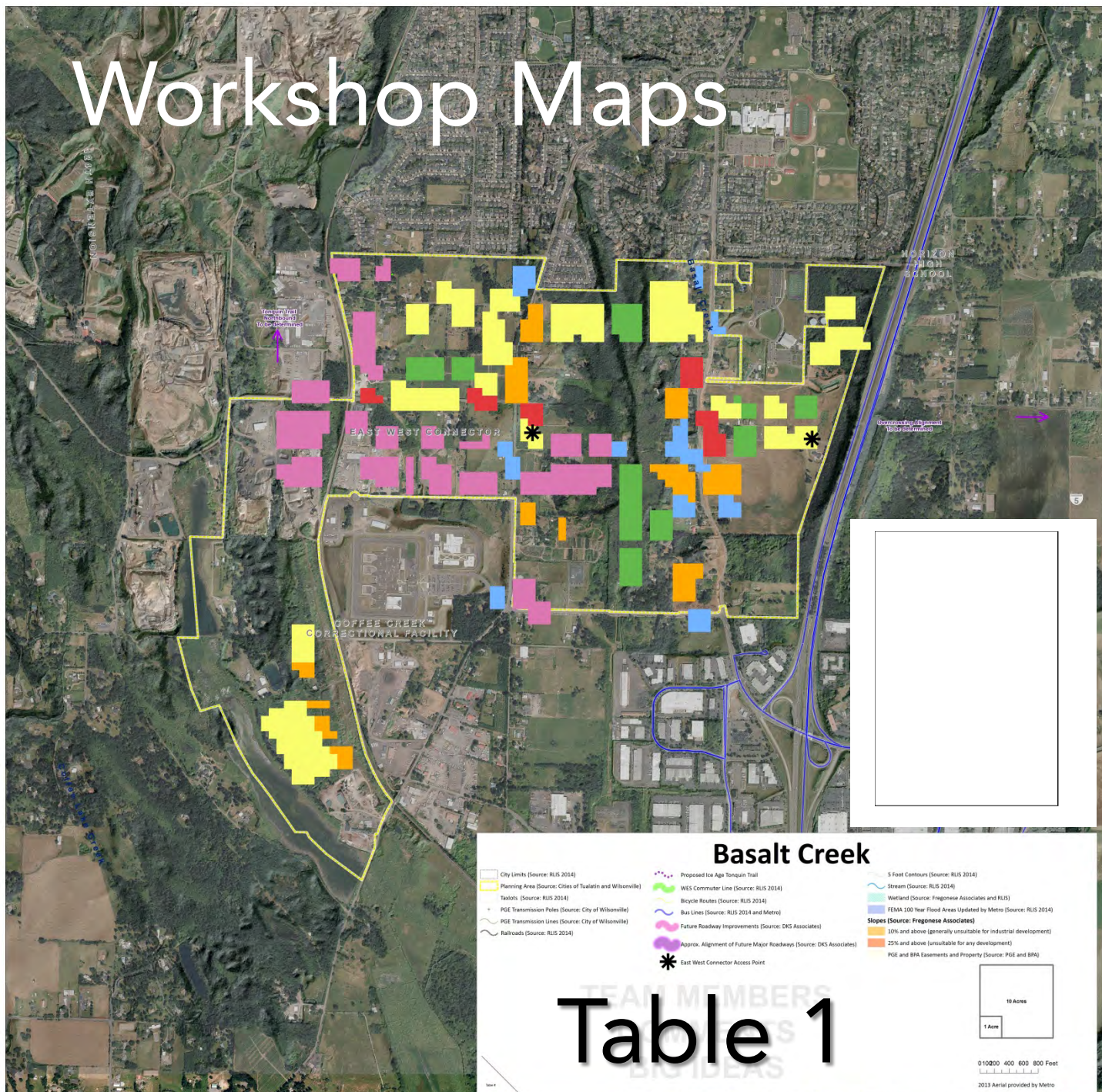
Workshop Maps

Goals

- Housing/schools close together
- Public amenities around wetlands
- Housing where there is transportation and other existing infrastructure
- Transit options that allow people to make trips without their cars
- Make the wetlands a source of pride and natural beauty (visual focal point/vistas)

Comments

- Civic entertainment use – public theater?
- Seems like E-W Connector will determine how land uses are arranged
- Couth the nursery along Graham’s Ferry be encouraged to develop as a unique attraction?
- This is an opportunity do something different – provide public amenities that make the community proud.



Basalt Creek

- City Limits (Source: RLS 2014)
- Planning Area (Source: Cities of Tualatin and Wilsonville)
- Taxlots (Source: RLS 2014)
- PGE Transmission Poles (Source: City of Wilsonville)
- PGE Transmission Lines (Source: City of Wilsonville)
- Railroads (Source: RLS 2014)
- Proposed Ice Tinquin Trail
- WES Commuter Line (Source: RLS 2014)
- Bicycle Routes (Source: RLS 2014)
- Bus Lines (Source: RLS 2014 and Metro)
- Future Roadway Improvements (Source: DKS Associates)
- Approx. Alignment of Future Major Roadways (Source: DKS Associates)
- * East West Connector Access Point
- 5 Foot Contours (Source: RLS 2014)
- Stream (Source: RLS 2014)
- Wetland (Source: Fregonese Associates and RLS)
- FEMA 100 Year Flood Areas Updated by Metro (Source: RLS 2014)
- Slopes (Source: Fregonese Associates)
 - 10% and above (generally unsuitable for industrial development)
 - 25% and above (unsuitable for any development)
 - PGE and BPA Easements and Property (Source: PGE and BPA)

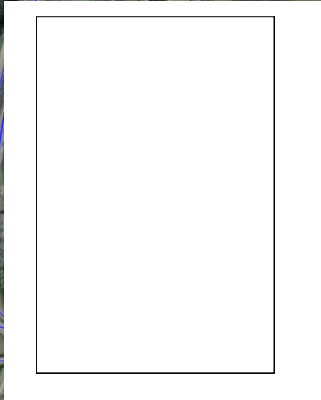
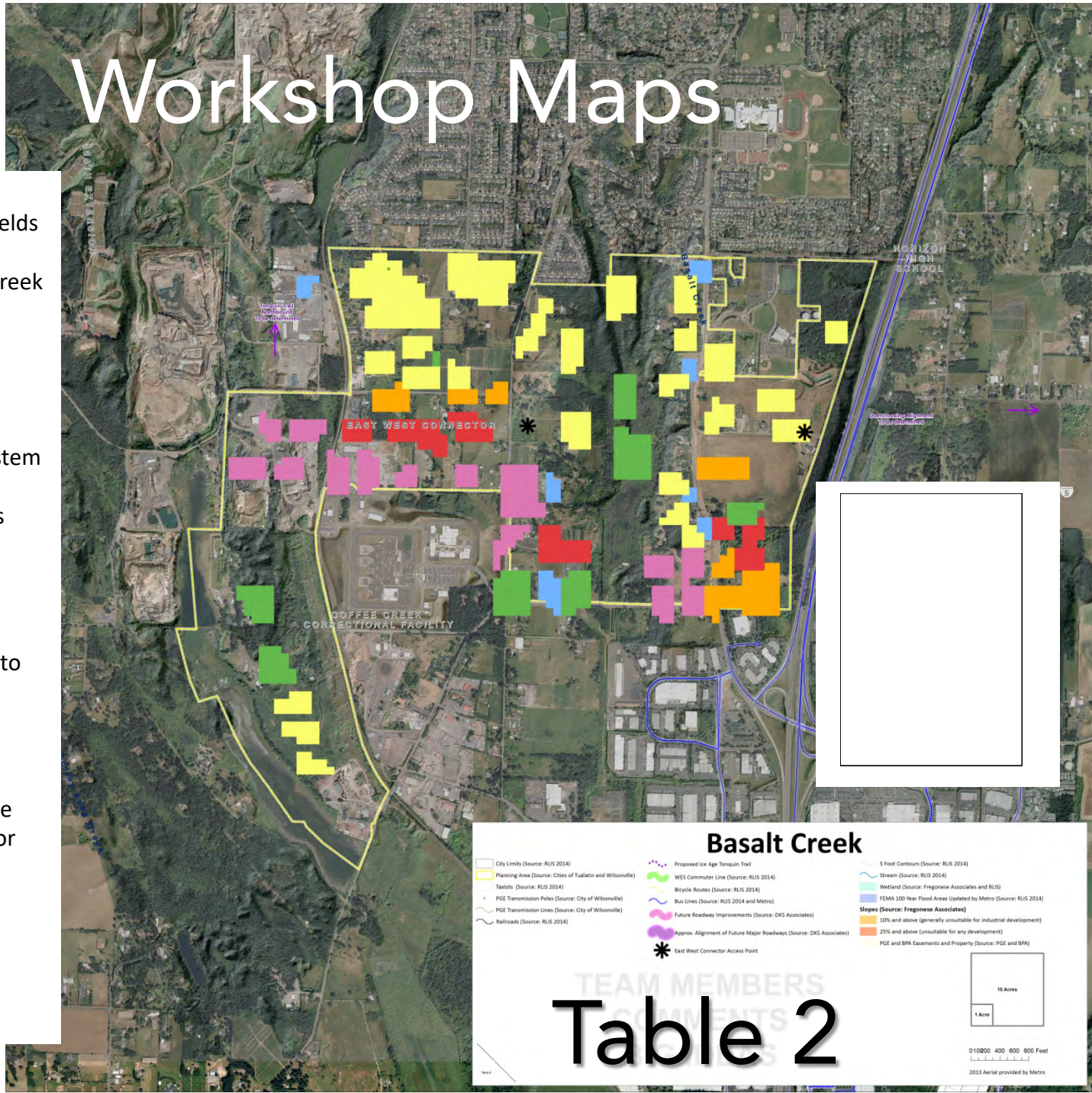
Table 1

10 Acres
1 Acre

0 1000 2000 4000 6000 8000 Feet

2013 Aerial provided by Metro

Workshop Maps



Basalt Creek

- City Limits (Source: RLS 2014)
- Planning Area (Source: Cities of Tualatin and Wilsonville)
- Taxlots (Source: RLS 2014)
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 - 10% and above (generally unsuitable for industrial development)
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- PG&E and BPA Assessments and Property (Source: PG&E and BPA)



0 1000 200 400 600 800 Feet
2013 Aerial provided by Metro

Table 2

Goals

- Increase recreation, more sports fields (plenty of them in Tualatin)
- Parks/natural area around Basalt Creek - preservation – West Railroad
- Concern around runoff into Basalt Creek
- Joint rec center
- Housing in Tualatin
- Incorporation into regional trail system along Basalt Creek
- Concern about widening of Boones Ferry for peds and bikes
- Location of EW/Boone’s Ferry
- Water/sewer lines
- EW Connector at Boone’s Ferry
- Smoother transition from industrial to housing
- Stop at WES –Trans
- Recreation (shared facilities)
- Natural area protection
- Housing –not everything need to be industrial south of the EW Connector

Big Ideas

- Connect to WES
- Smooth transition between uses
- Brew Pubs
- Crosswalks across Boone’s Ferry

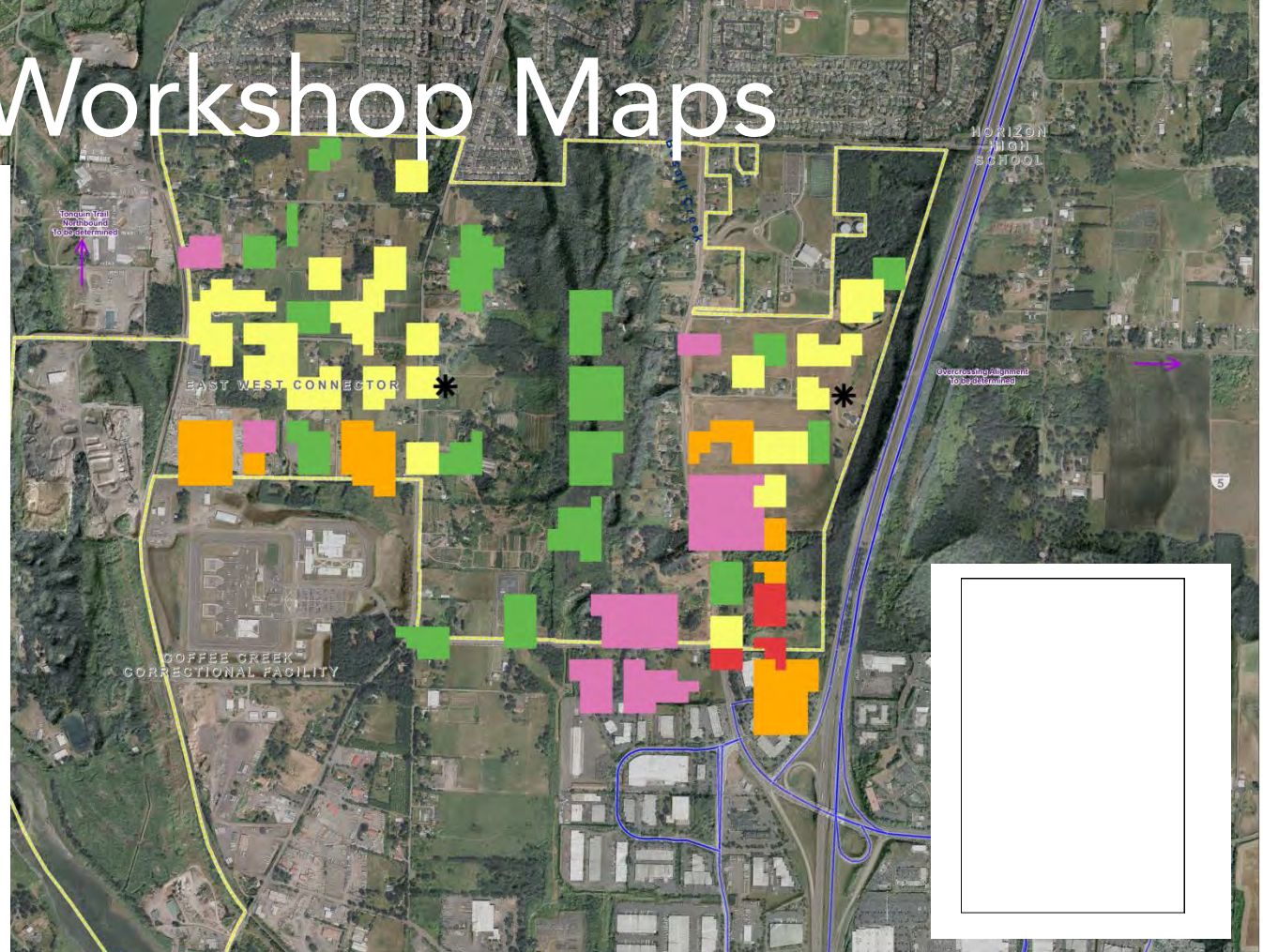
Workshop Maps

Goals

- Residential development
- Diverse housing mix (more than just single family)
- Celebrate natural features
- Interconnected trans network
- Integrate other regional plans
- Well laid out mix of land uses
- Integrated trail and greenways (multimodal connections)

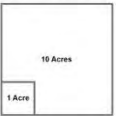
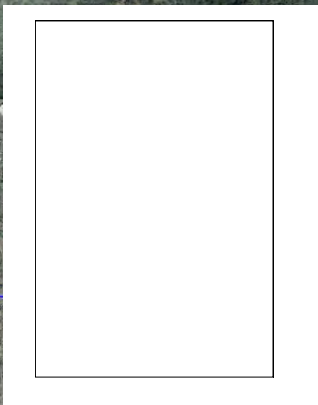
Comments

- Bike/ped access from Tualatin to Wilsonville- in nature
- Employment center near I-5 (east of I-5)
- Buffering between residential and industrial (transitional)
- Trails on power line easements
- Small lot SF and apartments – what is the market?
- Mixed use housing
- Where to put hi-density housing
- Prevent noise pollution from industry
- Center?
- Sherwood school district
- Housing where kids can walk to school
- Hi-density, assisted living near overpass
- Retail and industrial toward the south (jobs and light industrial)



Basalt Creek

- City Limits (Source: RLIS 2014)
- Planning Area (Source: Cities of Tualatin and Wilsonville)
- Taxlots (Source: RLIS 2014)
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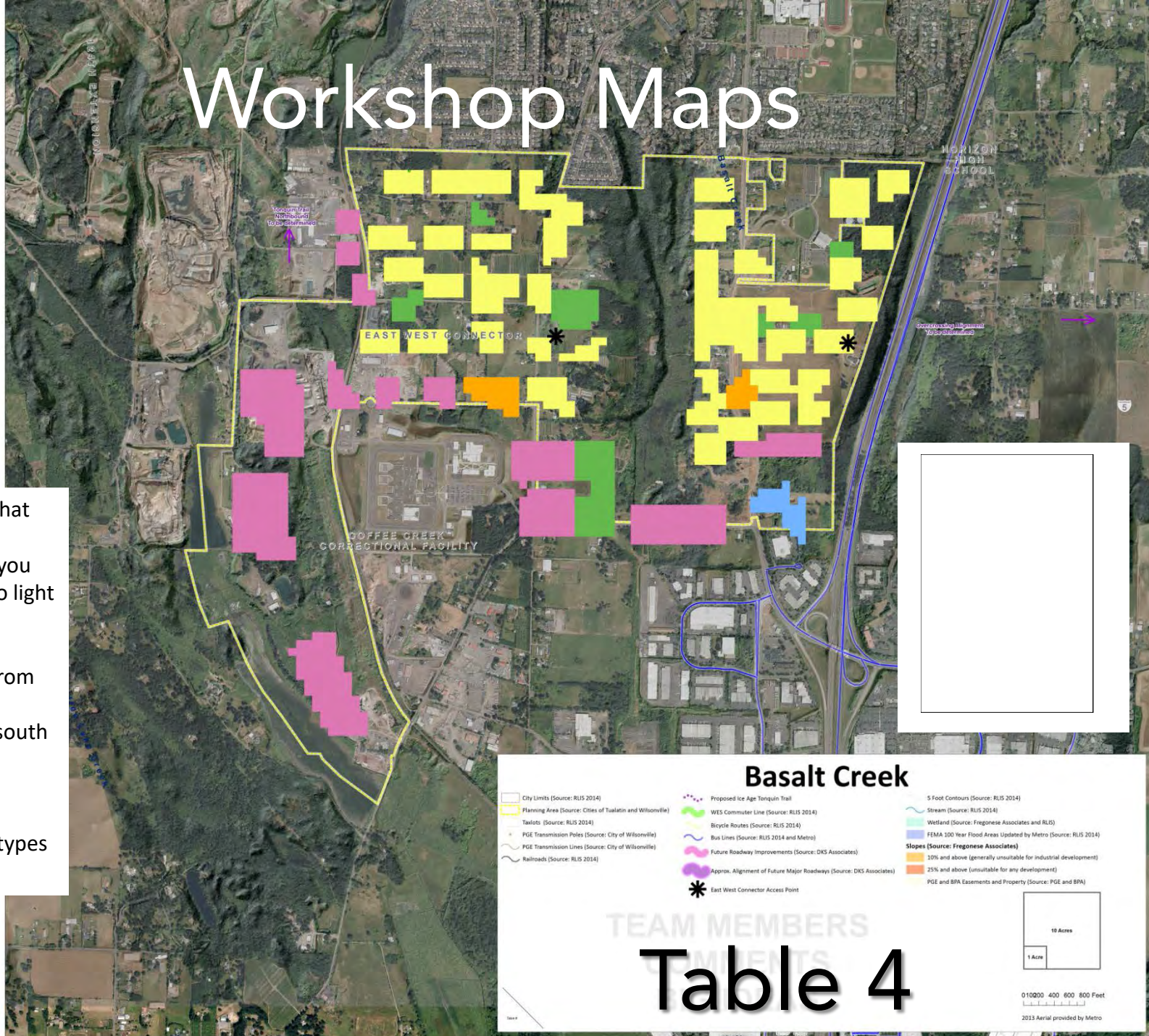


0 100 200 400 600 800 Feet
2013 Aerial provided by Metro

Table 3

Workshop Maps

- Residential at north that transitions to higher density/mixed use as you go south, eventually to light manufacturing.
- Access to small commercial services from residential areas.
- Places of worship at south end
- Sports complex and parks/open spaces
- Transitions between types of uses.

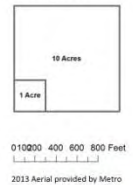


Basalt Creek

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> City Limits (Source: RUS 2014) Planning Area (Source: Cities of Tualatin and Wilsonville) Taxlots (Source: RUS 2014) PGE Transmission Poles (Source: City of Wilsonville) PGE Transmission Lines (Source: City of Wilsonville) Railroads (Source: RUS 2014) | <ul style="list-style-type: none"> Proposed Ice Age Tongue Trail WES Commuter Line (Source: RUS 2014) Bicycle Routes (Source: RUS 2014) Bus Lines (Source: RUS 2014 and Metro) Future Roadway Improvements (Source: DKS Associates) Approx. Alignment of Future Major Roadways (Source: DKS Associates) * East West Connector Access Point | <ul style="list-style-type: none"> 5 Foot Contours (Source: RUS 2014) Stream (Source: RUS 2014) Wetland (Source: Fregonesse Associates and RUS) FEMA 100 Year Flood Areas Updated by Metro (Source: RUS 2014) Slopes (Source: Fregonesse Associates) <ul style="list-style-type: none"> 10% and above (generally unsuitable for industrial development) 25% and above (unsuitable for any development) PGE and BPA Easements and Property (Source: PGE and BPA) |
|--|---|--|

TEAM MEMBERS

Table 4



2013 Aerial provided by Metro

Workshop Maps

Goals

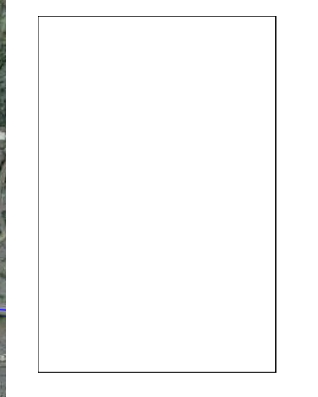
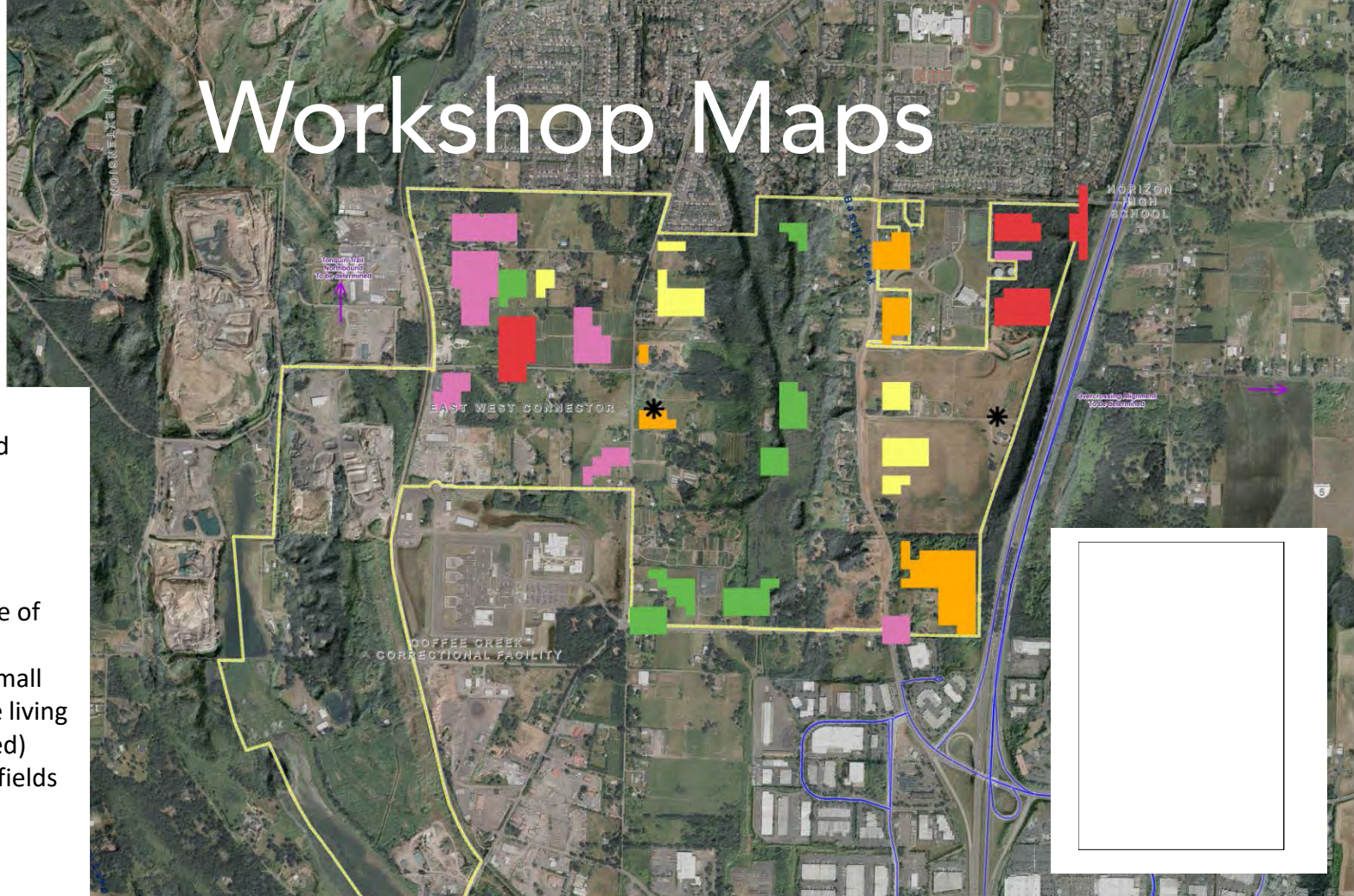
- Maintain neighborhood continuity

Comments

- Not great for industrial warehouse land because of transportation access
- No big box, but need small scale grocery for people living in the area (Haggen-sized)
- Big demand for sports fields

Big Ideas

- WES Station
- Natural area on Basalt Creek (like Tryon Creek)
- Sports Complex
- Clean green industrial flex as buffer to residential



TEAM MEMBERS
COMMENTS
Table 5

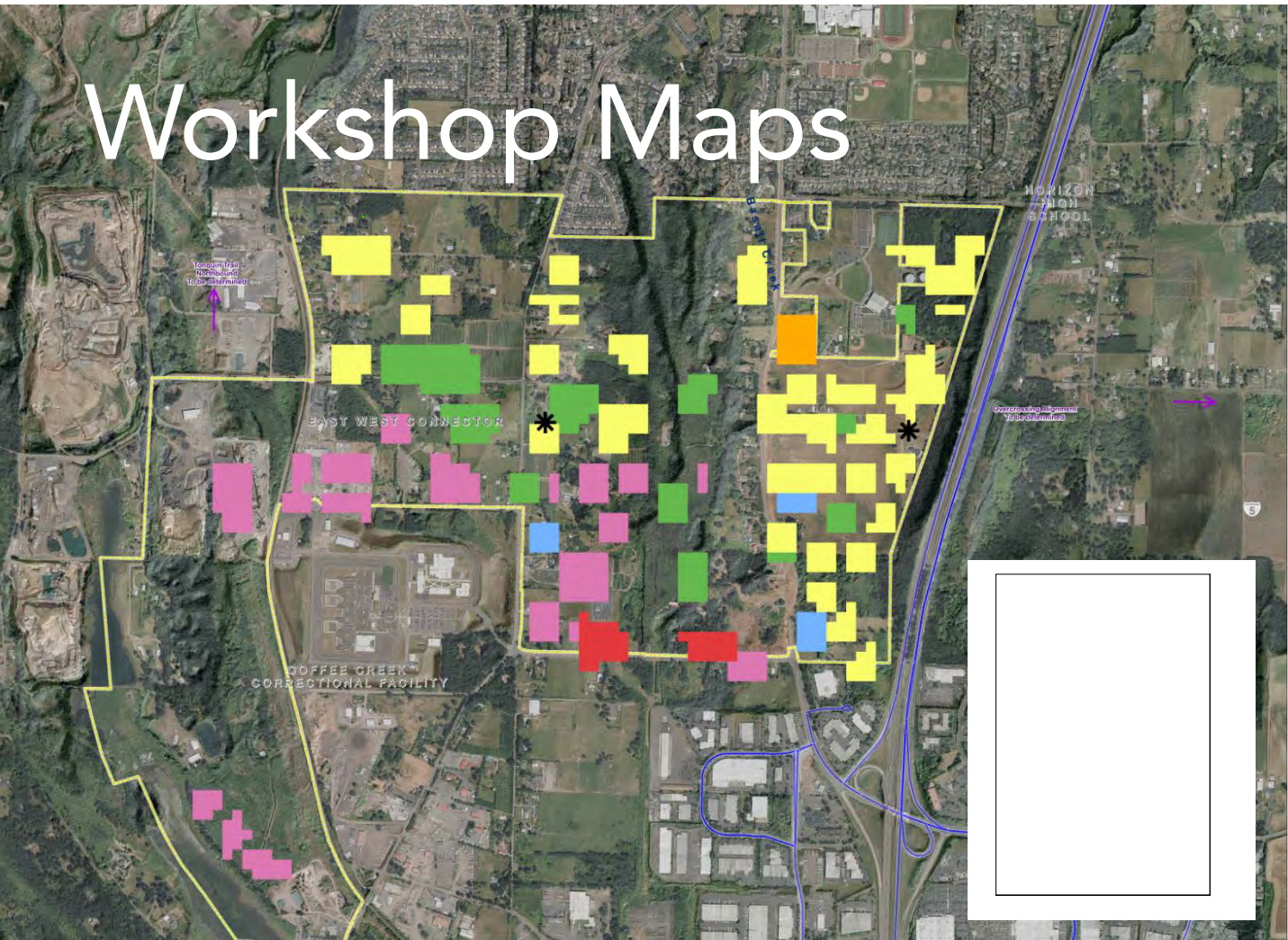
Workshop Maps

Goals

- Get people to live near their work!
- Offer more opportunities/options for sports field
- Connect neighborhood amenities/green spaces (i.e. walking/bike trails)
- Small parks in residential areas
- Maintain rural setting/provide safety/comfort

Our Ideas:

- Clustering of apartments/retail/parks
- Definitive boundaries – buffer zone (greenbelt)
- Trails, bike paths
- Neighborhood parks with multiple uses
- WES Station
- Easy access to freeway
- Community parks and gardens
- Assisted living centers
- Retail near intersection
- Industrial area down south
- G.F/E-R to ferry all residential
- Retail opportunity in front of school



Basalt Creek

<ul style="list-style-type: none"> City Limits (Source: RLIS 2014) Planning Area (Source: Cities of Tualatin and Wilsonville) Taxlots (Source: RLIS 2014) PGE Transmission Poles (Source: City of Wilsonville) PGE Transmission Lines (Source: City of Wilsonville) Railroads (Source: RLIS 2014) 	<ul style="list-style-type: none"> Proposed Ice Age Tonguin Trail WES Commuter Line (Source: RLIS 2014) Bicycle Routes (Source: RLIS 2014) Bus Lines (Source: RLIS 2014 and Metro) Future Roadway Improvements (Source: DKS Associates) Approx. Alignment of Future Major Roadways (Source: DKS Associates) * East West Connector Access Point 	<ul style="list-style-type: none"> 5 Foot Contours (Source: RLIS 2014) Stream (Source: RLIS 2014) Wetland (Source: Fregonesse Associates and RLIS) FEMA 100 Year Flood Areas Updated by Metro (Source: RLIS 2014) Slopes (Source: Fregonesse Associates) <ul style="list-style-type: none"> 10% and above (generally unsuitable for industrial development) 25% and above (unsuitable for any development) PGE and BPA Easements and Property (Source: PGE and BPA)
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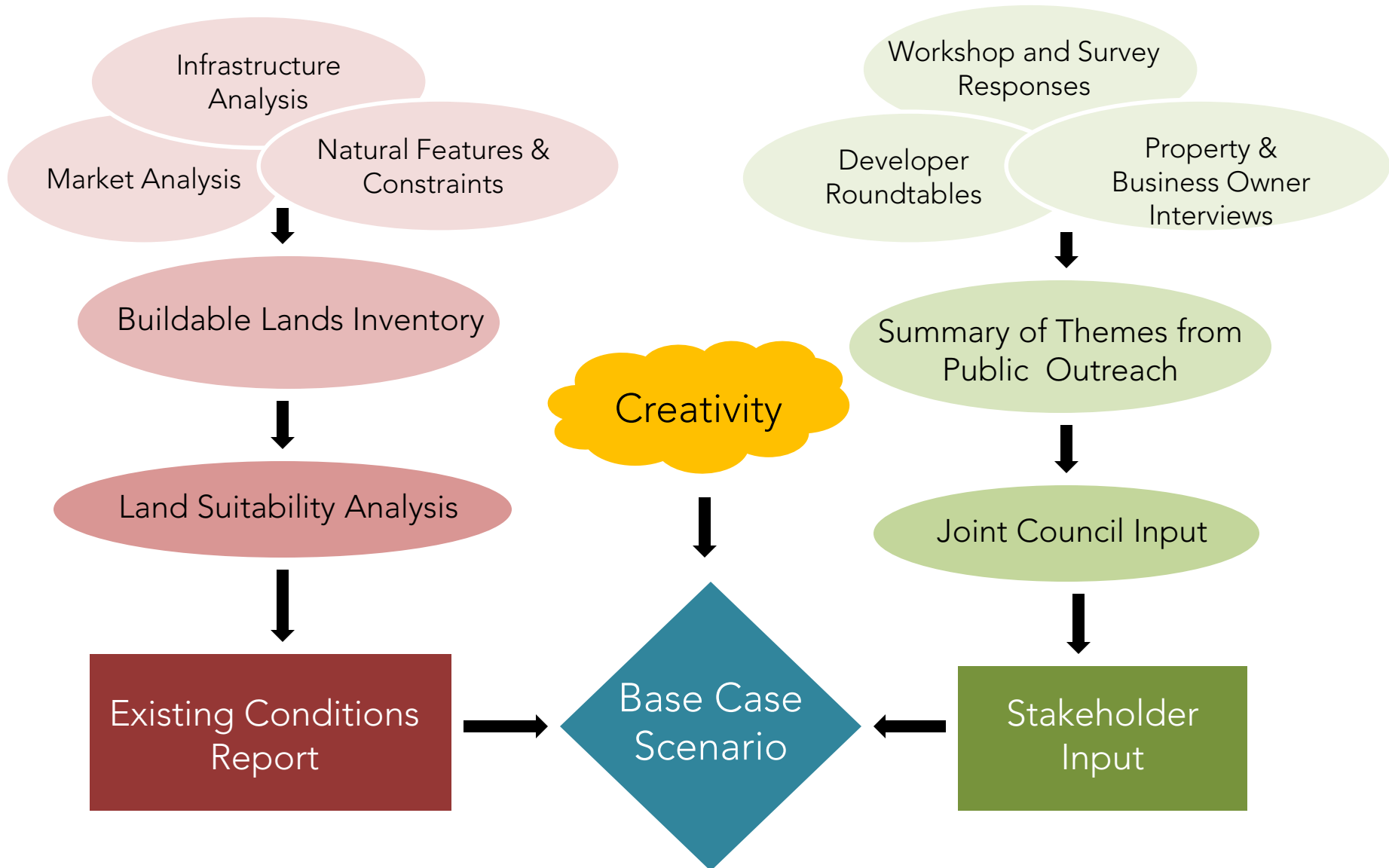
10 Acres
1 Acre

0 100 200 300 400 500 600 700 800 900 Feet

2013 Aerial provided by Metro

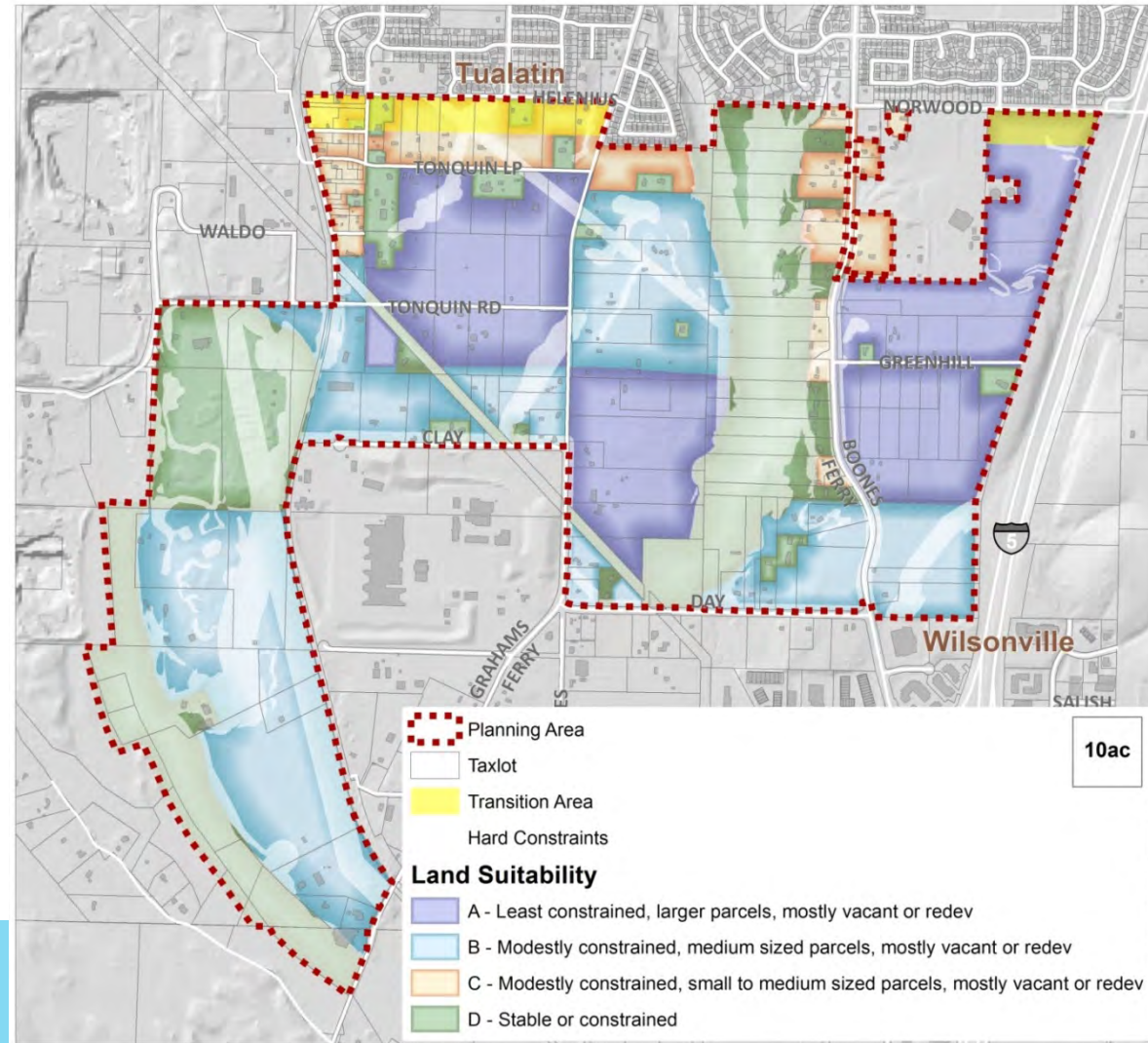
TEAM MEMBERS
Comments
Table 6

Building the Base Case Scenario

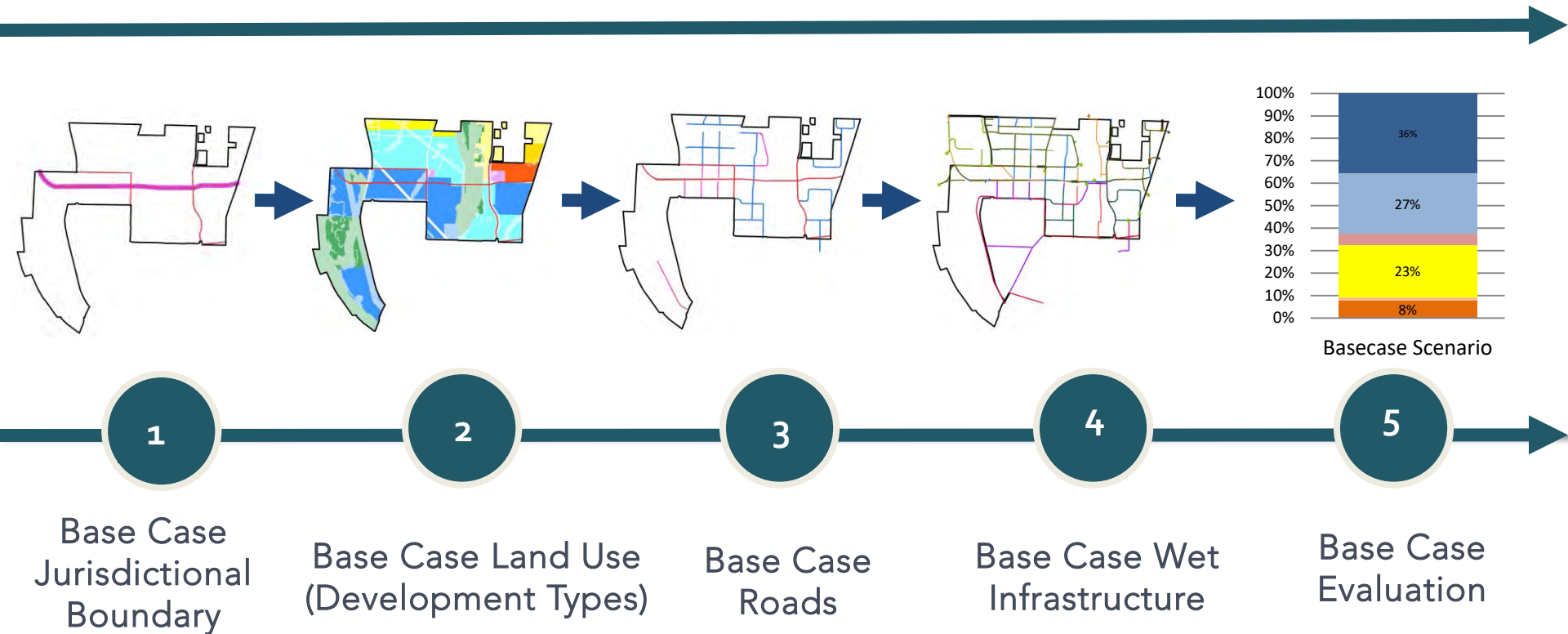


Building the Base Case Land Suitability Analysis

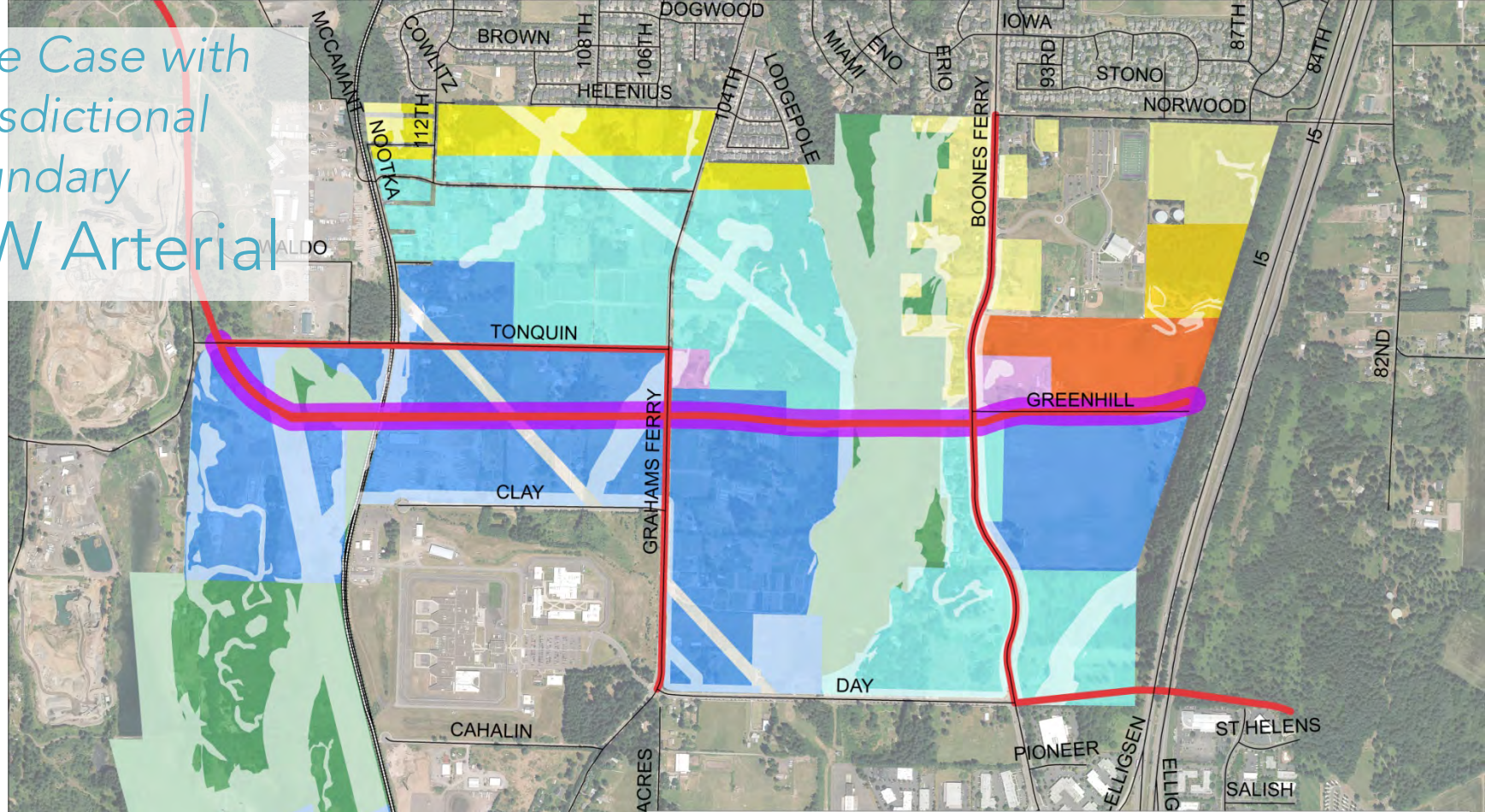
Suitability Category	Vacant Acres
A	197
B	144
C	38
D	12



Building the Base Case Scenario Development






Base Case with
Jurisdictional
Boundary
E-W Arterial



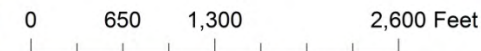
Basalt Creek Base Case Scenario

Legend

-  Planned Future Roads
-  Basecase Local Access Roads
-  Basecase Local Connector Roads
-  Basecase Jurisdictional Boundary
-  Existing Streets
-  Railroad

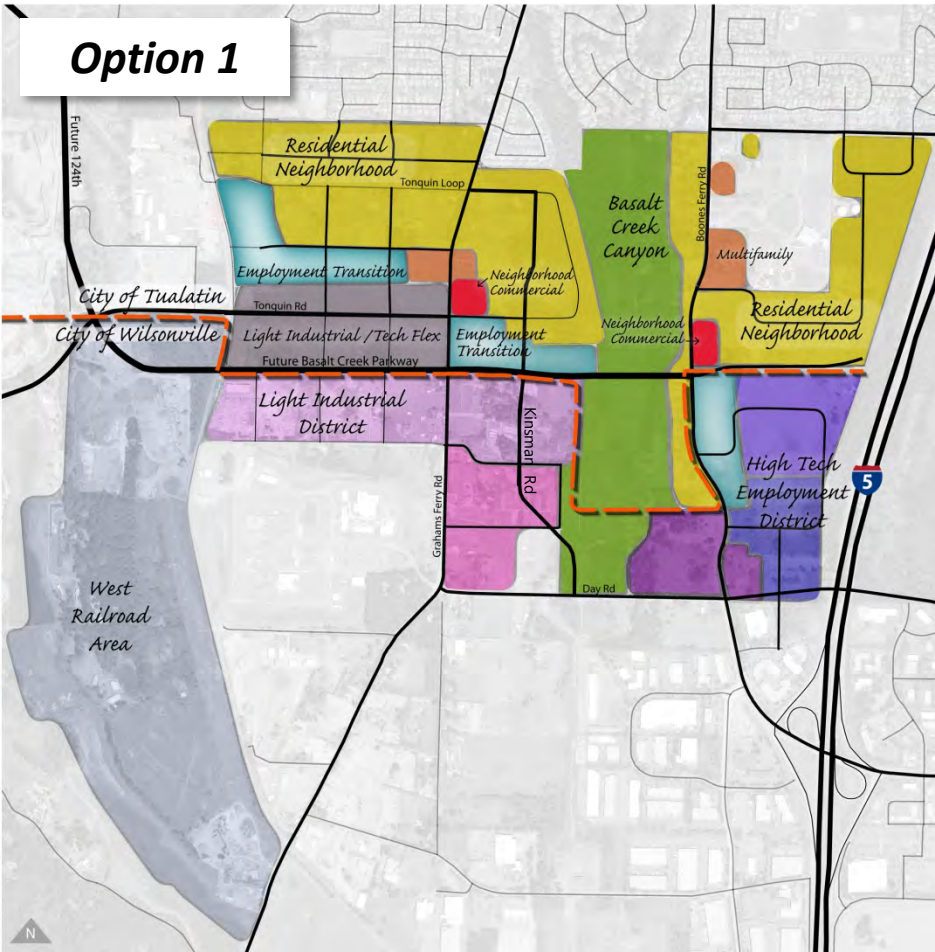
Development Type

-  Neighborhood Commercial
-  Suburban Multifamily
-  Compact Neighborhood
-  Suburban Residential
-  Conventional Single Family
-  Office Park/Flex
-  Light Industrial and Warehousing
-  Undeveloped Natural Area

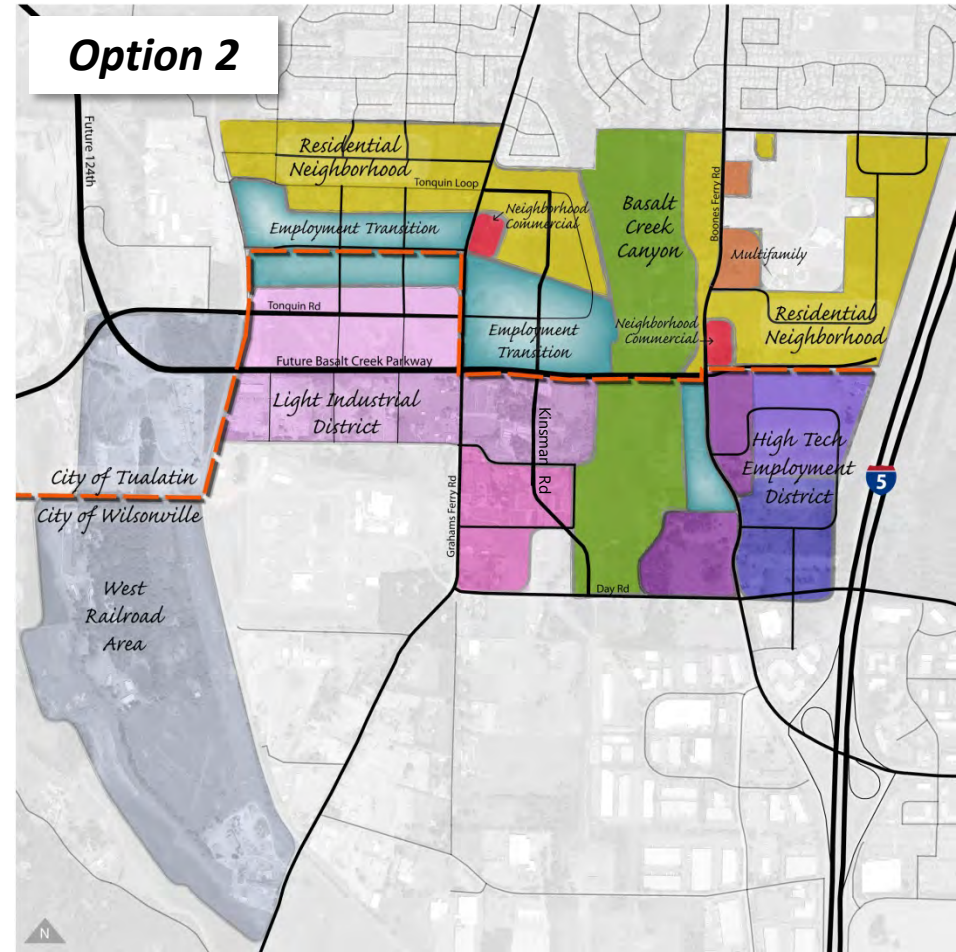


Initial Scenarios 1 & 2

Option 1



Option 2

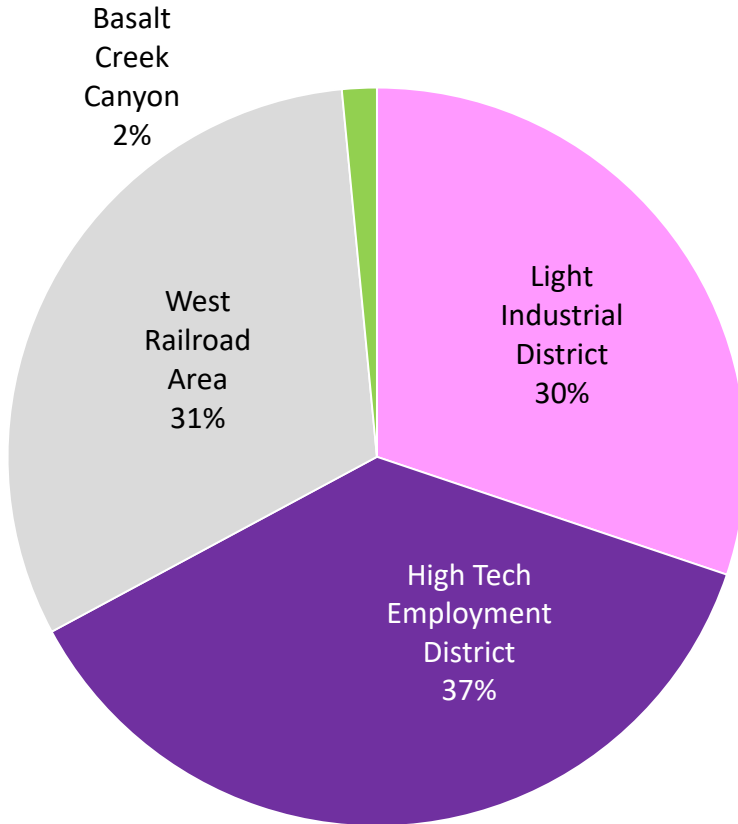


Indicators | Wilsonville Land Use

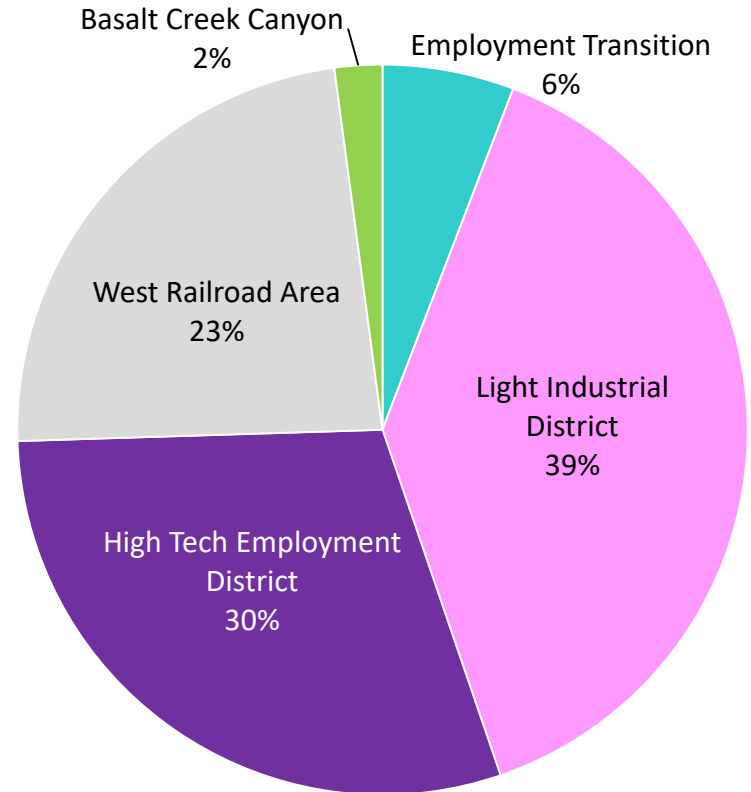
Mix

* % of developable acres

Boundary Option 1



Boundary Option 2

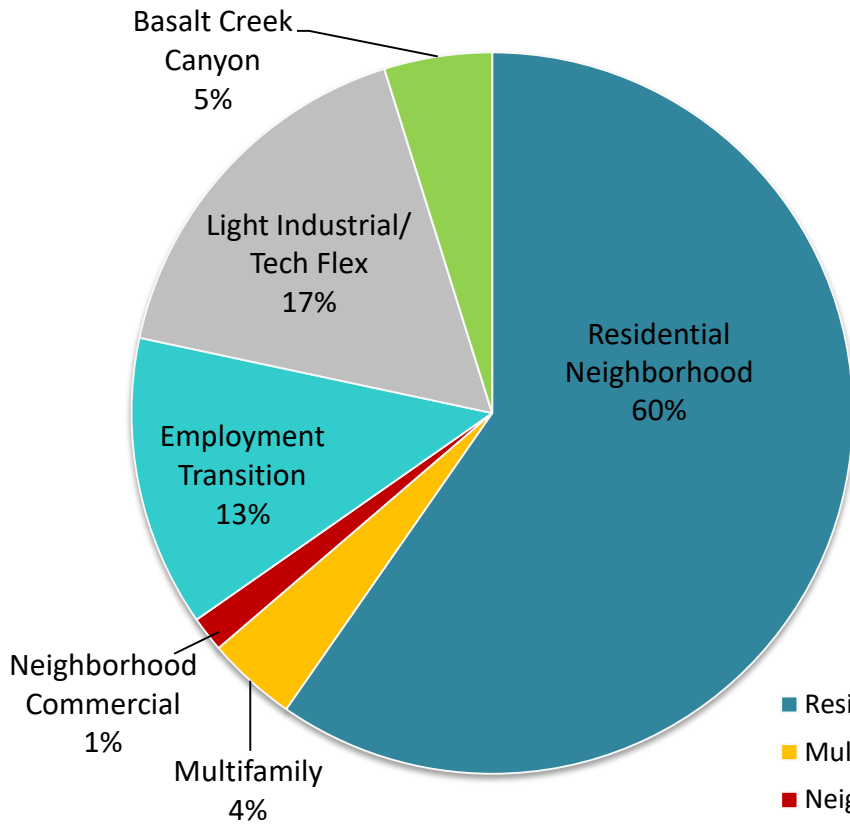


- Employment Transition
- High Tech Employment District
- Basalt Creek Canyon
- Light Industrial District
- West Railroad Area

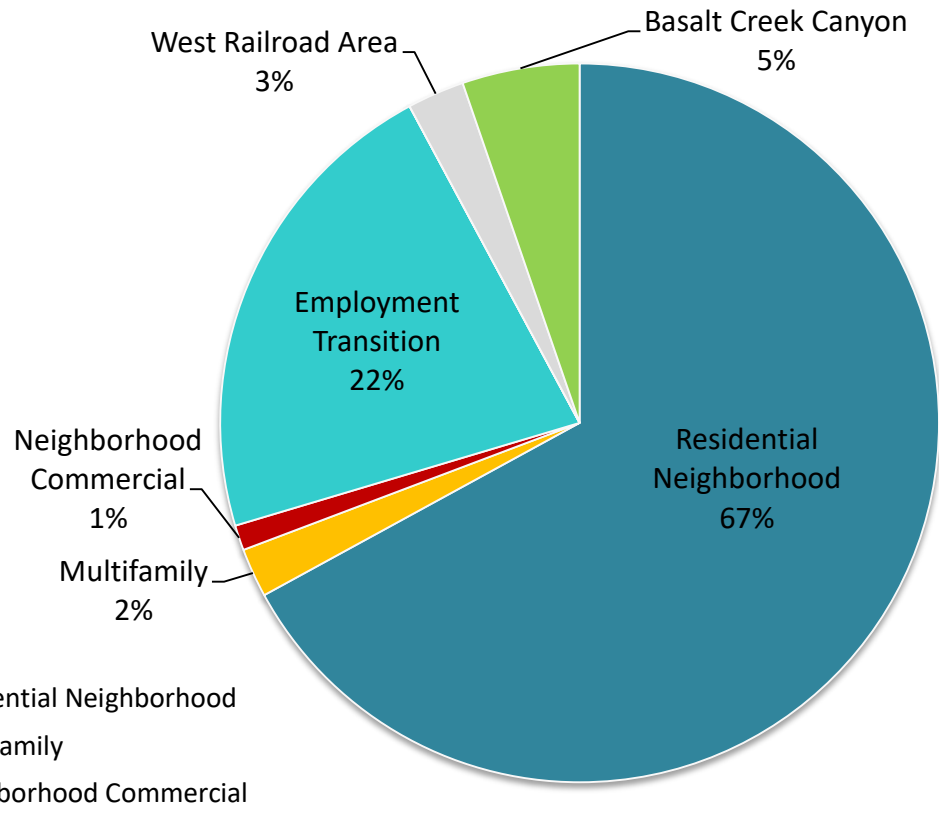
Indicators | Tualatin Land Use Mix

* % of developable acres

Boundary Option 1

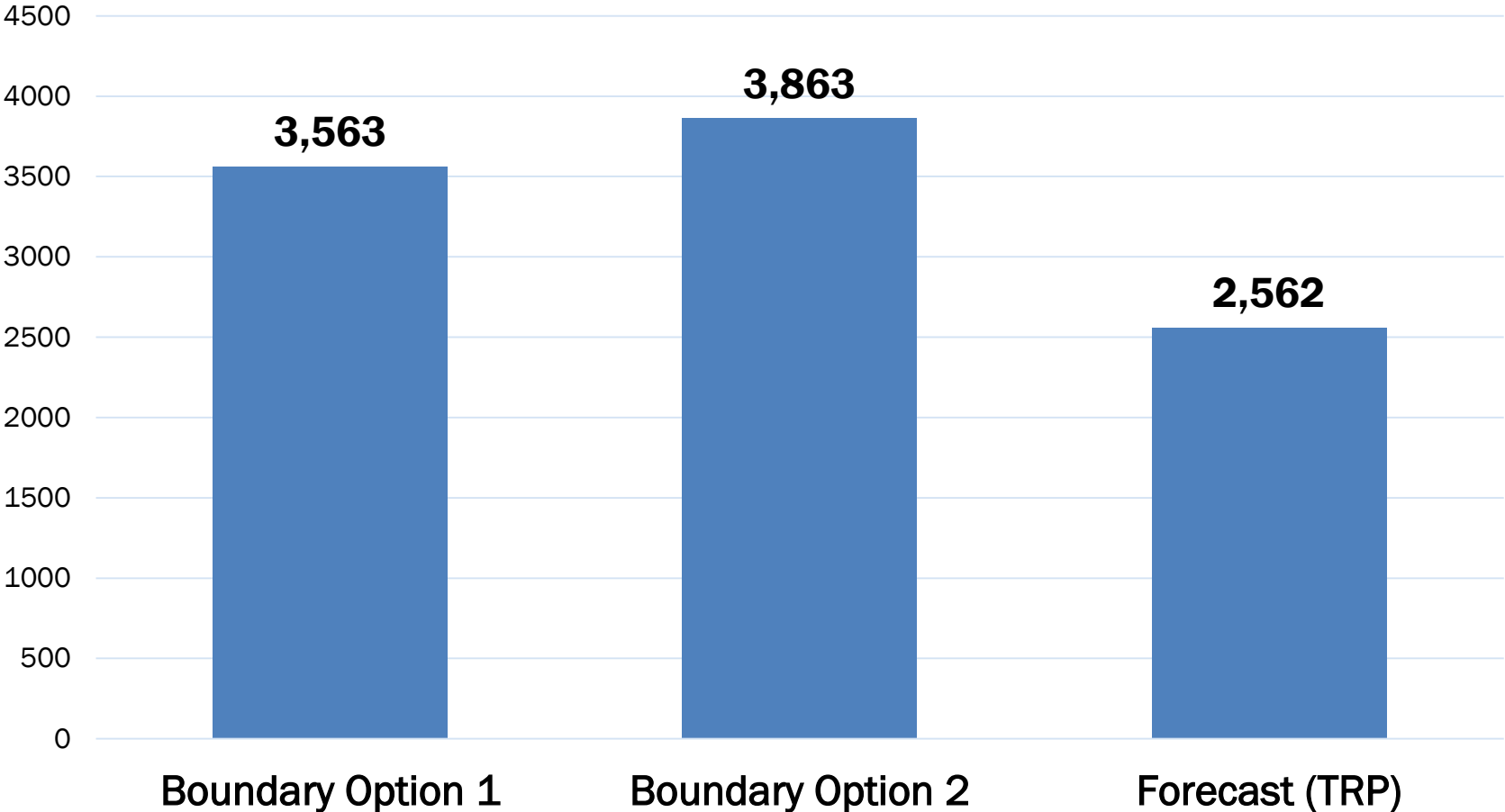


Boundary Option 2

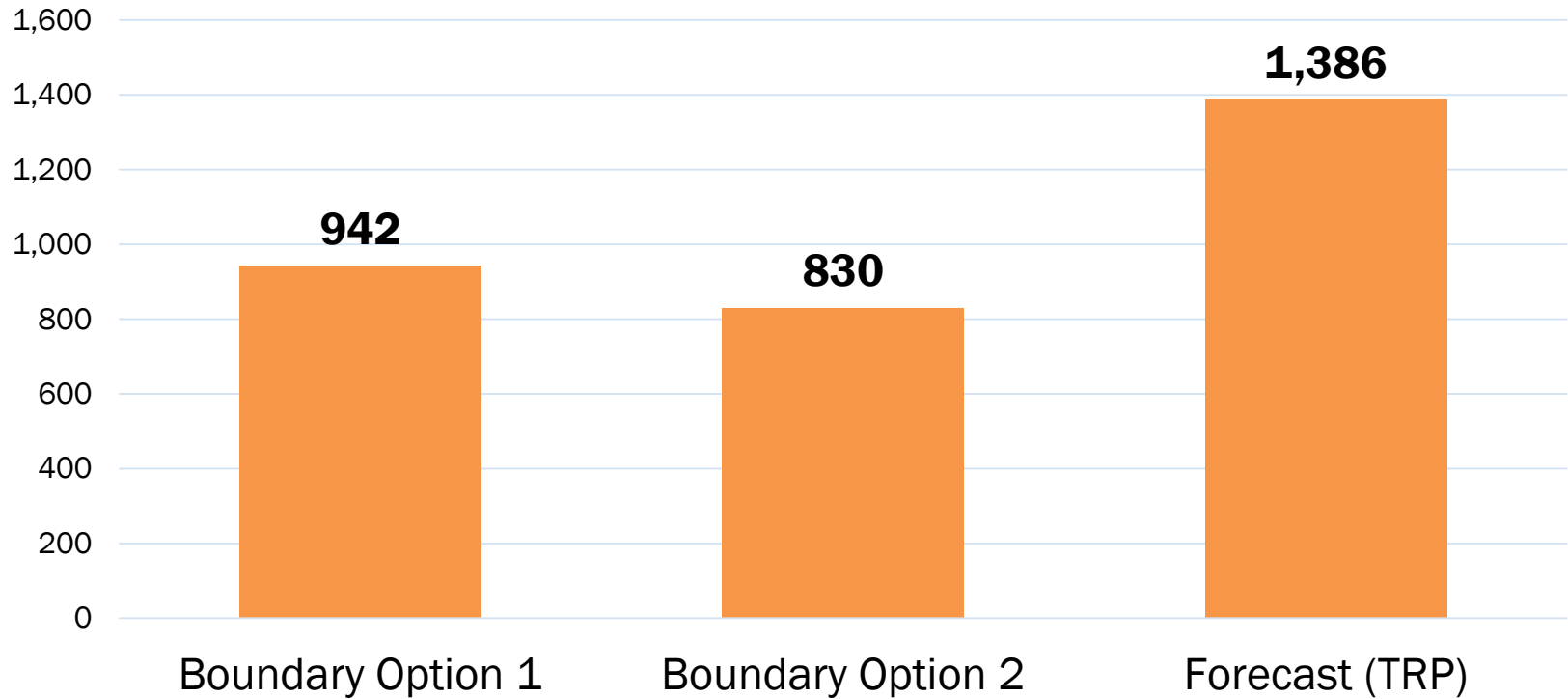


- Residential Neighborhood
- Multifamily
- Neighborhood Commercial
- Employment Transition
- Light Industrial/Tech Flex
- West Railroad Area
- Basalt Creek Canyon

Indicators | Number of Jobs



Indicators | Households



Land Use Scenario Objectives

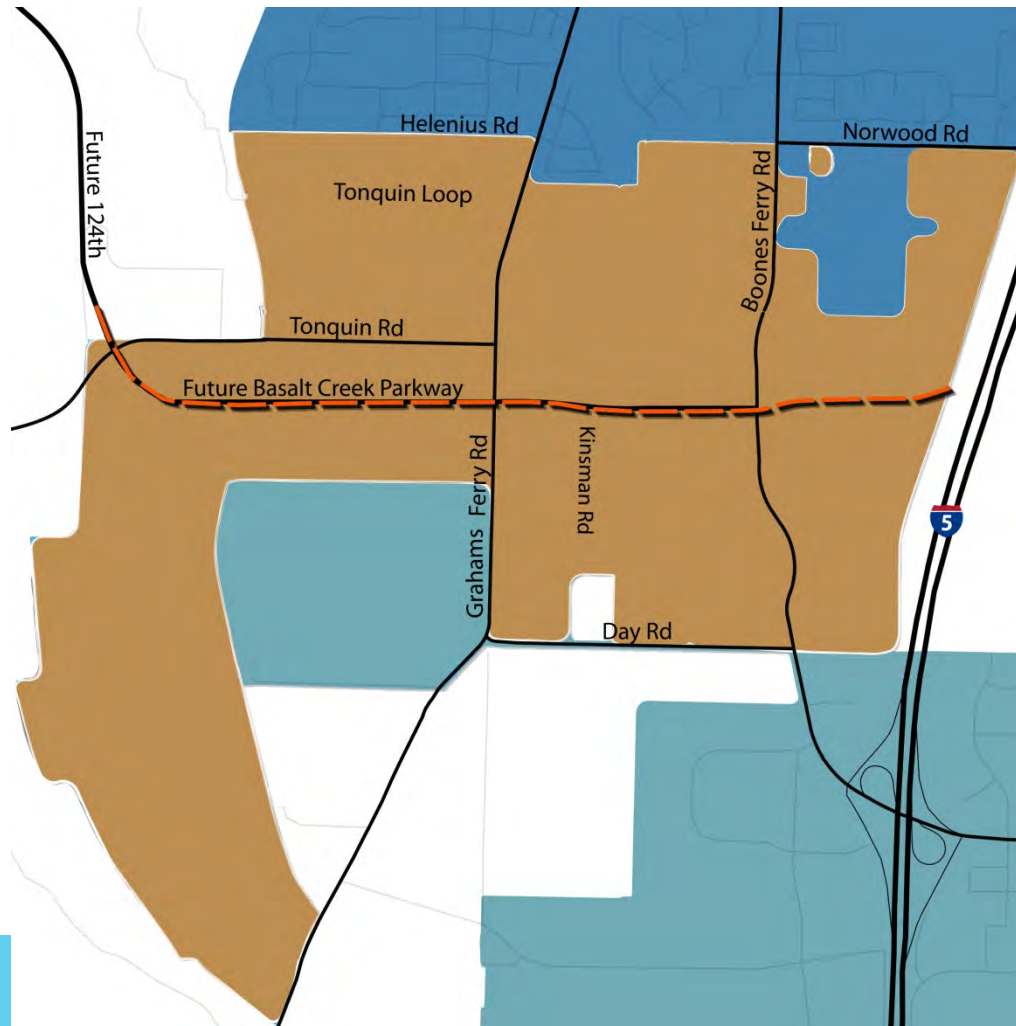
- A scenario designed around an implementable infrastructure plan
- Design principles focused on creating development forms reflective of the two cities
- Examine other boundary options that do not rely on the east west connector. Explore service agreements.
- Jurisdictional equity
- More residential for Tualatin in the north
- Consider creative solutions for transitions from employment to housing

Initial Scenario Summary

- Scenario 1 and 2 meet all regional goals and constraints
- Both provide:
 - high-quality employment and housing opportunities,
 - innovative and appropriate transition areas between residential and employment uses,
 - responsiveness to the real estate market,
 - robust and efficient infrastructure systems, and
 - development that generally “pays its way.”

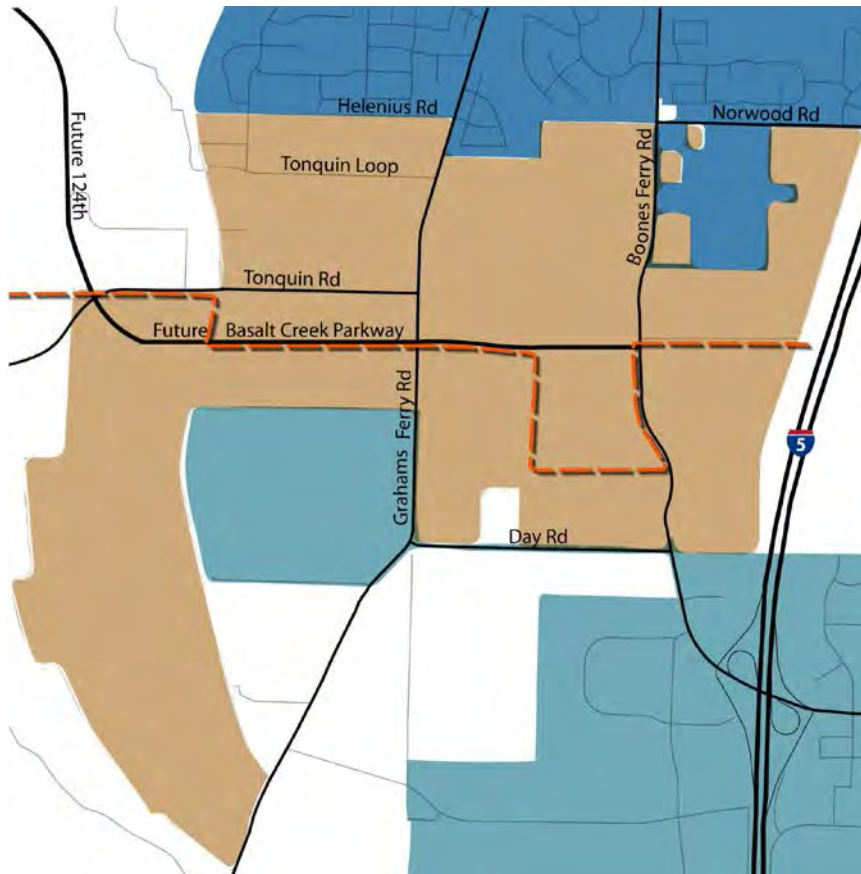
Base Case Boundary Option

December 2, 2014 Joint Council Meeting

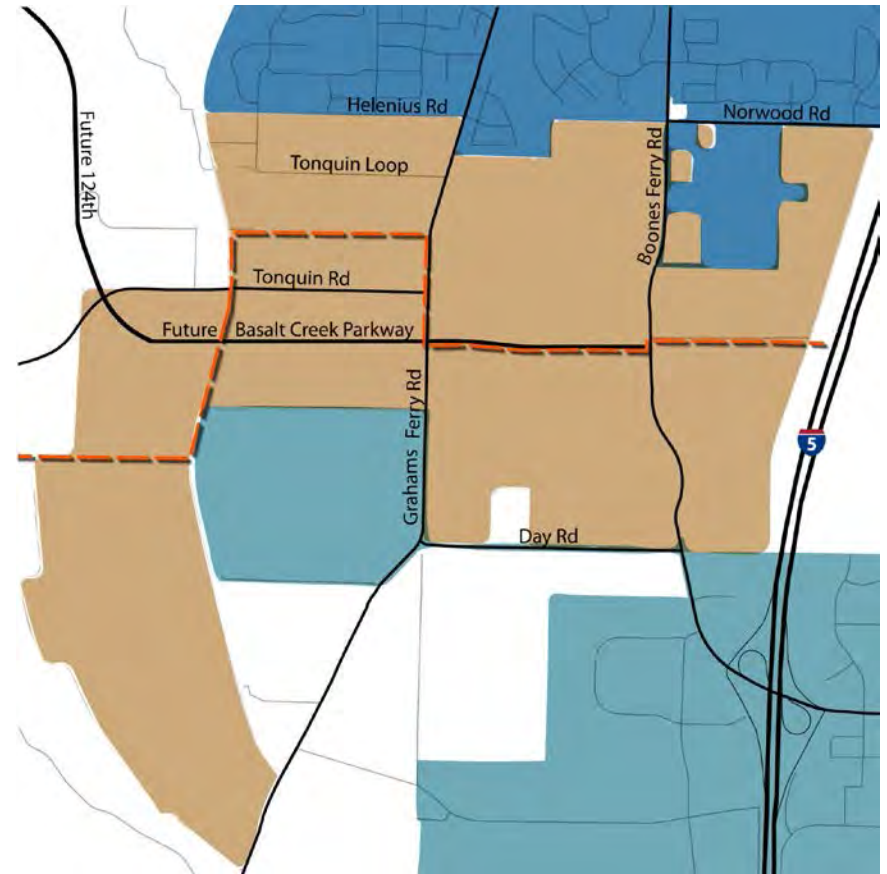


Boundary Options 1 and 2

June 17, 2015 Joint Council Meeting



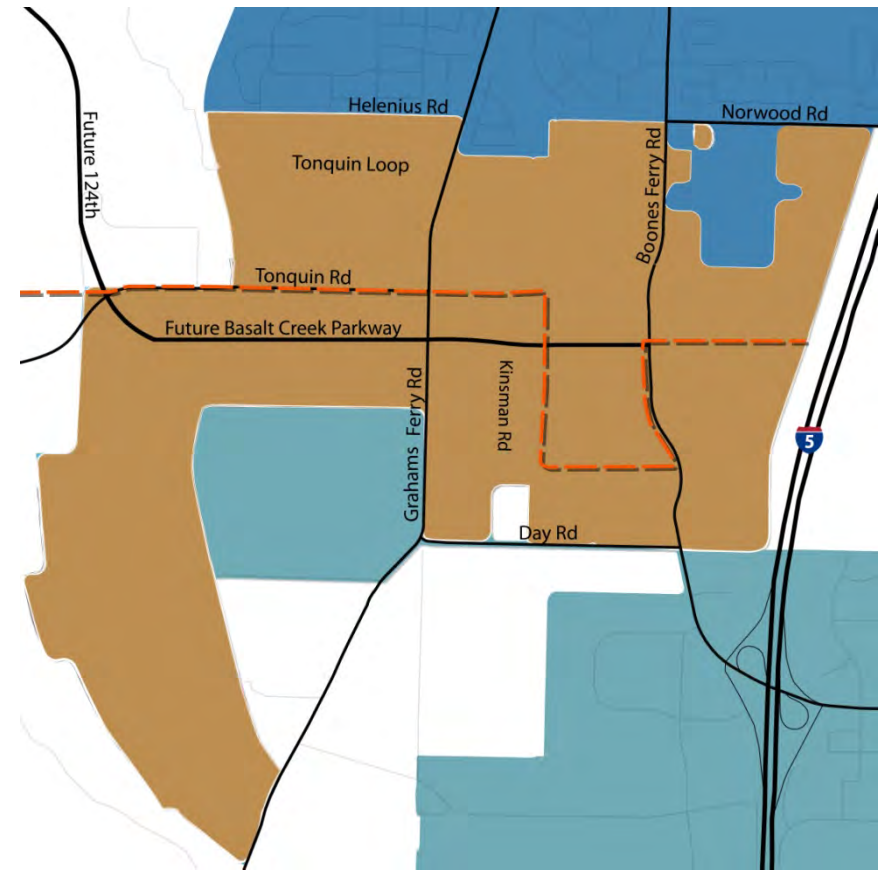
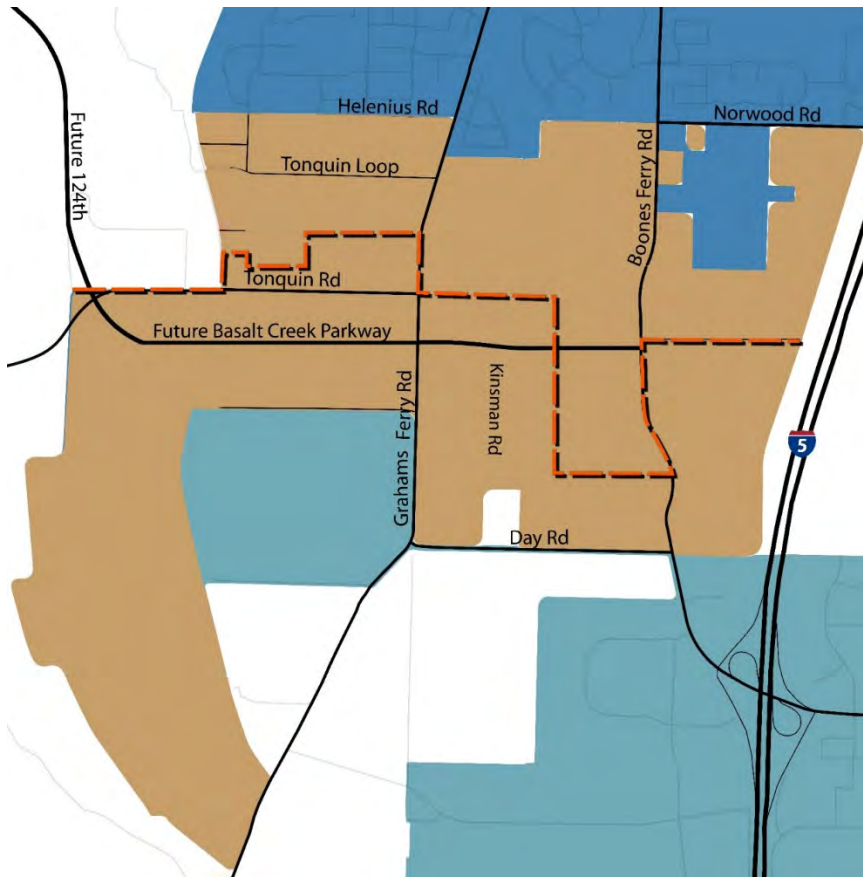
Boundary Option 1



Boundary Option 2

Boundary Options 3 and 4

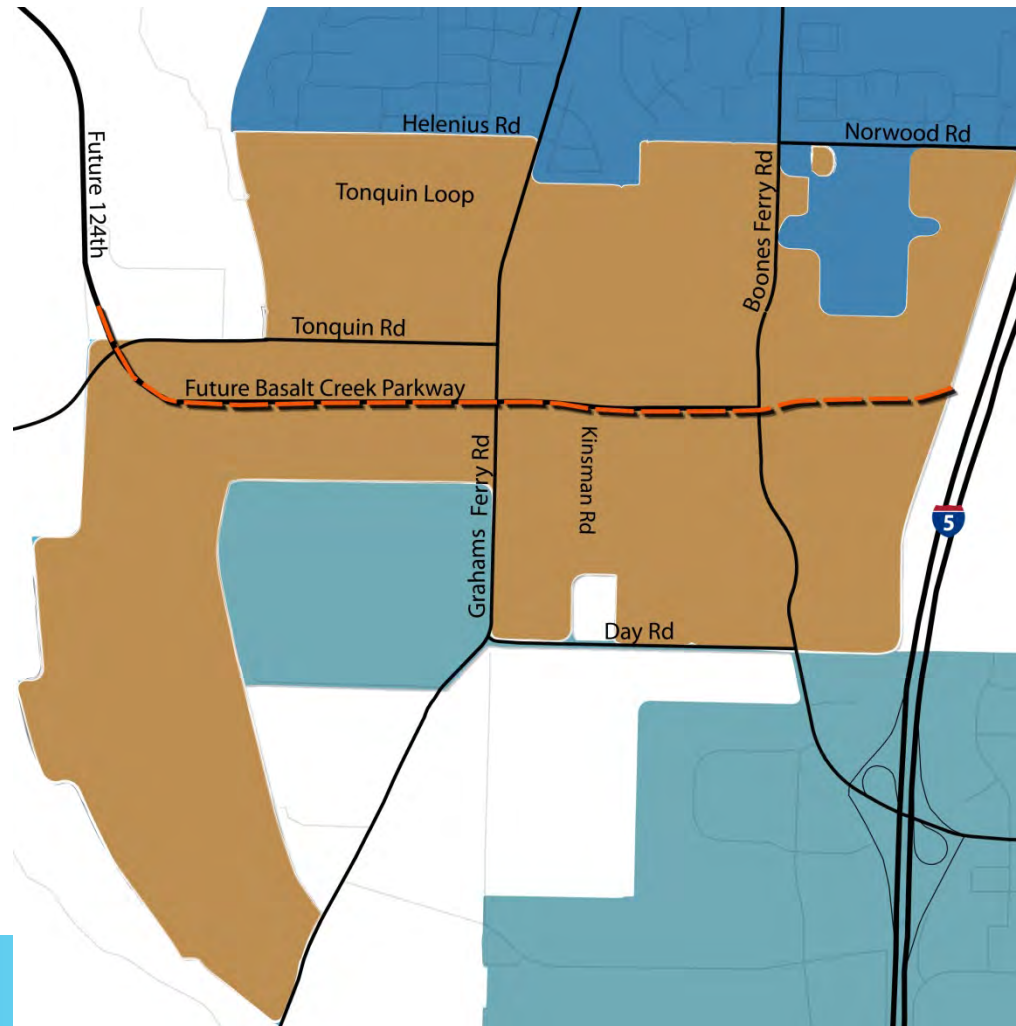
August 2015 Individual Work Sessions



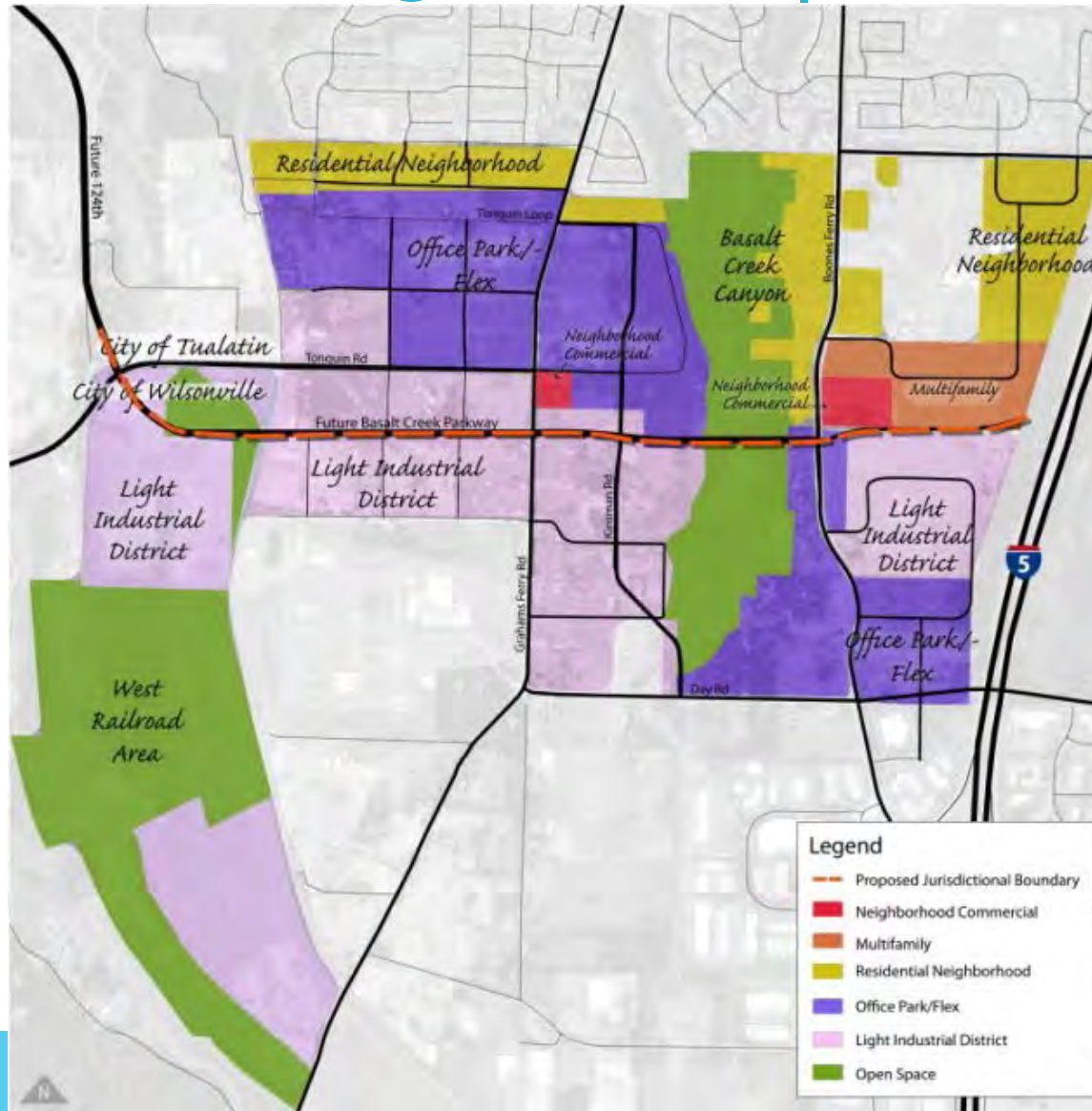
Boundary Option 3

Boundary Option 4

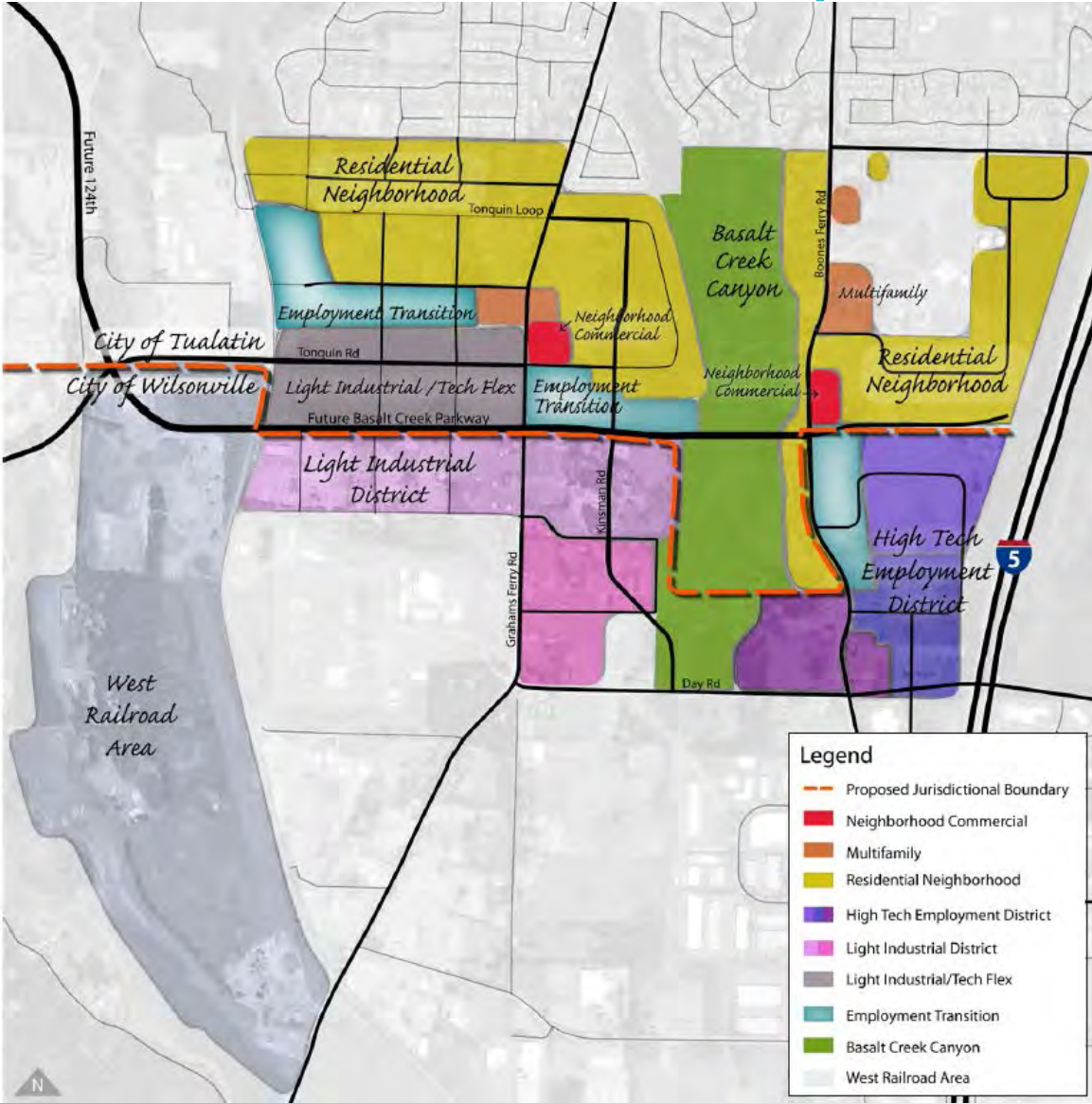
Final Jurisdictional Boundary follows the Basalt Creek Parkway



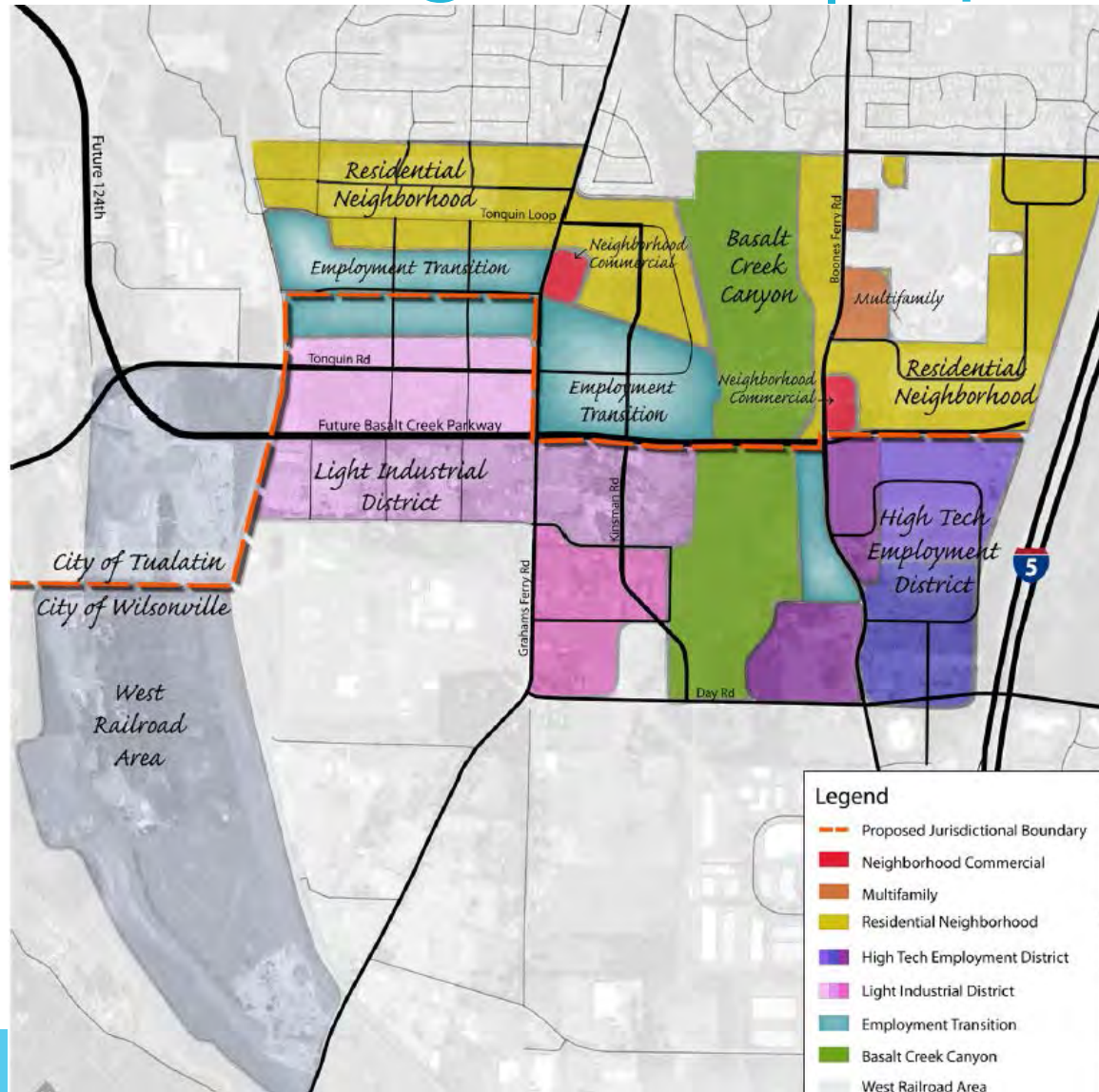
Scenario Progression | Base Case



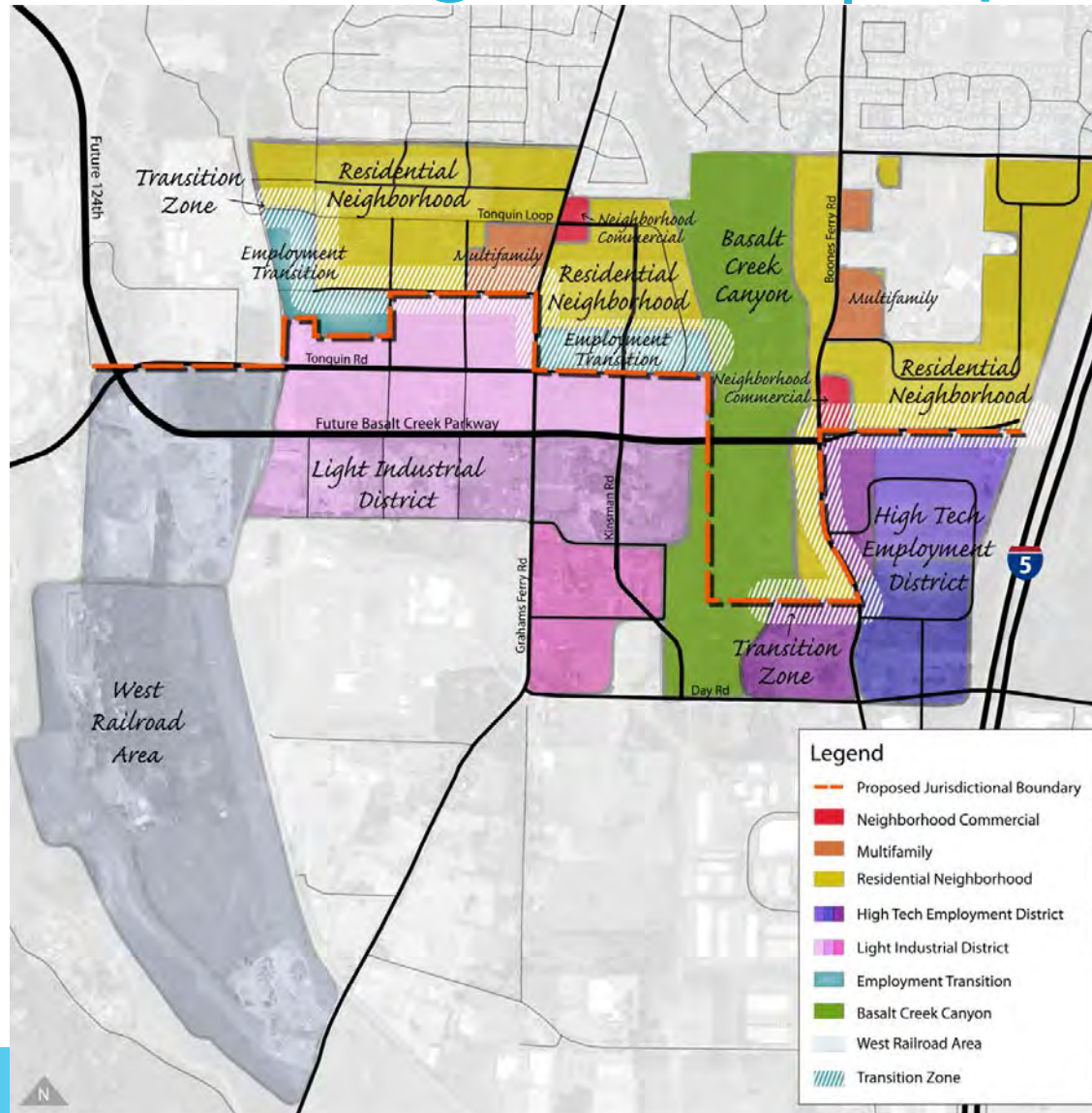
Scenario Progression | Option 1



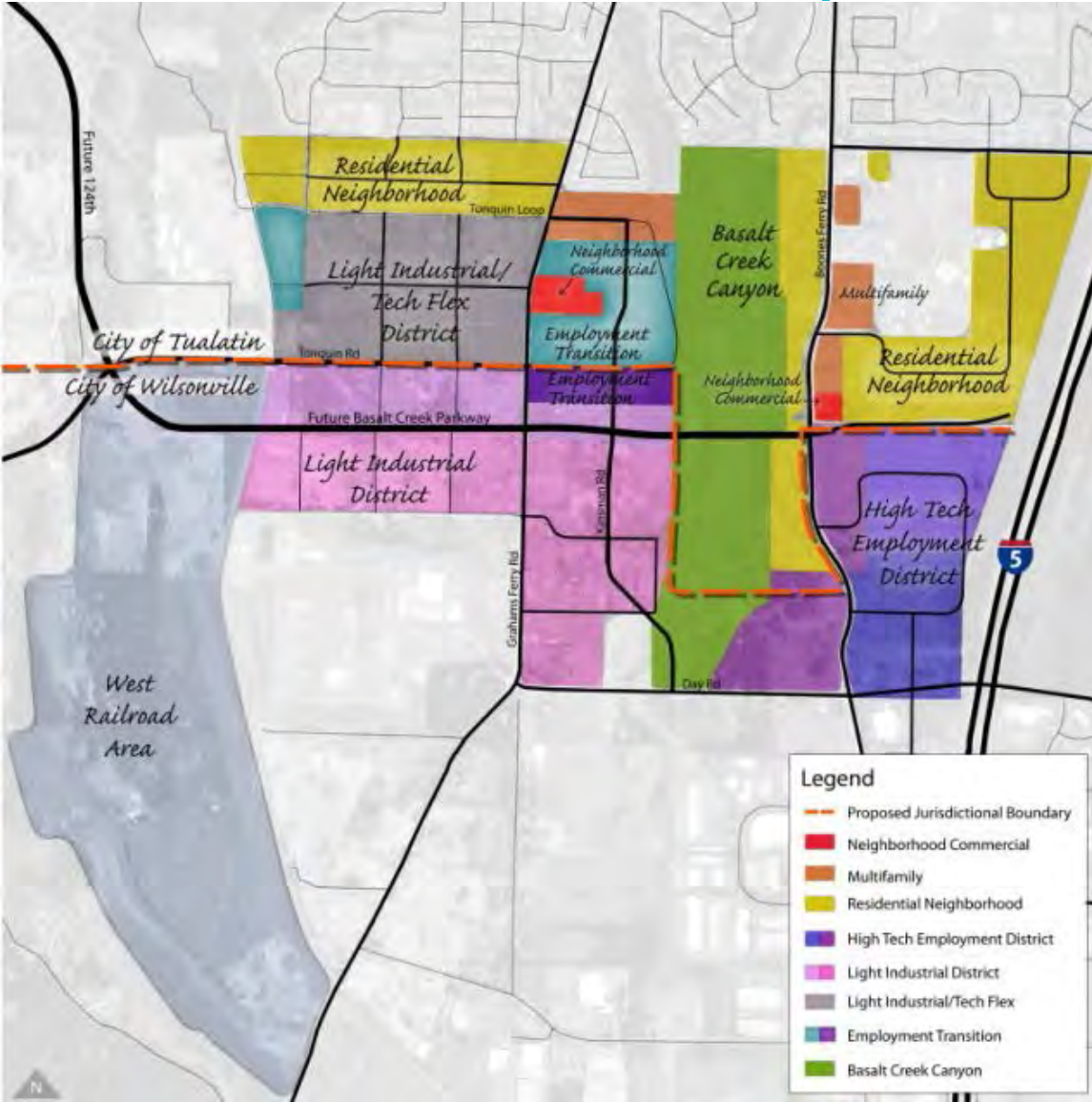
Scenario Progression | Option 2



Scenario Progression | Option 3

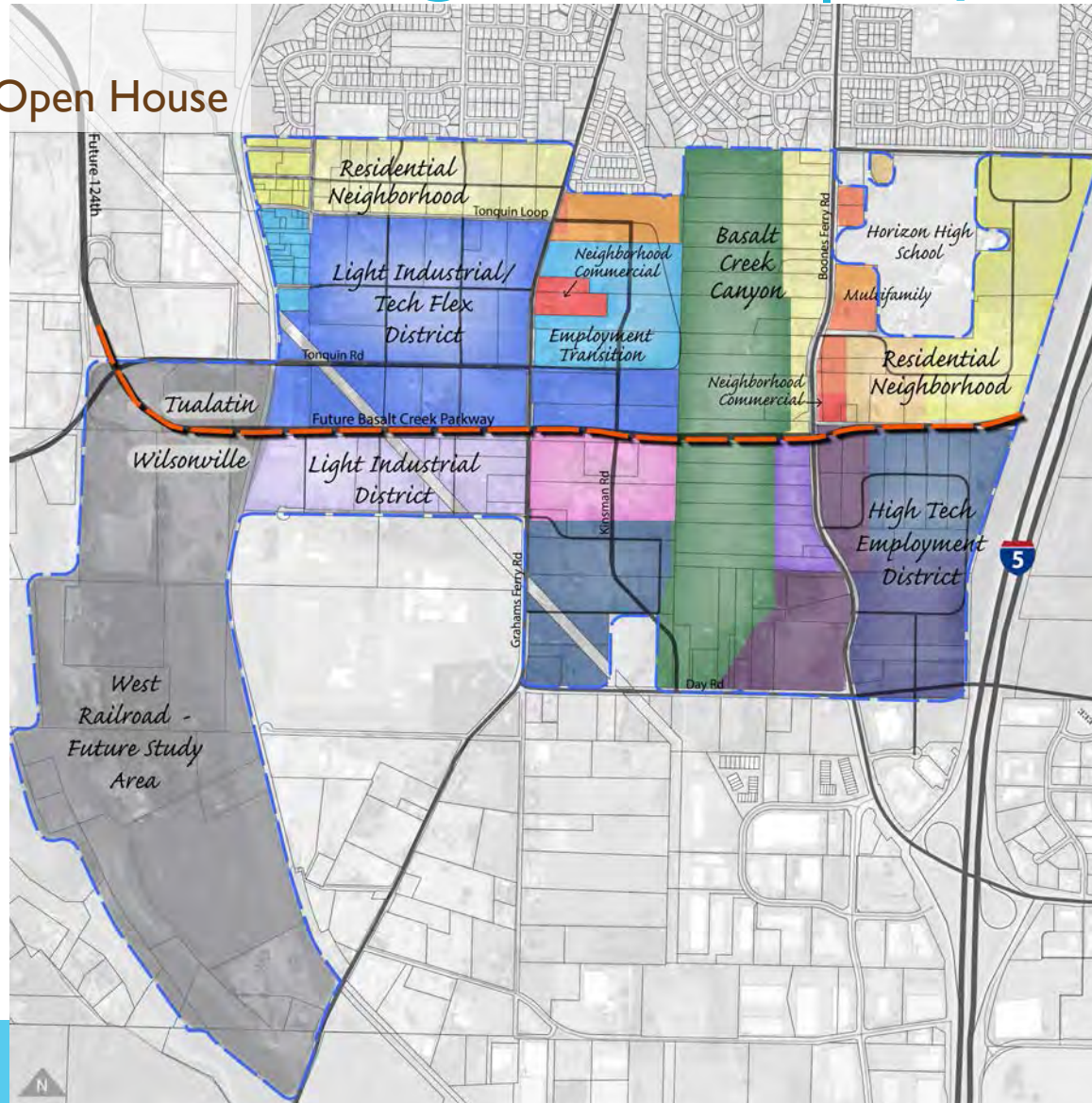


Scenario Progression | Option 4

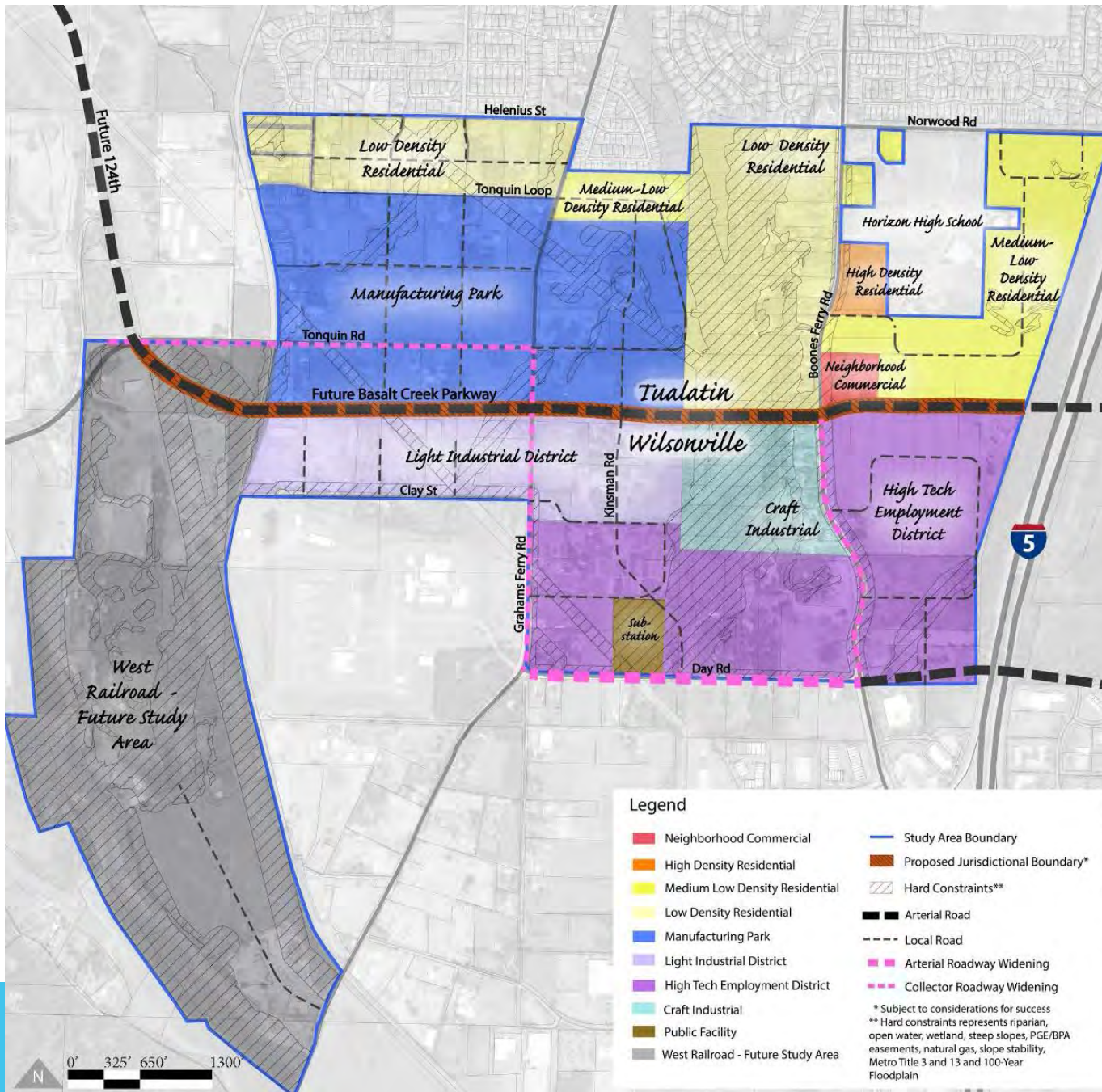


Scenario Progression | Option 5

Option 5
April 2016 Open House



Preferred Land Use Concept | April 2018



Boundary Option 1	Acreage	Housing Units	Households	Jobs	Retail	Office	Industrial	Warehousing	Trips	HH Trips	Retail Trips	Office Trips	Industrial Trips	Warehousing Trips
Tualatin														
Garden Apartments 2-story (T)	3	68	64	-	-	-	-	-	40	40	-	-	-	-
Townhomes (T)	6	58	55	-	-	-	-	-	34	34	-	-	-	-
Small Lot Single Family (T)	10	87	80	-	-	-	-	-	50	50	-	-	-	-
Small and Medium Lot Single Family (T)	59	401	369	-	-	-	-	-	232	232	-	-	-	-
Large Lot Single Family (T)	50	292	268	-	-	-	-	-	169	169	-	-	-	-
Small Pad Retail (T)	3	-	-	36	36	-	-	-	26	-	26	-	-	-
Light Industrial / Tech Flex (T)	34	-	-	689	24	132	533	-	263	-	17	49	197	-
Employment Transition (T)	26	-	-	773	-	773	-	-	286	-	-	286	-	-
Light Industrial / Tech Flex - Low Density (T)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Open Space	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Tualatin Total	201	906	836	1,498	60	905	533	-	1,102	526	43	335	197	-
Wilsonville														
Live-Work (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (W)	7	36	34	154	37	48	67	2	92	21	27	18	25	1
Single User Manufacturing (W)	21	-	-	253	3	160	63	27	95	-	2	59	23	10
Single User Warehousing (W)	27	-	-	317	8	110	-	199	120	-	5	41	-	74
High Tech Single User (W)	15	-	-	532	5	234	293	-	199	-	4	87	108	-
Multi User Manufacturing Small Tenants (W)	19	-	-	316	4	59	218	36	119	-	3	22	80	13
Multi User Manufacturing Large Tenants (W)	38	-	-	282	9	13	-	260	107	-	7	5	-	96
Employment Low - Area of Special Concern (W)	59	-	-	119	4	6	-	110	46	-	3	2	-	41
Open Space	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsonville Total	188	36	34	1,973	69	630	641	633	776	21	50	233	237	234
Total All	389	942	870	3,471	129	1,535	1,174	633	1,878	548	94	568	434	234

Boundary Option 2	Housing				Commercial				Trips		Retail	Office	Industrial	Warehousing
	Acreage	Units	Households	Jobs	Retail	Office	Industrial	Warehousing	Trips	HH Trips	Trips	Trips	Trips	Trips
Tualatin														
Garden Apartments 2-story (T)	3	68	64	-	-	-	-	-	40	40	-	-	-	-
Townhomes (T)	2	17	16	-	-	-	-	-	10	10	-	-	-	-
Small Lot Single Family (T)	10	89	82	-	-	-	-	-	52	52	-	-	-	-
Small and Medium Lot Single Family (T)	43	292	269	-	-	-	-	-	169	169	-	-	-	-
Large Lot Single Family (T)	49	289	266	-	-	-	-	-	167	167	-	-	-	-
Small Pad Retail (T)	2	-	-	20	20	-	-	-	14	-	14	-	-	-
Light Industrial / Tech Flex (T)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (T)	34	-	-	993	-	993	-	-	368	-	-	368	-	-
Light Industrial / Tech Flex - Low Density (T)	4	1	1	29	1	6	23	-	12	1	1	2	8	-
Open Space	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Tualatin Total	155	756	697	1,043	21	999	23	-	833	439	15	370	8	-
Wilsonville														
Live-Work (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (W)	13.4	68.66	64.54	291.70	70.80	90.33	127.04	3.53	174.07	40.66	51.68	33.42	47.01	1.30
Single User Manufacturing (W)	22.3	-	-	274.19	3.03	173.42	68.69	29.05	102.54	-	2.21	64.17	25.42	10.75
Single User Warehousing (W)	50.1	-	-	585.09	13.89	203.71	-	367.50	221.48	-	10.14	75.37	-	135.97
High Tech Single User (W)	21.3	-	-	766.61	6.98	337.62	422.02	-	286.16	-	5.09	124.92	156.15	-
Multi User Manufacturing Small Tenants (W)	30.6	-	-	503.04	6.39	93.78	345.83	57.03	188.43	-	4.67	34.70	127.96	21.10
Multi User Manufacturing Large Tenants (W)	37.7	-	-	282.12	8.93	13.09	-	260.10	107.60	-	6.52	4.84	-	96.24
Employment Low - Area of Special Concern (W)	55.1	-	-	111	4	5	-	103	42	-	3	2	-	38
Open Space	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsonville Total	235	69	65	2,814	114	917	964	820	1,123	41	83	339	357	303
Total All	390	825	762	3,857	134	1,916	986	820	1,955	480	98	709	365	303

Boundary Option 3	Housing				Commercial				Trips					
	Acreage	Units	Households	Jobs	Retail	Office	Industrial	Warehousing	Trips	HH Trips	Retail Trips	Office Trips	Industrial Trips	Warehousing Trips
Tualatin														
Garden Apartments 2-story (T)	6	124	117	-	-	-	-	-	74	74	-	-	-	-
Townhomes (T)	5	46	43	-	-	-	-	-	27	27	-	-	-	-
Small Lot Single Family (T)	10	89	82	-	-	-	-	-	52	52	-	-	-	-
Small and Medium Lot Single Family (T)	56	382	352	-	-	-	-	-	222	222	-	-	-	-
Large Lot Single Family (T)	38	223	205	-	-	-	-	-	129	129	-	-	-	-
Small Pad Retail (T)	3	-	-	35	35	-	-	-	25	-	25	-	-	-
Light Industrial / Tech Flex (T)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (T)	12	-	-	365	-	365	-	-	135	-	-	135	-	-
Light Industrial / Tech Flex - Low Density (T)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Open Space	13	-	-	-	-	-	-	-	-	-	-	-	-	-
Tualatin Total	144	865	799	400	35	365	-	-	664	503	25	135	-	-
Wilsonville														
Live-Work (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (W)	16	84	79	357	87	111	156	4	213	50	63	41	58	2
Single User Manufacturing (W)	22	-	-	274	3	173	69	29	103	-	2	64	25	11
Single User Warehousing (W)	50	-	-	585	14	204	-	367	221	-	10	75	-	136
High Tech Single User (W)	22	-	-	792	7	349	436	-	296	-	5	129	161	-
Multi User Manufacturing Small Tenants (W)	40	-	-	663	8	124	456	75	249	-	6	46	169	28
Multi User Manufacturing Large Tenants (W)	33	-	-	250	8	12	-	230	95	-	6	4	-	85
Employment Low - Area of Special Concern (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Open Space	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsonville Total	187	84	79	2,922	127	972	1,117	706	1,177	50	93	360	413	261
Total All	331	949	878	3,322	162	1,337	1,117	706	1,841	553	118	495	413	261

Boundary Option 4	Housing				Retail				Trips	HH Trips	Retail Trips	Office Trips	Industrial Trips	Warehousing Trips
	Acreage	Units	Households	Jobs	Retail	Office	Industrial	Warehousing						
Tualatin														
Garden Apartments 2-story (T)	4	84	79	-	-	-	-	-	50	50	-	-	-	-
Townhomes (T)	9	79	74	-	-	-	-	-	47	47	-	-	-	-
Small Lot Single Family (T)	10	89	82	-	-	-	-	-	52	52	-	-	-	-
Small and Medium Lot Single Family (T)	46	312	287	-	-	-	-	-	181	181	-	-	-	-
Large Lot Single Family (T)	23	135	124	-	-	-	-	-	78	78	-	-	-	-
Small Pad Retail (T)	1	-	-	17	17	-	-	-	12	-	12	-	-	-
Light Industrial / Tech Flex (T)	41	-	-	846	29	162	655	-	323	-	21	60	242	-
Employment Transition (T)	20	-	-	600	-	600	-	-	222	-	-	222	-	-
Light Industrial / Tech Flex - Low Density (T)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Open Space	13	-	-	-	-	-	-	-	-	-	-	-	-	-
Tualatin Total	168	699	647	1,463	45	763	655	-	965	407	33	282	242	-
Wilsonville														
Live-Work (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Employment Transition (W)	7.6	39.05	36.70	165.89	40.26	51.37	72.25	2.00	99.00	23.12	29.39	19.01	26.73	0.74
Single User Manufacturing (W)	22.3	-	-	274.19	3.03	173.42	68.69	29.05	102.54	-	2.21	64.17	25.42	10.75
Single User Warehousing (W)	50.0	-	-	584.80	13.88	203.61	-	367.32	221.37	-	10.13	75.33	-	135.91
High Tech Single User (W)	22.1	-	-	792.27	7.21	348.92	436.15	-	295.74	-	5.26	129.10	161.37	-
Multi User Manufacturing Small Tenants (W)	24.8	-	-	407.55	5.18	75.98	280.18	46.21	152.66	-	3.78	28.11	103.67	17.10
Multi User Manufacturing Large Tenants (W)	33.4	-	-	249.98	7.91	11.60	-	230.47	95.34	-	5.77	4.29	-	85.27
Employment Low - Area of Special Concern (W)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Open Space	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsonville Total	163	39	37	2,475	77	865	857	675	967	23	57	320	317	250
Total All	331	738	683	3,937	123	1,627	1,512	675	1,932	431	90	602	559	250

Boundary Option 5		Housing Units/Gross Acre	Housing Units	Households/Gross Acre	Households	Jobs/Gross Acre	Jobs	Retail Percentage	Retail	Office Percentage	Office	Industrial Percentage	Industrial	Warehousing Percentage	Warehousing	Trips per Acre	HH Trips	Retail Trips	Office Trips	Industrial Trips	Warehousing Trips
Tualatin																					
Garden Apartments 2-story (T)	4	21.13	84	19.87	79	-	-	0%	-	0%	-	0%	-	0%	-	50	12.52	50	-	-	-
Townhomes (T)	9	9.16	79	8.61	74	-	-	0%	-	0%	-	0%	-	0%	-	47	5.43	47	-	-	-
Small Lot Single Family (T)	10	8.92	89	8.21	82	-	-	0%	-	0%	-	0%	-	0%	-	52	5.17	52	-	-	-
Small and Medium Lot Single Family (T)	46	6.80	312	6.25	287	-	-	0%	-	0%	-	0%	-	0%	-	181	3.94	181	-	-	-
Large Lot Single Family (T)	22	5.88	128	5.41	118	-	-	0%	-	0%	-	0%	-	0%	-	74	3.41	74	-	-	-
Small Pad Retail (T)	1	-	-	-	-	11.31	17	100%	17	0%	-	0%	-	0%	-	12	8.26	-	12	-	-
Light Industrial / Tech Flex (T)	72	-	-	-	-	20.41	1,468	3%	50	19%	282	77%	1,136	0%	-	561	7.80	-	37	104	420
Employment Transition (T)	20	-	-	-	-	29.47	600	0%	-	100%	600	0%	-	0%	-	222	10.90	-	-	222	-
Light Industrial / Tech Flex - Low Density (T)	-	-	-	-	-	7	-	3%	-	20%	-	77%	-	0%	-	-	-	-	-	-	-
Open Space	10	-	-	-	-	-	-	0%	-	0%	-	0%	-	0%	-	-	-	-	-	-	-
Tualatin Total	194		692		640		2,085		67		882		1,136		-	1,199	6.17	403	49	326	420
Wilsonville																					
Live-Work (W)	-	15	-	14	-	15	-	100%	-	0%	-	0%	-	0%	-	-	-	-	-	-	-
Employment Transition (W)	1	5	6	5	6	22	27	24%	6.59	31%	8	44%	12	1%	0	16	12.95	4	5	3	4
Single User Manufacturing (W)	22	-	-	-	-	12	274	1%	3.03	63%	173	25%	69	11%	29	103	4.59	-	2	64	25
Single User Warehousing (W)	50	-	-	-	-	12	585	2%	13.88	35%	204	0%	-	63%	367	221	4.42	-	10	75	-
High Tech Single User (W)	22	-	-	-	-	36	792	1%	7.21	44%	349	55%	436	0%	-	296	13.40	-	5	129	161
Multi User Manufacturing Small Tenants (W)	14	-	-	-	-	16	222	1%	2.83	19%	41	69%	153	11%	25	83	6.17	-	2	15	57
Multi User Manufacturing Large Tenants (W)	22	-	-	-	-	7	163	3%	5.17	5%	8	0%	-	92%	151	62	2.86	-	4	3	-
Employment Low - Area of Special Concern (W)	-	-	-	-	-	2	-	3%	-	5%	-	0%	-	92%	-	-	-	-	-	-	-
Open Space	6	-	-	-	-	-	-	0%	-	0%	-	0%	-	0%	-	-	-	-	-	-	-
Wilsonville Total	137		6		6		2,064		39		783		669		572	781	5.72	4	28	290	248
Total All	331		698		646		4,149		106		1,665		1,805		572	1,980	5.98	407	77	616	668

Land Use Concept	Acreage	Housing Units/Gross Acre	Housing Units	Households/Gross Acre	Households	Jobs/Gross Acre	Jobs	Retail Percentage	Retail	Office Percentage	Office	Industrial Percentage	Industrial	Warehousing Percentage	Warehousing	Trips	Trips per Acre	HH Trips	Retail Trips	Office Trips	Industrial Trips	Warehousing Trips
Tualatin																						
High Density Residential	3.36	21.13	71	19.87	67	-	-	0%	-	0%	-	0%	-	0%	-	42	12.52	42	-	-	-	-
Medium-Low Density Residential	59.83	6.80	407	6.25	374	-	-	0%	-	0%	-	0%	-	0%	-	236	3.94	236	-	-	-	-
Low Density Residential	24.83	5.88	146	5.41	134	-	-	0%	-	0%	-	0%	-	0%	-	85	3.41	85	-	-	-	-
Neighborhood Commercial	2.89	-	-	-	-	11.31	33	100%	32.66	0%	-	0%	-	0%	-	24	8.26	-	24	-	-	-
Manufacturing Park	92.95	-	-	-	-	20.41	1,897	3%	65	19%	364	77%	1,468	0%	-	725	7.80	-	47	135	543	-
Open Space	10.37	-	-	-	-	-	-	0%	-	0%	-	0%	-	0%	-	-	-	-	-	-	-	-
Tualatin Total	194.23		624		575		1,929		98		364		1,468		-	1,111	5.72	362.4	71.2	134.8	543.0	-
Wilsonville																						
Craft Industrial	1.25	5	6	5	6	21.70	27	24%	6.59	31%	8	44%	12	1%	0	16	12.95	4	5	3	4	0
Light Industrial District	35.30	-	-	-	-	16.46	581	1%	7.39	19%	108	69%	400	11%	66	218	6.17	-	5	40	148	24
High Tech Employment District	94.47	-	-	-	-	20.28	1,916	1%	24.01	45%	870	38%	733	15%	289	717	7.59	-	18	322	271	107
Open Space	5.62	-	-	-	-	-	-	0%	-	0%	-	0%	-	0%	-	-	-	-	-	-	-	-
Wilsonville Total	136.64		6		6		2,524		38		987		1,144		356	951	6.96	3.8	27.7	365.1	423.3	131.5
Total All	331		630		581		4,453		136		1,351		2,611		356	2,062	6.23	366.2	99.0	499.9	966.2	131.5

TITLE 11 COMPLIANCE MEMORANDUM

In response to a shortfall in industrial land, a 2004 study identified good candidates for industrial development by looking at soil classification, earthquake hazard, slope steepness, and parcel size, distribution to regional transportation, necessary services, accessibility, proximity to existing like uses, and predominately industrial use.

Add in language from the ordinance that describes the "Tualatin study area"

Two areas of land identified in Metro Ordinance No. 04-1040B Exhibit X as good candidates for industrial development now comprise the Basalt Creek planning area. The main section of the Basalt Creek area (identified in the 2004 ordinance as the Tualatin study area) was identified as suitable for industrial development due to its proximity to the I-5 corridor and to an existing industrial area in Wilsonville and with areas that are relatively flat. The ordinance states "...the Tualatin study area is most suitable for warehousing and distribution, among other industrial uses."

3.07.1110 Planning for Areas Designated Urban Reserve

A. The county responsible for land use planning for an urban reserve and any city likely to provide governance or an urban service for the area, shall, in conjunction with Metro and appropriate service districts, develop a concept plan for the urban reserve prior to its addition to the UGB pursuant to sections 3.07.1420, 3.07.1430 or 3.07.1435 of this chapter. The date for completion of a concept plan and the area of urban reserves to be planned will be jointly determined by Metro and the county and city or cities.

MB: Include findings: IGA with all parties; coordination with CPDG creating Concept Plan

B. A local government, in creating a concept plan to comply with this section, shall consider actions necessary to achieve the following outcomes:

1. If the plan proposes a mix of residential and employment uses:
 - a. A mix and intensity of uses that will make efficient use of the public systems and facilities described in subsection C;

Findings: Title 11 Section 3.07.1110 (C) refers to proposed sewer, park and trail, water and stormwater systems and transportation facilities. Basalt Creek Concept Plan balanced land use types and densities to meet obligations for providing regional

employment capacity (Metro forecast) while limiting negative impacts on congestion and traffic levels (trip caps). In addition, the scenarios vetted by the Project Management Team (PMT) and each City Council sought efficient provision of services, fully analyzing the transportation, infrastructure, park, school, natural resource, and land use implications of various development patterns and formed the basis for the concept plan.

Conclusion: The Basalt Creek Concept Plan fulfills this requirement.

- b. A development pattern that supports pedestrian and bicycle travel to retail, professional and civic services;

Findings: The Basalt Creek Concept Plan identifies opportunities for bike and pedestrian connections in conjunction with the planned development pattern. Additional bike/pedestrian facilities will be integrated into new and updated road projects in accordance with State, County and City standards, respectively, and opportunities for additional active transportation connects are identified in the Concept Plan (e.g. across the future Basalt Creek Parkway, to the Ice Age Tonquin Trail, and potentially, along the western edge of the Basalt Creek Canyon).

Map is included under Bicycle and Pedestrian Framework (pg. X).

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- c. A range of housing of different types, tenure and prices addressing the housing needs in the prospective UGB expansion area in the context of the housing needs of the governing city, the county, and the region if data on regional housing needs are available, in order to help create economically and socially vital and complete neighborhoods and cities and avoiding the concentration of poverty and the isolation of families and people of modest means;

Findings: While the major purpose of the area is to provide land for employment opportunities, the Basalt Creek Concept Plan includes some residential areas to the north adjacent to the City of Tualatin. The mix of housing types proposed was designed to coordinate with existing adjacent residential neighborhoods. The mix includes low, medium-low and high density housing, which provides the opportunity for a range of different housing types, tenure and prices. The average housing density capacity for Basalt Creek is anticipated to meet the State minimum standard of an average of eight dwelling units per net buildable acre.

KPF: Also refer to recent regional housing needs for context – housing type, tenure and pricing.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- d. Sufficient employment opportunities to support a healthy economy, including, for proposed employment areas, lands with characteristics, such as proximity to transportation facilities, needed by employers;

Findings:

In 2004, Metro identified the Basalt Creek area as a good candidate for industrial development because it is near I-5, adjacent to Wilsonville’s industrial area to the south, and contains large, flat sites suitable for industrial users. Metro passed an ordinance to annex the area into the existing Urban Growth Boundary (UGB), in order to ensure sufficient regional supply of land for employment growth over the next twenty years.

Basalt Creek planning area is located near one of the region’s largest clusters of employment land, including existing developed areas in Tualatin, Wilsonville, and Sherwood and planned future employment areas of Southwest Tualatin, Tonquin Employment Area, and Coffee Creek. Viewed together, these areas comprise one of the largest industrial and employment clusters in the region.

In the most recent Metro forecast for the area, Basalt Creek planning area was expected to accommodate about 1,200 new housing units and 2,300 new jobs (mostly industrial, with some service jobs and few retail jobs). The land suitability analysis (see Appendix X, page X) influenced the most appropriate locations for employment-based land uses within the planning area.

Include year of the Metro forecast used.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- e. Well-connected systems of streets, bikeways, parks, recreational trails and public transit that link to needed housing so as to reduce the combined cost of housing and transportation;

Findings:

The Basalt Creek Concept Plan includes maps of planned Roadway Framework (pg. X), Bikes, Trails, and Pedestrian Network (pg Z), and a Transit Network (pg. X). These networks are designed to work together and to integrate planned future uses with existing adjacent uses. However, it is important to note that this land was brought into the UGB as industrial land with housing allowed specifically to address concerns for necessary buffering of adjacent uses. The new housing is located in close proximity to future employment, which provides opportunity to reduce combined cost of housing and transportation. These road networks provide a well-connected system that contributes to reduced cost of housing and transportation, in locating housing and employment in close proximity.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- f. A well-connected system of parks, natural areas and other public open spaces;

Findings: The Basalt Creek Concept Plan includes as one of the guiding principles to protect key natural resources and sensitive areas while making recreational opportunities accessible by integrating the new open spaces, natural areas and trails in the planning area into existing regional networks. The planning area provides an interesting opportunity for different types of parks, given the variety of uses and the extensive Basalt Creek natural area: active and passive neighborhood parks, pocket parks, and even perhaps a large community or regional facility. While the area is largely employment, the Basalt Creek open space makes for opportunities for parks in employment areas, for jogging, hiking, or other outdoor recreation by area employees.

The Basalt Creek Concept plan states that locating parks near schools, natural areas or other public facilities is preferable, especially when it provides an opportunity for shared use facilities. The Basalt Creek area will be incorporated into each City's master planning for parks and recreation, and land acquisition and development will occur as the need arises. Assumptions were made in the scenarios for the development of parks within Tualatin. While no parks have been delineated, the scenario provides for the development of XX acres of land for park uses, including neighborhood parks, pocket parks, and industrial waysides, which were supported at the public open house and are included in the Concept Plan for implementation at the local level.

MB: Consider mentioning West Railroad Area for its significant natural resources; key aspect of study for the "future study area"Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- g. Protection of natural ecological systems and important natural landscape features; and

Findings: The Basalt Creek Concept Plan includes land suitability studies for this area, which identified constrained lands including 11,478 feet of natural streams, 8,157 feet of underground streams, and 1,402 feet of intermittent streams in the planning area. Coffee Lake Creek forms the western boundary of the planning area. There are also 69 acres of wetlands (8% of the planning area), including 49 acres of open water. There are 116 acres of area land designated by Metro as Water Quality and Flood Management Areas. Both the City of Wilsonville and Clean Water Services, who regulate environmental lands in the City of Tualatin, have local ordinances in place that go beyond the level of conservation otherwise required and the plan allows for existing local standards from each City to apply upon annexation of property into either Wilsonville or Tualatin.

A buildable lands assessment (see Appendix X, page X) screens out places where there is limited or no development potential to identify the places where development is most suitable given the environmental and regulatory context. There is a range of factors that influence development potential within the planning area, but they can be divided into two categories: hard and soft constraints. Hard constraints are either physical or legal requirements that prohibit new development. These areas are excluded from the analysis. Soft constraints are where physical or legal requirements allow some development with guidance on appropriate land uses and intensities.

A conservative approach was taken in this analysis toward development in and around environmental constraints to emphasize preservation of natural resources.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- h. Avoidance or minimization of adverse effects on farm and forest practices and important natural landscape features on nearby rural lands.

Findings: The planning area is bounded to the north by Tualatin residential neighborhoods, to the south by Wilsonville commercial and industrial uses, I-5 to the east, and to the west by Coffee Lake Creek, wetland habitat, and rural and industrial lands. The buildable lands assessment (see Appendix X, page X) identify the places where development is most suitable given the environmental and regulatory context.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- 2. If the plan involves fewer than 100 acres or proposes to accommodate only residential or employment needs, depending on the need to be accommodated:

Conclusion: The Basalt Creek Concept Plan does not involve fewer than 100 acres and accommodates residential and employment and this section does not apply.

C. A concept plan shall:

1. Show the general locations of any residential, institutional, commercial, industrial, institutional and public uses proposed for the area with sufficient detail to allow estimates of the cost of the public systems and facilities described in paragraph 2;

Findings: The Basalt Creek Concept Plan Land Use Concept Map is located on page X.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

2. For proposed sewer, park and trail, water and stormwater systems and transportation facilities, provide the following:

- a. The general locations of proposed sewer, park and trail, water and stormwater systems;

Findings: The Basalt Creek Concept Plan includes Sanitary Sewer System Concept Map (pg. X), Bikes, Trails, and Pedestrian Network (pg. X), Water Systems Concept Map (pg. X), and Stormwater Infrastructure System Concept Map (pg. X).

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- b. The mode, function and general location of any proposed state transportation facilities, arterial facilities, regional transit and trail facilities and freight intermodal facilities;

Findings: The Basalt Creek Concept Plan includes a map of planned Roadway Framework (pg. X), and a Transit Network (pg. X).

Major new roads and improvements will be constructed as laid out in the 2013 Basalt Creek Transportation Refinement Plan for the area, which is also coordinated with the Metro Regional Transportation Plan, and integrated into the Concept Plan's Roadway Framework map. Basalt Creek Parkway, currently under construction, will be a major east-west arterial, with limited access, creating a new connection between I-5 and 99W. Further roadway improvements—such as adding capacity to north-south collectors, and two additional I-5 crossings at Day and Greenhill—will be needed to handle future traffic levels as the area is built out. Local roads connecting to this network will be planned and built by property owners as the area develops.

Conclusion: Therefore, Basalt Creek Concept Plan fulfills this requirement.

- c. The proposed connections of these systems and facilities, if any, to existing systems;

Findings: Each concept system is designed to connect to existing systems

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- d. Preliminary estimates of the costs of the systems and facilities in sufficient detail to determine feasibility and allow cost comparisons with other areas.

MB: Need to address feasibility

Findings: The Basalt Creek Concept Plan includes cost tables for each system.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- e. Proposed methods to finance the systems and facilities; and

Findings: Additional services will be provided by each jurisdiction independently through SDCs and permit fees. Particularly given the impacts of regional traffic from the Basalt Creek Parkway, the Basalt Creek Concept Plan includes a specific acknowledgment that significant improvements will be needed to the existing and future transportation network in the Basalt Creek Concept Plan area. In order to achieve the vision established by the Cities and Washington County in the 2013 Basalt Creek Transportation Refinement Plan (TRP), Tualatin and Wilsonville agree to begin working together to prioritize those network improvements. The Cities will work together to identify a cooperative funding strategy that considers local, county, regional, state, and federal funding tools.

MB: Add financing tools that will pay for services

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

- f. Consideration for protection of the capacity, function, and safe operation of state highway interchanges, including existing and planned interchanges and planned improvements to interchanges.

Findings: The Basalt Creek Concept Plan includes considerations to maintain the integrity of the transportation network in this employment area that states that the Cities will also work cooperatively to evaluate future regional transportation

projects and decisions, beyond those identified in the TRP, which could direct additional traffic to the Basalt Creek Concept Plan Area. These projects will be evaluated to ensure that system capacity and adequate regional funding is available for needed improvements to mitigate additional regional traffic.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

3. If the area subject to the concept plan calls for designation of land for industrial use, include an assessment of opportunities to create and protect parcels 50 acres or larger and to cluster uses that benefit from proximity to one another;

Conclusion: The Basalt Creek Concept Plan does not include parcels over 50 acres and this provision does not apply.

4. If the area subject to the concept plan calls for designation of land for residential use, the concept plan will describe the goals for meeting the housing needs for the concept planning area in the context of the housing needs of the governing city, the county, and the region if data on regional housing needs are available. As part of this statement of objectives, the concept plan shall identify the general number, price and type of market and nonmarket—provided housing. The concept plan shall also identify preliminary strategies, including waivers, subsidies, zoning incentives and private and nonprofit partnerships, that will support the likelihood of achieving the outcomes described in subsection B of this section;

Findings: The Basalt Creek Concept Plan includes a mix of low, medium-low and high density housing projected to produce 624 units in Tualatin, which provides the opportunity for a range of different housing types, tenure and prices to meet the needs of the city, county and region. Preliminary strategies that will support the likelihood of achieving outcomes described in subsection B include, but are not limited to: private and non-profit partnerships, waivers, subsidies, update and streamline zoning code (i.e. additional flexibility with accessory dwelling units, allow smaller lots in certain Planning Districts, density bonuses, reduce parking requirements) programs to lower the cost of development, additional funding sources to pay for infrastructure.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

5. Show water quality resource areas, flood management areas and habitat conservation areas that will be subject to performance standards under Titles 3 and 13 of this chapter;

Findings: The Basalt Creek Concept Plan is based on a constraints analysis located in the Existing Conditions report and the plan under Regulatory Framework for Conserving Natural Resources (pg x).

Elaborate on performance standards connection

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

6. Be coordinated with the comprehensive plans and land use regulations that apply to nearby lands already within the UGB;

Findings: The Basalt Creek Concept Plan is designed to work with existing planning efforts in City of Tualatin and City of Wilsonville, and to form the basis for necessary comprehensive plan amendments.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

7. Include an agreement between or among the county and the city or cities and service districts that preliminarily identifies which city, cities or districts will likely be the providers of urban services, as defined at ORS 195.065 (4), when the area is urbanized;

Findings: The Basalt Creek Concept Plan states that this area will be added to urban service agreements already in effect. Service providers will be the same, depending on the City a property is annexed into, and various infrastructure systems were designed as such. For any services not provided by the annexing City, service agreements are already in place (such as Clean Water Services and Tualatin Valley Fire and Rescue).

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

8. Include an agreement between or among the county and the city or cities that preliminarily identifies the local government responsible for comprehensive planning of the area, and the city or cities that will have authority to annex the area, or portion of it, following addition to the UGB.

Findings: The Basalt Creek Concept Plan includes a jurisdictional boundary, with the city of Tualatin having authority to the north of the future Basalt Creek Parkway, and Wilsonville having authority to the south of the future parkway. UPAA agreements with each City will be updated as part of the planning process, based on the Concept Plan.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

9. Provide that an area added to the UGB must be annexed to a city prior to, or simultaneously with, application of city land use regulations to the area intended to comply with, subsection C of section 3.07.1120; and

Findings: The Basalt Creek Concept Plan includes provision that this area is added to existing urban services agreements. Ensuring service provision is also a requirement of City of Wilsonville code and a component of the UPAA.

Conclusion: Basalt Creek Concept Plan fulfills this requirement.

10. Be coordinated with school districts, including coordination of demographic assumptions.

Findings: The Basalt Creek Concept Plan was coordinated with local school districts.

Conclusion: Therefore, Basalt Creek Concept Plan fulfills this requirement.

FA: May need to include letters from school districts.

MB: Address demographics

3.07.1120 Planning for Areas Added to the UGB

FA: Should these sections address content of the Concept Plan and technical memos, or content of each city's comprehensive plan amendments? Need to clarify w Metro.

- A. The county or city responsible for comprehensive planning of an area, as specified by the intergovernmental agreement adopted pursuant to section 3.07.1110(c)(7) or the ordinance that added the area to the UGB, shall adopt comprehensive plan provisions and land use regulations for the area to address the requirements of subsection (c) by the date specified by the ordinance or by section 3.07.1455(b)(4) of this chapter.
- B. If the concept plan developed for the area pursuant to section 3.07.1110 assigns planning responsibility to more than one city or county, the responsible local governments shall provide for concurrent consideration 3.07 - 60 (Updated on 01/06/16) and adoption of

proposed comprehensive plan provisions unless the ordinance adding the area to the UGB provides otherwise.

- C. Comprehensive plan provisions for the area shall include:
1. Specific plan designation boundaries derived from and generally consistent with the boundaries of design type designations assigned by the Metro Council in the ordinance adding the area to the UGB;

Findings: Done – utilize Basalt Creek Concept Plan designations.

Conclusion:

2. Provision for annexation to a city and to any necessary service districts prior to, or simultaneously with, application of city land use regulations intended to comply with this subsection;

Findings: Done

Conclusion:

3. Provisions that ensure zoned capacity for the number and types of housing units, if any, specified by the Metro Council pursuant to section 3.07.1455(b)(2) of this chapter;

Findings: Metro Council did not specify housing requirements for the Basalt Creek area when the land was brought into the UGB.

3.07.1455 (b) (2): Establish the 2040 Growth Concept design types designations applicable to the land added to the UGB, including the specific land needs, if any, that is the basis for the amendment. If the design type designation authorizes housing, the Council shall designate an appropriate average density per net developable acre consistent with the needs for which the UGB is expanded.

Findings: The Basalt Creek Concept Planning Area was brought into the UGB as industrial land, which allows housing specifically to address concerns for necessary buffering of adjacent uses. Tualatin intends to meet the State requirement of average density of eight dwelling units per net buildable.

Conclusion:

4. Provision for affordable housing consistent with Title 7 of this chapter if the comprehensive plan authorizes housing in any part of the area.

Findings: The Basalt Creek Concept Planning Area was brought into the UGB as industrial land, which allows housing specifically to address concerns for necessary buffering of adjacent uses.

Preliminary strategies to achieve a diverse range of housing types including affordable housing include, but are not limited to: private and non-profit partnerships, waivers, subsidies, grant funding , update and streamline zoning code (i.e. additional flexibility with accessory dwelling units, allow smaller lots, ,density bonuses, reduce parking requirements) programs to lower the cost of development, additional funding sources to pay for infrastructure, programs that decrease operational costs, programs that provide financial assistance to homeowners and renters.

Does Title 7, designed to ensure the production of affordable housing in the Metro UGB, applies to the Basalt Creek Planning Area?

Conclusion:

5. Provision for the amount of land and improvements needed, if any, for public school facilities sufficient to serve the area added to the UGB in coordination with affected school districts. This requirement includes consideration of any school facility plan prepared in accordance with ORS 195.110;

Findings: Existing schools are expected to accommodate future student population.

AHR: Mention conversations with Tualatin and Sherwood school districts. Discussed future student population at Agency Review Team meeting in February 2016.

Conclusion:

6. Provision for the amount of land and improvements needed, if any, for public park facilities sufficient to serve the area added to the UGB in coordination with affected park providers.

Findings: Based on discussion at Agency Review Team meeting in February 2016, parks agencies expect that existing park facilities will accommodate future residents of Basalt Creek area. In addition, small pocket parks and industrial waysides were supported by the public at open house events, and will be planned for independently by each jurisdiction.

Conclusion:

7. A conceptual street plan that identifies internal street connections and connections to adjacent urban areas to improve local access and improve the integrity of the regional street system. For areas that allow residential or mixed-use development, the plan shall meet the standards for street connections in the Regional Transportation Functional Plan;

Findings: Done

AHR: Address how each city will amend TSPs to accommodate the future transportation system described in the Concept Plan.

Conclusion:

8. Provision for the financing of local and state public facilities and services; and 3.07 - 61 (Updated on 01/06/16)

Findings: Done.

Pull in relevant information from transportation tech memos.

Conclusion:

9. A strategy for protection of the capacity and function of state highway interchanges, including existing and planned interchanges and planned improvements to interchanges.

Findings: DKS modeling

Pull in relevant information from transportation tech memos.

Conclusion:

- D. The county or city responsible for comprehensive planning of an area shall submit to Metro a determination of the residential capacity of any area zoned to allow dwelling units, using a method consistent with a Goal 14 analysis, within 30 days after adoption of new land use regulations for the area.

Findings: Residential capacity determined by FA land use scenarios; this will occur as part of each city's adoption of comprehensive plan amendments.

Conclusion:

(Ordinance 98-772B, Sec. 2. Ordinance 99-818A, Sec. 3. Ordinance 01-929A, Sec. 8. Ordinance 02-964, Sec. 5. Ordinance 05-1077C, Sec. 6. Ordinance 05-1089A, Sec. 2. Ordinance 07-1137A, Sec. 3. Ordinance 10-1238A, Sec. 5. Ordinance 11-1252A, Sec. 1. Ordinance 15-1357.)

3.07.1130 Interim Protection of Areas Added to the UGB

Until land use regulations that comply with section 3.07.1120 become applicable to the area, the city or county responsible for planning the area added to the UGB shall not adopt or approve:

- A. A land use regulation or zoning map amendment that allows higher residential density in the area than allowed by regulations in effect at the time of addition of the area to the UGB
- B. A land use regulation or zoning map amendment that allows commercial or industrial uses not allowed under regulations in effect at the time of addition of the area to UGB;
- C. A land division or partition that would result in creation of a lot or parcel less than 20 acres in size, except for public facilities and services as defined in section 3.07.1010 of this chapter, or for a new public school;
- D. In an area designated by the Metro Council in the ordinance adding the area to the UGB as Regionally Significant Industrial Area:
 - 1. A commercial use that is not accessory to industrial uses in the area; and
 - 2. A school, a church, a park or any other institutional or community service use intended to serve people who do not work or reside in the area.

AHR: When the land was added to the UGB, Washington County designated the land as FD-20 (Future Development 20 Acres) which is their "holding" zone. Use that action and effective zoning to address this criteria.

(Ordinance No. 98—772B, Sec. 2. Amended by Ordinance No. 99—818A, Sec. 3, Ordinance No. 10—1238A, Sec. 5; and Ordinance NO. 11—1252A, Sec. 1).

MEMORANDUM

Basalt Creek: Guiding Principles and Evaluation Criteria

TO: Basalt Creek Project Management Team (Cities of Tualatin and Wilsonville)

FROM: Leila Aman, Project Lead, Fregonese Associates

DATE: December 29, 2014

RE: Guiding Principles and Evaluation Criteria for the Basalt Creek Concept Plan

Purpose of Guiding Principles

Guiding Principles are intended to represent the collective interests and goals for the Basalt Creek planning area. The guiding principles provide a framework for gathering input and developing transparent and meaningful measures that can help inform the decision making process.

Purpose of Scenario Indicators

Indicators are the outputs of evaluation criteria which are created near the beginning of the scenario planning process. They generally reflect the guiding principles as well as previously adopted community goals. Indicators may also be related to new or emerging community goals or issues: such as transit access, housing costs, or air quality.

The indicators will be used during the development and evaluation of the scenarios within Envision Tomorrow to communicate the benefits, impacts and tradeoffs of different policy choices and investments. Using Envision Tomorrow, alternative scenarios are tested and refined, and then compared and evaluated based on their indicator performance. Indicators enable Envision Tomorrow users to tie the scenario results to the community values and guiding principles.

In practice, this approach not only allows the public to visualize their region's future, final plans created using our scenario planning process will come with a dashboard of indicators so policymakers can monitor their progress and make adjustments along the way, in concert with established guiding principles and long-term vision.

Guiding Principles

Qualitative Guiding Principles

1. Maintain and complement the Cities' unique identities

The cities of Wilsonville and Tualatin each have unique qualities that draw people to live and work there. Those qualities should be maintained and enhanced by development in the Basalt Creek planning area.

2. Capitalize on the area's unique assets and natural location

Development in the planning area should preserve and leverage the natural beauty of Basalt Creek by protecting key natural resources and sensitive areas while minimizing the negative impacts of new development. Recreation opportunities should be made accessible in the area through the creation of new open spaces and trails and integrating them with existing regional networks.

3. Explore creative approaches to integrate jobs and housing

Long distances between centers of employment and residential neighborhoods can cause long travel times, congestion and pollution. Planning for the Basalt Creek area should consider a range of methods (and the feasibility of those methods) for integrating residential and employment land uses to create more high quality living and working environments.

4. Create a uniquely attractive business community unmatched in the metropolitan region

Planning for the Basalt Creek area should capitalize on its unique assets - the location of the planning area near the center of one of the region's largest clusters of employment land, projections for rapid employment growth in the local market, and superior access to major transportation routes (I-5, I-205 and Highway 217) – to facilitate development of high quality employment facilities and opportunities that will benefit both the local and regional economies.

5. Ensure appropriate transitions between land uses

While integration of housing and employment can enrich a community, there remains a need for physical separation between uses that might negatively impact one another. Land uses should be arranged within the study area to minimize these impacts, such as excessive noise, traffic, nighttime light, or air pollution. Use of buffers to mitigate auditory, aesthetic, and safety impacts may include swaths of vegetated land, sound walls, or commercial development (among others).

Quantitative Guiding Principles

Associated measures from Envision Tomorrow and other quantitative analysis that will be conducted as part of the concept planning process are described.

6. Meet regional responsibility for jobs and housing

Population and employment forecast performance

Using output from the Envision Tomorrow scenario modeling tool added jobs and housing units will be compared back to the regional forecast estimate (from Metro's Gamma model) for jobs and households within the planning area.

7. Design cohesive and efficient transportation and utility systems

Evaluation of Wet Infrastructure

Aggregate water and sewer requirements will be developed for each of the three (3) alternatives. A comparison will be provided indicating required capacity and potential infrastructure elements based on each alternative land use plan and the existing systems inventory.

Performance of transportation systems

Motor vehicle transportation system for each of three alternatives will be evaluated including the development of future year 2035 PM peak hour volumes using a focus-area travel demand model. Intersection operation analysis (level of service and v/c ratios) based on the forecasted 2035 PM volumes will be conducted using Synchro.

Internal water consumption and Landscaping water consumption

Water consumption has a major impact both financially and environmentally. Water bills can make up a large proportion of household or business utility costs, and excessive water consumption can put a strain on water supplies and infrastructure, especially in regions with water scarcity. Anticipated domestic and irrigation water consumption by residential households and commercial or industrial businesses will be estimated based on existing usage patterns within Tualatin and Wilsonville.

8. Maximize assessed property value

Building value and local revenue

Adding new housing and employment space to a community brings additional tax revenue that can be used for new infrastructure and services to support new and existing residents and businesses. Different scenarios can produce different amounts of tax revenue (property tax, sales tax and transportation impact fee (TIF)) due to the differing values of particular building types and locations. .

9. Incorporate natural resource areas and provide recreational opportunities as community amenities and assets

Percent of Natural Area Protected within the planning area

Types of natural areas to be considered for protection from development include:

- *Wetlands and Floodplains*
- *Metro Title 3 Lands*
- *Metro Title 13 Lands*

Some development may occur in these areas. However, the proportion of total development planned for non-environmentally sensitive areas should be maximized in order to preserve habitat, ecosystem services, open space, and recreation opportunities in the planning area.

Environmentally sensitive lands are identified and described in the Basalt Creek Existing Conditions Report.

Total jobs allocated to prime flat industrial lands within the planning area

The largest proportion possible of new jobs forecasted for the planning area should be allocated to lands identified as suitable for industrial and/or office development, one factor of which is the absence of sensitive environmental features and constraints.

Land suitable for industrial and/or office development is identified and described in the Basalt Creek Existing Conditions Report.

Acres of impervious surface

Impervious surface can have a negative impact on the health of a region's waterways. Instead of soaking in and filtering through the soil, rainwater runs off impervious surfaces, washing many polluting substances such as pesticides and oils into streams and other aqueous habitats. Increasing impervious surface runoff also increases the volume of runoff, and the speed which the water is delivered to streams, resulting in higher peak flows.

10 Considerations for Success

In addition to the Guiding Principles, the Joint Council also identified ten key elements for successful implementation of the Basalt Creek Concept Plan:

1. **Sewer.** Each City will serve its own jurisdiction area independently, to the extent reasonably possible, with the understanding that future agreements may be needed to address potential cooperative areas.
2. **Stormwater.** Each City will serve its own jurisdiction area independently, to the extent reasonably possible, consistent with the respective National Pollutant Discharge Elimination System (NPDES) stormwater permits, with the understanding that future agreements may be needed to address potential cooperative areas.
3. **Metro Title 4 Land.** The Basalt Creek Concept Planning Area is currently mapped and identified as an “Industrial Area” in Metro’s Title 4 Code, which allows both housing and employment designations. The Cities agree to implement the land uses identified in the Basalt Creek Concept Plan.
4. **Transportation Funding.** The Cities acknowledge significant improvements will be needed to the existing and future transportation network as identified in the 2013 Basalt Creek Transportation Refinement Plan (TRP). In order to implement the TRP, Tualatin and Wilsonville will coordinate with Washington County to prioritize projects and funding strategies.
5. **Future Regional Transportation Projects in the Basalt Creek Area.** The Cities will coordinate with Washington County and Metro to evaluate future regional transportation projects and decisions, beyond those identified in the TRP that affect its planned system capacity.
6. **Trips.** Proposed development will be reviewed by each City for impacts to the transportation system and consistency with the Concept Plan trip targets to achieve transportation system goals for the area.
7. **Basalt Creek Parkway and I-5 Crossings.** The Cities acknowledge the Basalt Creek Parkway and I-5 crossings identified in the TRP are critical to successful implementation of the Basalt Creek Planning Area. The Cities will seek to coordinate timely regional investments in these crossings to implement the Basalt Creek Concept Plan.
8. **North-South Local Street (Kinsman Road).** Kinsman Road is planned as a local route both north and south of the jurisdictional boundary that will not connect to the Basalt Creek Parkway.
9. **Basalt Creek Canyon.** The Cities recognize the natural resource value of the Basalt Creek Canyon. Each city will comply with Metro Titles 3 and 13. The Cities also recognize the benefits of locating north/south trails near the Basalt Creek Canyon and bicycle connections that would connect the cities and other trail systems and be an asset for both residents and employees in the area.
10. **Public Transportation.** Robust transit services are critical to supporting the land uses envisioned in the Basalt Creek Planning Area. The Cities agree to coordinate efforts on how SMART and TriMet can best provide service throughout the area.

Analysis/Methodology

- Separate hard and soft constraints
 - Hard constraints will be excluded from the buildable land analysis
 - Soft constraints will offer guidance
- Parcels categorized into:
 - Vacant
 - Stable (residential use with higher building value)
 - Redev (site has redevelopment potential and/or is non-residential)

Basalt Creek

Environmental Hard Constraints:

- Mix of Clean Water Services , Title 3 and basic constraints
- Basic environmental constraints are:
 - Open Water
 - Streams
 - Wetlands
 - Steep Slopes (25% and greater)
 - Slope Stability
 - Title 3
 - Floodplains (50% land reduction)
 - Title 13 (20% land reduction)

Basalt Creek

Manmade Hard Constraints:

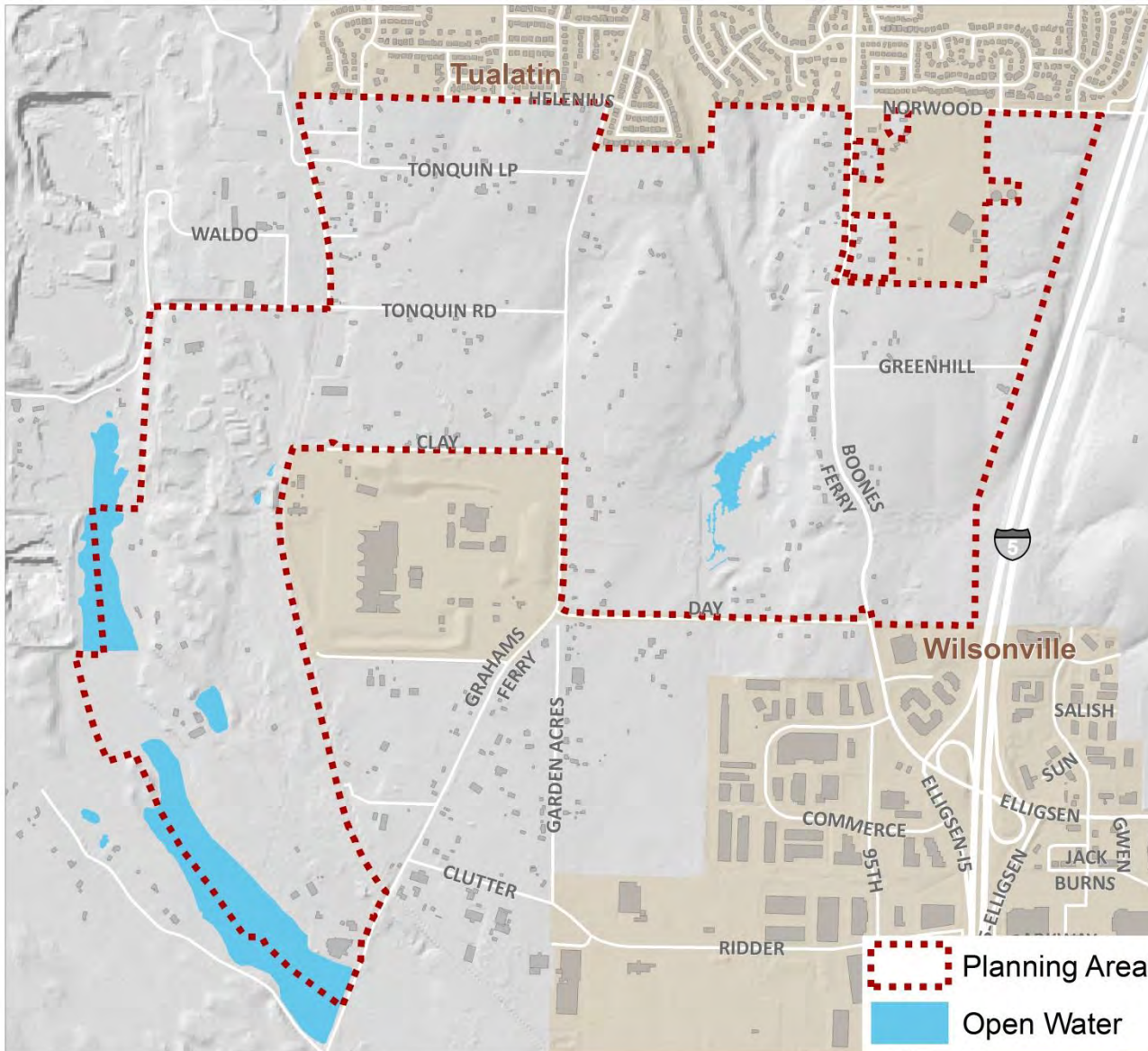
- Easements
 - BPA easements
 - PGE easements and substation
 - Natural Gas Pipeline

Basalt Creek

Additional soft constraints:

- Title 13
 - Riparian Class I and II, Upland Class A
- Road projects
 - East West Connection
 - Boones Ferry Road Widening (how much from centerline?)
 - 2035 Overcrossing
- Others
 - 10%+ slopes regarding industrial development

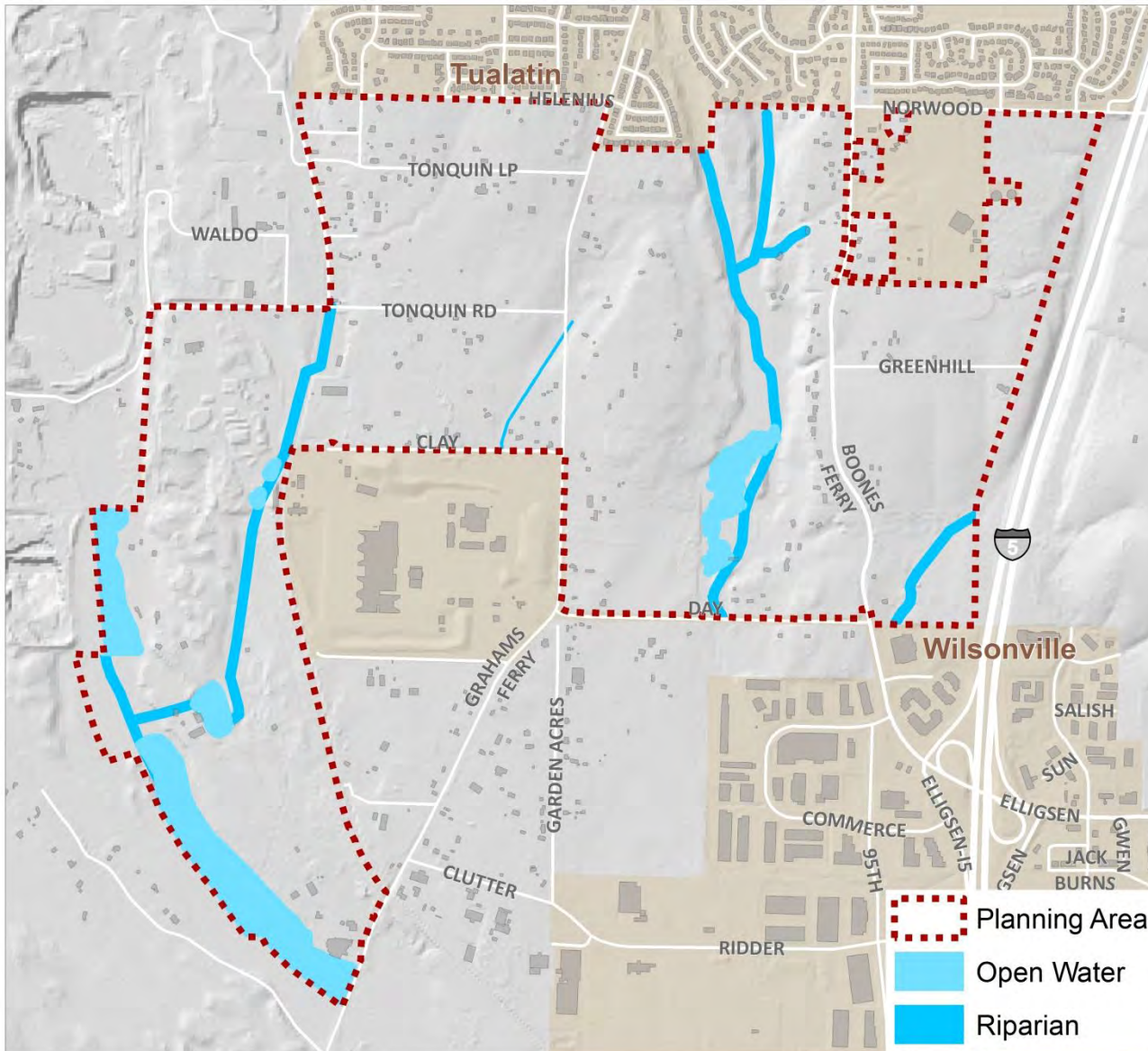
Open Water



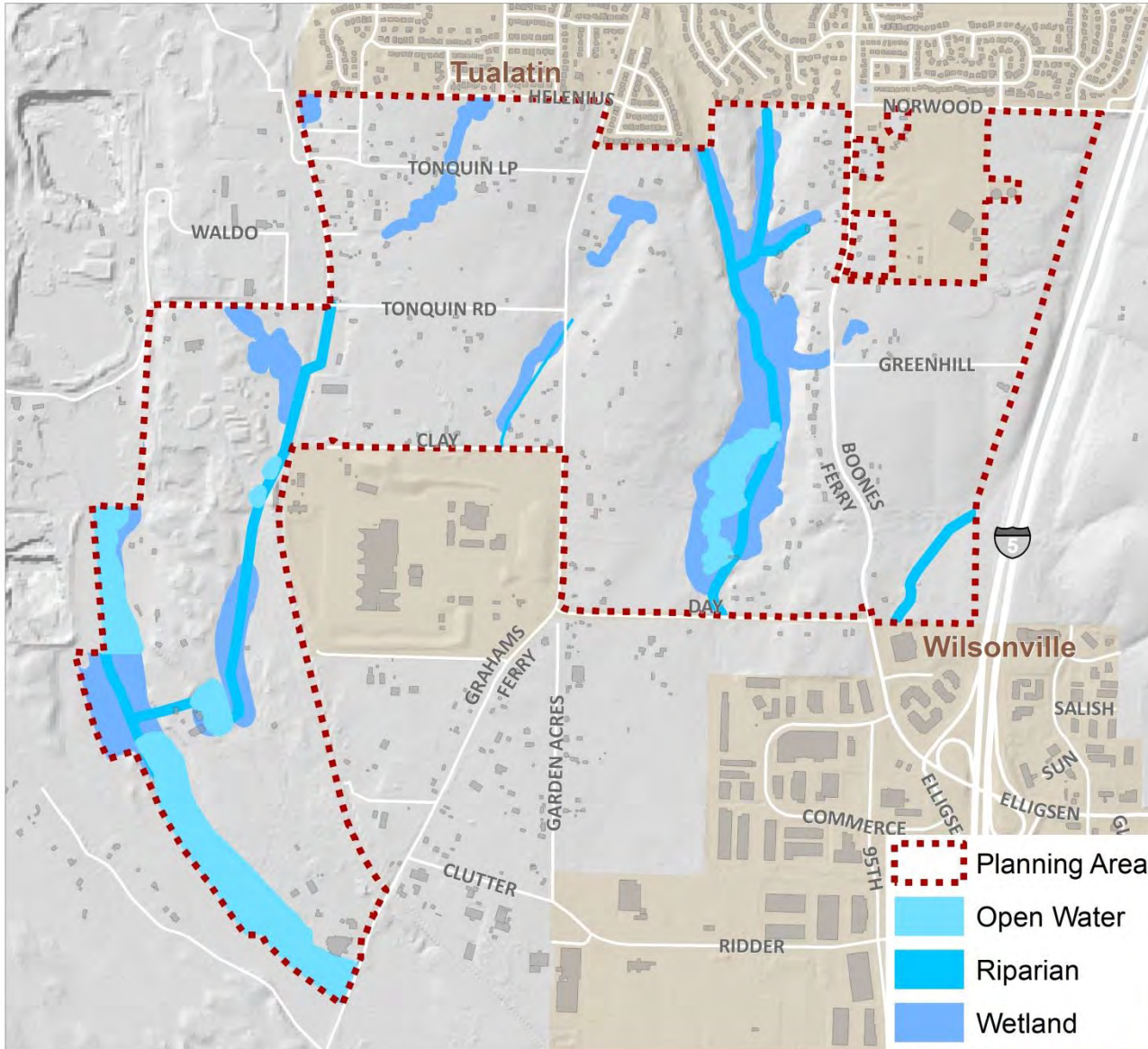
- **49** acres constrained
- Two sources:
 - Digitized by Fregonese Associates based on 2013 and 2012 (leaf free) aerials.
 - David Evans and Associates – 75% engineering files 124th Extension
- For constraints analysis:
 - Open water - **50ft** buffer

Streams - Riparian

- 31 acres constrained
- Three categories of streams:
 - Natural stream – 18,845 feet
 - Underground stream – 789 feet
 - Intermittent stream – 1,402 feet
- Stream categories determined:
 - by visual survey of 2013 and 2012 (leaf free) aerials and intermittent stream through comment by Kerry Rappold, City of Wilsonville
 - Fieldstudy performed by City of Wilsonville
- For constraints analysis:
 - Natural stream - 50ft buffer
 - Intermittent stream - 15ft buffer

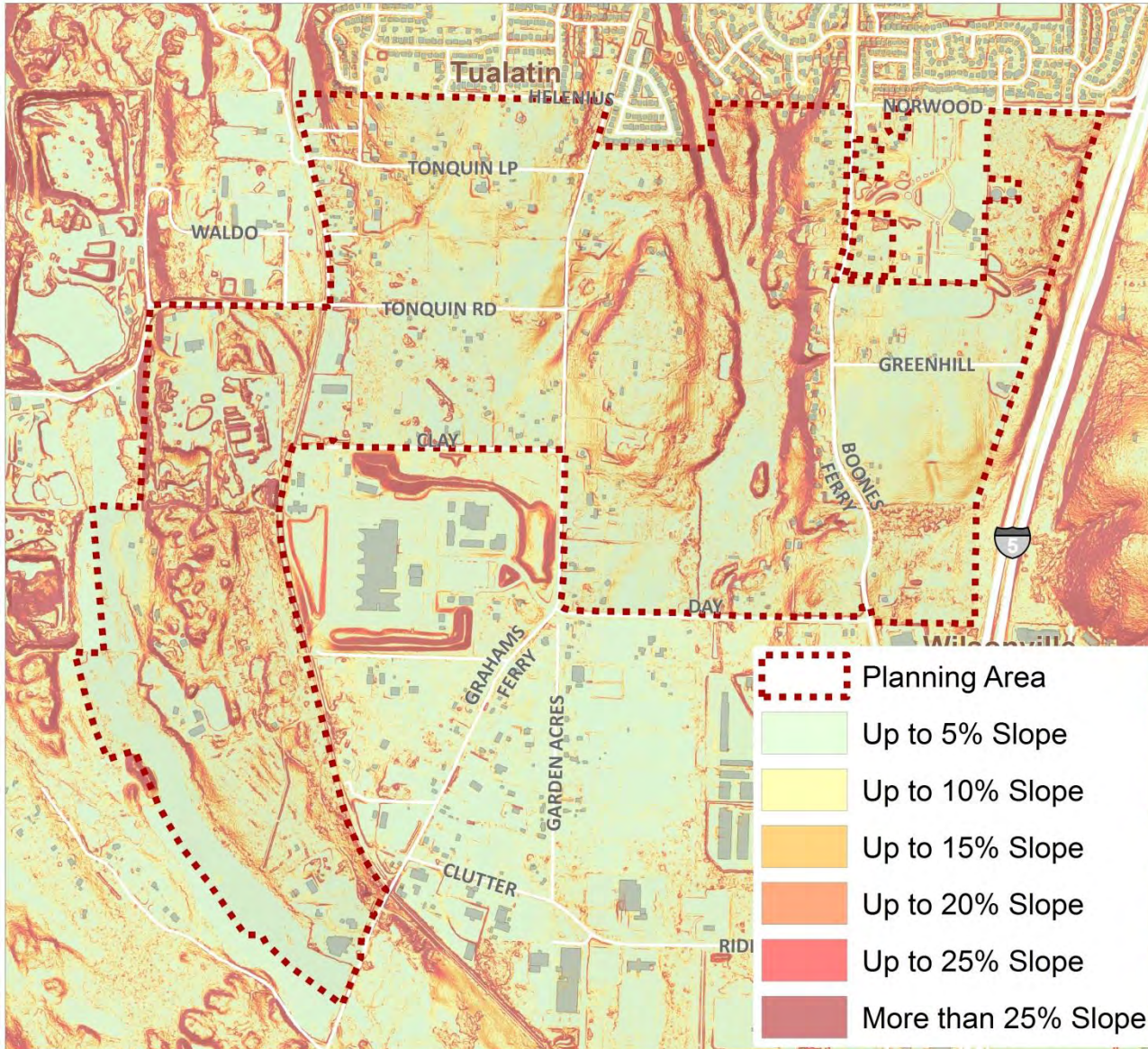


Wetlands



- **70 acres**
- Sources are:
 - RLIS
 - Wetland Delineation Report for Proposed Boones Ferry Widening
 - David Evans and Associates – 75% engineering files 124th Extension
 - additional wetlands digitized by Fregonese Associates based on 2013 and 2012 (leaf free) aerials.
- For constraints analysis:
 - Wetlands - **50ft** buffer
 - Isolated wetland and smaller than a half acre – **25ft** buffer

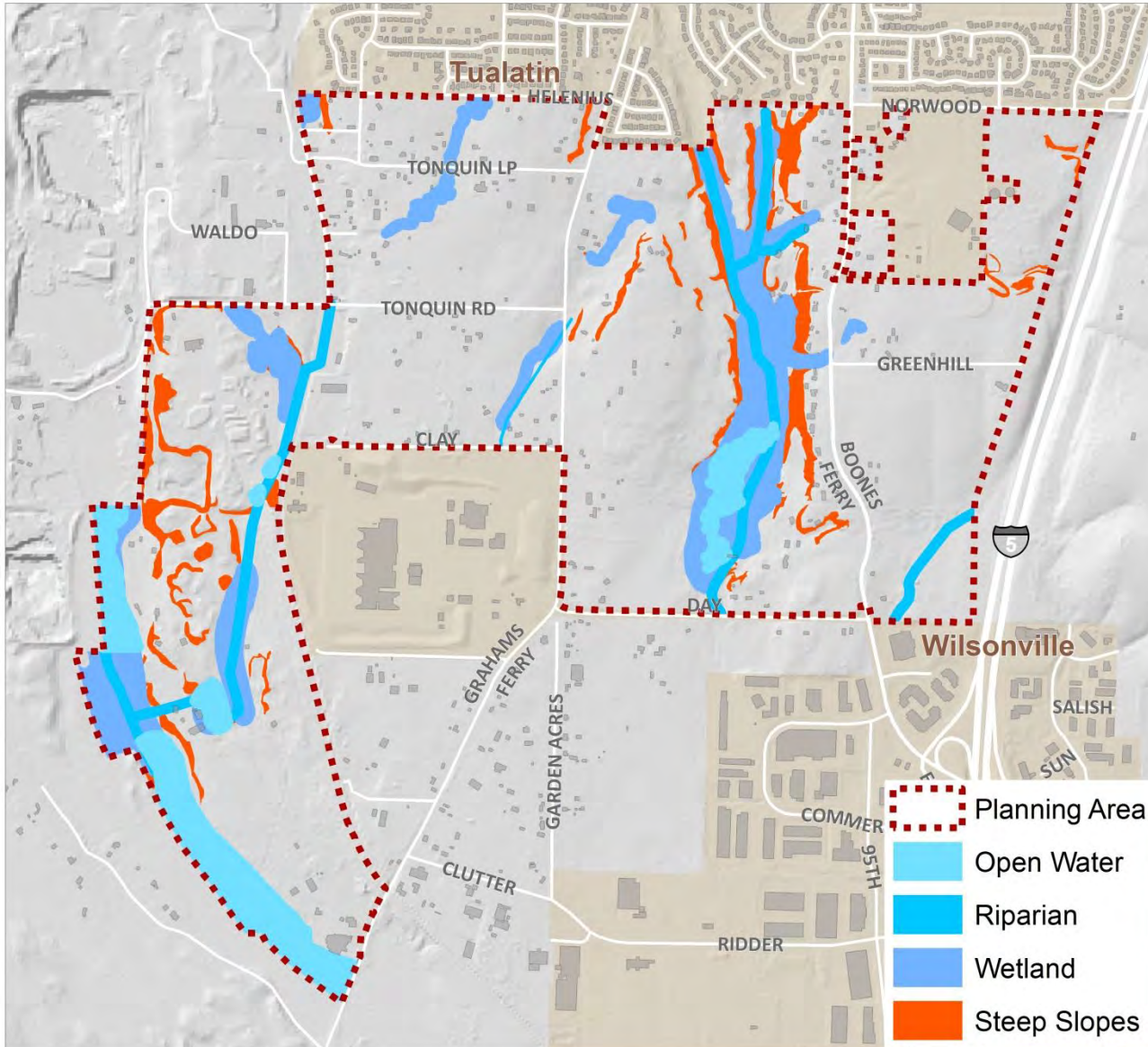
Steep Slopes



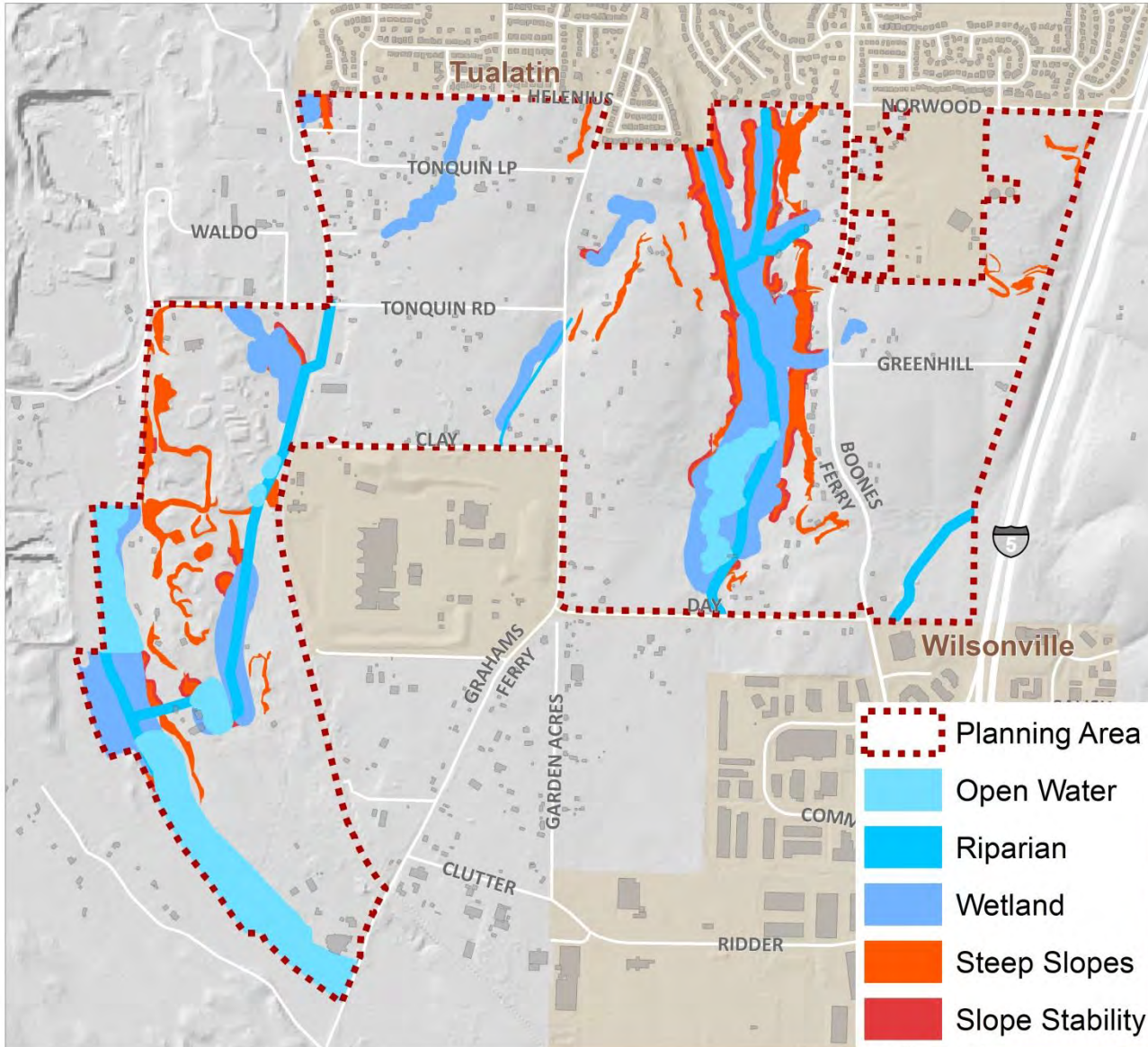
- For constraints analysis:
 - Using slopes from 3ft DEM
 - Non-isolated slopes, greater than half an acre, natural and or along a riparian area

Steep Slopes

- **40** additional acres constrained

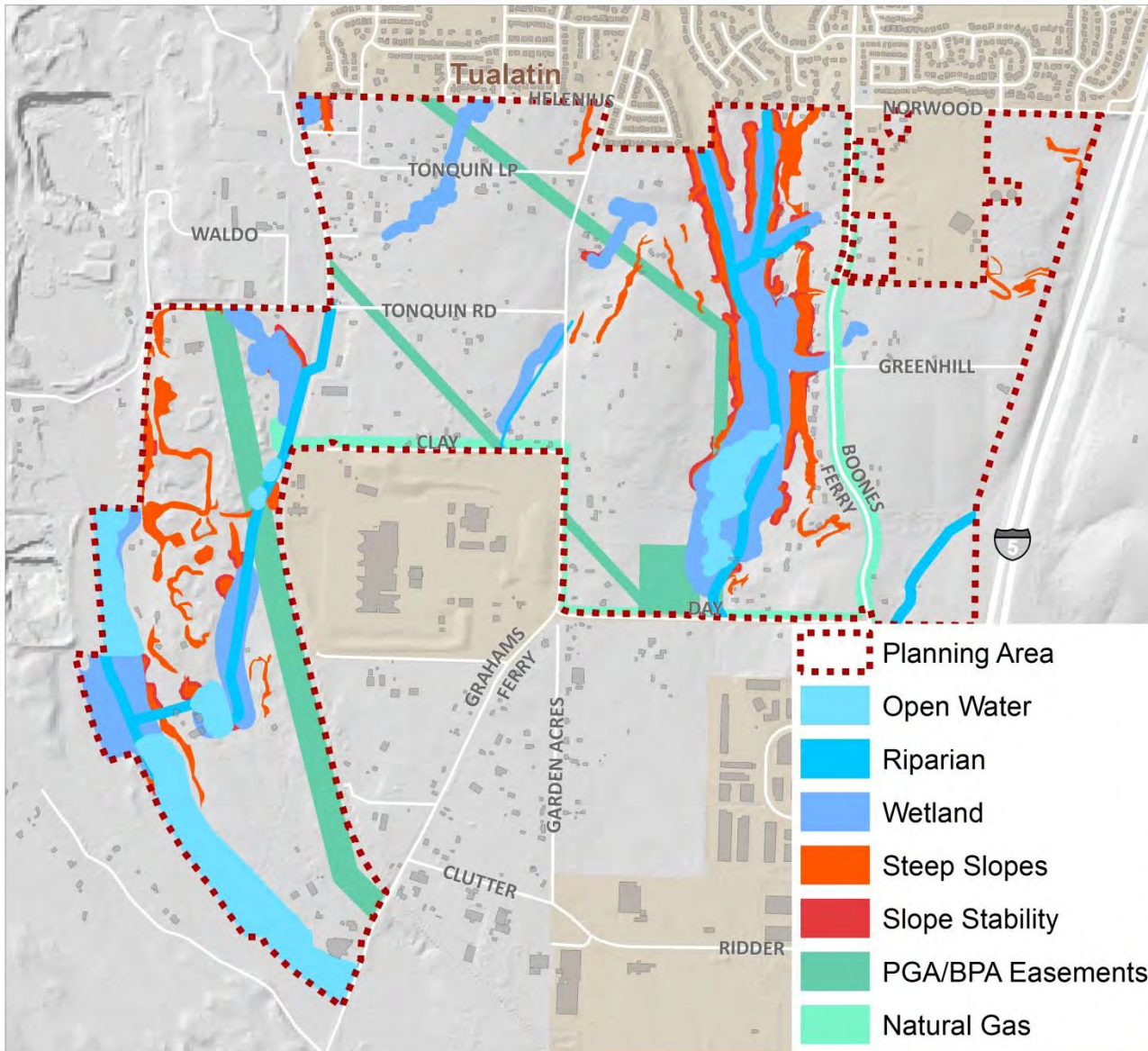


Slope Stability



- **11** additional acres constrained
- CWS request an additional 35ft for steep slopes within vegetated corridor
- Measured from top of bank/break in 25% slope
- Buffer needed for up to 200 feet from vegetated corridor

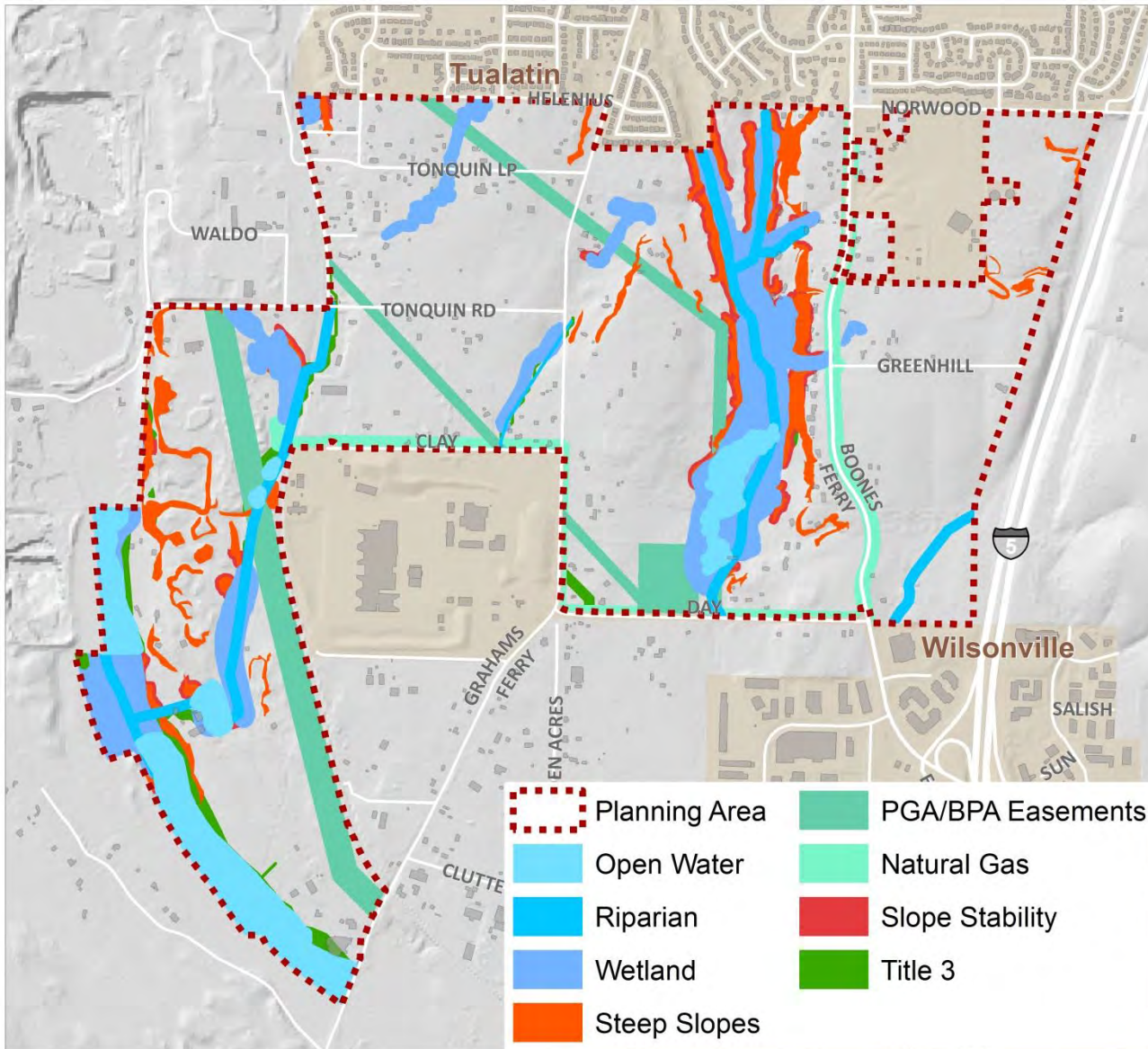
Utilities



- **84** additional acres constrained
- Almost 16,000 feet of transmission lines crossing the area
- 2 easements:
 - BPA 42.3 acres
 - PGA 18.0 acres plus 4.1 acres substation
- 2 natural gas lines:
 - 25.7 acres
- For constraints analysis:
 - Remove from buildable land

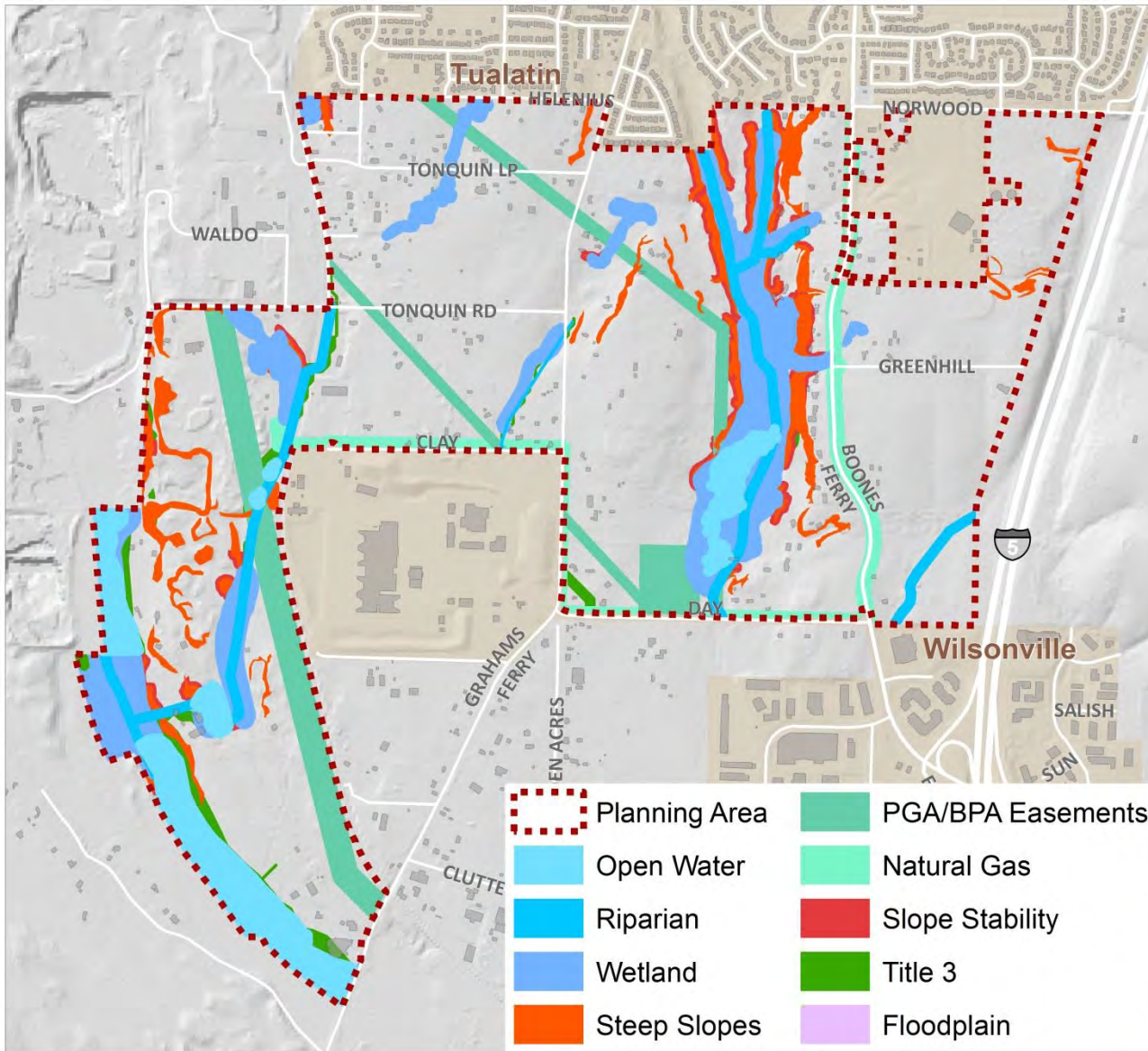
Title 3 (Metro)

- **8** additional acres constrained

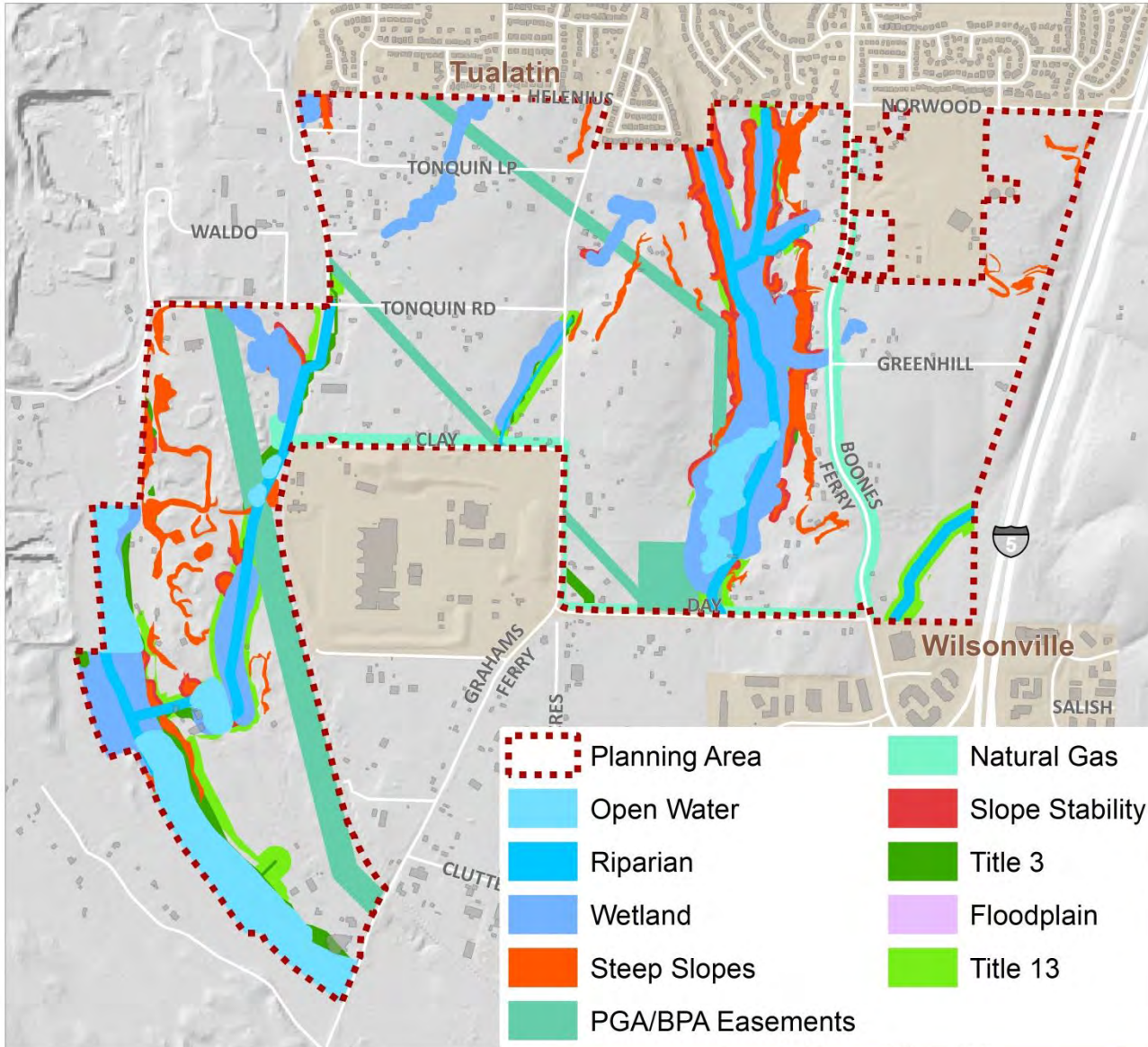


Floodplains

- **0.01** additional acres constrained
- For constraints analysis:
 - 50% of land



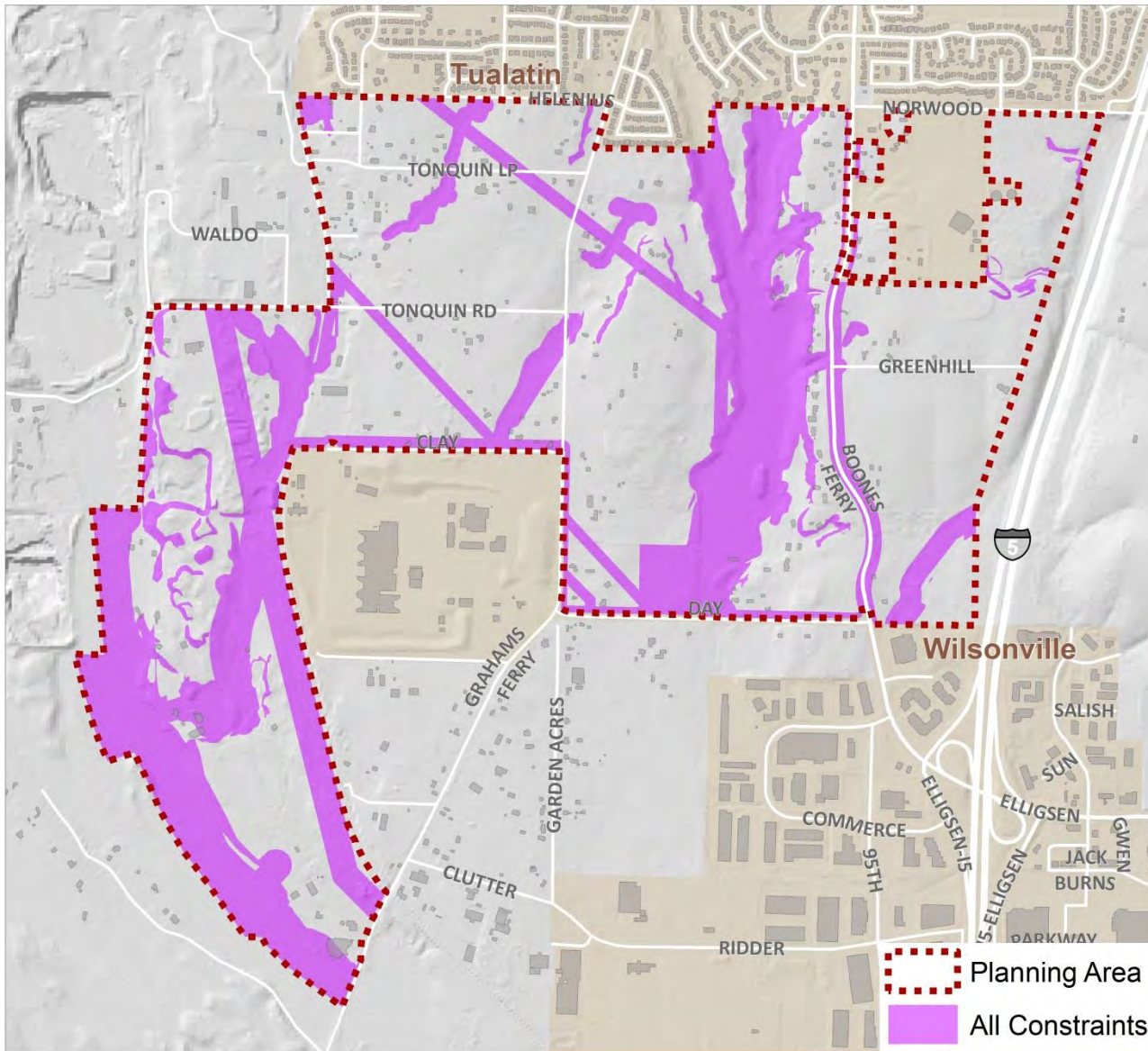
Title 13



- **4** additional acres constrained
- GHG scenarios set aside 20% of land for protection (Riparian Class I and II)

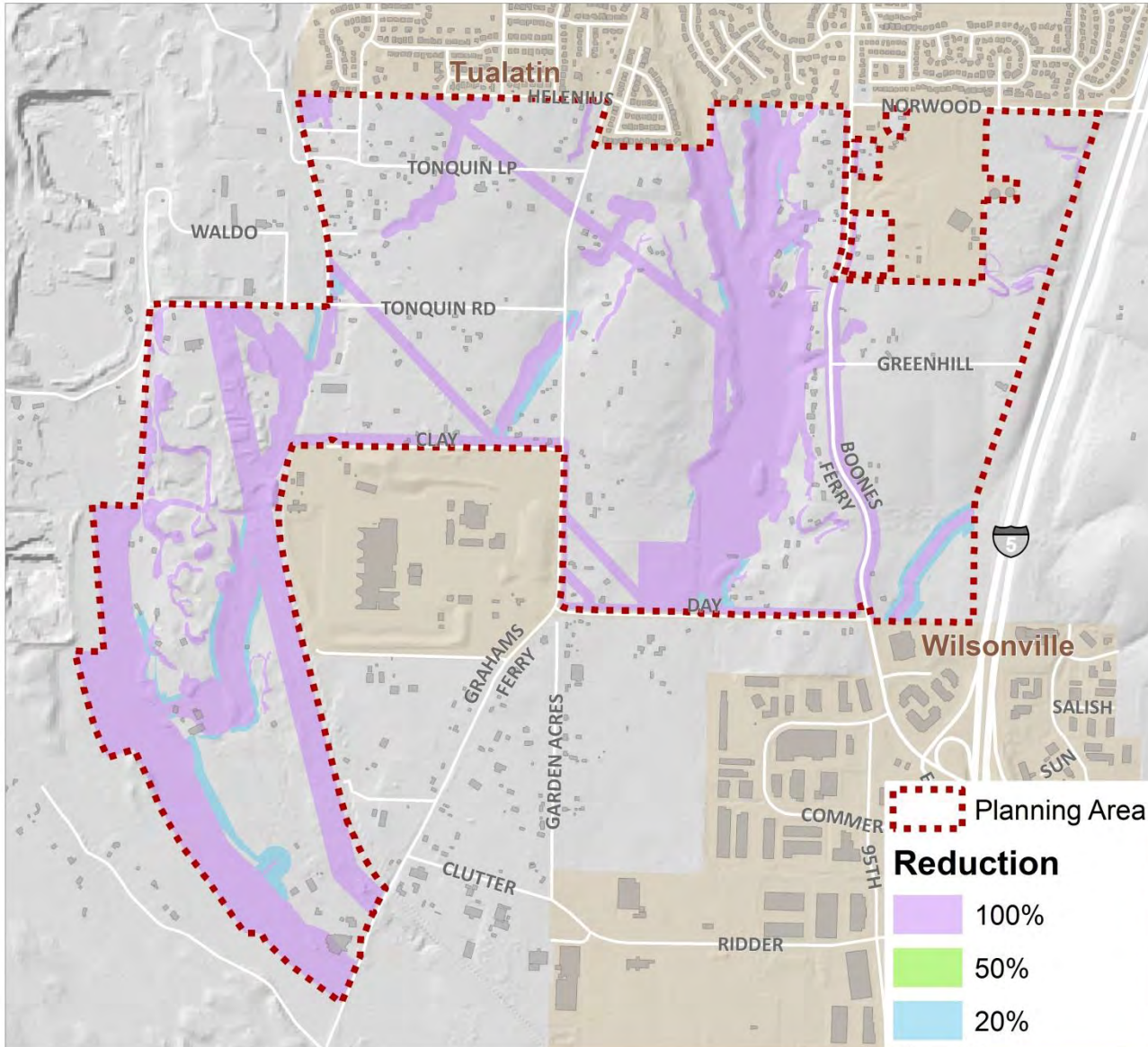
All Constraints

- A total of **296** acres are constrained
- Study area total is **847** acres
- **35%** of the Basalt Creek area is constrained



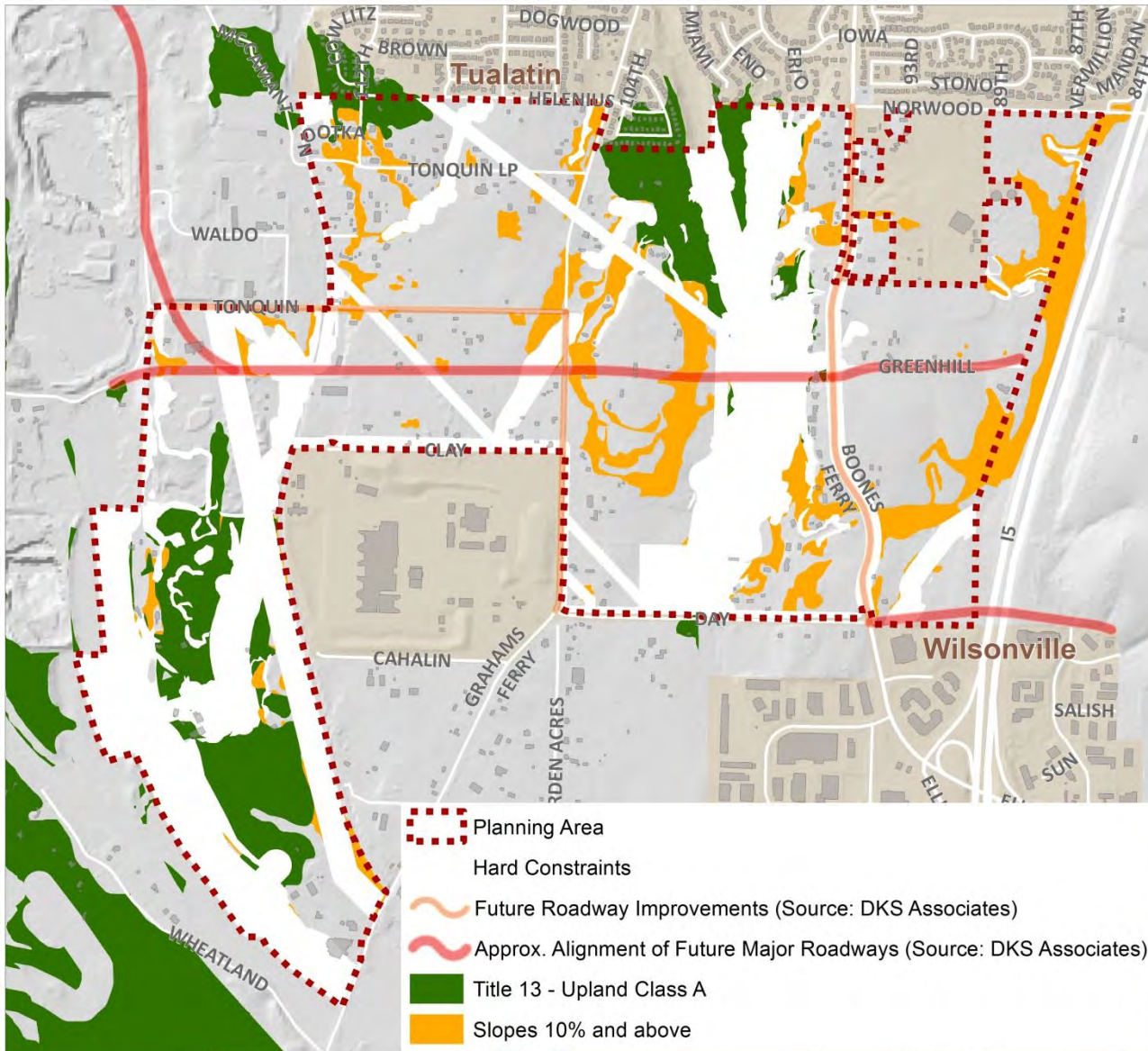
All Constraints

- **35%** of the Basalt Creek area is constrained



Soft Constraints

- 10% slopes and greater
- Title 13 Upland Class A
- Various road projects



Land Supply

- Three elements:
 - Vacant Land – Land ready to build, no major structure on site
 - Redev Land – Land with some redevelopment potential
 - Stable Land – Land and structures on it will not change in the future

Vacant Land



Redev Land



Stable Land



Four-Step Methodology

Existing
Land Use

Visual
Survey

Building
Value

Local
Input

Land
Supply

1. Land use provided by tax lot data via RLIS (Metro data)

2. Ground proofing using aerials and online tools

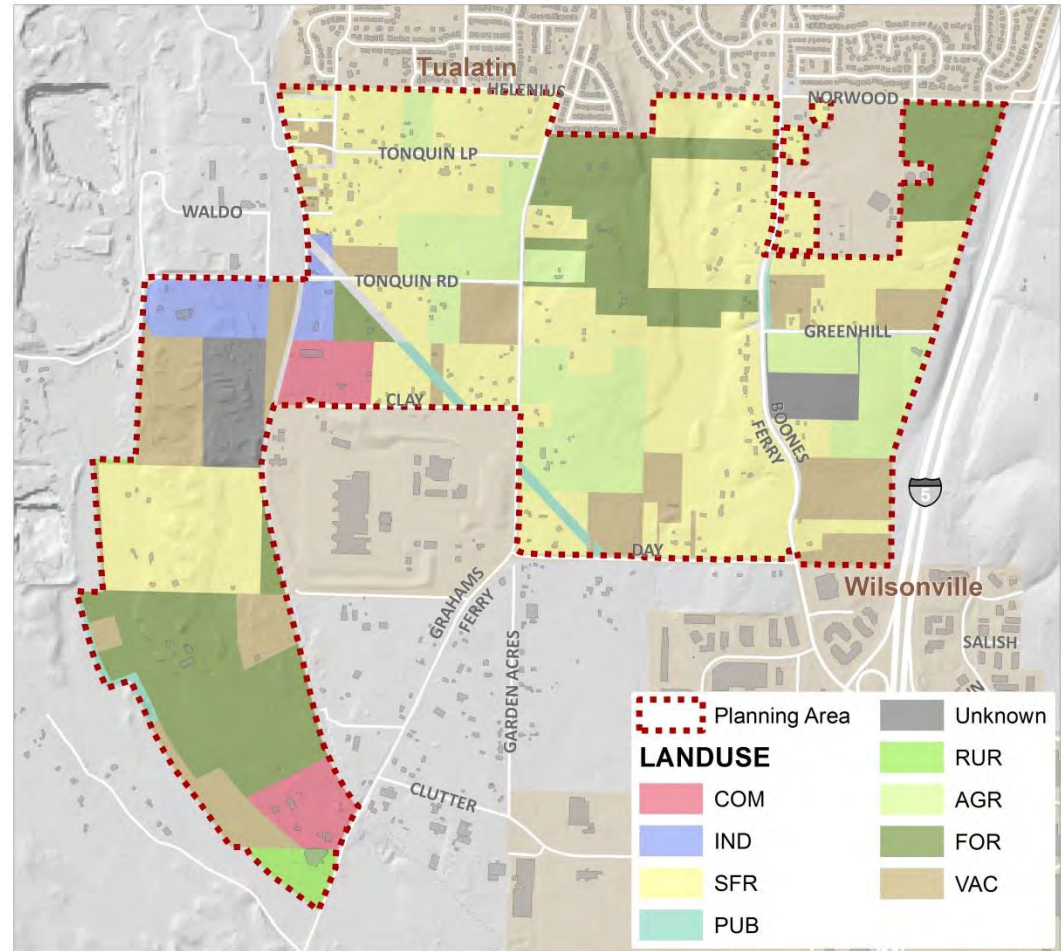
3. Define "stable" building value

4. Refine analysis with local input

Land Use

1. Step

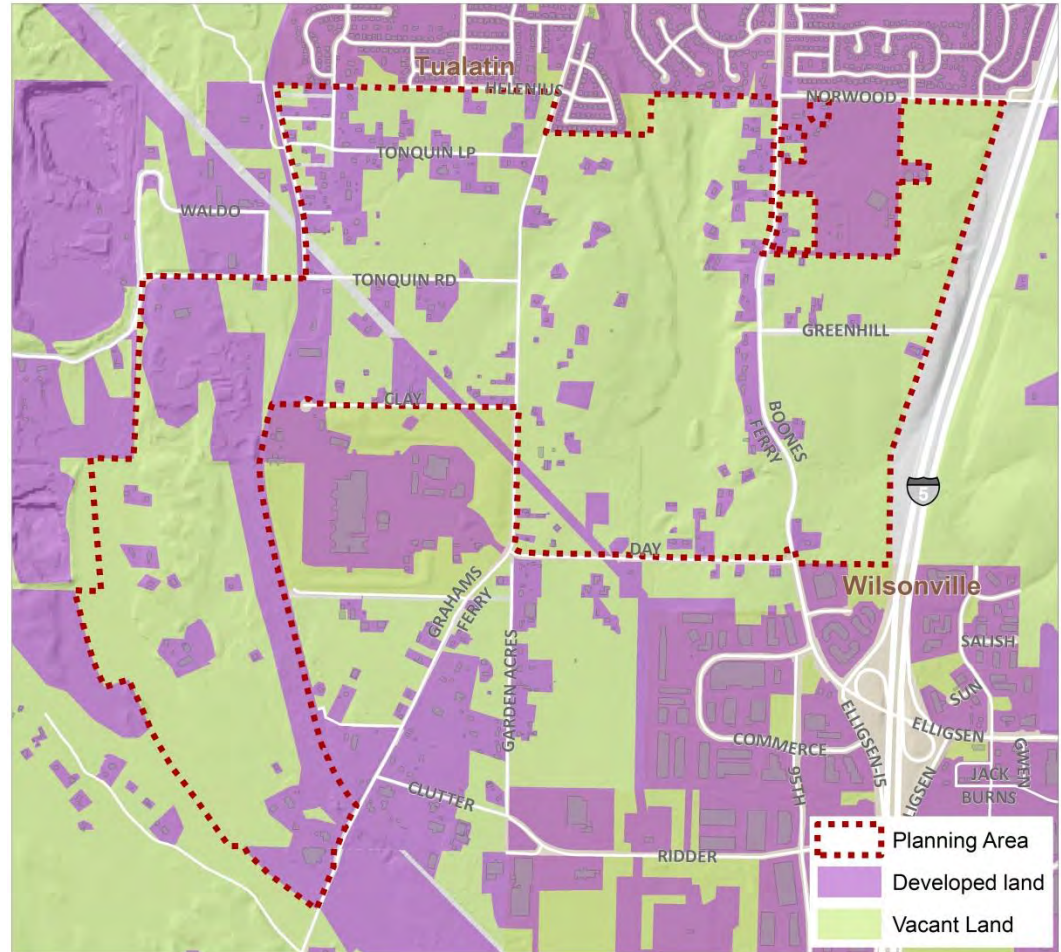
- Assumptions on development via existing land use in taxlot file (RLIS March 2014)
 - Developed is:
 - Commercial
 - Industrial
 - Public
 - Residential
 - Vacant is:
 - Rural
 - Forest
 - Agriculture
 - Unknown
 - Vacant



Visual Survey

2. Step

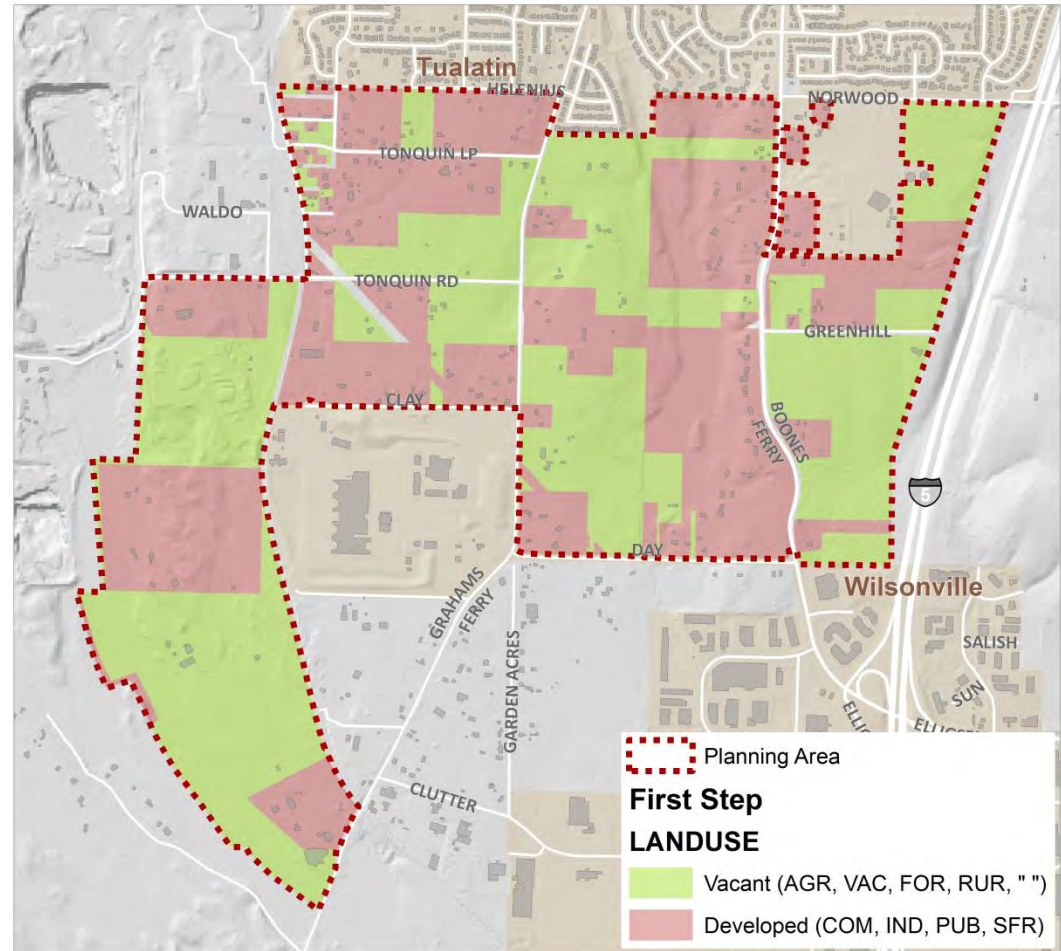
- Vacant and developed land (RLIS March 2014)
 - Does not limit itself to taxlots
 - Uses “Cookie Cutter” around buildings



Land Use

1. Step

- Assumptions on development via existing land use in taxlot file (RLIS March 2014)
 - Developed is:
 - Commercial
 - Industrial
 - Public
 - Residential
 - Vacant is:
 - Rural
 - Forest
 - Agriculture
 - Unknown
 - Vacant



Visual Survey

2. Step

- Adjust for large amount of “unused”
 - Uses “Cookie Cutter” around buildings
 - Split to allow for backyard
 - Split, where lot becomes “natural”
 - Via visual survey of aerial, Google Map Street View, and Bing Map Bird’s Eye
 - Use RLIS coverage as guide
- Additional developed land via visual survey that was first identified as vacant (based on land use)



Split lot



Split lot

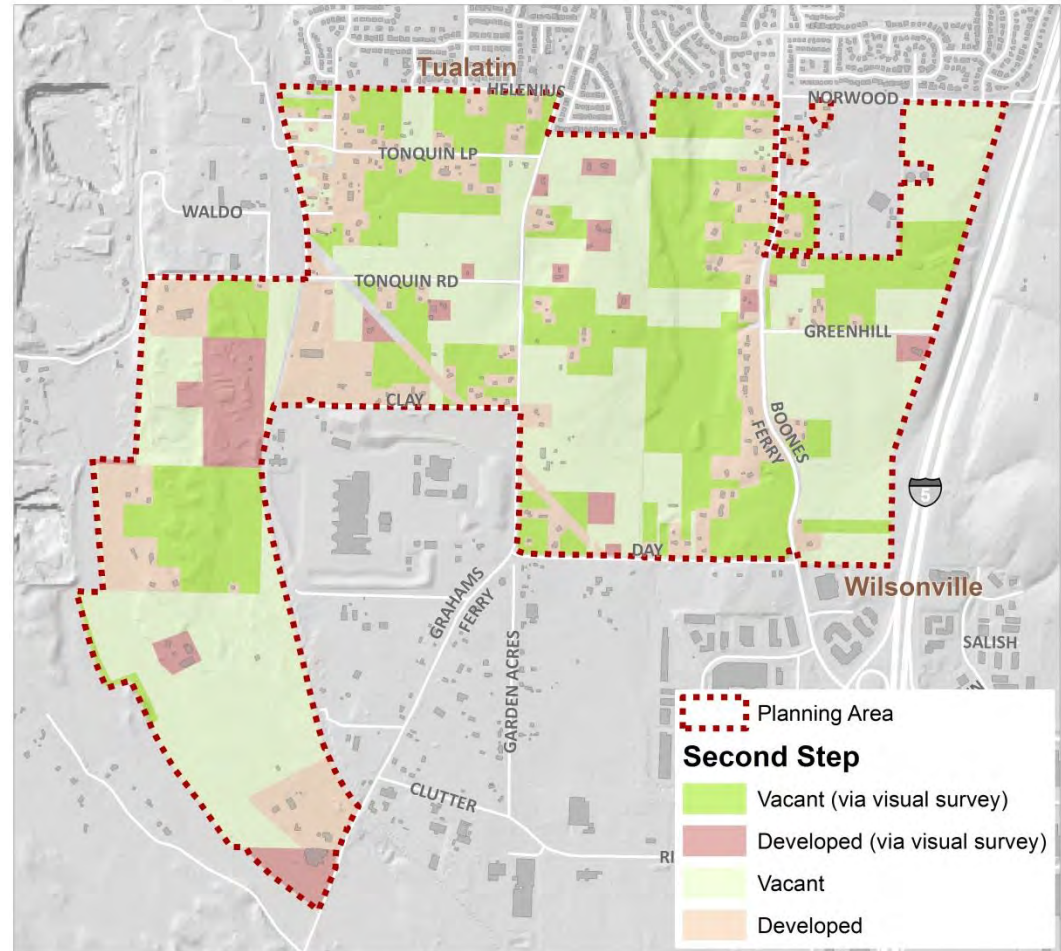


From vacant to developed

Visual Survey

2. Step

- Adjust for large amount of “unused”
 - Uses “Cookie Cutter” around buildings
 - Split to allow for backyard
 - Split, where lot becomes “natural”
 - Via visual survey of aerial, Google Map Street View, and Bing Map Bird’s Eye
- Additional developed land via visual survey that was first identified as vacant (based on land use)



Building Value

3. Step

- What is “Stable”:
 - No changes to the taxlot are expected
 - No growth
 - No additional employment
 - No additional housing unit
 - Minor improvements to property but not much more



Newer Single Family Home

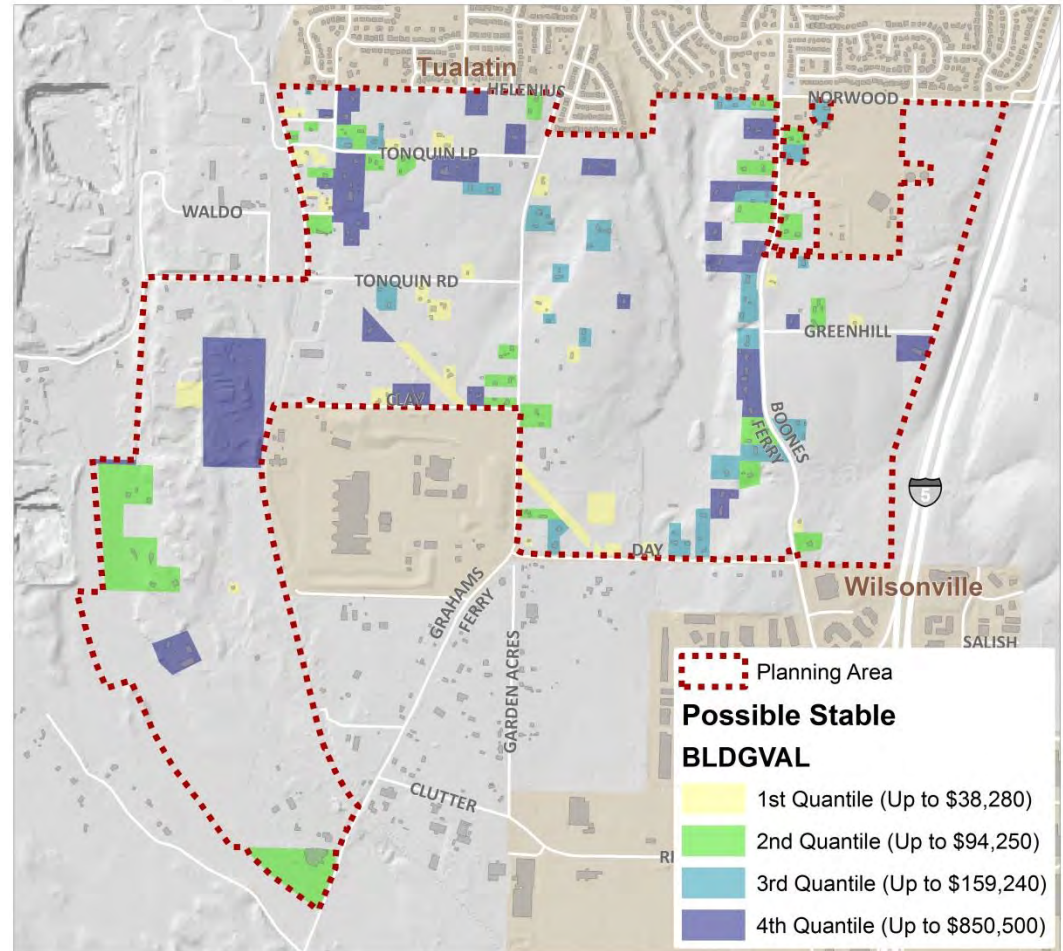


Older Single Family Home

Building Value

3. Step (non commercial)

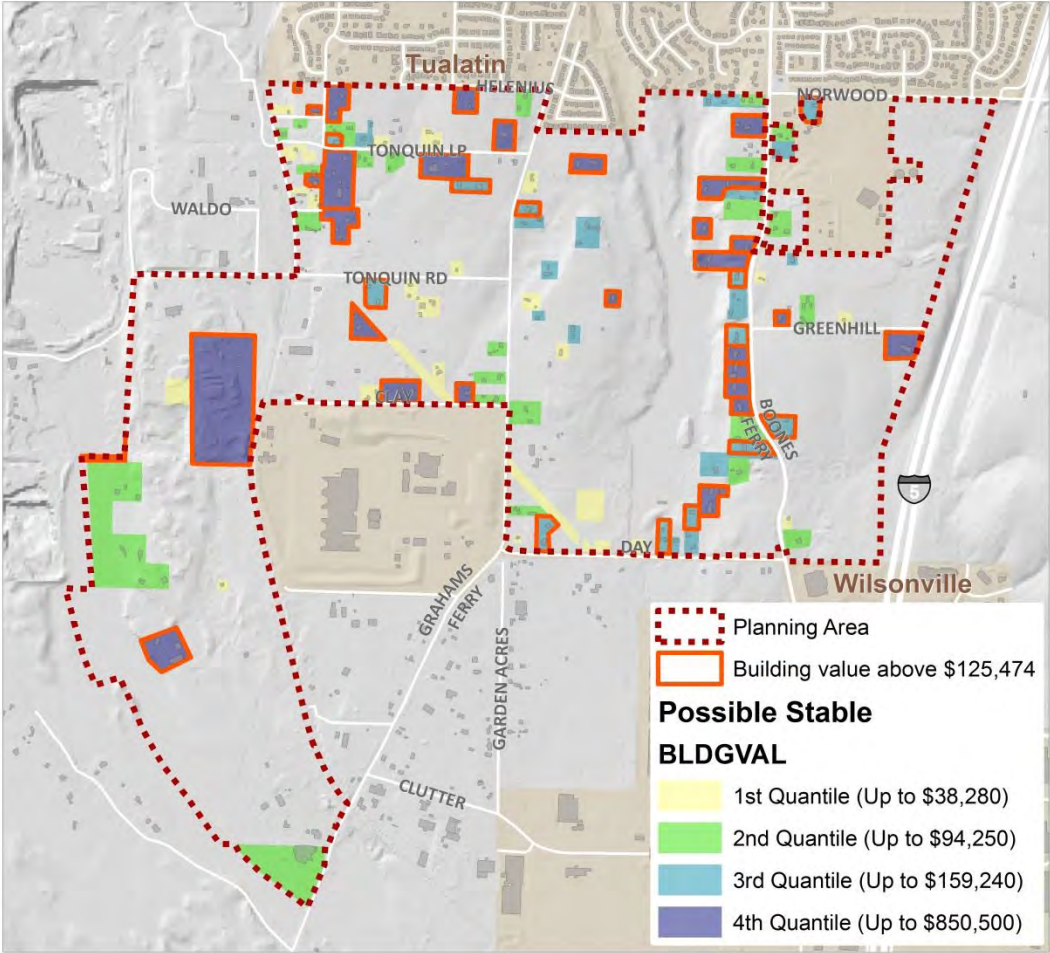
- Select Non commercial but developed taxlots
 - Exclude COM and IND land uses
- Quantiles:
 - In which range falls a specific building?
 - 50% of building values are below \$95,000



Building Value

3. Step

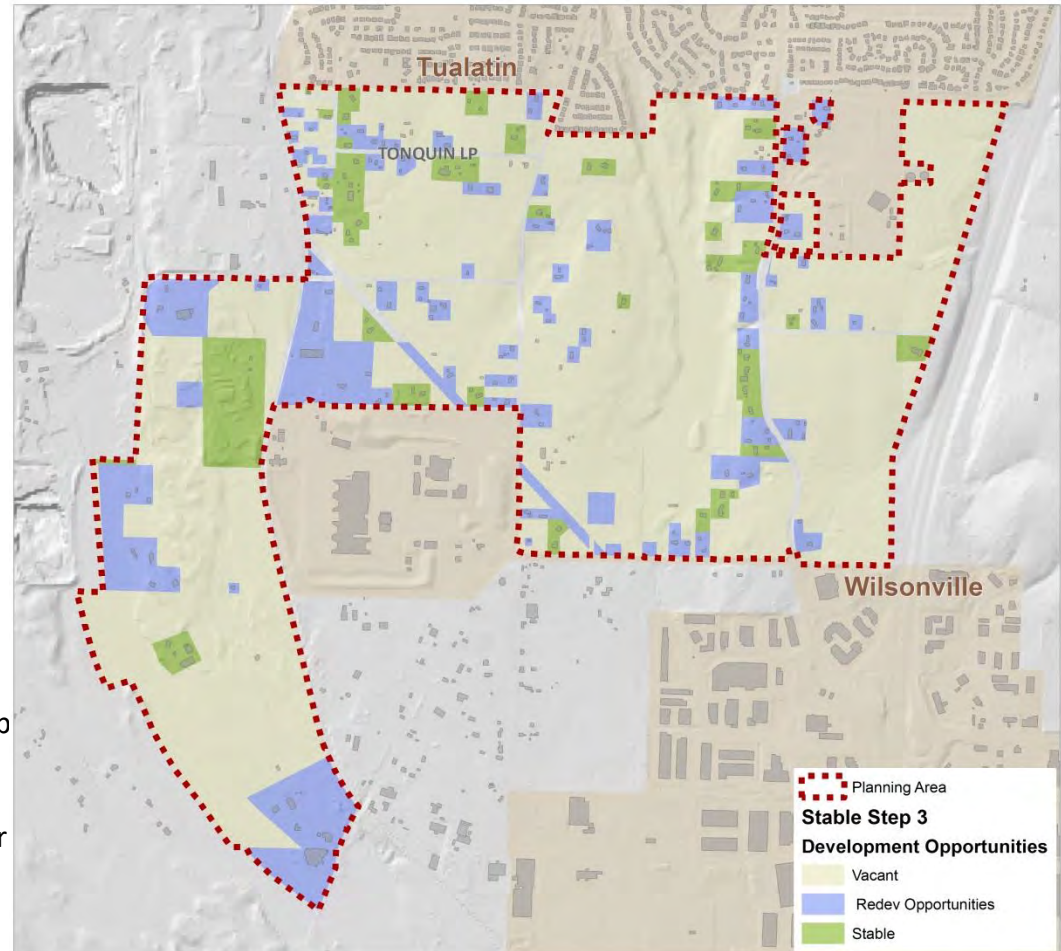
- Assuming higher building values will be stable
 - Average building value is **\$125,474**



Building Value

3. Step

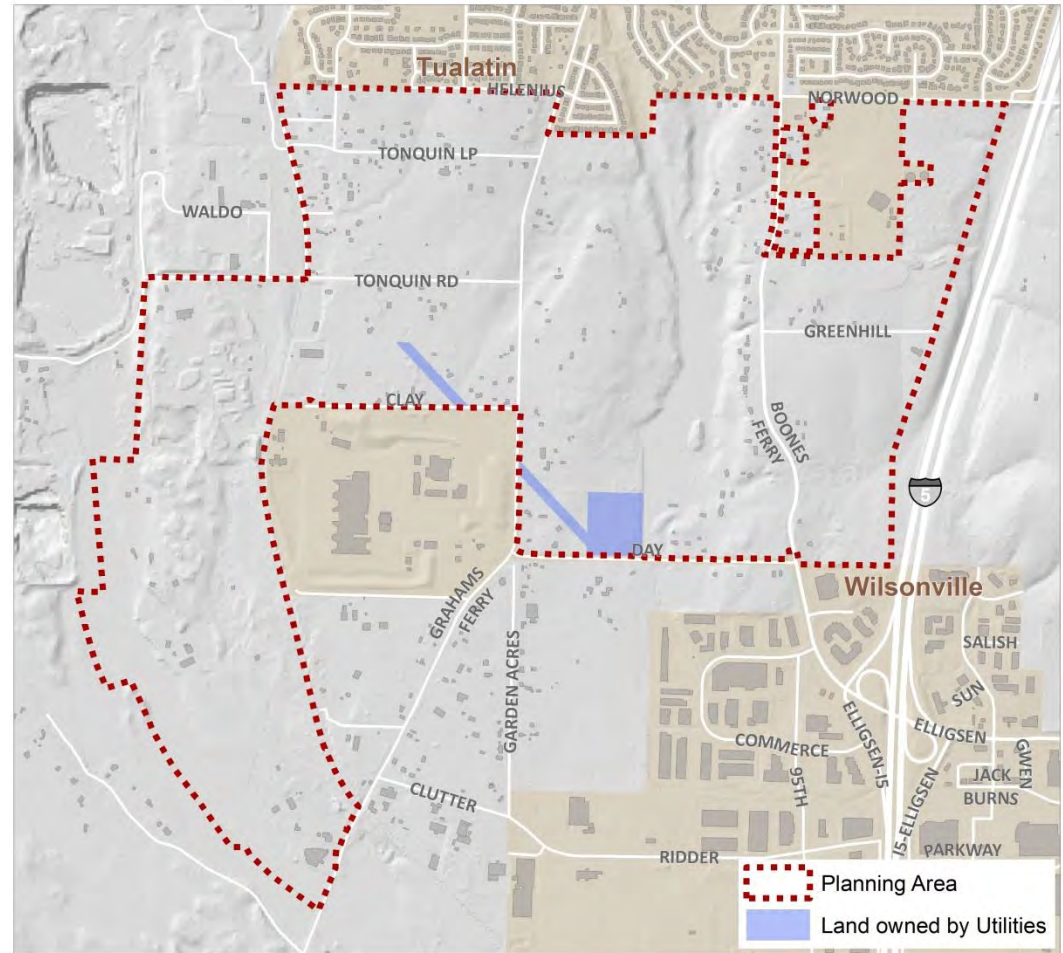
- Introduced “stable”
 - Non commercial buildings only
 - On developed land
- Assuming higher building values will be stable
 - Average building value is \$125,474
 - Set limit to **\$150,000**, based on owner input
 - Existing rural development are more likely to redevelop under/with an urban footprint
 - Know of site that the owner would like to redevelop (current building value is about \$145,000)
- **34** sites identified as stable



Local Input

4. Step

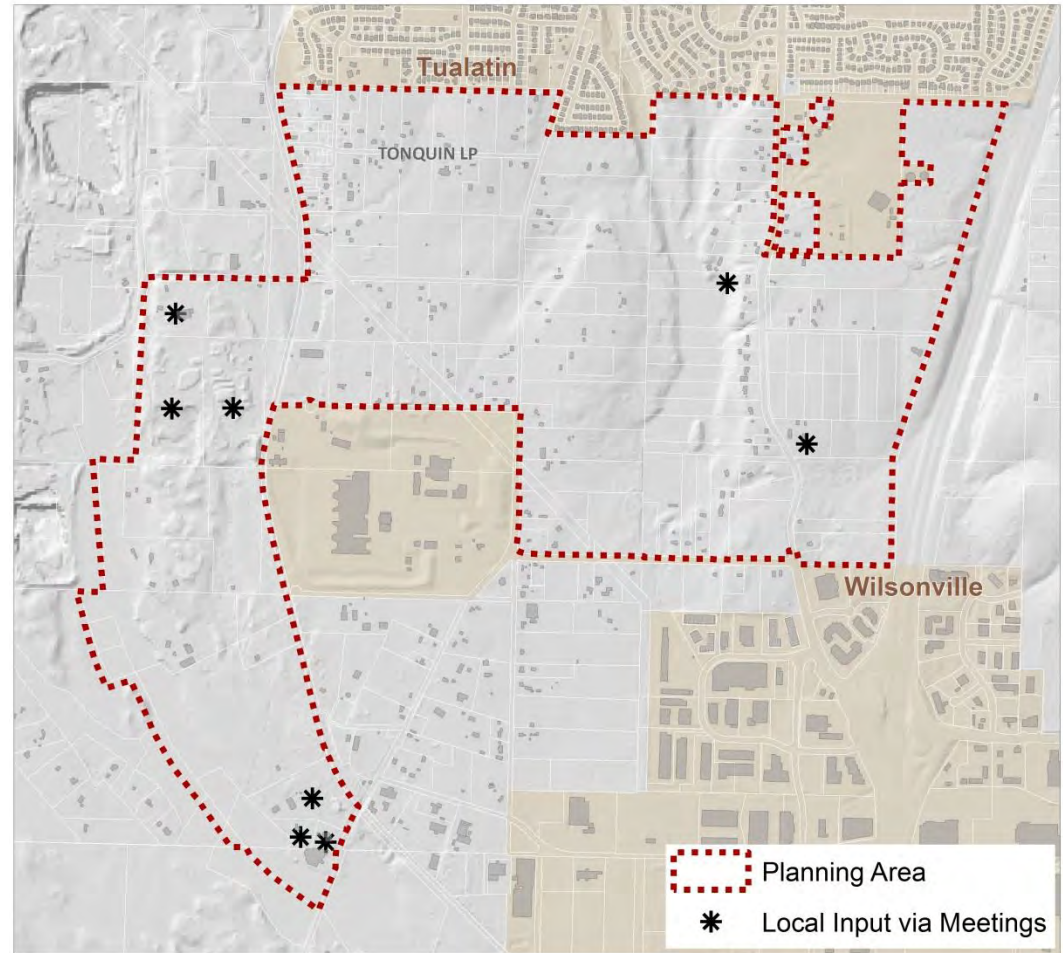
- Utilities
 - PGE sub station
 - BPA Properties



Local Input

4. Step

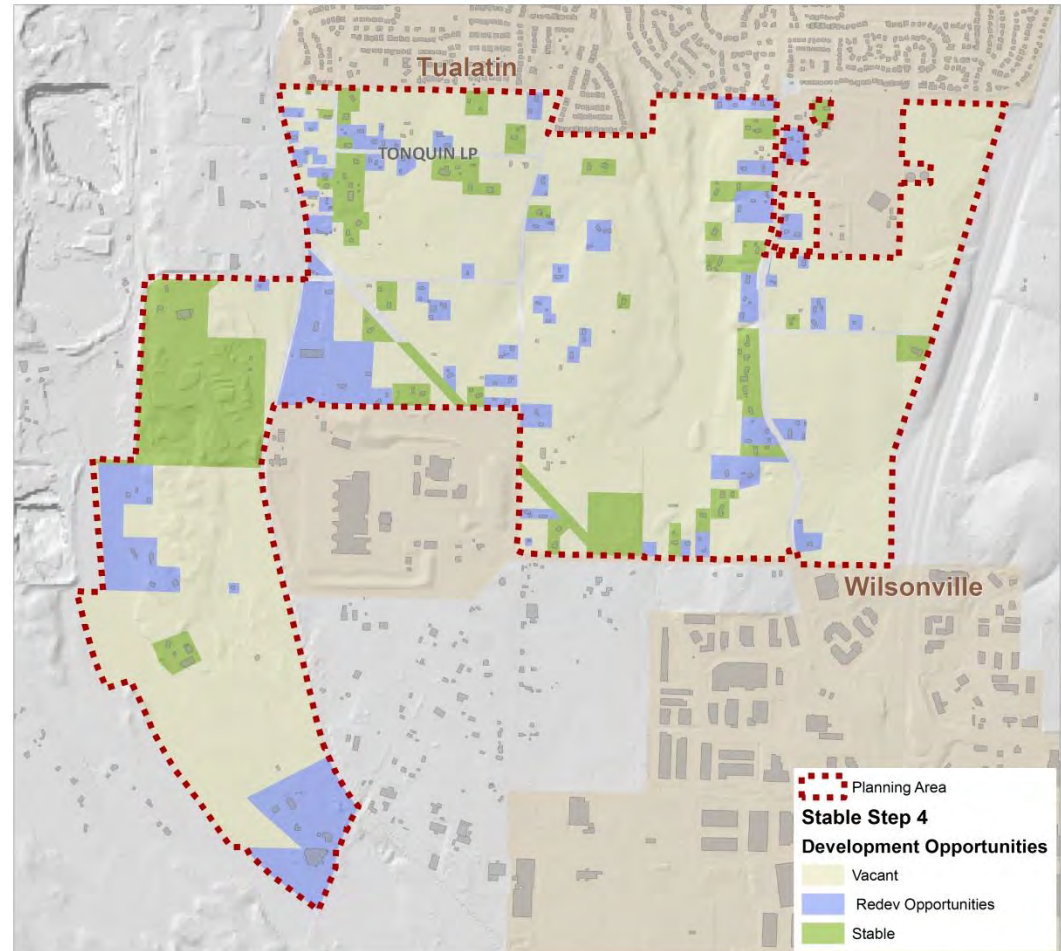
- Local Input
 - Stakeholder meetings
 - Focus group meetings



Local Input

4. Step

- **43** sites identified as stable, based on:
 - Buildingvalue
 - Local Input
- **596** acres are vacant
- **117** acres are available for redevelopment



Buildable Land

Buildable Lands =

Land Supply – Constraints (Environmental & Policy)

Land Supply

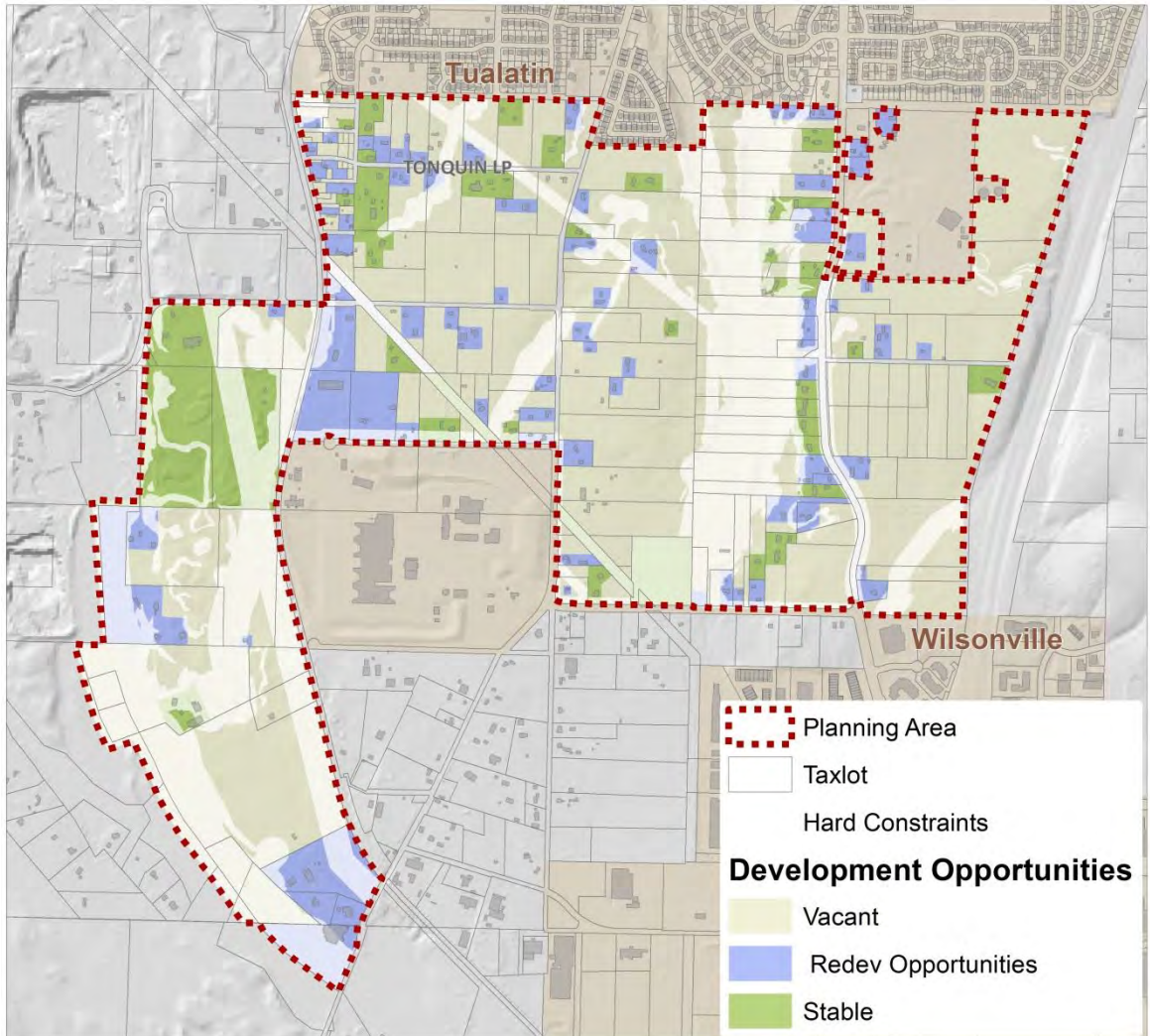
Constraints

Buildable Land



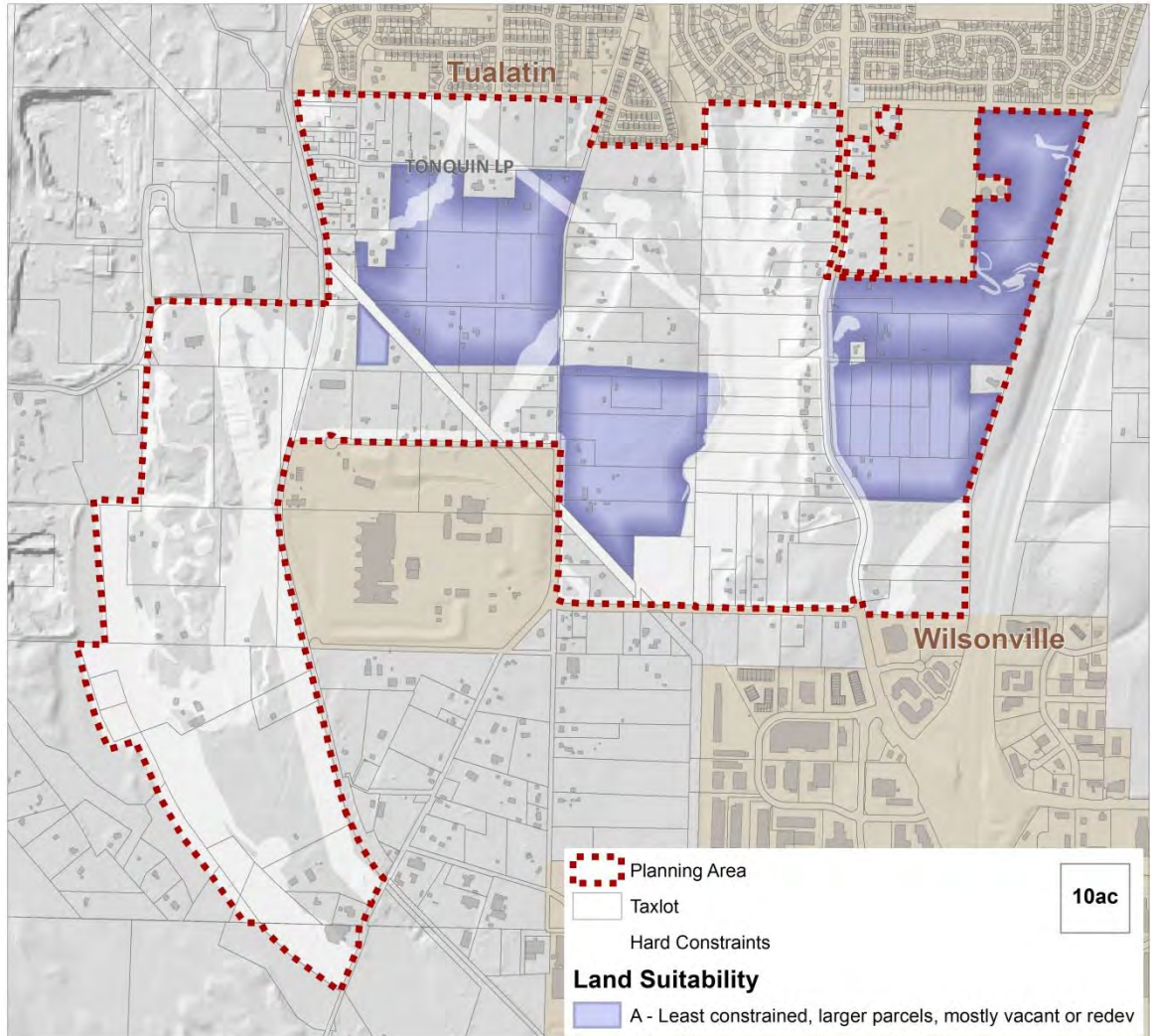
Suitable Sites

- Multiple Sites vary by:
 - Taxlot size
 - Amount of constraints
 - Vacancy and redevelopment opportunities



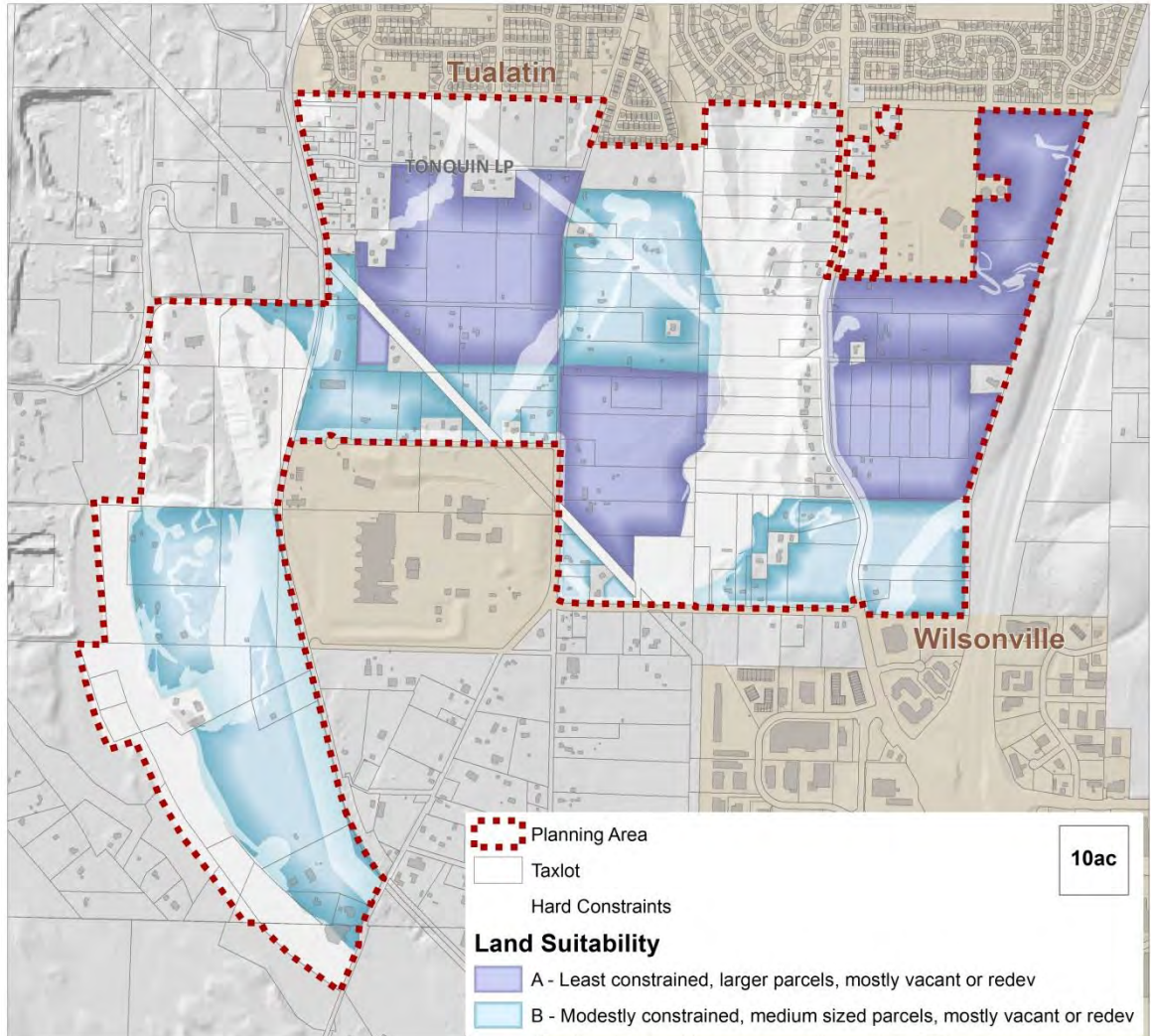
Suitable Sites

- Suitability A:
 - Larger parcels
 - Least constrained
 - Mostly vacant, might have redevelopment opportunities
 - 214 buildable acres (does not exclude built road network, etc.)



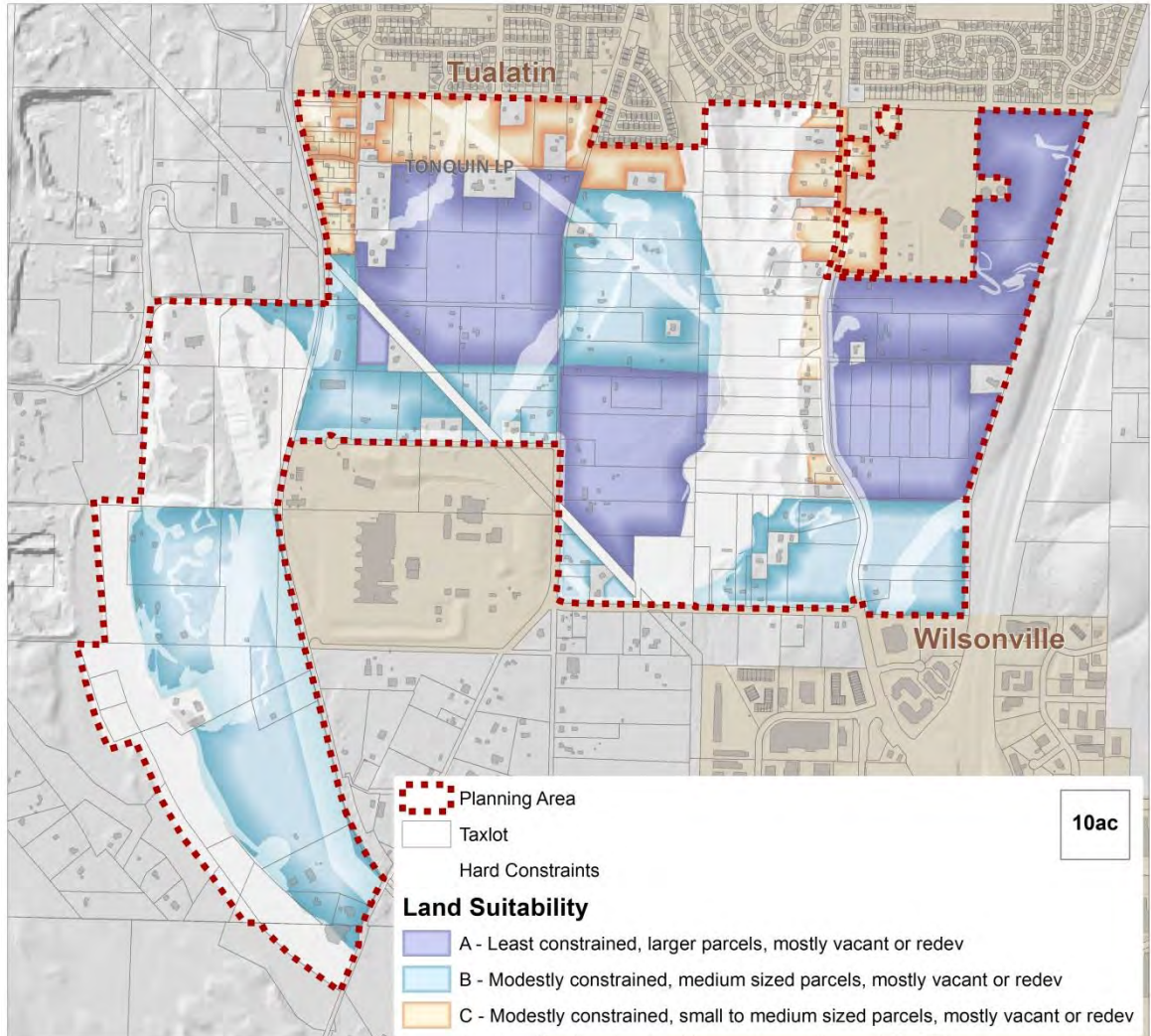
Suitable Sites

- Suitability B:
 - Medium sized parcels
 - Modestly constrained
 - Mostly vacant, might have redevelopment opportunities
 - 193 buildable acres (does not exclude built road network, etc.)



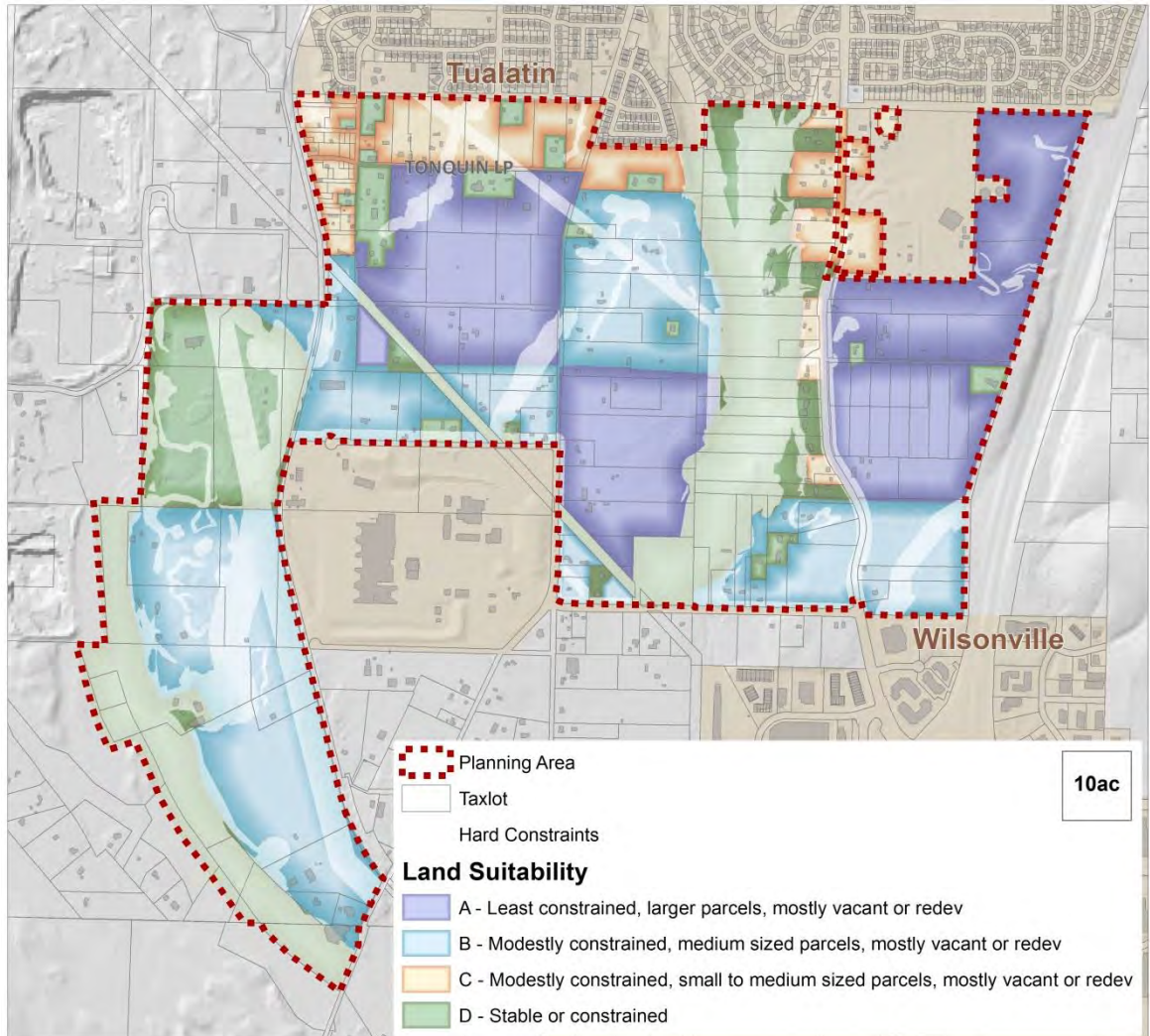
Suitable Sites

- Suitability C:
 - Small to medium sized parcels
 - Modestly constrained
 - Mostly vacant, might have redevelopment opportunities
 - 64 buildable acres (does not exclude built road network, etc.)



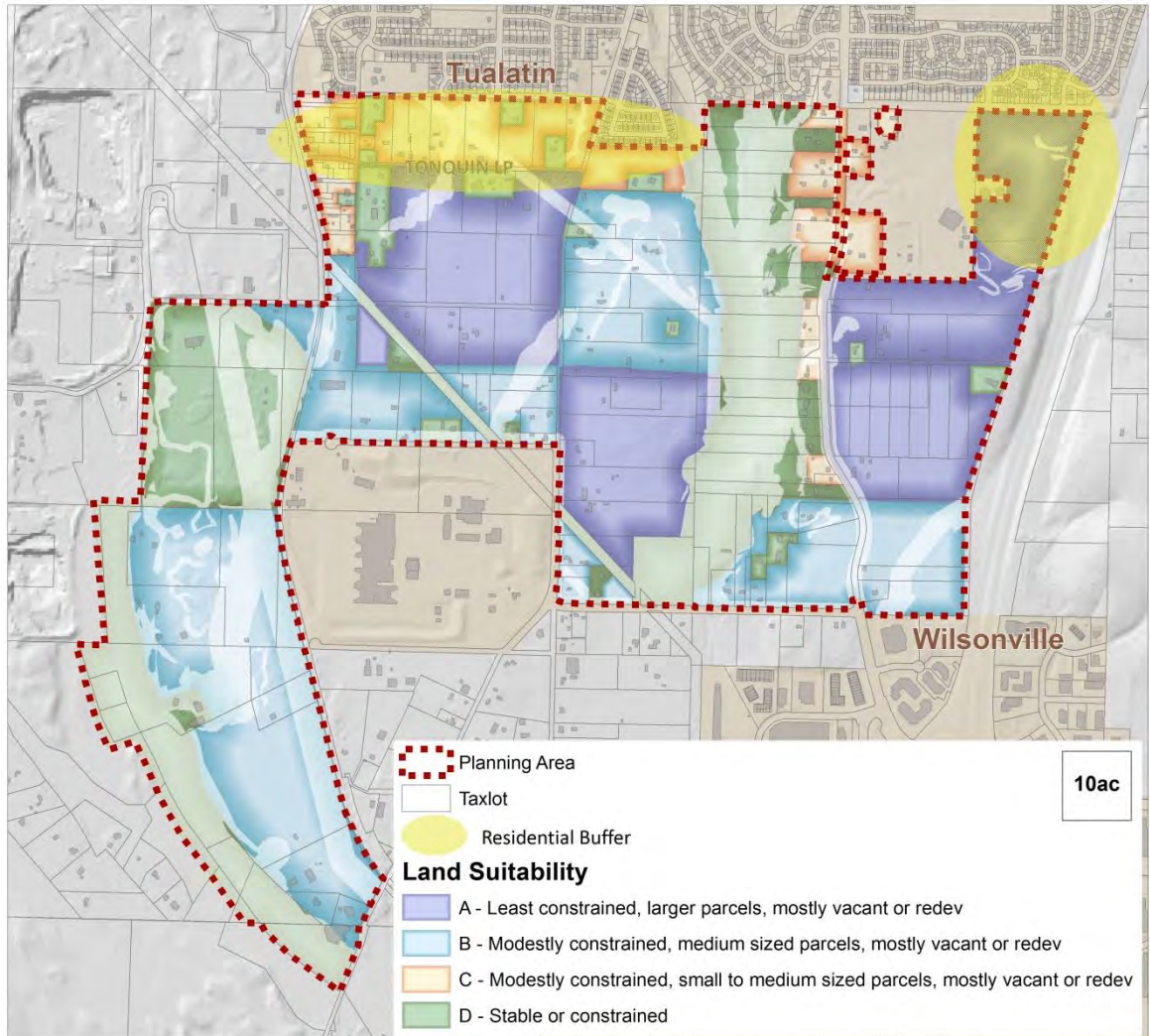
Suitable Sites

- Suitability D:
 - Stable or mostly constrained
 - 82 “buildable” acres (does not exclude built road network, etc.)



Suitable Sites – Residential Buffer

- Residential Buffer:
 - 63 buildable acres (does not exclude built road network, etc.)



Buildable Land à la Envision*

Site	Constrained Acres	Vacant Acres	Redev Acres
Suitability A	15	197	12
Suitability B	79	144	47
Suitability C	12	38	20
Suitability D	136	12	1
Transition Area			

*based on parcel file (excludes roadways and stable parcels)



BASALT CREEK CONCEPT PLAN



MARKET ANALYSIS DRAFT

PREPARED FOR



PREPARED BY



Contents

Executive Summary	3
Industrial and Office Market Analysis	6
Regional Employment Context.....	6
Industrial and Office Development, 1980 to 2014	7
Employment Outlook.....	10
Tualatin and Wilsonville’s Economic Positioning and Goals	15
Subregional Context.....	18
Employment Strengths and Challenges.....	19
Absorption and Build Out	20
Housing Market Analysis.....	21
Demographic Context.....	21
Regional and National Demographic Trends Affecting Housing	25
Community Preferences.....	28
Housing Types	29
Recent Housing Development.....	30
Basalt Creek Housing Scenarios.....	31
Retail Market Analysis.....	33

Executive Summary

Located between Tualatin’s residential neighborhoods to the north and Wilsonville’s employment center to the south, Basalt Creek is currently a relatively rural area that is positioned for significant change and urbanization due to its prime location within the growing Portland metropolitan region. Leland Consulting Group (LCG) has prepared this market analysis as one component of the Basalt Creek Concept Plan. Its purpose is to provide Basalt Creek stakeholders with information regarding the outlook for industrial, office, residential, and retail development in Basalt Creek and adjacent areas, and to inform the Concept Plan as this process moves forward. This executive summary condenses the key points of the analysis; details are explained in the body of the report. The key findings and recommendations of this market analysis are:

Industrial and Office Market. Basalt Creek is located near the center of one of the region’s largest clusters of employment land, which includes existing developed areas in the cities of Tualatin, Wilsonville, and Sherwood, as well as the planned future employment areas of Southwest Tualatin, Tonquin, and Coffee Creek. A market area—including the cities of Tualatin, Wilsonville, and Sherwood and some surrounding areas—was defined for this market analysis in order to provide a baseline to estimate future subregional employment and population growth.

The Metro regional government projects rapid employment growth of 2.3 percent annually for the market area through 2035, about 40 percent faster than the employment growth in the region (1.7 percent), indicating that ongoing business expansion and job creation is expected for these three cities in the southwestern metropolitan area.

Tualatin and Wilsonville have independently identified a series of industry clusters in which the two cities are already highly competitive, and in which they expect future significant business and job growth. These include advanced manufacturing, corporate and professional services, health care and related fields, and other specific industrial clusters such as food processing and light manufacturing. Leading organizations within these clusters include Lam Research, Legacy Meridian Park Medical Center, the Oregon Institute of Technology, Mentor Graphics, and Xerox Corporation. Businesses in these categories are well suited to locate at Basalt Creek.

Both Tualatin and Wilsonville have seen significant industrial and office development during the past three decades. Development peaked during the 1990s and has slowed following the recession; however, industrial development in particular is expected to resume and accelerate in coming years due to a desire to “onshore,” shorten supply chains, and take advantage of lower domestic costs in some industries. Between 1980 and 2014, the cities of Tualatin and Wilsonville saw on average over 400,000 square feet of industrial and office building development annually, and 56.6 acres of industrial and office land development annually. The amount of industrial development in both cities is significantly larger (more than seven times) than the amount of office development, and this general dynamic is expected to persist for the foreseeable future.



Building types vary significantly within the market area: some industrial facilities contain more than 200,000 square feet of building area, while many other small office and industrial flex spaces are less than 20,000 square feet in size. The floor area ratio (FAR) of most buildings, however, generally falls within the range of 0.2 to 0.4, which generally indicates one to three-story buildings with large areas for parking and/or freight movement. A small number of office buildings have higher FARs to about 1.0, which indicates more dense buildings and some structured parking.

Going forward, employment development in Basalt Creek will benefit from a number of competitive advantages. These include its direct access to I-5, superior to other employment areas in the region; access to I-205, Highway 217, arterial roads, and transit; a growing and educated workforce; and established and expanding industry clusters.

Based on past industrial and office development, and future growth projections, LCG absorption projects employment land at Basalt Creek to develop at a rate of eight to 10 net acres per year. However, the pace of build out will depend on economic conditions, the availability of employment land in other nearby areas, infrastructure such as roads and sewer, and other factors. Building and site sizes should vary widely, and FARs will remain consistent with those seen in the past.

Housing Market. Significant population growth is anticipated for Tualatin, Wilsonville, and the Portland metropolitan region over the next two decades. Metro's gamma population model shows that Tualatin and Wilsonville will add 1,170 and 3,649 households respectively between 2010 and 2035. Metro projects that the market area will add about 10,900 households during this time period, an increase of 39 percent. These population increases will result in demand for housing at Basalt Creek through 2035, assuming that the area can compete effectively with other potential residential locations.

Basalt Creek's location is also a positive: the study area is immediately south of several South Tualatin residential neighborhoods, which contain attractive parks, street trees, and schools. It should be noted, however, that Basalt Creek is located in the Sherwood School District rather than the Tigard-Tualatin School District, and therefore school-age children will head west rather than north for school. The market area's current demographics are encouraging for new housing development. When compared to the Portland metropolitan area, the market area has a higher percentage of family households, larger households, higher household and per capita incomes, more residents with college degrees, and more residents who work in white collar jobs.

However, housing demand is expected to shift somewhat in the future because of decreasing housing sizes, an aging population, the popularity of walkable communities, and other factors. By combining current and future housing demand indicators, this market analysis provides three different housing development scenarios, all of which assume a mix of single-family detached, single-family attached, and multifamily housing. Housing diversity and flexibility (the opportunity to adjust the housing mix) is important to developers in any large area, since they need to be able to build for many different household types, and respond to changing market conditions. This report does not propose a specific number of households in the study area, since residents and decision makers have yet to define precisely which areas will be set aside for residential development.

Retail/Commercial Market. The likely amount and location of retail in Basalt Creek will need to be revisited later in the concept planning process, after more specific programs for employment and residential development are established. It is often said that “retail follows rooftops” and jobs, and without more confidence about the number of homes and jobs that will be in the area, it is difficult to project retail demand.

With that said, some generalizations can be made. Because there are several major regional and subregional retail nodes located to the north and south of the study area—at Bridgeport Village, central Tualatin, and in Wilsonville—any commercial space built in Basalt Creek is most likely to primarily serve local residents and employees. These larger centers are located at I-5 interchanges, whereas retail at Basalt Creek would be further from interchanges. Whereas regional retail is anchored by fashion, consumer electronics, entertainment, and furniture/household goods, neighborhood retail is typically anchored by grocery stores, pharmacies, and restaurants, supplemented by other local goods and services.

Retail is likely to be located at key intersections on either Boones Ferry or Grahams Ferry Roads, the major north-south arterials in Basalt Creek, and potentially along the planned East-West connector, which will also carry considerable traffic and afford high visibility to retailers.

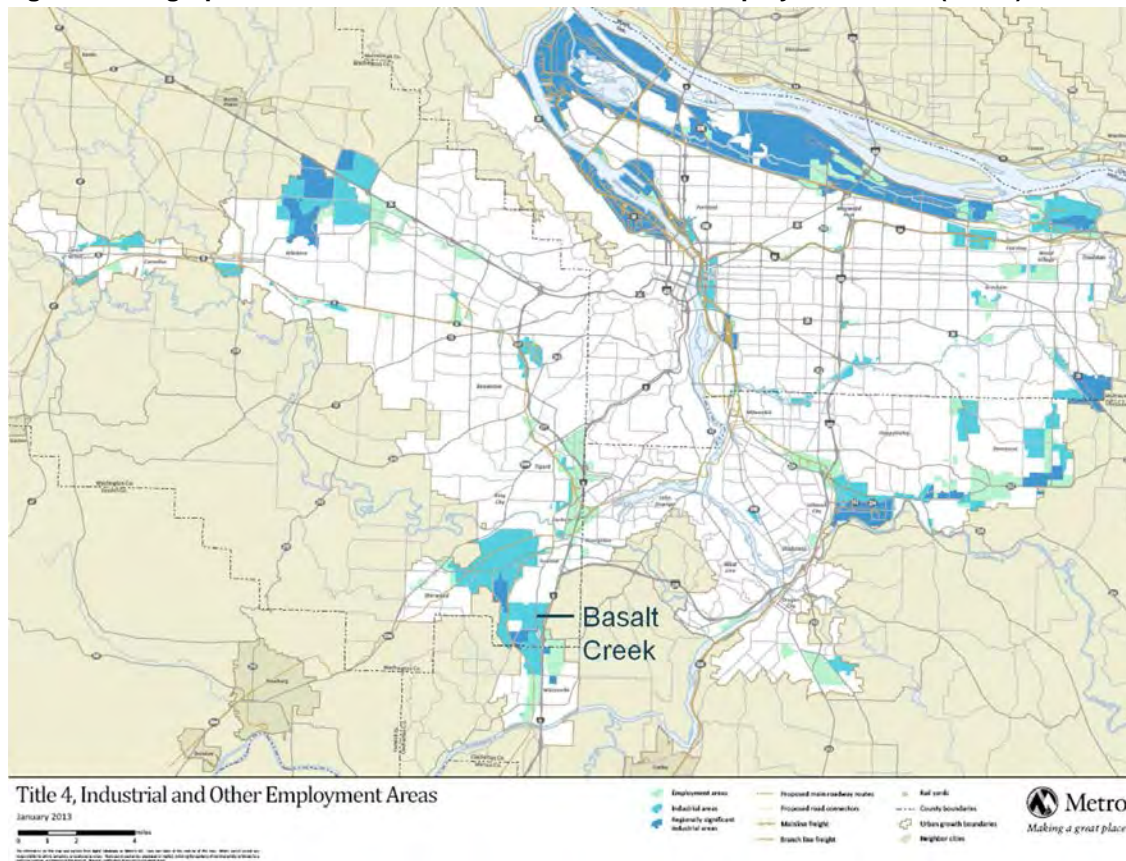
Industrial and Office Market Analysis

Regional Employment Context

As shown in Figure 1, Basalt Creek is contiguous with a number of other employment and industrial areas in the southwestern part of the Portland metropolitan region, including areas in the cities of Tualatin, Wilsonville, and Sherwood. Viewed together, these areas comprise one of the largest industrial and employment clusters in the region, comparable in size to the agglomeration in northern Hillsboro, though smaller than the employment lands near PDX Airport.

A major feature and competitive advantage of this “Southwestern Metro” employment cluster in general, and Basalt Creek in particular, is its immediate access to I-5, the West Coast’s most important transportation route. Via I-5, Basalt Creek is closely connected to downtown Portland, numerous Willamette Valley communities, and major metropolitan areas in Washington and California. I-205 and Highway 217 are also close by and easily accessible. These freeway connections are a major benefit for industrial—for whom distribution is an important site selection factor—and office-based businesses—which require access for their clients, suppliers, workforce, and collaborators.

Figure 1. Geographic Context: Title 4 Industrial and Other Employment Areas (Metro)



Source: Metro.

Industrial and Office Development, 1980 to 2014

The figures below show the pace of industrial and office development in the cities of Tualatin and Wilsonville, beginning in 1980. The bars represent the building area (square feet) of development within each of the two cities in a given year, while the dashed line is a longer-term trend line, showing a five-year rolling average of built area for both cities combined. These historical development trends are one data set that shapes expectations for future employment development in both cities and Basalt Creek.

Since 1980, both cities have seen considerably more industrial development than office development. Over this 34-year period, an average of 340,000 square feet of industrial space and 67,000 square feet of office space has been built in the two cities combined. Thus, the amount of industrial development has been about five times as great as office development.

Figure 2. Industrial Development, Tualatin and Wilsonville, 1980 to 2014

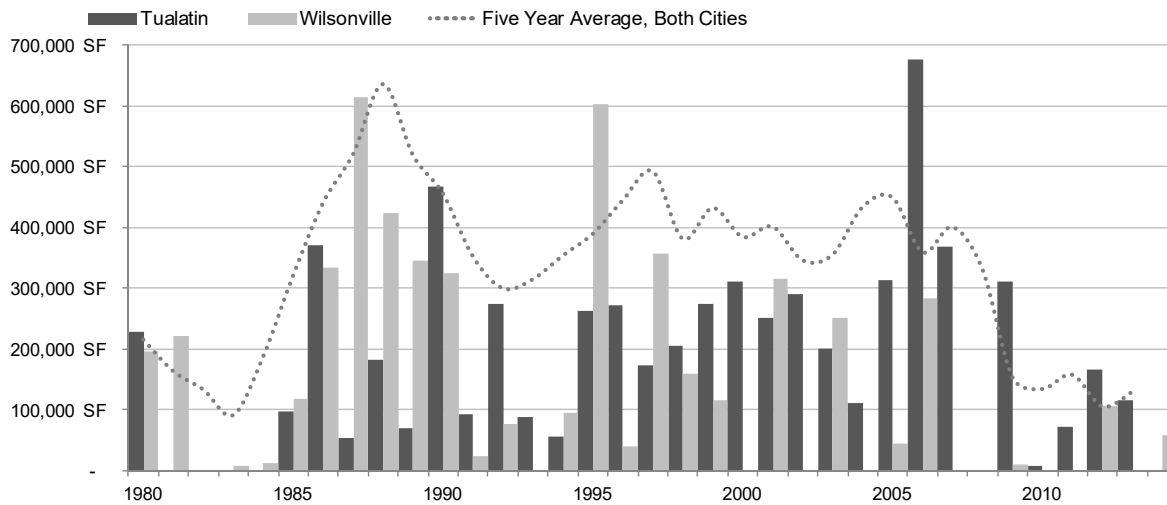
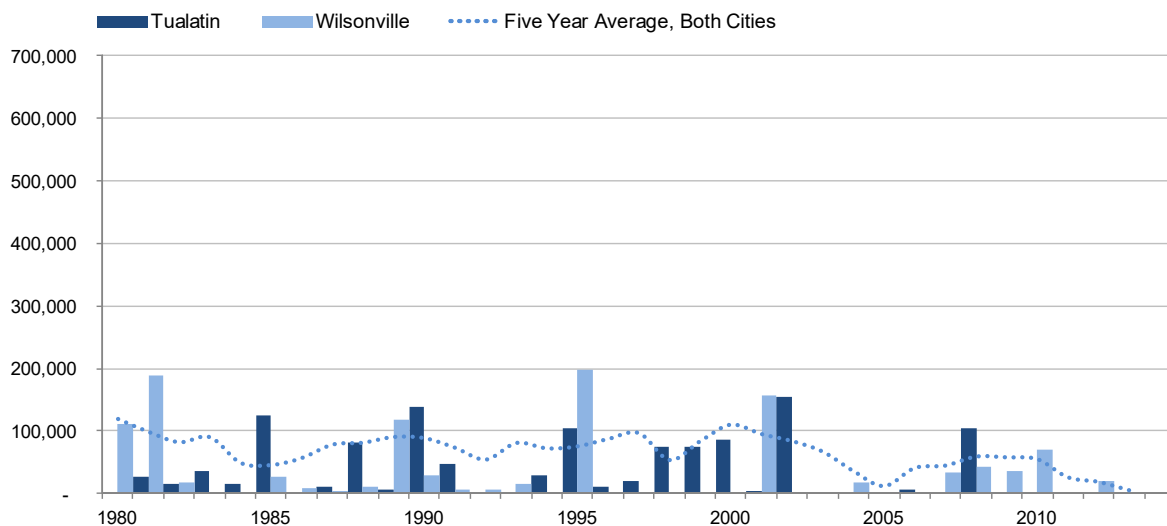


Figure 3. Office Development, Tualatin and Wilsonville, 1980 to 2014



Source, both figures: CoStar, Leland Consulting Group.

The past decade has been a slow period for both industrial and office development. The recession slowed industrial development beginning in 2008, particularly in Wilsonville. The pace of recent industrial development has been about half of development during the 1990s and early 2000s—considered to be a time of robust activity for industrial developers. Office development has also slowed, although this trend began in 2003, before the recession. Office development in the past decade has also taken place at about half the pace of office development in the 1990s.

Clearly, both industrial and office development go through significant peaks and troughs. By focusing on the five-year rolling-average trend line, however, a somewhat more consistent pattern of development can be seen.

Employment Building and Site Attributes

Table 1 below shows some key attributes of industrial and office development in Tualatin and Wilsonville.

- On average, 43.1 acres of industrial land and 13.6 acres of office land per year have been developed in both cities combined. Wilsonville has seen about 25 acres of employment land development per year, 16.3 acres of industrial land, and 8.3 acres of office land, which provides a good benchmark for total demand in Wilsonville, including Basalt Creek, going forward.
- Average industrial building sites (9.1 and 6.5 acres in Tualatin and Wilsonville respectively) tend to be larger than office building sites. Industrial buildings also tend to be larger than office buildings.
- Floor area ratios (FAR) are helpful to understanding the physical form of buildings on their sites. Most industrial buildings have a FAR of 0.2 to 0.4. Most office buildings have FARs between 0.3 and 0.5; however, there are some newer office buildings in Tualatin that feature structured parking and FARs up to 1.0. These FARs are consistent with Metro’s analysis and future projections.

Table 1. Attributes of Industrial and Office Development in Tualatin and Wilsonville

	Industrial			Office		
	Tualatin	Wilsonville	Total	Tualatin	Wilsonville	Total
Total Area (SF)	10,470,000	8,390,000	18,860,000	1,260,000	1,250,000	2,510,000
Av. Annual Development, 1980 - 2014						
Annual Building Development (SF)	186,960	150,980	337,940	34,632	32,985	67,617
Annual Land Development (Acres)	26.8	16.3	43.1	5.3	8.3	13.6
Building Averages, 2000 - 2014						
Average Building Size (SF)	60,224	80,000	-	31,807	35,000	-
Average Site Size (Acres)	9.1	6.5	-	4.2	2.0	-
Typical Floor Area Ratios (FAR)	0.2 to 0.4	0.2 to 0.4	-	0.4 to 1.0	0.3 to 0.5	-

Source: CoStar, Leland Consulting Group. SF: Square feet; FAR: Floor area ratio, the ratio of a building’s size in square feet (or gross building area) to the size of the piece of land upon which it is built.

Note that, while the averages shown here are useful for high-level planning purposes, both industrial and office buildings vary considerably in size, scale, and purpose. For example, the industrial building category includes flex buildings, which can often be divided into 5,000 square foot tenant spaces and feature significant amounts of office and showroom space. The industrial category also includes

distribution and warehouse buildings, which can be hundreds of thousands of square feet in size. Sample industrial and office buildings are pictured below in Figure 4 and Figure 5.

Figure 4. Typical Industrial Buildings: Office/Distribution and Flex

The first building pictured below is located in the Wilsonville Business Center west of I-5 and contains a mix of office space (left foreground) and warehouse/distribution space, where freight trucks are parked. The second building pictured below is a typical flex industrial building located in the Tualatin Industrial Center, which features high ceiling heights, freight loading, and small, flexible spaces that can serve as a combination of office, showroom, and/or industrial.



Figure 5. Headquarters Office Building (Mentor Graphics)

The Mentor Graphics building is located east of I-5 between the Elligsen Road and Wilsonville Road interchanges. Despite its size and height, the FAR of the building is similar to other buildings in the area because of its extensive campus, landscaped areas, and surface parking.



Employment Outlook

Table 2 below shows Metro’s gamma employment forecast for the 2010 to 2035 time period. Key aspects of this forecast that are relevant to Basalt Creek are:

- Employment in the Basalt Creek market area is expected to grow at 2.3 percent annually between 2010 and 2035, about 40 percent faster than the three-county metro area rate (1.7 percent). Employment in all three cities within the market area is expected to grow relatively rapidly—at a higher annual rate than their populations, and a higher rate than regional population growth (see Table 6 for population growth projections).
- Tualatin and Wilsonville are expected add 12,267 and 10,346 jobs respectively over the 25-year Metro forecast period. In total, the market area is expected to add 36,786 jobs, an increase of 78 percent over the 47,005 jobs currently in the market area.
- This significant growth can be expected to drive consistent demand for employment land and buildings, including industrial, office, and commercial space, both in Basalt Creek and in other employment areas in the market area over the 2010 to 2035 time period.

Table 2. Metro Employment Forecast, 2010 to 2035

Jurisdiction	Employment			
	2010	2035	Change	CAGR
City of Tualatin	22,972	35,239	12,267	1.7%
City of Wilsonville	17,073	27,419	10,346	1.9%
City of Sherwood	4,216	9,252	5,036	3.2%
Basalt Creek Market Area	47,005	83,791	36,786	2.3%
Clackamas County	137,946	210,444	72,498	1.7%
Multnomah County	419,164	597,331	178,167	1.4%
Washington County	232,019	382,812	150,793	2.0%
Three County Total	789,129	1,190,587	401,458	1.7%

Source: MetroScope Gamma Forecasts, Published Feb 07, 2013, <http://www.oregonmetro.gov/regional-2035-forecast-distribution>.

Figure 6. Projected Employment Growth (2010-2035)

Source: Metro Gamma Forecast; Leland Consulting Group.

Table 3 shows Metro’s analysis of past and future employment growth in the Metropolitan Statistical Area (MSA), completed for the Draft 2014 Urban Growth Report. This data shows employment changes for a larger area—the seven-county MSA—than the three-county data above.

Table 3. Employment: Past Growth and Future Projections, Seven-County MSA

Time Period	Annual Growth Rate
1960 - 1980	3.74%
1980 - 2000	2.60%
2000 - 2020	1.17%
2020 - 2040	1.24%

Source: Metro, *Mid Range projection, Draft 2014 Urban Growth Report, Appendix 1a.*

A key take away from this data is that while employment in the region will continue to grow, it will grow more slowly during the build out period for Basalt Creek (likely largely during the 2020 to 2040 time period) than during the most rapid periods of employment growth (1960 to 2000). Based on this projection and conversations with area brokers, LCG projects that employment land absorption during Basalt Creek’s build out period should be faster than 2000 to 2014 (which includes the recession and its aftermath), but slower than during the rapid growth period of 1980 to 2000, and the 1990s in particular.

Industrial Development Outlook

Private sector analysis of the demand for industrial space is consistent with Metro’s projections in that most observers expect a resurgence of demand as the economy recovers from the recession. Nationwide, industrial development is anticipated to accelerate due to increased long-term demand for industrial properties from firms whose businesses involve research and development, advanced manufacturing, general manufacturing, and warehousing. While private sector development forecasts are often focused on a short to medium-term (e.g., one to five years) time frame, rather than the long-term (20-year) time frame for this plan, the dynamics described below are significant and are supportive of industrial development at Basalt Creek. According to the Urban Land Institute’s 2014 *Emerging Trends in Real Estate*:

Industrial. Industrial real estate will get a boost in 2014 as the U.S. economy continues to improve and as retailers and manufacturers have made the shortening of the supply chain their top priority for the foreseeable future. Warehousing stands out as the strongest prospect in both investment and development in 2014—not only among industrial subsectors and niche markets, but across all types of subsectors and niche markets... Warehousing is a clear favorite when survey respondents recommended action... The strength of warehousing reflects the expanding influence of e-commerce distribution networks...

The Return of Manufacturing. “Manufacturing is coming back to the U.S., and it’s coming back faster than we thought. Back in 2011, no one thought we would see anything until 2015. Now, we are seeing dozens of companies moving back to the U.S. because the economics are shifting,” says a labor economist. “A key driver of this trend is that labor costs in China are rising, with wages increasing by about 15 to 20 percent a year and the steady appreciation of the Chinese yuan against the dollar. Manufacturers are seeing very long supply chains, and there are increasing concerns about intellectual property.”

Portland's industrial market is heating up in response to these trends. In late 2013 and early 2014, a number of new industrial projects have been announced totaling about 1.5 million square feet; one is the 800,000-square-foot PDX Logistics Center (18.3-acre building) to be built near PDX Airport. A speculative investment of this magnitude shows significant confidence in the Portland market. Eight additional major projects are reportedly in the planning pipeline. Industrial brokers at Kidder Matthews report an "industrial land shortage" and that the "greatest demand is seen in the I-5 corridor," a submarket that includes Wilsonville and Tualatin.

Office Development Outlook

Office development nationally and regionally is not expected to bounce back with the same resiliency as industrial space. Office development in the short and long term faces several challenges. In the short term, the Portland region's employment levels have only just recovered this year to their 2008 pre-recession levels. While office vacancies are far lower than they were several years ago, there is not yet pressure for new development. As Table 4 shows, the region is expected to add just 288,000 square feet of office in 2014, or 0.6 percent of the total regional inventory of nearly 47 million square feet. Tualatin's current vacancy rate of 20.5 percent suggests a soft market, though that space will be occupied in the long term.

Table 4. Current Office Market Summary, Portland Metro Region

Market	Existing Inventory		Vacancy %	YTD Net Absorption	Under Const. & Complete YTD	Class A Rates
	# Blds	Total RBA				
Portland CBD	374	26,309,983	10.0%	(36,157)	288,000	\$25.58
Lake Oswego/West Linn	142	1,144,080	8.5%	13,170	0	\$25.50
North Beaverton	151	3,246,113	6.7%	37,420	0	\$26.33
Sunset Corridor/Hillsboro	359	10,374,721	6.2%	111,442	0	\$21.53
Tigard	226	3,313,116	10.4%	35,859	0	\$24.27
Tualatin	68	1,263,266	20.5%	10,099	0	\$22.28
Wilsonville	59	1,252,446	7.1%	9,476	0	\$20.50
Totals	1,379	46,903,725		181,309	288,000	

Source: CoStar, Leland Consulting Group.

Of more concern for new office development at Basalt Creek are several long-term trends. Companies are becoming much more efficient than ever before with their office space, and thus, requiring less of it. Greater efficiencies are being achieved through smaller dedicated desk spaces; employees who work out of the office on the road, from home, or other locations; and less storage for fewer paper files. In addition, companies have gotten more reluctant to take on long-term obligations such as expanded leases. These trends are expected to continue, and in some cases accelerate in the future, and therefore, demand for office space as a function of total employment is likely to be less in the future.

In conclusion, in the near and potentially long term, office development is likely to be slower than industrial development throughout the Portland region. As shown in Figure 2 and 4, much more industrial development than office development has taken place in Tualatin and Wilsonville in recent decades, and LCG expects this trend to continue at Basalt Creek.

Tualatin and Wilsonville's Economic Positioning and Goals

The Cities of Tualatin and Wilsonville are proactively pursuing economic development in order to provide high paying jobs for their residents, strengthen their tax bases, offer quality public services, and enable general prosperity in the communities. The two Cities' main economic development plans relevant to Basalt Creek are shown below.

Table 5. Relevant Economic Development Plans

Tualatin	Wilsonville
<ul style="list-style-type: none"> Economic Development Strategic Plan (2014) Industry Cluster Analysis (2014) Southwest Tualatin Concept Plan (2010) 	<ul style="list-style-type: none"> Economic Opportunities Analysis (EOA) Update (Final Draft, 2012) Coffee Creek Master Plan (2007)

Target Industry Clusters

Tualatin and Wilsonville have both identified a series of targeted industry clusters. According to Tualatin's Industry Cluster Analysis, a cluster is an agglomeration of similar and related businesses and industries that are mutually supportive, regionally competitive, attract capital investment, encourage entrepreneurship, and create jobs. For example, 57 percent of Tualatin's jobs fall within its five key industry clusters, which also provide wages that are on average 70 percent (\$35,000) higher than those in all other industries.

Clusters reflect the community's strengths and competitive advantages, suggest which sectors of the economy are most likely to generate jobs in the future, and provide policy makers with guidance about the types of land, buildings, infrastructure improvements, and other actions needed to grow jobs in the future. (Wilsonville's EOA uses the term industry "sectors." The terms cluster and sector are used interchangeably here.)

Both Tualatin and Wilsonville have determined that they excel in the following three industry clusters. The economic figures included below are drawn from the Cities' economic development plans.

- Advanced Manufacturing and Related.** This cluster is a significant driver of both cities' economies. It is Tualatin's largest cluster, accounting for 22 percent of jobs in the city. It accounts for a significant portion of Wilsonville's economy; computer and electronic product manufacturing was Wilsonville's largest industry sector as of 2012, and includes several of the city's largest employers such as Xerox, TE Connectivity, and Rockwell Collins.

The Oregon Institute of Technology (OIT), now educating students in the engineering, technology, management, and health sciences fields from its Wilsonville campus, is an important anchor institution for the southwest metro economy. The Cities are looking for ways to capitalize on OIT's presence and to strengthen partnerships between the school and private business.

Growth in this cluster will result in ongoing demand for industrial land and buildings in Basalt Creek and other areas. Freeway access, freight mobility, and access to a skilled workforce will be important to this cluster's ongoing success.

- **Corporate and Professional Services.** This cluster accounts for 12 percent of Tualatin's jobs, and was the second largest industry sector in Wilsonville as of 2012. Major employers include Portland General Electric and Express Employment Professionals in Tualatin, and Mentor Graphics in Wilsonville. Growth in this cluster will result in ongoing demand for office land and buildings in Basalt Creek and other areas. A variety of locational factors tend to be important to corporate and professional service firms, including skilled workforce, available land or office space, transportation connections, and nearby restaurants and commercial services.
- **Health Care and Medical Related.** This cluster is important in both cities: it is the third largest in Tualatin and fourth largest in Wilsonville. Tualatin's health care cluster is anchored by Legacy Meridian Park Medical Center, among Tualatin's largest employers, and also includes associated industries such as clinics, laboratories, physician offices, and assisted living centers. Wilsonville's largest health care employers as of completion of the EOA were Infinity Rehab and Avamere, both ambulatory (outpatient) service providers. Wages in this cluster are well above average.

Because of the diversity of health care businesses, firms in this cluster can operate in health care-specific zones (such as Tualatin's Medical Commercial zone), or general employment zones (such as Wilsonville's Planned Development Industrial zone). In some cases, health care firms that serve smaller, more localized populations can locate in retail/commercial zones.

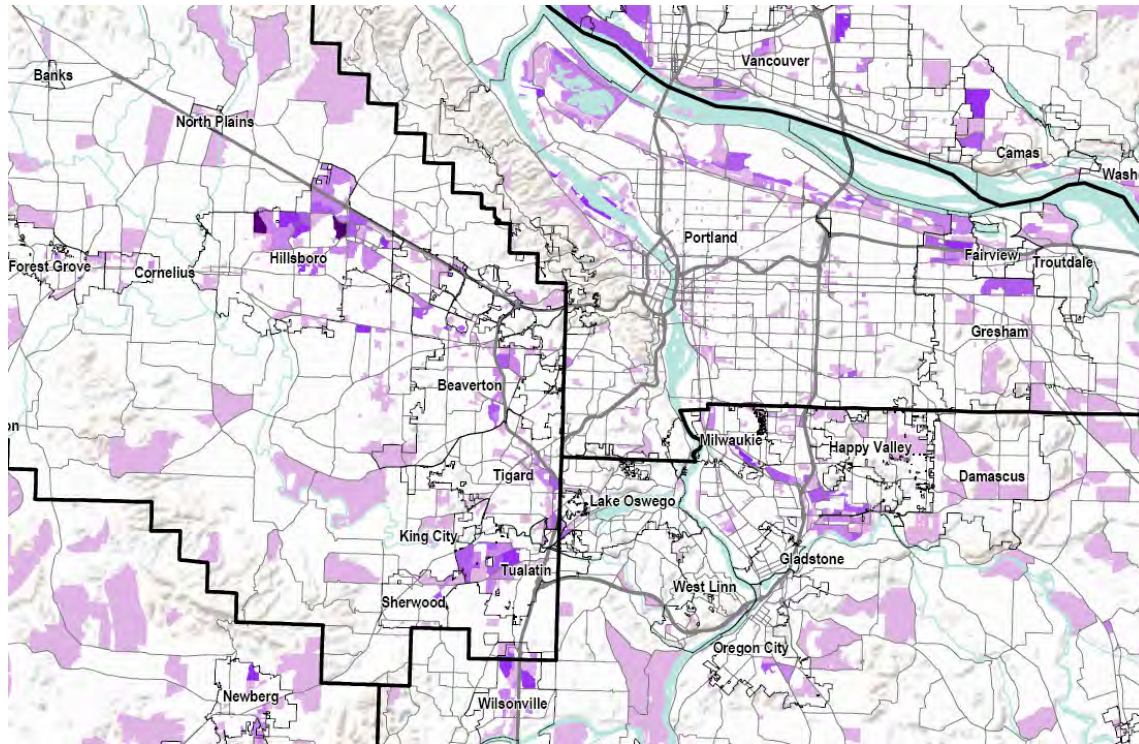
In addition to the three clusters described above that have been identified as targets for both cities, Tualatin and Wilsonville have also identified these industry clusters:

- **Other Industrial Clusters.** Both Cities have identified additional industrial target clusters that could locate in Basalt Creek. Tualatin has identified two other industry clusters likely to generate demand for industrial land and buildings: Food Processing and Distribution, and Wood, Paper, Printing, and Related. Wilsonville identified a number of other industrial business types: Light Manufacturing and Warehouse/Showroom Operations; Specialty Contractors and Construction Firms; Sustainable Product Manufacturing and Distribution; Miscellaneous Manufacturing, and Wholesale Trade.

Growth in these clusters will result in ongoing demand for industrial land and buildings in Basalt Creek and other areas. Freeway access, freight mobility, and access to a skilled workforce will be important to these clusters' ongoing success.

- **Other Professional and Commercial Services.** Wilsonville's EOA also identifies Creative Services (such as transportation logistics, legal services, management consulting, and accounting) as a target cluster. Similar to Corporate and Professional Services, growth in this cluster should result in demand for office land and buildings in Basalt Creek and other areas.
- **Other Clusters.** Some clusters may or may not be a good fit for inclusion at Basalt Creek, depending on the Concept Plan. An example is Tourism and Recreation, which was identified by Wilsonville.

Figure 7. Number of Manufacturing Employees



Source: Institute for Metropolitan Studies, Portland State University.

Figure 8. Lam Research Facility, Tualatin

The semiconductor equipment manufacturer is the city's largest private employer, and a leader in the city's advanced manufacturing cluster.



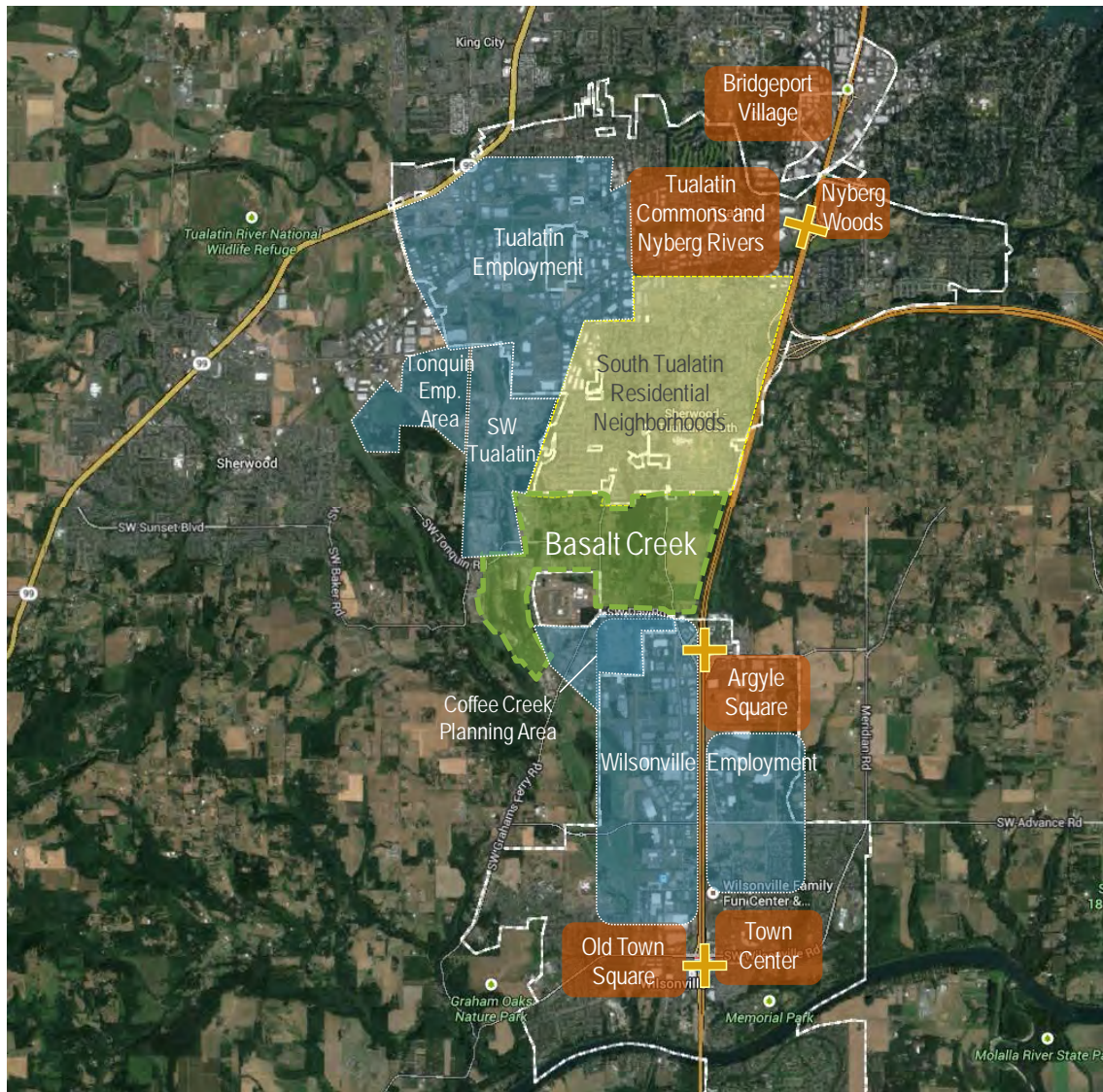
Photo credit: Tualatin Chamber.

Subregional Context

Figure 9 below shows the Basalt Creek study area and the key employment, commercial, and residential areas nearby, along with three I-5 freeway interchanges. This map shows that Basalt Creek is located at the heart of a large, contiguous series of employment areas, which will provide Tualatin and Wilsonville with the land area to build on and expand their advanced manufacturing, corporate services, and other key industry clusters.

Transportation is fundamentally important to these employment areas, and transportation connectivity has the potential to make a whole that is greater than the sum of its parts by enabling firms to trade goods and services easily. I-5 is the most important single transportation corridor. The 124th Avenue Extension and East-West Connector will also be very important in knitting the employment areas together. This large agglomeration of employment areas creates momentum, and will also be a source of competition for Basalt Creek.

Figure 9. Basalt Creek Geographic Context



Source: Leland Consulting Group. **Note: Employment, commercial, and residential area boundaries are approximate.**

Established Employment Areas. The Tualatin and Wilsonville employment areas are developed areas that have capacity to continue to add businesses and jobs. To the west of I-5, Wilsonville's employment area tends to contain more industrial, manufacturing, distribution, and flex businesses and buildings; to the east of I-5, a larger share of businesses are office-based professional service firms, such as Mentor Graphics and Xerox Corporation. However, the zoning is the same (Planned Development Industrial) throughout the entire Wilsonville employment area.

The City of Wilsonville is currently at work developing a Light Industrial Form Based Code (FBC) intended to streamline approval of light industrial and office employment, while at the same time ensuring high-quality urban design. The FBC will apply to the Coffee Creek industrial area, but could also apply to Basalt Creek Creek and other areas.

Planned Employment Areas. Southwest Tualatin, Tonquin, and Coffee Creek are planned employment areas located within the UGB that have yet to be served by infrastructure or see new private development. Annexation and development in the areas are property owner initiated.

- The Southwest Tualatin Concept Plan Area is approximately 614 gross acres and is planned for a mix of light industrial, high tech, and campus employment users. Most of the area remains an active quarry; the City expects this use to continue for an indeterminate period.
- The Coffee Creek industrial area is a 225-gross-acre area that was master planned by the City of Wilsonville in 2007. It is adjacent to Basalt Creek on the south side of Day Road. In addition to industrial development throughout the area, the City's vision includes the development of an office corridor on Day Road (the dividing line between the Coffee Creek and Basalt Creek areas). No development or annexation has taken place in Coffee Creek since the adoption of the master plan; land assemblage challenges, and lack of City services and financing plan to build those services are the primary obstacles to development here.
- The Tonquin employment area is a 300-gross-acre area located in the City of Sherwood. It is planned for light industrial development with a small amount of ancillary retail/commercial services.

Employment Strengths and Challenges

Basalt Creek's primary strengths/competitive advantages and challenges vis-à-vis the industrial and office development are as follows:

Strengths and Competitive Advantages

- Tualatin and Wilsonville's established and successful industry clusters in advanced manufacturing, professional services, and a variety of other industrial and office-based employment categories. Large contiguous cluster of existing and planned employment areas.
- Long-term growth projections for employment and population in the southwest Portland metro area.
- Excellent access to I-5, as well as I-205 and Highway 217. Additional transportation strengths include existing and planned arterial roads, and local and regional transit service provided by TriMet, WES Commuter Rail, and SMART.
- Educated workforce.

- Market success of recent industrial, office, and retail developments.

Challenges

- Vision and regulation: This Concept Plan, and subsequent Comprehensive Plan and zoning amendments, need to be in place prior to development.
- Planning, financing, and construction of new infrastructure.
- Lot sizes and property aggregation. There is a mix of large and small lots throughout Basalt Creek. The time and cost required to secure properties from multiple parties in order to aggregate developable industrial or office properties of adequate size can be a significant deterrent to developers.
- Natural features including wetlands and slopes. Basalt Creek and its surrounding slopes and wetland areas run north-south through the study area and divide the area into east and west sections.
- The market for new office development continues to be slow. However, the study area will not be ready for private development for several years, which may allow enough time for this market to recover.

Absorption and Build Out

Employment development—including industrial and office land development—is expected to take place in Basalt Creek at a pace of about eight to 10 buildable acres annually, assuming zoning is in place and urban infrastructure (roads, sanitary sewer, and water) are available. The pace of development will depend on economic conditions at the time of development, the location of transportation and other improvements, and the number of other nearby employment areas also available for development, among other factors. This represents a 30 to 40 percent capture rate of Wilsonville’s annual average of 25 acres of employment land development (see Table 1) and is reasonable given that employment development can also be expected to take place at Coffee Creek and “infill” within existing urbanized parts of the city. The projection is also consistent with the estimates provided by developers interviewed for this project. If development at Coffee Creek and on infill sites is highly constrained, then development at Basalt Creek could accelerate.

Buildings in Basalt Creek are expected to range widely in terms of site and building sizes. However, the FARs for most buildings should fall between 0.2 and 0.4 FARs and be surface parked. Higher density buildings with some structured parking may be feasible at special locations, or in later years after the market has matured.

Housing Market Analysis

Demographic Context

Table 6 summarizes Metro's 2010 to 2035 gamma projections of household growth for the cities of Tualatin and Wilsonville, and other geographies relevant to Basalt Creek. Some key take aways are:

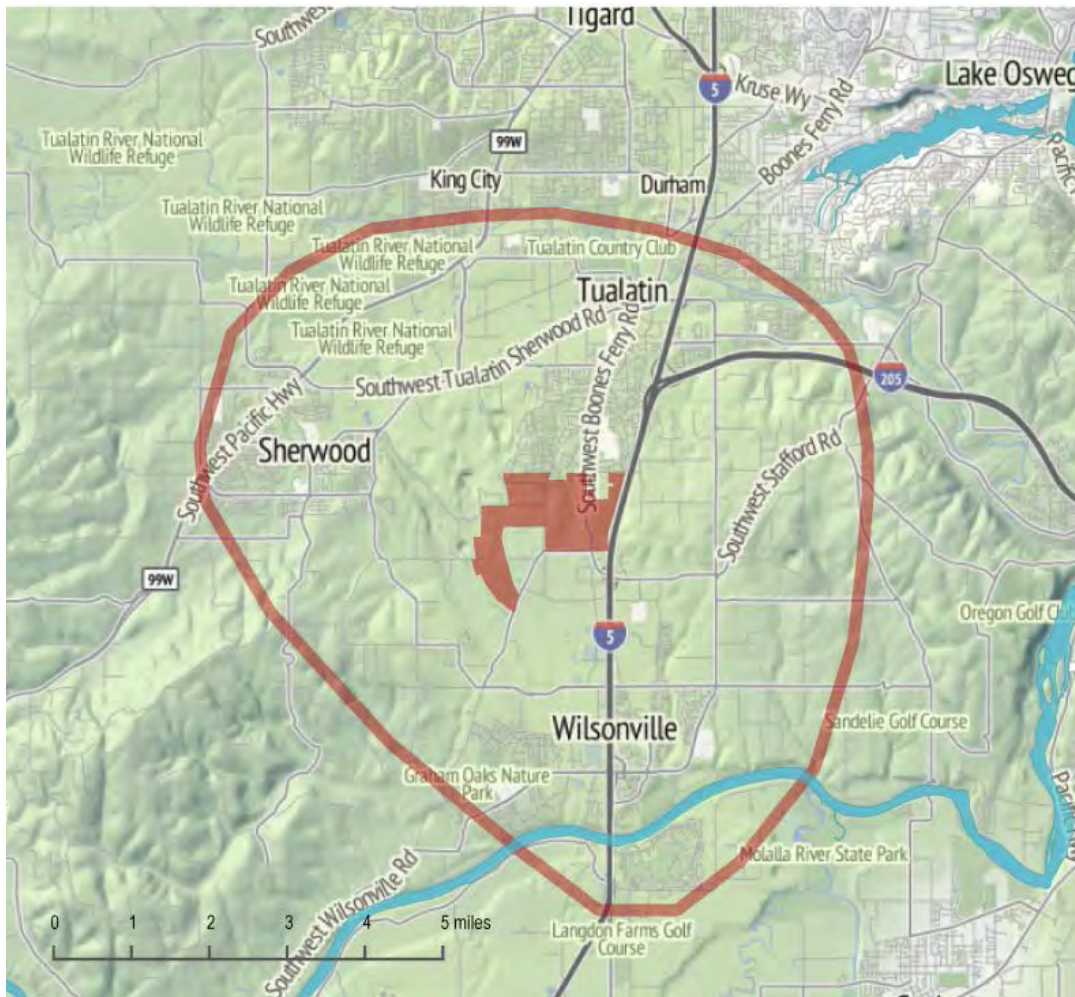
- The number of households in the three-county Metro area is expected to grow relatively quickly, at a 1.5 percent Compound Annual Growth Rate (CAGR), between 2010 and 2035, and thus add more than 11,000 households per year.
- Metro forecasts that Tualatin and Wilsonville will grow throughout the forecast period, with the number of households in Wilsonville projected to grow at a faster rate (1.5 percent) than Tualatin (0.4 percent). According to Metro, in 2010, Tualatin's average household size (2.61 persons) was slightly larger than Wilsonville's average (2.48 persons). Metro projects this difference will essentially remain through 2035, though Tualatin's household size will decrease somewhat (to 2.55 persons).
- The Basalt Creek market area (see Figure 10) was also defined in order to evaluate demographic trends that cross city and county boundaries. The market area includes the cities of Tualatin, Wilsonville, and Sherwood, as well as some surrounding areas. This market area is the area from which new residents of Basalt Creek are most likely to come, based on Leland Consulting Group's market research.
- The consistent projected household growth in the region, market area, and subject cities suggest that there will be demand for new homes within the market area generally and Basalt Creek specifically through 2035, assuming that Basalt Creek is effectively planned and made available for development.

Table 6. Demographic Forecasts for Market Area and and Metro Region

Jurisdiction	Households			
	2010	2035	Change	CAGR
City of Tualatin	10,000	11,170	1,170	0.4%
City of Wilsonville	7,859	11,508	3,649	1.5%
City of Sherwood	6,316	7,269	953	0.6%
Basalt Creek Market Area	27,825	38,704	10,879	1.3%
Clackamas County	146,324	208,437	62,113	1.4%
Multnomah County	304,649	442,546	137,897	1.5%
Washington County	202,647	289,592	86,945	1.4%
Three County Total	653,620	940,575	286,955	1.5%

Source: MetroScope Gamma Forecasts, Published Feb 07, 2013, <http://www.oregonmetro.gov/regional-2035-forecast-distribution>.

Figure 10. Basalt Creek Market Area



Source: Fregonese Associates, Leland Consulting Group.

Table 7 below and Table 8 on the following page provide additional perspective on the demographics of the subject cities when compared to the Portland MSA.

The City of Tualatin, when compared to the Portland MSA, has a higher percentage of family households (two or more related people), larger average households, higher household incomes, and higher capita incomes. A larger share of residents have college degrees (43 percent) and are employed in white collar jobs (67.4 percent) compared to the region.

Wilsonville, when compared to the Portland MSA, has a higher percentage of family households and smaller households. This is likely because the city has a higher share of young households (in the 25 to 34 age category) and seniors, Baby Boomers, and retirees (65+ category). Each of these age groups has different housing preferences. Like Tualatin, Wilsonville has a larger share of residents with college degrees (43 percent) and white collar jobs (67.4 percent) than the region. (The data below shows information about *jobs held by residents of the given geographical areas*, not the jobs within those areas.)

Table 7. Demographic Summary

Key: Low High 2014 data except where noted.

Demographic Attribute	City of Tualatin	City of Wilsonville	Basalt Creek Market Area	Portland MSA
Comparison to Portland MSA:	More families Larger HHs Higher HH Incomes Higher PC Incomes More college degrees More white collar emp.	Fewer families Smaller HHs More Gen Y More Boomers More low-income HHs More college degrees More white collar emp.	More families Larger HHs Higher HH incomes Higher PC incomes More college degrees More white collar emp.	
Population	26,520	21,235	73,786	2,296,285
Number of Households	10,170	8,638	28,121	896,982
Family Households (2010 Census)	68%	59%	68%	64%
Household Size (Average)	2.60	2.32	2.57	2.52
Household by Size (2010 Census)				
1 and 2 person households	57%	68%	58%	61%
3 and 4 person households	33%	25%	32%	29%
5 + person households	10%	7%	10%	10%
Median Household Income	\$64,324	\$59,812	\$70,256	\$57,441
Per Capita Income	\$32,672	\$31,995	\$33,336	\$30,135
Population By Age				
0 to 24	35%	31%	34%	32%
25 - 34	14%	16%	13%	15%
35 - 44	15%	14%	15%	14%
45 to 54	14%	13%	14%	14%
55 to 64	13%	11%	12%	13%
65 +	9%	15%	11%	13%
Median Age	35.7	37.0	36.6	37.5

Source: ESRI Business Analyst, Leland Consulting Group.

The Basalt Creek market area is similar to Tualatin in many ways. When compared to the Portland MSA, the market area has a higher percentage of family households, larger households, higher household and per capita incomes, more residents with college degrees, and more residents who work in white collar jobs.

Table 8. Demographic Summary (Continued)

Key: Low High 2014 data except where noted.

Demographic Attribute	City of Tualatin	City of Wilsonville	SW Metro Market Area	Portland MSA
Education and Employment				
Less than High School	9.7%	8.0%	8.0%	9.4%
High School or Equivalent	16.5%	20.4%	18.2%	22.1%
Associate's or some college	31.5%	32.3%	32.5%	34.2%
Bachelor's or Advanced Degree	42.3%	39.3%	41.3%	34.3%
Occupation				
"White Collar"	67.5%	70.1%	69.3%	63.1%
"Blue Collar"	11.3%	14.1%	13.5%	19.5%
Housing				
Median Home Value	\$331,190	\$349,927	\$337,289	\$275,516
Housing Tenure				
Owner Occupied Housing Units	51.9%	43.4%	55.0%	56.2%
Renter Occupied Housing Units	42.6%	50.5%	39.8%	37.7%

Source: ESRI, Leland Consulting Group. 2013 data except where noted.

In general, these demographics are favorable to housing development in Basalt Creek; they also reflect the types of residents most likely to locate in Basalt Creek.

Finally, the South Tualatin residential neighborhoods immediately to the north of Basalt Creek reflect many of the demographic attributes typical of Tualatin's population. The neighborhoods—including roads, street trees, parks, and schools—create a positive environment for residential development within Basalt Creek, particularly along the northern edge. It should be noted, however, that Basalt Creek is located in the Sherwood School District, not the Tigard-Tualatin School District, and therefore, school age children in Basalt Creek would need to travel west to Sherwood, rather than north, for classes.

Regional and National Demographic Trends Affecting Housing

It is important to note that over the coming decades the metropolitan region's demographics are expected to become more like Wilsonville's demographics today, and somewhat less like Tualatin. Table 9 compares the age group split in the cities of Tualatin and Wilsonville today with Washington County's demographics in 2010 and projected demographics in 2035. The biggest change is that older households are expected to comprise a larger share of the total population, with a smaller share in the 35 to 64 age category. Household sizes are also expected to decrease. Washington County is used here as a proxy for the age groups and household types most likely to live in the Basalt Creek market area in coming years, and because Metro and the State of Oregon both produce long-range estimates for the County.

Table 9. Demographic Comparison of Subject Cities in 2013 and Washington County 2035 Projection

Age Group	City of Tualatin 2013	Washington County 2010	City of Wilsonville 2013	Washington County 2035
0 - 19	35%	34%	31%	30%
20 - 34	15%	15%	17%	14%
35 - 64	42%	40%	38%	38%
65+	8%	10%	15%	19%
Total	100%	100%	100%	100%

Source: Office of Economic Analysis, State of Oregon; ESRI Business Analyst, Leland Consulting Group.

The figures below further emphasize the demographic trend that is referred to as the aging of the Baby Boomers or the “silver tsunami,” which is expected to have a significant impact on housing demand. As Baby Boomers, those born between 1946 and 1964, retire and begin to consider selling their homes and relocating, they are expected to have a major impact on housing markets. Many will be selling medium and large size single-family homes and looking for smaller homes with lower maintenance and upkeep, and the freedom to “lock and leave” home to visit family and friends, and vacation elsewhere. Many will also keep their homes.

Figure 11 highlights several points. The population of all age categories is growing between 2015 and 2035—the period during which Basalt Creek is expected to build out—and there should be demand for housing that meets the needs of all of these groups. The 65+ population will grow the most. The effect of this growth will be even more pronounced since these are relatively small households and thus more housing units are needed to serve the same population. The population of the 35 to 64 age category, and their children, under 19, will also grow significantly. This group is likely to re-occupy many of the single-family homes now in the market area, and new homes in Basalt Creek. The size of the 20 to 34 age group is not expected to increase much. This is because Generation Y / Millennials, now in their 20s and early 30s, is a large age cohort, and the age cohort behind them is expected to be smaller. Generation Y is driving the apartment boom now taking place in urban and mixed-use areas throughout the metro region.

Figure 11. Net Population Change by Age Group, 2015 to 2035, Washington County

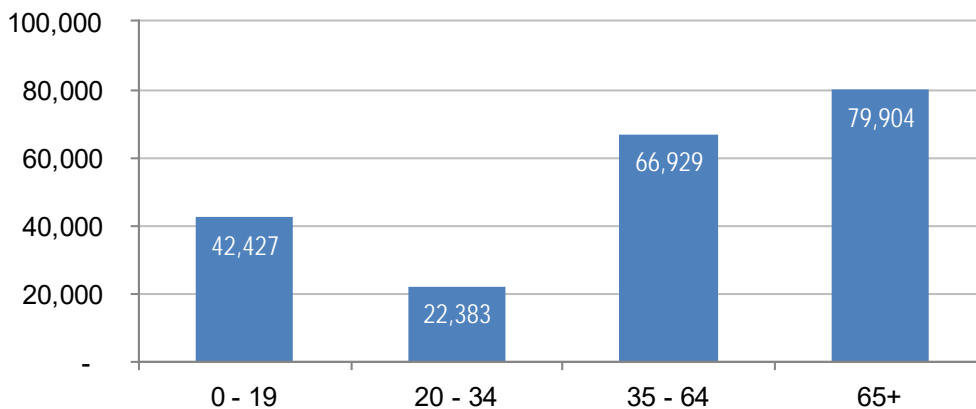
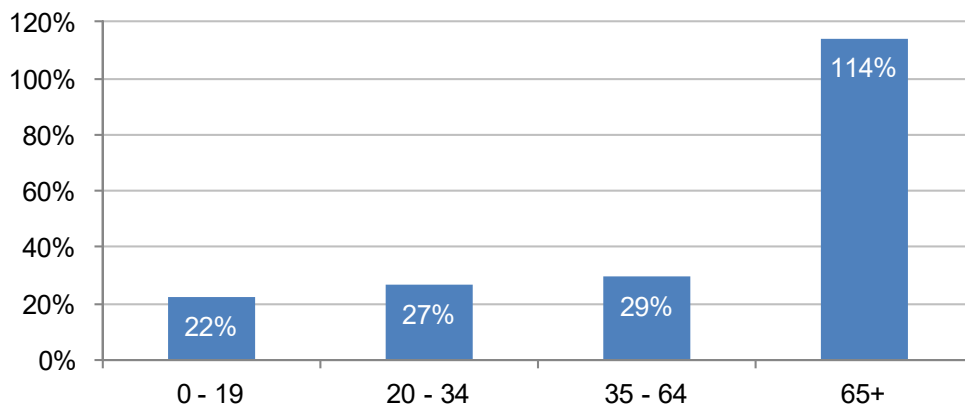


Figure 12. Percent Population Increase by Age Group, 2015 to 2035, Washington County, Oregon



Source: Office of Economic Analysis, State of Oregon; Leland Consulting Group.

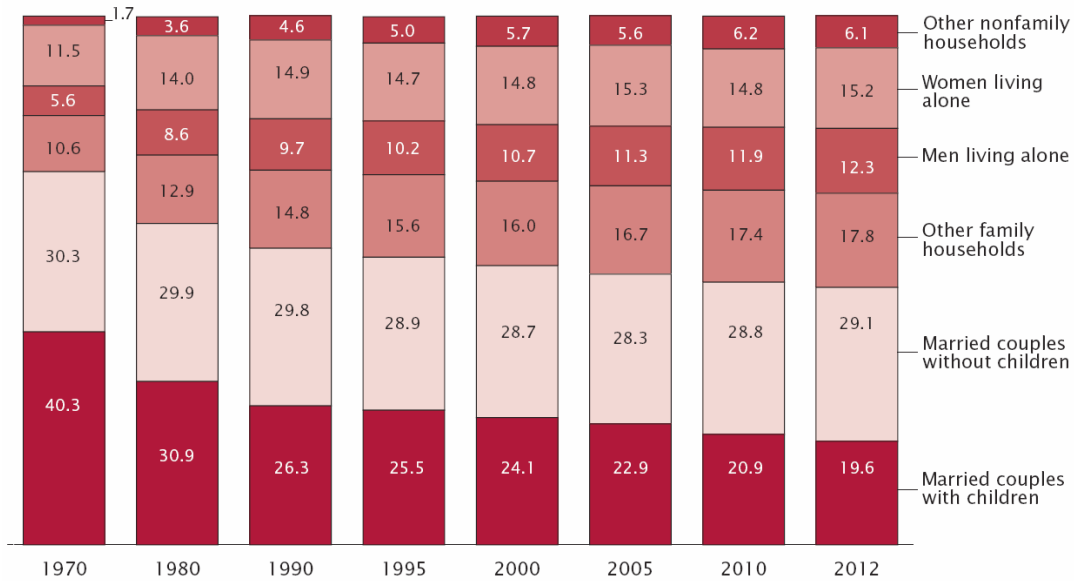
Figure 12 shows that, as a percentage of the current population, the growth in the 65+ age group will be far greater than growth in the other age groups. While the numerical increase (shown in Figure 11) is only slightly greater than the increase in other population groups, the percent increase is far greater. Therefore, our perception of this change, and its impact—on housing, health care, and other parts of society—is likely to be greater.

Some urban planners have identified four demographic groups that have seen the highest rate of growth in recent decades and are expected to continue growing in the coming decades. These are the “four S groups:”

- Seniors
- Singles
- Single-parent households
- Starter households

The growth in these groups nationwide is shown in Figure 13 below, along with the significant decrease in married couples with children as a share of all households. This strongly suggests that future housing demand, and the housing mix in residential neighborhoods, will continue to shift from single-family homes to a broader mix of housing types.

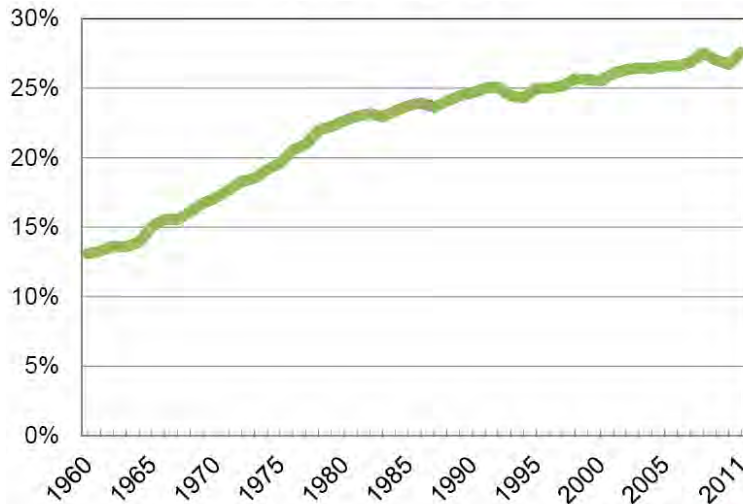
Figure 13. Households by Type, United States



Source: US Census Bureau.

Figure 14 shows the growth in the percent of households nationwide with one person. The share of one-person households doubled between 1960 and 2011. Two-person households are also making up a larger share of the national and regional population. Sixty percent of households in the market area, and 68 percent of Wilsonville’s households, are one or two-person households. These households are the core drivers of demand for housing types such as small lot single-family homes, attached single-family homes (townhouses and duplexes), and multifamily housing (apartments, condominiums, and senior housing).

Figure 14. Percent of Households with One Person, United States



Source: US Census Bureau.

Community Preferences

Of course, real estate and home buying is all about “location, location, location”—in other words, the community, city, or neighborhood in which a given home is located. Since 2004, the National Association of Realtors (NAR) has conducted a nationwide poll to better understand what Americans are looking for in their future homes and communities. This is the most robust, widely-applicable survey instrument available to suggest how housing demand is evolving. One important focus of this poll is testing Americans’ interest in the features of what are variously called “walkable communities,” “complete communities,” or “traditional neighborhood development.” Such communities tend to be pedestrian friendly—parks, schools, shops and businesses are located within walking distance of homes—and contain a range of different housing types where households of different ages and sizes can live (single-family homes, townhouses, and multifamily housing).

Figure 15 shows how people responded when asked, “Do you think there is too much, too little, or the right amount of each of the following in the area close to where you live?” Respondents most often felt that there are too few features such as safe routes for walking and biking, public transit, a diversity of housing, and shops and restaurants within an easy walk.

Figure 15. Which Neighborhood Amenities are in Demand?

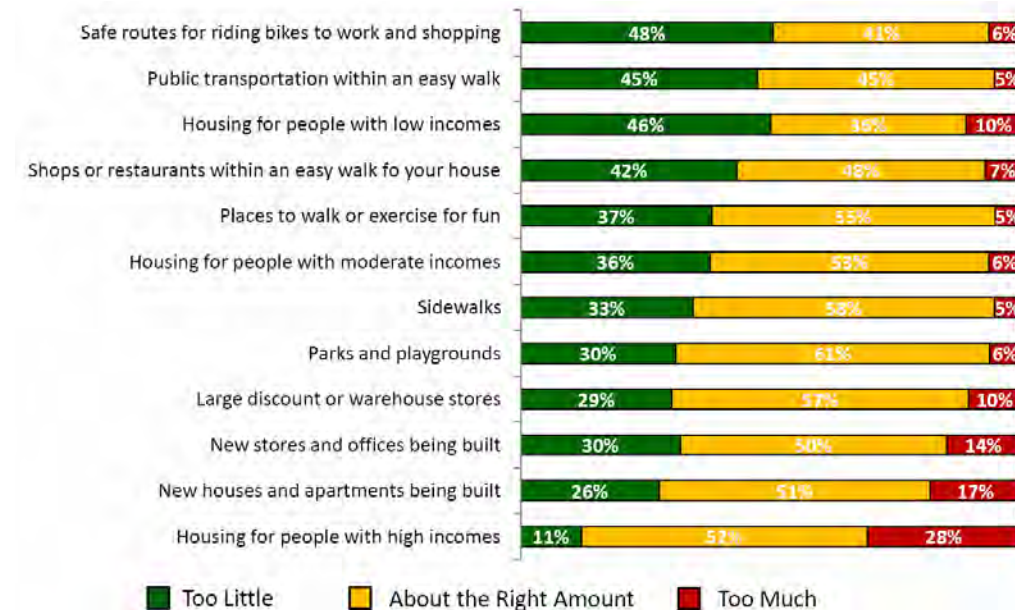


Figure 16 shows how people responded when asked to select the house where they would prefer to live when provided with two community options. By nearly a two-to-one margin, Americans prefer a neighborhood where they can walk to stores and businesses. The preference is significantly more pronounced among those who recently purchased a home or are currently in the market.

Figure 16. Community Preferences



Source, both figures: National Community Preference Survey, National Association of Realtors, October 2013.

Housing Types

Table 10 and the images that follow show categories of housing that are used to estimate demand in the Basalt Creek area. While there are many different categories and subcategories of housing, these five housing types are representative of the vast majority of housing being built now and in the recent past in the Portland metropolitan region, and in the market area in particular. The net density (number of housing units that can be accommodated on buildable land) of various housing types will vary depending on conditions such as slope, wetlands and environmental constraints, property ownership, streetscape features such as sidewalks and parking strips, and other factors; the net densities shown below are based on the average density of numerous built and planned projects.

Table 10. Housing Types

Housing Type	Lot Size			Net Density
	Low	Average	High	
Large Lot Single Family	6,000	7,500	8,500	6.0
Medium Lot Single Family	4,000	5,000	6,000	7.5
Small Lot Single Family	2,500	3,500	4,000	11.0
Attached Single Family: Townhomes and Duplexes	1,000	2,250	2,500	16.0
Multifamily: Apts, Condos, and Senior Housing	NA	NA	NA	25.0

Large Lot Single-Family



Medium Lot Single-Family



Small Lot Single-Family



Single-Family Attached



Multifamily



Recent Housing Development

Table 11 shows the recent residential permitting trends in the cities of Tualatin and Wilsonville, and in Villebois, a master planned community in Wilsonville. Villebois is shown here because: it is the largest master planned community (482 acres) that has been developed recently in the Southwest Metro area; it is a defined area that has been planned to include a range of housing, parks, and commercial services; and due to its success in the marketplace in recent years, housing absorption has been relatively rapid (adjusting for the recession), and many houses sell for a premium when compared to the competition in other areas. Naturally, recent housing built in these areas provides one benchmark from which to estimate future demand.

As Table 11 shows, the housing types that have been permitted and built in these areas correlate closely to the types of people and households who live there; the housing types also likely reflect zoning and other regulatory and market forces. Recent housing permitted in Tualatin is composed largely of large and medium lot single-family housing. No small lot single-family housing (lots smaller than 4,000 square feet) or attached single-family housing has been permitted since 2004. About 20 percent of the recently permitted housing in Tualatin is multifamily—market rate and affordable apartments, condominiums, and senior housing. Very little existing multifamily housing is located in the neighborhoods immediately north of Basalt Creek; most of Tualatin’s multifamily housing is clustered further north near the Tualatin Town Center, Tualatin-Sherwood Road, and Bridgeport Village. The majority were built prior to 2000, although the 367-unit Eddyline at Bridgeport, completed in 2013, is a notable exception. Historically, this multifamily share is relatively typical; multifamily has comprised about 20 percent of total housing in many communities during the past five decades.

Wilsonville’s housing is more diverse and features a significantly higher percentage of small lot single-family and multifamily housing, and much less large and medium lot single-family housing. Again, this is likely to be due to market, demographic, and regulatory reasons. The broad housing mix reflects the presence and growth of the four S groups in Wilsonville: seniors, singles, single-parent households, and starter households. The large multifamily share (66 percent) is partially due to the large number of new 20 and 30-something households recently formed, which will slow in coming years. Villebois’ housing mix is similar to that in Wilsonville overall; however, during the time period surveyed (2000 to 2012) a larger percentage of small lot single-family homes, townhouses and duplexes were built in Villebois, along with a smaller percentage of multifamily housing. Villebois’ developers and NAR surveys show that most American households, Baby Boomers included, prefer single-family homes over multifamily homes, but that they are quite open to smaller lot and homes sizes, especially when the surrounding neighborhood is attractive and walkable.

Table 11. Residential Development in Tualatin and Wilsonville by Housing Type

Housing Type	Tualatin	Wilsonville	Villebois
	Recent Permits	Recent Permits	Recent Permits
Large Lot Single Family	44%	9%	8%
Medium Lot Single Family	36%	10%	8%
Small Lot Single Family	0%	12%	35%
Attached Single Family	0%	2%	6%
Multifamily	20%	66%	43%
Total	100%	100%	100%

Sources: HUD; City of Wilsonville, *New Home Trends*, Leland Consulting Group. Due to data availability, Table 11 shows housing built in Tualatin between 2004 and 2014; and permits issued in Wilsonville between 2000 and 2012.

Basalt Creek Housing Scenarios

Table 12 shows the residential development scenarios developed by Leland Consulting Group for Basalt Creek. Rather than a single recommendation, these scenarios represent a continuum of options for the area. Typically, there is no single residential land use program that is “correct” in the marketplace, especially because of the significant growth in all households projected to occur in the market area. Rather, public policy, community aspirations, the vision of developers and land owners, and the type of multidisciplinary planning now taking place in this Concept Plan can help to shape the type of community expected, and the proper housing markets to pursue. An average net density (across all housing products) for each scenario is shown below. The density of each product type is shown in Table 10 on page 29.

Scenario 1 can be thought of as reflecting the “status quo”—a housing mix similar to what has been built in Tualatin between 2004 and 2014. This is used as a status quo benchmark since Tualatin’s residential neighborhoods are in closest proximity to Basalt Creek. Eighty percent of the homes in this scenario are either large lot or medium lot single-family homes. While these homes are likely to appeal to families with children and many smaller households, this scenario may have an undersupply of small lot and attached single-family homes which will appeal to the growth in 65+ households and one and two-person households. There is less housing diversity in this scenario than other scenarios, and the predominance of large lot homes is likely to make it more challenging to create the type of walkable neighborhoods that 60 percent of those polled by the National Association of Realtors prefer.

Scenario 2 largely relies on the housing preferences expressed in the 2013 Realtors Survey. The one exception is that the 20 percent multifamily share was maintained from Scenario 1 to reflect historical multifamily construction patterns in Tualatin and Wilsonville. This scenario reflects the demand for small lot single-family, attached single-family, and multifamily expressed in the survey, and also greater share of these products in Wilsonville. Nonetheless, 75 percent of the housing remains single-family detached housing. The average density is just under 10 dwelling units per net buildable acre. This scenario contains a broader diversity of housing products and will be more suitable for a walkable community than Scenario 1.

Table 12. Residential Development Scenarios

	Scenario 1	Scenario 2	Scenario 3
Percent of Units by Type			
Large Lot Single Family	44%	10%	5%
Medium Lot Single Family	36%	41%	23%
Small Lot Single Family	0%	24%	43%
Attached Single Family	0%	5%	9%
Multifamily	20%	20%	20%
Total	100%	100%	100%
Net Density	7.7	9.6	10.9

Source: Leland Consulting Group.

Scenario 3 is similar to Scenario 2 but attempts to make several adjustments for changing housing demand. First, more demand is shifted to towards small lot single-family homes in response to stated preferences for such homes when they are located in a neighborhood where businesses and other amenities are located in close walking distance. Second, slightly higher demand for attached housing (duplexes, clustered cottage homes, and townhouses) is assumed because of the significant increase in 65+ aged households, and because of preferences for smaller homes in walkable communities. The multifamily share remains the same. Seventy percent of all housing remains single-family detached housing.

Retail Market Analysis

Retail, commercial services, and commercial office space (e.g., medical and dental offices) may be feasible in Basalt Creek. However, the market for these goods and services cannot be determined without first establishing one or more land use alternatives for employment, housing, and other uses in Basalt Creek. Nearby residents and employees generate the main demand for retail and since the amount and location of these are unknown at this time, the amount and location of retail cannot be determined.

Despite these significant unknowns, the following observations can be made about retail in Basalt Creek.

Market

In addition to new residents and employees that may locate in Basalt Creek, the residents of the Tualatin neighborhoods located immediately to the north are an important source of support for retail. Residents spend more of their retail dollars locally than employees or passersby, and therefore are generally a more important source of demand for retail goods and services. Approximately 4,000 households live in the area between Norwood Road and Tualatin-Sherwood Road. These households already have other places to shop, particularly on and near Tualatin-Sherwood Road. However, based on existing traffic counts and interviews with residents and developers, it is clear that some of these residents are already accustomed to driving south through Basalt Creek to access I-5 or other destinations.

Retailers also look at traffic counts as an important demand indicator, since retail relies on passby traffic for support. Boones Ferry Road carries average daily traffic (ADT) of about 15,000 today according to ESRI Business Analyst, which is high enough to suggest that it will be a good retail location in the future. Traffic counts on Grahams Ferry Road are below 6,000 ADT, and therefore it is likely to be a less desirable retail location. Traffic counts such as these likely reflect trips being made by residents and employees of the Southwest metro area and beyond. The 124th Avenue Extension, now being built to the western edge of the study area, and the planned East-West Connector Road that will run across the study area are also important transportation arterials along which retail will seek to locate. A prime location for retail may be at the intersection of Boones Ferry Road and the East-West Connector Road.

These demand factors should be taken into account along with housing and employment projections for the study area in order to estimate the total amount of supportable retail.

Types of Retail Centers

Retail in Basalt Creek is likely to be built in the formats shown in Table 13: corner store, convenience centers, and/or neighborhood centers. These types of retail generally serve residents and employees within a one-half mile to three-mile radius, and are usually located on arterial roads such as Boones Ferry and Grahams Ferry Roads.

Neighborhood centers are typically anchored by a grocery store and usually include five to 15 smaller in-line tenants which may include pharmacy, food/restaurant, bakery, beauty, technology, financial services, and other tenants. Convenience centers and corner stores are smaller retail nodes that serve their immediate surroundings; they may be anchored by a convenience store (e.g., 7 Eleven) or simply include four to 10 tenants similar to those listed above.

Larger retail formats, such as community centers, regional shopping malls, and lifestyle centers, typically require immediate access to and visibility from a major freeway interchange or other major transportation infrastructure (e.g., high-capacity transit in downtown Portland); a large existing population base; and minimal immediate competition. There is already a series of established major retail clusters located around the freeway interchanges to the north and south. These clusters serve subregional and/or regional shoppers who sometimes travel a half hour or more to shop there. Each has very good access to and visibility from I-5. It is highly unlikely that retail at Basalt Creek could effectively compete against these centers for a share of the regional retail market, because the competition is well established and its freeway access is generally superior.

Table 13. Types of Retail Centers

Retail Center Type	Gross Retail Area	Dwellings Necessary To Support	Average Trade Area	Anchor Tenants
Corner Store	1,500 - 3,000	1,000	Neighborhood	Corner store
Convenience Center	10,000 - 30,000	2,000	1 mile radius	Specialty food or pharmacy
Neighborhood Center	60,000 - 90,000	6 - 8,000	2 mile radius	Supermarket and pharmacy
Community Center	100,000 - 400,000	20,000+	5 mile radius	Junior department store

Sources: Urban Land Institute, Leland Consulting Group.

Timing

“Retail follows rooftops.” In other words, in most cases, residential (and employment) development come first, and then retail follows, simply because retail needs local shoppers in order to survive. Any retail space in Basalt Creek is likely to be built following significant residential and employment development. Details will depend on the concept plan prepared for the study area.



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MEMORANDUM

DATE: June 17, 2016
TO: Basalt Creek Concept Plan Project Team
FROM: Ray Delahanty, AICP
SUBJECT: Basalt Creek Concept Plan Transportation Analysis and Solutions

P#14044-000-005

This memorandum presents the forecast approach, future transportation analysis, and recommended solutions for the Basalt Creek Concept Plan.

FORECASTING

This section documents the assumptions and methodology used for developing traffic forecasts for the Basalt Creek Concept Plan. The process outlined below was used to forecast traffic volumes for the operational analysis of the land use and transportation network alternatives. Key assumptions of the methodology, including regional land use, hour of analysis, and baseline infrastructure, are outlined in the sections that follow. The key assumptions are:

- Use current Gamma model regional land use (household and employment) assumptions
- Use PM peak hour without the “peak-spreading” for the analysis hour
- Assume all Basalt Creek area projects from the Basalt Creek Transportation Refinement Plan (BCTRP) except for the East-West I-5 Overcrossing

Regional Land Use

The Concept Plan analyzed alternatives regarding future development – and therefore trip generation -- in the Basalt Creek/West Railroad area. The land uses assumed for the Concept Plan are key inputs in traffic forecasting and future traffic operations.

Assumptions about regional land use (and intensity of trip generation) beyond the Concept Plan area in 2035 also have a strong impact on forecasting and future operations. While the Basalt Creek Transportation Refinement Plan (BCTRP) used Metro’s 2008 RTP (Regional Transportation Plan) model for forecasting, the Concept Plan analysis uses the Gamma model land use, which was also used for the recently adopted 2014 Regional Transportation Plan (RTP).

Analysis Hour

Metro’s PM peak hour model relies on an underlying demand matrix (trip table) that determines the origins and destinations for all trips within the model. The Gamma model allows for two different potential PM peak hour demand matrices:

- A standard (non-peak-spread) matrix, which reflects the full PM peak hour demand.



- A “Peak-Spread” matrix, which assumes that some potential peak hour trips will move to other hours (e.g., traveling in the 4-5 PM hour rather than the 5-6 PM hour), meaning there is less demand on the system overall.

For this project, the standard (non-peak-spread) matrix was used for forecasting. This approach is also consistent with the Washington County 2035 TSP.

Transportation Projects

Forecasting results depend partly on the projects that are assumed for the Basalt Creek area, as well those assumed for adjacent areas. Since this is a 2035 forecast, Washington County’s latest 2035 Gamma model was used. This model’s transportation network includes projects considered likely to be in place by 2035.

For the Basalt Creek area, we reviewed both the BCTRP and the newly released project list for the Metro 2014 RTP, which lists projects reasonably likely to be funded by 2040. Table 1, below, shows potential capacity-related projects from the RTP list and indicates which projects we are assuming to be in place by 2035.

Table 1: 2014 RTP Projects Assumed for 2035 Forecasting

Project Number	Project and Description	RTP Time Period	In Place by 2035?
10736	124 th Ave. Extension (Tualatin-Sherwood Rd. to Grahams Ferry Rd.) – new two-lane roadway extension	2014-2017	Yes
11243	Day Rd. (Grahams Ferry Rd. to Boones Ferry Rd.) – widen to five lanes	2018-2024	Yes
10853	Kinsman Rd. Extension (Ridder Rd. to Day St.) – new three-lane roadway extension	2018-2024	Yes
10588	Grahams Ferry Rd. (Helenius St. to county line) – widen to three lanes	2025-2032	Yes
10590	Tonquin Rd. (Grahams Ferry Rd. to Oregon St.) – widen to three lanes	2025-2032	Yes
11438	Tonquin Rd./Grahams Ferry Rd. – add traffic signal	2025-2032	Yes
11469	124 th Ave. Extension (Tualatin-Sherwood Rd. to Grahams Ferry Rd.) – widen to five lanes	2025-2032	Yes
11470	East-West Arterial (Grahams Ferry Rd. to Boones Ferry Rd.) – new five-lane roadway extension	2025-2032	Yes
11487	Boones Ferry Rd. (East-West Arterial to Day Rd.) – widen to five lanes	2025-2032	Yes
11488	Boones Ferry Rd./Commerce Circle/95 th Ave. – Intersection improvement and access control	2025-2032	Yes
11489	Boones Ferry Rd./I-5 Southbound – add second southbound right turn lane on ramp	2025-2032	Yes
11490	Day Rd. Overcrossing (Boones Ferry Rd. to Ellgsen Rd.) – new four-lane roadway extension/overcrossing of I-5	2033-2040	Yes
11436	East-West Arterial Overcrossing (Boones Ferry Rd. to east side of I-5) – new four-lane roadway extension/overcrossing of I-5	2033-2040	No

Source: <http://www.oregonmetro.gov/regional-transportation-plan>

Two projects, the Day Road Overcrossing and the East-West Overcrossing, are anticipated to be in place in the 2033-2040 time frame. For our 2035 forecasting effort, all projects in Table 1 are assumed to be in place by 2035 **except for the East-West Arterial Overcrossing**. This project was assumed to be the last one needed for the BCTRP (after the Day Road Overcrossing), and a portion of the project is outside the Urban Growth Boundary.



Therefore we assume the project is not considered likely to be part of the network by 2035, and is not included in the 2035 network assumptions.

Additional Note on Kinsman Road Extension

Subsequent to much of the Concept Plan's baseline forecasting, the City of Wilsonville removed project 10853, the Kinsman Road Extension between Ridder Road and Day Road, from its Transportation System Plan (TSP)'s list of likely funded projects. The City will instead develop Garden Acres Road between Ridder Road and Day Road as a north-south collector roadway in the area. These changes are reflected in the forecasting for the recommended network.

FINDINGS

This section presents results of motor vehicle operations analysis for the Concept Plan's preferred land use alternative and associated trip generation characteristics. Two roadway network options were analyzed and compared to a previous network alternative.

Roadway Network

The planned roadway network includes the facilities shown in Table 1, except for the East-West Arterial Overcrossing and the Kinsman Road Extension. Previous Concept Plan network alternatives included a new collector roadway aligned to the north of the Kinsman Road Extension. This collector roadway connected from SW Day Road to SW Tonquin Loop Road, parallel to SW Grahams Ferry Road. This roadway was referred to as North Kinsman Extension, and was intended to create a full collector connection from SW Ridder Road to SW Tonquin Loop Road. Subsequently, SW Kinsman Road between SW Ridder Road and SW Day Road was dropped from the Wilsonville TSP's list of likely funded projects, making the North Kinsman Extension a less useful collector-level connection.

The roadway network also includes local streets needed to provide access and circulation to existing development and developable parcels. The planned network is shown in the figures on the following page. Two options were analyzed to address the North Kinsman extension and compare to the previous analysis, which assumed SW Kinsman Road as a collector from SW Ridder Road to SW Tonquin Loop Road (see Figure 1):

- **North Kinsman as Local Connection.** This option retains North Kinsman as a facility connecting SW Tonquin Loop Road to SW Day Road, but classifies it as a local street. This means the SW Kinsman Road/SW Day Road intersection is stop-controlled, and not signalized as it was under the BCTRP. This option is shown in Figure 2.
- **North Kinsman without Grade-Separated Crossing of Basalt Creek Parkway.** This option retains parts of the North Kinsman facility in order to provide access and circulation, but does not provide a complete north-south connection with grade separation across the Basalt Creek Parkway. This option is shown in Figure 3.

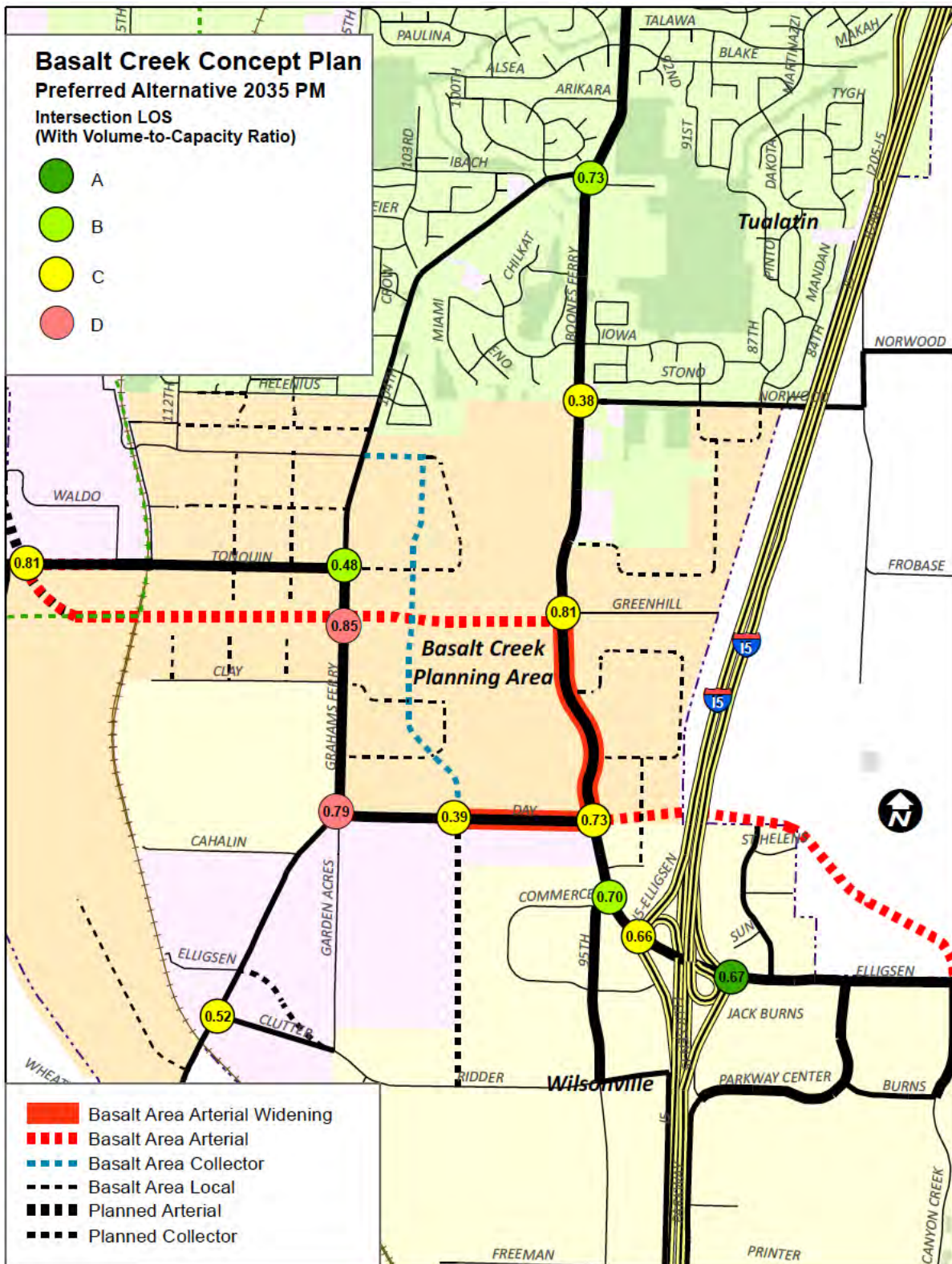


Figure 1: Concept Plan Network with Full Kinsman Road Extension

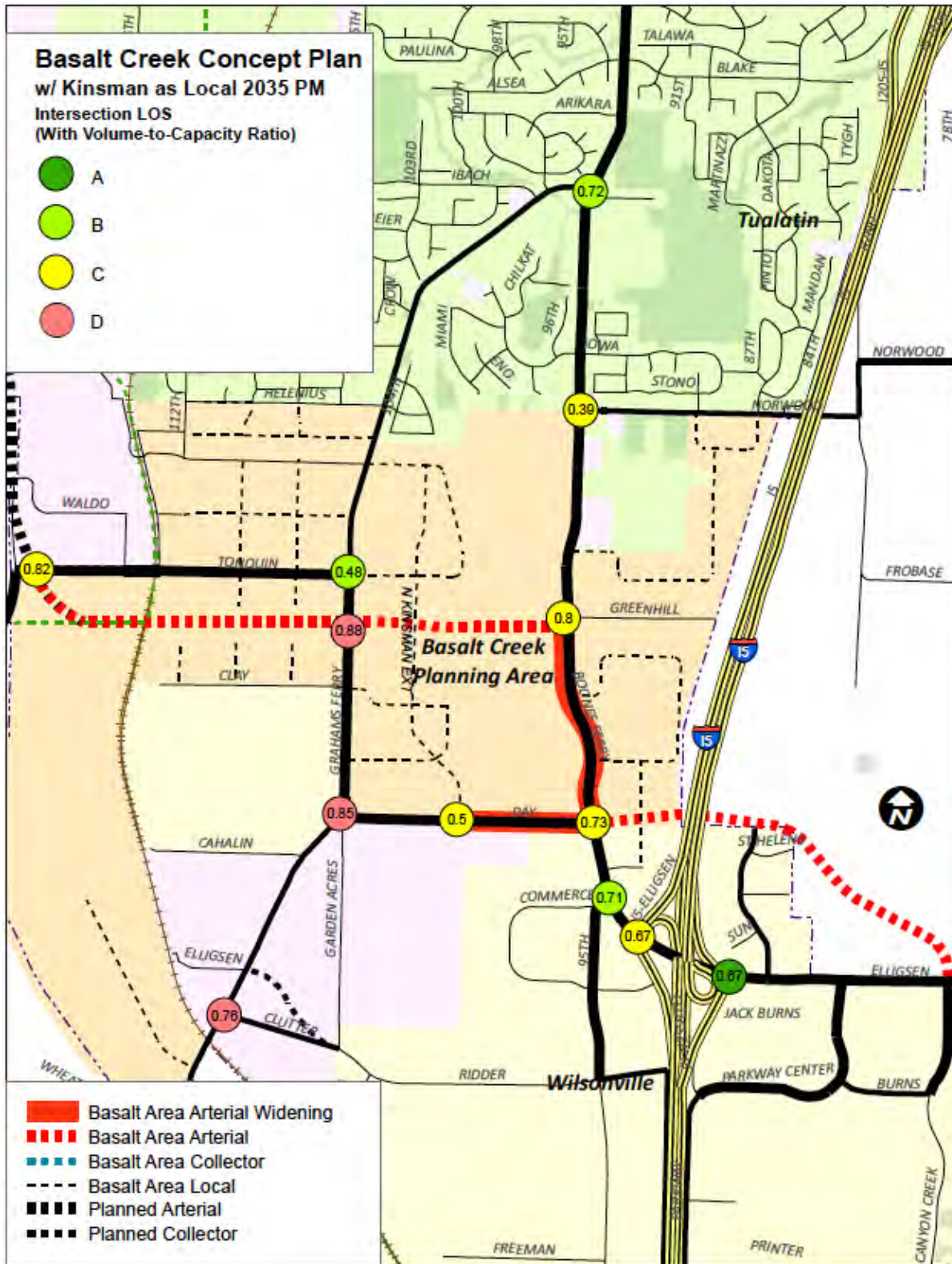


Figure 2: Concept Plan Network with Kinsman Road as Local Connection

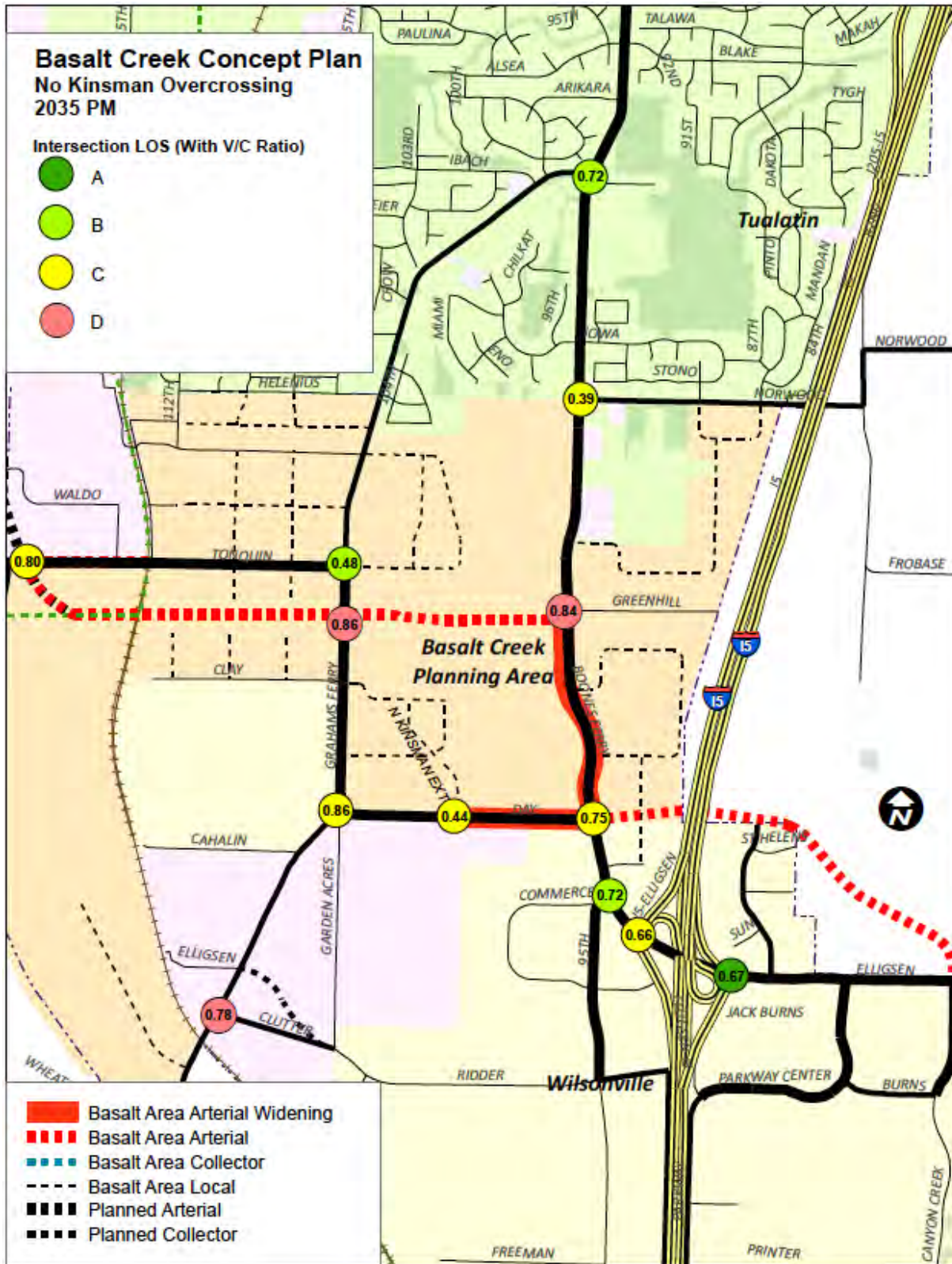


Figure 3: Concept Plan Network Without Kinsman Road Overcrossing



Motor Vehicle Operations

Intersection turning movement volumes for the two network options were developed for the 2035 PM peak hour based on the approach described in the Forecasting section above. Results, with a comparison to the previous alternative with a full Kinsman collector are shown in Table 2 below.

Table 2: Network Alternative Intersection Operations (2035 PM Peak Hour)

Intersection	Jurisdiction	Mobility Target	Full Kinsman Collector (Tonquin Loop to Ridder)		Kinsman as Local		No Kinsman Crossing	
			PM LOS	PM V/C	PM LOS	PM V/C	PM LOS	PM V/C
I-5 NB/Elligsen Rd	ODOT	0.85	A	0.67	A	0.67	A	0.67
I-5 SB/Elligsen Rd	ODOT	0.85	C	0.66	C	0.67	C	0.66
Boones Ferry Rd/95th Ave	Washington County	0.99	B	0.70	B	0.71	B	0.72
Boones Ferry Rd/Day Rd	Washington County	0.99	C	0.73	C	0.73	C	0.75
Boones Ferry Rd/Basalt Creek Parkway	Washington County	0.99	C	0.81	C	0.80	D	0.84
Boones Ferry Rd/Ibach St	Washington County	0.99	B	0.73	B	0.72	B	0.72
Boones Ferry Rd/Norwood Rd	Washington County	0.99	A/C	0.38	A/C	0.39	A/C	0.39
Grahams Ferry Rd/Clutter Rd	Washington County	0.99	A/C	0.52	A/D	0.76	A/D	0.78
Grahams Ferry Rd/Day Rd	Wilsonville	D	D	0.79	D	0.85	C	0.86
Grahams Ferry Rd/Basalt Creek Parkway	Washington County	0.99	D	0.85	D	0.88	D	0.86
Grahams Ferry Rd/Tonquin Rd	Washington County	0.99	B	0.48	B	0.48	B	0.48
124th Ave/Tonquin Rd	Washington County	0.99	C	0.81	C	0.82	C	0.80
Kinsman Rd/Day Rd	Wilsonville	D	C	0.39	A/C	0.50	A/C	0.44

Worst mainline LOS/worst side street LOS reported for unsignalized intersections

As shown in the above table, all intersections meet future mobility standards under both Kinsman options as well as the full Kinsman Collector alternative. The removal of Kinsman Road between SW Ridder Road and SW Day Road has the most impact at SW Grahams Ferry Road/SW Clutter Road and SW Grahams Ferry Road/SW Day Road. These two intersections experience increased traffic volumes as drivers that might have used the Kinsman Extension use SW Grahams Ferry Road south of SW Day Road instead.



Differences between the two North Kinsman Road options are minor, as the North Kinsman extension primarily serves as access to properties between Grahams Ferry Road and the Basalt Creek, and serves very little through traffic when the overcrossing is in place. The largest difference in operations is at SW Boones Ferry Road/Basalt Creek Parkway, where the option with no North Kinsman overcrossing experiences slightly higher volumes. Without the overcrossing in place, more vehicles are expected to travel north on SW Boones Ferry Road and then west on the Basalt Creek Parkway rather than accessing the Basalt Creek Parkway via SW Day Road and SW Grahams Ferry Road.

Active Transportation

While all network options analyzed above perform acceptably in terms of intersection capacity, connections for modes other than the motor vehicle are an important consideration. If a North Kinsman overcrossing of the Basalt Creek Parkway is not built, a connection for people biking and walking in the area east of SW Grahams Ferry Road should still be provided. A multi-use path along the west edge of the Basalt Creek, passing underneath the Basalt Creek Parkway, would provide this needed connection.

Basalt Creek Utility Infrastructure Concept Plan

PREPARED FOR: Fregonese Associates
PREPARED BY: Kelli Walters/CH2M
DATE: May 27, 2016
PROJECT NUMBER: 491811
REVISION NO.: Revision 2: January 11, 2017
APPROVED BY: Mark Anderson/CH2M

Introduction

The conceptual sanitary sewer, water, and stormwater systems were updated based on the selected jurisdictional boundary that follows the proposed East-West connector (future Basalt Creek Parkway). This memorandum describes the conceptual system designs, provides conceptual cost estimates and funding strategies for the sanitary sewer and water systems, and discusses development phasing. Conceptual level sizing and design were completed for cost estimating purposes. Modeling and detailed design were not completed as part of this work and detailed pipe sizes, slopes, flows, and updated cost estimates will be completed during the design phase. Conceptual level cost estimates are preliminary for comparison of alternatives and have a +100%/-50% accuracy.

Overview of Conceptual Utility Designs

Sanitary Sewer System

The sanitary sewer conceptual design for the Basalt Creek planning area is shown in Figure 1. The Tualatin and Wilsonville service basins are based on the proposed jurisdictional boundary. This design requires five pump stations to serve the Tualatin service area (operated by Clean Water Services (CWS)) and one pump station to serve the Wilsonville service area, and the sewers generally flow to the south and west, following the slope of the existing ground. The sanitary system uses gravity as much as possible, follows existing and proposed roadways and trails, and was designed to avoid streams and natural areas.

The conceptual sewer system connects to the existing CWS/Tualatin system at SW 112th Avenue between SW Cowlitz Drive and SW Nootka Street, at SW Grahams Ferry Road and SW Helenius Street, at SW Boones Ferry Road and SW Norwood Road, and at SW Vermillion Drive and SW Norwood Road. The sewer system connects to the planned extension of the Wilsonville system at SW Day Road and the proposed SW Kinsman Road, and at the planned extension at SW Day Road and the planned extension of SW Garden Acres Road.

The area immediately west of creek open space (east of Grahams Ferry Road), north of the jurisdictional boundary is shown as being served with a pump station to the CWS/Tualatin system, but could also be served by gravity to Wilsonville. If the gravity option is selected, it would require an intergovernmental agreement between the cities. In the area just west of Boones Ferry Road and east of Basalt Creek in both Tualatin and Wilsonville service boundaries, residents will be required to install grinder pumps to connect to the proposed gravity systems. The West Railroad Area (west of the railroad and south of SW

Tonquin Road) has a lower potential to develop due to several constraints including slope, geology, wetlands, habitat, and existing uses. The sanitary system and pump station to serve this area have been included as a separate column in the cost estimate, but would only be required if and when development occurs.

There are three areas that will require boring or very deep excavations greater than 25 feet deep, which are highlighted in yellow on Figure 1. There are a few other areas that require excavations around 20-25 feet, highlighted in orange on Figure 1.

Design Assumptions and Principles

The following design assumptions were made for the conceptual sanitary system design. Local laterals and service connections have not been included in the concept layout.

- Minimum sewer depth = 10 feet
- Maximum sewer depth = 25 feet
- Minimum pipe slope = 0.004 (for an 8 inch diameter pipe)
- Minimum sanitary pipe slopes from Clean Water Services Design and Construction Standards and City of Wilsonville Public Works Standards:

Table 1
Minimum Sanitary Pipe Slopes

Pipe Diameter (inches)	Minimum Slope
6	0.006
8	0.004
10	0.0028
12	0.0022
15	0.0015
18	0.0012

The sanitary system design followed these guiding principles for the layout:

- Use gravity as much as possible
- Follow existing or proposed roadways
- Follow property lines or tax lot boundaries when not possible to follow roads
- Follow land use boundaries (not serving Undeveloped Natural Area land use areas)
- Avoid streams and significant natural areas

Flow Calculations

Loading estimates were calculated using the land use scenario presented at the April 2016 open house. Peak flows were calculated for each connection point into the existing Tualatin and Wilsonville systems. Dry weather flows were calculated separately for residential areas and commercial/industrial areas, according to the equations below. The industrial flow calculations assume general light industry without allocation for any heavy water use industries. Flow estimate values are consistent with recommendations in the 2009 Clean Water Services Sanitary Sewer Master Plan Update and are consistent with the flow contribution per capita and the observed peaking factors described in the 2014 Wilsonville Wastewater Collection System Master Plan.

$$Peak\ Dry\ Weather\ Flow\ (DWF) = Residential\ EDU * 2.4 \frac{people}{EDU} * 80 \frac{gal}{person * day} * 1.6\ peak\ factor$$

$$\text{Peak Dry Weather Flow (DWF)} = \frac{\text{Comm./Ind. Area (sq. ft.)}}{1000 \frac{\text{sq. ft.}}{\text{person}}} * 40 \frac{\text{gal}}{\text{person * day}} * 1.2 \text{ peak factor}$$

Wet weather flows were calculated based on the developed areas, not including the areas designated as “Open Space” land use. The wet weather flows were calculated using the following equation.

$$\text{Wet Weather Flow (WWF)} = \text{Developed Area (ac.)} * 2,500 \frac{\text{gal}}{\text{ac.* day}}$$

The total peak flow was calculated by adding the wet and dry weather flows together, as follows.

$$\text{Peak Sewer Flow} = \text{Dry Weather Flow (DWF)} + \text{Wet Weather Flow (WWF)}$$

The estimated sewer flows at the connection points to the existing system are summarized in Table 2. During preliminary sizing and design of the sewer system, the application of peaking factors to the dry weather flows will be necessary to calculate peak flows for design.

Table 2.
Estimated Sewer Flows at Connections to the Existing Systems

Connection Point	Estimated Sewer Flow (gal/d)
112th and Helenius (Tualatin)	563,200
Grahams Ferry and Helenius (Tualatin)	227,300
Boones Ferry near Norwood (Tualatin)	259,600
Norwood and Vermillion (Tualatin)	109,600
Kinsman Road Extension Sewer (Wilsonville)	499,000
Garden Acres and Clutter (West RR Area, Wilsonville)	589,600

Cost Estimate and Preliminary Sizing

The cost estimate for the sewer system is provided in Table 5. Project costs include pipe costs, rock excavation, pump station capital costs, pump station operations and maintenance costs for 30 years, engineering/legal/admin fees (25%), and contingency (30%). Upgrades to the existing downstream systems are not included in the cost estimates. The cost of downstream impacts to Tualatin and CWS’s existing sanitary sewer system are being included in the City’s current SSMP, which will model and evaluate flow impacts from the Basalt Creek Planning Area.

Pipe installation costs were gathered from the Tualatin Sewer Master Plan (2002) and escalated. The costs are also consistent with the 2014 unit costs for new and upsized pipelines in the Wilsonville Wastewater Collection System Master Plan. The construction costs are based on pipe diameter and average depth of bury, and include the costs of manholes and service laterals. An average diameter of 8 inches was used for pipes in the Wilsonville service system and diameters of 8 inches (approximately 34,000 linear feet) and 10 inches (approximately 2,200 linear feet, located along the northwestern edge of the proposed system) were used for pipes in the Tualatin service system, based on the preliminary sizing completed at the downstream connection points. All force mains were assumed to be 6 inches in diameter. The cost estimate includes the piping shown in Figure 1, which serves each property. If properties are subdivided in the future, additional piping will be required, generally at the cost of the developer.

The rock excavation cost was calculated based on information from geotechnical investigations and the estimated depth of trench. Based on the boring summary map and geotechnical data available, the Basalt Creek planning area was divided into regions where we expect to require rock excavation for 50%,

Commented [AB1]: There should be a citation for the source of the pump station cost estimates. These should be based upon the CWS 2009 Sanitary Sewer Master Plan Pump Station Cost Curve and escalated to reflect current costs.

Commented [WK2R1]: The SSMP only provides cost estimates for new pump station projects that also include the associated forcemains. I can’t determine a cost curve for just pump stations from this data. I added a description for the cost in the cost section below.

20% or 10% of the pipe installations. In order to quantify the amount of pipe that will require rock excavation, a percentage of the pipe length was assumed to require rock excavation based on the region the pipe is located in. Figure 3 (attached) outlines the regions that fall into the three categories. The regions were determined based on the depth to rock (from boring information), approximate depth of bury for pipes, and amount of data in the area. Areas with shallow depths to rock, greatly varying depths to rock, and/or that have a lack of data are assumed to have 50% of the pipe length requiring rock excavation. The area circled in the northeast is where the depths varied for different sewer layout alternatives. For this region, if the average depth of the pipe is deep (>20 feet), it was assumed that 40% of the pipe length required rock excavation and if average depth of the pipe is shallow (<20 feet), it was assumed that 20% of pipe length required rock excavation.

To estimate the linear footage of rock excavation required, the length of each pipe was multiplied by the percentage denoted by the region it is in. Unit costs for rock excavation were developed for two trench depths (15 feet and 25 feet) and the price for the depth closest to the average depth of bury for each pipe were applied to the rock excavation length for that pipe. The unit costs for rock excavation were \$30/LF for a 15-foot deep trench and \$90/LF for a 25-foot deep trench. The cost of rock excavation was added to the pipe unit costs.

A few segments of pipe require very deep sewers (shown in yellow on Figure 1) and will be installed by boring. The cost of boring was estimated at \$500 per linear foot and includes the cost of pipe.

Table 3 provides an estimate of the length of pipe requiring a shallow (<20 feet) or deep (>20 feet) trench, as used in the rock excavation cost estimate, as well as the total length of pipe. The estimated length of excavation was calculated using a percentage of the total length of each stick of pipe (10%, 20%, or 50%) based on location, as description above.

Table 3.
Summary of Estimated Excavation Lengths

		Tualatin Service Area	Wilsonville Service Area
Shallow (<20 feet) Excavation	Estimated Length of Excavation (feet)	11,672	7,152
	Total Length of Pipe (feet)	38,190	23,430
Deep (>20 feet) Excavation	Estimated Length of Excavation (feet)	1,531	1,093
	Total Length of Pipe (feet)	4,776	2,274

The cost of the proposed pump stations is based on the projected pump station capacity. A pump station cost curve was obtained from 2004 and escalated to February 2015. For flows less than 1 MGD (million gallons per day), the average construction cost is calculated using the following equation, where x is the pump station capacity.

$$\text{Construction Cost (\$)} = 745985.1x^3 - 2724835.9x^2 + 2724835.9x + 109711.4$$

Existing System Improvements

Upgrades to the existing downstream systems may be required to accommodate the anticipated flows from the Basalt Creek planning area. These upgrades have not been included in the conceptual design and cost estimate. The City of Wilsonville has identified two capacity upgrade projects that will need to be completed to serve the Basalt Creek Planning Area: (1) CIP-01 Railroad Undercrossing (\$480,000), and (2) CIP-04 from Railroad crossing to Boeckman Rd (\$1,700,000).

NOTE TO EDITOR: CH2M is working on updating the Tualatin Master Plan to reflect the Basalt Creek concept plan and these results could be incorporated later.

Water System

The conceptual water systems are shown in Figure 2 and are divided by the jurisdictional boundary. Each system is a looped system, which requires water lines for each city located along the proposed east-west arterial road (future Basalt Creek Parkway).

The Basalt Creek planning area has the potential to be served for water supply from either Tualatin or Wilsonville. The existing service zones (levels B and C) from both communities would provide the necessary hydraulic pressure to provide service within the planning area. The Tualatin pressure zones that will be used to serve the Basalt Creek are Zones B (ground elevations 192 feet to 306 feet) and C (ground elevations 260 feet to 360 feet). A majority of the service area can be served by Pressure Zone B, but a small portion will require Pressure Zone C. The reservoirs intended to service this area are the newly constructed C-2 (1-MG) Reservoir, the Norwood Reservoirs B-1 (2.2-MG) and B-2 (2.8-MG). In addition to the B level storage reservoirs, the Portland Supply Main using a control valve would also serve pressure zone B.

The Wilsonville pressure zones that will be used to serve the Basalt Creek area are Zones B (ground elevations 100 feet to 285 feet) and C (ground elevations 275 feet to 410 feet). Wilsonville has identified a need to install a booster pump station for a new pressure zone level D (ground elevations of 340 feet to 465 feet). The booster pump station is one of the CIP projects listed in the 2012 Wilsonville Water Master Plan and has been included in the cost estimate for water for Wilsonville.

The southwest railroad section (west of the railroad and south of SW Tonquin Road) has a lower potential for development. Service lines in this area would only need to be constructed if and when development occurs. The Coffee Creek system is shown outside of the Basalt Creek planning area (east of the railroad, west of SW Grahams Ferry Road, and south of SW Clay Road). This portion of the system would be installed and funded by the Coffee Creek development.

Wilsonville has included the Basalt Creek Planning Area in their 2012 Water System Master Plan and has determined that the existing system has capacity to serve the area without exceeding velocity standards.

Flow Calculations

Water demand estimates were calculated using the base case land use (October/November 2014) and are shown in Table 4. Peak flows were calculated for the proposed Tualatin and Wilsonville service areas. Peak flows were calculated separately for residential areas and commercial/industrial areas, according to the equations below. Flow estimate values are consistent with recommendations in the 2009 Clean Water Services Sanitary Sewer Master Plan Update and in the 2012 Wilsonville Water System Master Plan.

$$\text{Peak Residential Flow} = \text{Residential EDU} * 2.4 \frac{\text{people}}{\text{EDU}} * 80 \frac{\text{gal}}{\text{person} * \text{day}} * 2.2 \text{ peak factor}$$

$$\text{Peak Commercial/Industrial Flow} = \frac{\text{Comm./Ind. Area (sq. ft.)}}{1000 \frac{\text{sq. ft.}}{\text{person}}} * 40 \frac{\text{gal}}{\text{person} * \text{day}} * 2.2 \text{ peak factor}$$

Flow estimates for the final layout are provided below.

Table 4.
Estimated Water Demand

	Tualatin	Wilsonville	Both
Peak Daily Demand (gal/d)	364,111	57,261	421,372
Average Annual Demand (gal/d)	165,505	26,028	191,533

Commented [WK3]: Need map and date from Frego to add.

Table 4.
Estimated Water Demand

	Tualatin	Wilsonville	Both
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Cost Estimate and Preliminary Sizing

The cost estimate for water is based on construction costs for installing pipes. Construction costs for water pipe construction were gathered from the Tualatin Water Master Plan (January 2013) and escalated. The pipe installation costs are based on pipe diameter, and do not include rock excavation or excessive dewatering. For water, a pipe diameter of 12 inches was used for water lines along SW Grahams Ferry Road, SW Boones Ferry Road, and the proposed East-West connector. An average diameter of 8 inches was used for the remaining pipes. Preliminary pipe sizing was completed for cost estimating purposes, but further analysis is needed to confirm fire flow requirements in industrial areas. Water pipes are shallower than sanitary sewer pipes, so rock excavation costs were estimated at 3% of the pipe installation cost. The conceptual cost estimate for the water system is provided in Table 6.

Stormwater System

The conceptual stormwater system design includes the layout for stormwater pipes in the public right-of-way and does not include private stormwater system designs. Stormwater detention and treatment will occur at local facilities and no regional facilities are planned for the area. All flows that outlet within each city will be guided by their respective protocols, design standards, and/or discharge permits. At locations where the City of Tualatin’s pipe system connects to the City of Wilsonville’s pipe system, the upstream stormwater discharged into Wilsonville’s system shall meet or exceed Wilsonville’s stormwater management requirements.

Cost Estimate

Public stormwater costs are included in the road network cost estimate. Stormwater systems outside of the public right-of-way are paid for by the developer, and developer costs for the stormwater systems have not been estimated.

Funding Strategies

The utility improvements will be funded by a combination of public and private entities. The cities of Tualatin and Wilsonville, with support from district entities, such as Clean Water Services and Metro, will fund public utility improvements. Private developers/land owners will generally pay for utilities on private properties, as well as certain projects in the public right-of-way that are required for development to occur. The City of Tualatin and the City of Wilsonville will be responsible for the publicly-funded water and storm system improvements in their respective jurisdictions. For the sanitary sewer system, the City of Wilsonville will fund all public improvements in their jurisdiction, and the City of Tualatin will fund public gravity pipelines, while pump stations and forcemains are paid for by the service provider, Clean Water Services. There are opportunities for shared funding and partnering agreements for specific projects.

Cost estimates were developed for the conceptual sanitary sewer and water systems. The cost estimates summarize the anticipated costs for the cities, Clean Water Services, and private developers. For both systems, the cost for pipes that are 8 inches in diameter and smaller are paid for by the developer, except for sanitary forcemains. Pipes that are greater than 8 inches in diameter have a cost share between the city and the developer, where the developer pays for the equivalent of installing 8-inch pipes and the city pays for the difference between the cost for the design pipe size and the cost for an 8-inch pipe. For the sanitary sewer system in the CWS/Tualatin jurisdiction, pump station and force main

costs are paid for by the service provider, Clean Water Services (CWS), and pump station capital costs are SDC creditable (pump station operations and maintenance costs are not SDC creditable). For the sanitary sewer system in Wilsonville, pump station and forcemain costs are typically paid for by the city. If a project is required for development to occur, or depending on the service area, the developer may be required to pay for the utility costs. For this cost estimate, it was assumed that half of the pump station capital costs would be paid for by the developer and half would be paid for by the City. City, service provider, and developer costs for the sanitary system are summarized in Table 5 and city and developer costs for the drinking water systems are summarized in Table 6. The West Railroad Area has a lower potential to develop and the costs for this area have been included as a separate column since they would only be required if and when development occurs.

Commented [AB4]: Pump station #5 appears to be a "neighborhood pump station and may be solely the developer's responsibility as opposed to the four other CWS pump stations that serve larger areas, multiple properties, and likely qualify as regional pump stations.

Commented [WK5R4]: Should I move this to developer cost? I'm not clear on the direction. How small does the service basin need to be to be considered a "neighborhood pump station"?

Table 5.
Cost Estimate Summary for Conceptual Sewer System

Item	Tualatin/CWS Service Area			Wilsonville Service Area		Wilsonville SW RR Area	
	Tualatin	CWS	Developer	Wilsonville	Developer	Wilsonville	Developer
Pipe Costs (8") (pipe length, feet)			\$8,033,000 (36,415 ft)		\$3,443,000 (18,440 ft)		\$1,818,000 (6,830 ft)
Pipe Costs (Upsize 8" to 10") (pipe length, feet)	\$34,000 (2,165 ft)						
Force Mains (6") (pipe length, feet)		\$1,523,000 (6,555 ft)				\$55,000 (435 ft)	
Rock Excavation (pipe length, feet)		\$66,000 (1,540 ft)	\$422,000 (11,665 ft)		\$161,000 (4,615 ft)	\$6,000 (215 ft)	\$145,000 (3,415 ft)
Pump Station Capital Cost		\$2,638,000				\$339,000	\$339,000
Total Construction Costs	\$34,000	\$4,227,000	\$8,455,000	\$0	\$3,605,000	\$401,000	\$2,303,000
Pump Station O&M Cost (30 years)*		\$5,599,000				\$1,120,000	
Subtotal	\$34,000	\$9,826,000	\$8,455,000	\$0	\$3,605,000	\$1,521,000	\$2,303,000
Engineering/ Admin/Legal (25%)	\$9,000	\$2,457,000	\$2,114,000	\$0	\$901,000	\$380,000	\$576,000
Contingency (30%)	\$10,000	\$2,948,000	\$2,536,000	\$0	\$1,081,000	\$456,000	\$691,000
TOTAL	\$53,000	\$15,231,000	\$13,105,000	\$0	\$5,588,000	\$2,357,000	\$3,569,000

*Pump Station O&M costs are not SDC creditable

Table 6.
Cost Estimate Summary for Conceptual Water System

Item	Tualatin Service Area		Wilsonville Service Area		Wilsonville SW RR Area	
	Tualatin	Developer	Wilsonville	Developer	Wilsonville	Developer
Pipe Cost (8") (pipe length, feet)		\$5,028,000 (45,215 ft)		\$2,666,000 (23,975 ft)		\$521,000 (4,685 ft)
Pipe Cost (Upside 8" to 12")	\$871,000		\$421,000			

Table 6.
Cost Estimate Summary for Conceptual Water System

Item	Tualatin Service Area		Wilsonville Service Area		Wilsonville SW RR Area	
	Tualatin	Developer	Wilsonville	Developer	Wilsonville	Developer
(pipe length, feet)	(16,230 ft)		(7,835 ft)			
Rock Excavation (3%)		\$151,000		\$80,000		\$16,000
Total Construction Cost	\$871,000	\$5,179,000	\$421,000	\$2,746,000	\$0	\$537,000
Engineering/Admin/Legal (25%)	\$218,000	\$1,295,000	\$105,000	\$687,000	\$0	\$134,000
Contingency (30%)	\$261,000	\$1,554,000	\$126,000	\$824,000	\$0	\$161,000
Total Project Cost	\$1,351,000	\$8,028,000	\$652,000	\$4,257,000	\$0	\$832,000
Wilsonville Booster PS			\$609,000			
TOTAL	\$1,351,000	\$8,028,000	\$1,261,000	\$4,257,000	\$0	\$832,000

Development Phasing

Utility improvements will be made as properties are annexed into each city, so phasing will be driven by the pace of development. Generally, utility improvements will begin at the boundaries of the planning area that are adjacent to the existing cities and progress outward. Most of the utility infrastructure follows existing or proposed roadways and construction should be coordinated with new road construction and existing roadway improvements. Some enabling projects may be required to be constructed prior to development to connect properties to existing systems. For example, the sanitary sewer pump station in the northeast corner of the planning area may be required in order for development to occur in that sewer basin.

Basalt Creek Transportation Refinement Plan Recommendations

Introduction

The Basalt Creek transportation planning effort analyzed future transportation conditions and evaluated alternative strategies for phased investments that support regional and local needs.¹ This document reflects the Policy Advisory Group’s unanimous approval of the transportation investments, next steps for policy and plan updates, and potential funding strategies described in this document.

Purpose

The purpose of this refinement plan was to determine the major transportation system connecting Tualatin-Sherwood Road to I-5 in North Wilsonville through the Basalt Creek Planning Area, which is currently an unincorporated urban area of Washington County between the cities of Tualatin to the north, and Wilsonville to the south (see Figure 1). This plan refines recommendations from the I-5/99W Connector Study and the Regional Transportation Plan, setting the stage for land use concept planning and comprehensive plan development for the Basalt Creek area.

Planning Context

The need to plan for the future transportation system in the Basalt Creek area is driven not only by future growth in the Basalt Creek Planning area itself, but by future growth in surrounding areas targeted for industrial development. Basalt Creek currently lacks the multi-modal transportation facilities needed to support economic and urban-level development. Several planning

The Basalt Creek Transportation Refinement Plan was a joint effort involving:

- Washington County
- City of Tualatin
- City of Wilsonville
- Metro
- The Oregon Department of Transportation
- Area Citizens

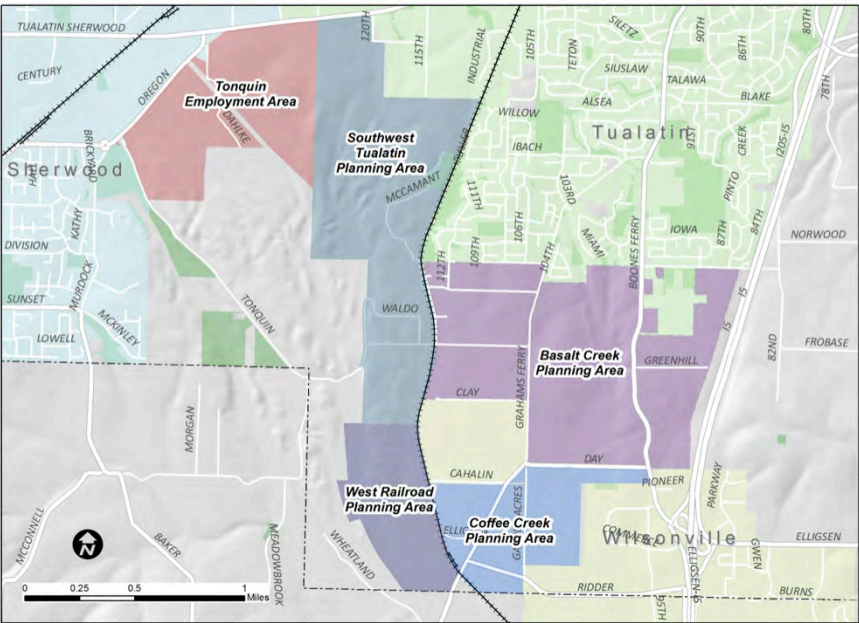


Figure 1: Basalt Creek Planning Area Location

¹ See *Basalt Creek Transportation Refinement Plan Technical Report* for more information.

efforts, summarized below, provide background and context for the Basalt Creek Transportation Refinement Plan.

- The **I-5/99W Connector Study** recommended an alternative that spreads east-west traffic across three smaller arterials rather than a single expressway. Although specific alignments for these arterials were not defined, the eastern end of the Southern Arterial was generally located within the Basalt Creek Planning Area, south of Tonquin Road. The present planning effort aims to further define the location of the connection between the SW 124th Avenue Extension and the I-5/Elligsen interchange in a manner that does not preclude the future Southern Arterial west of SW 124th.
- The **2035 Regional Transportation Plan (RTP)** calls for detailed project planning and near-term construction of an extension of SW 124th Avenue from Tualatin-Sherwood Road to the I-5/Elligsen Road interchange, supporting industrial access from the Tonquin, Southwest Tualatin, and Basalt Creek Planning Areas. The RTP also calls for the near-term construction of the Tonquin Trail (see below).
- The **Tonquin Employment Area, Southwest Tualatin Concept Planning Area, and Coffee Creek Planning Area** together comprise about 1,000 acres surrounding the Basalt Creek area that are planned primarily for industrial use. These areas are expected to generate growing freight and work-related travel demands on the multi-modal transportation network that runs through the Basalt Creek area.
- The **SW 124th Avenue Extension** Project, currently underway, is planning and designing the corridor described in the RTP from Tualatin-Sherwood Road to Tonquin Road. The present planning effort aims to extend the corridor to I-5 as envisioned in the RTP and ensure consistency with current SW 124th Avenue project.
- Washington County's **Boones Ferry Road** improvement project, also currently underway, provides pedestrian and bicycle improvements and an intermittent center turn lane between Norwood Road and Day Road. It is an assumed improvement for the Basalt Creek area.
- Near-term construction of the **Tonquin Trail** is called for in the RTP. The master plan identifies an alignment for new bicycle and pedestrian connections between Sherwood, Tualatin, and Wilsonville, with connections to the larger regional trail system. The Tonquin Trail will travel through the Southwest Tualatin Concept Plan Area and the Tonquin Employment Concept Plan Area, and is an assumed improvement within the Basalt Creek Transportation Refinement Plan.
- **Transportation System Plan** updates for Washington County, Tualatin, and Wilsonville are currently underway. Washington County will incorporate recommendations from this refinement plan into the County TSP update. The cities of Tualatin and Wilsonville will not incorporate these recommendations into their current TSP updates, but will carry the recommendations into land use concept planning and future TSP updates.

Facility Considerations and Characteristics

At the outset of this effort, agencies articulated a set of considerations to guide selection of the preferred transportation system as well as preferred characteristics of the primary east-west facility through the area.

- **Guiding considerations** included: ability to fund and phase improvements, level of impacts (environmental, right-of-way, etc.), support for development, consistency with regional policy, and traffic operations performance.
- **Facility characteristics** included: for the primary arterial connection, a 45 mph prevailing speed and access spacing of one-half mile to one mile to improve capacity.

Recommendation

The Policy Advisory Group (PAG), which consists of elected officials and key staff from the project's five partner agencies, recommends the following elements as part of an overall Action Plan (illustrated in Figure 2) for the area.

Roadways

The final recommendation is for a combination of new and improved roadways through the Basalt Creek area. The key new roadway through the area is a five-lane east-west extension of SW 124th Avenue, aligned south of Tonquin Road and extending east to Boones Ferry Road. The recommendation also includes improvements to existing roadways in the area, such as Tonquin Road, Grahams Ferry Road, Boones Ferry Road, and Day Road.

Protection of right-of-way for the new east-west roadway from the 124th Avenue extension to Boones Ferry Road is a key element of this recommendation. Right-of-way protection and purchase will be addressed separately, concurrent with the Basalt Creek land use concept planning.

During the planning process, the City of Wilsonville expressed concern about the structural condition of Day Road (i.e., failing roadway base and resulting pavement deterioration) and its ability to carry freight traffic for further development of industrial lands. While the Basalt Creek Transportation Refinement Plan focused on roadway needs related to capacity, the PAG agreed that the function of the arterial network in the Basalt Creek area includes providing roadways with adequate structural design for regional freight needs. Therefore, the PAG agreed that the project recommendations include a commitment to address the construction, operations, and maintenance of the arterial network through the concept planning process.

Overcrossings

The ability to construct two new I-5 overcrossings, including an off-street multi-use path, should be preserved in order to provide for future circulation and connectivity across the Basalt Creek area and into areas east of I-5. These overcrossings are recommended as long-term improvements and are likely not needed until 2035 or later. Forecasts show that the second overcrossing is not needed unless surrounding urban reserve areas east of I-5 and south of I-205 are developed. This refinement plan is neutral on the timing of urban reserves development, and therefore does not specify the timing and order of overcrossing improvements.

Active Transportation

All improved roadways in the Action Plan include bike lanes and sidewalks consistent with Washington County urban standards. This recommendation also includes integration of the regional Tonquin Trail into the transportation network. Metro, in close coordination with the cities of Tualatin, Wilsonville, Sherwood, and Washington and Clackamas counties, led the master planning effort that identified a preferred alignment that travels through the Basalt Creek Planning Area. Roadway cross-sections and right-of-way purchases for the future east-west facility will consider needs for the Tonquin Trail in the design for the railroad overcrossing and improvements to Tonquin Road between Morgan Road and Tonquin Loop Road. Design for the east-west facility should also consider providing an off-street multi-use path that connects to the Tonquin Trail and extends east of I-5. Details of how this multi-use path will be integrated with the east-west facility design will be refined during later land use concept planning.

Action Plan

The recommended Action Plan consists of 18 transportation investments, shown in Figure 2. Timing of projects was prioritized through an analysis of likely transportation needs in 2020, 2030, and 2035 based on growth assumptions from the adopted Regional Transportation Plan. Because of uncertainty regarding the years during which development in the Basalt Creek Planning Area and surrounding areas will occur, phasing for investments is classified as short-term, medium-term, and long-term. Descriptions of these investments, as well as timing and the funding needed, are shown in Table 1. Cost estimates include right-of-way.

Table 1: Basalt Creek Action Plan

ID	Project	Short-Term	Medium-Term	Long-Term	Cost (\$2012)
1	124 th Avenue Extension (Tualatin-Sherwood Road to Tonquin Road): Construct three lane road extension with bike lanes and sidewalks	x			\$20,000,000
2	Tonquin Road (124 th Avenue to Grahams Ferry Road): Widen to three lanes with bike lanes and sidewalks, grade separate at railroad, improve geometry at Grahams Ferry Road ¹	x			\$10,500,000
3	Grahams Ferry Road (Tonquin Road to Day Road): Widen to three lanes with bike lanes and sidewalks	x			\$5,400,000
4	Boones Ferry Road (Norwood Road to Day Road): Widen to three lanes with bicycle and pedestrian improvements	x			\$10,800,000
5	124 th Avenue/Tonquin Road Intersection: Signal (may include Tonquin Trail crossing)	x			. ²
6	Grahams Ferry Road/Tonquin Road Intersection: Signal	x			\$500,000
7	Boones Ferry Road/Day Road Intersection: Add second southbound through approach lane	x			. ³
8	Boones Ferry Road/95 th Avenue Intersection: Construct dual left-turn and right-turn lanes; improve signal synchronization, access management and sight distance	x			\$2,500,000
9a	Tonquin Trail (Clackamas County Line to Tonquin Loop Road): Construct multi-use trail with some segments close to but separated from road	x			\$8,900,000 ⁴
9b	Tonquin Trail (Tonquin Loop Road to Tualatin-Sherwood Road): Construct multi-use trail with some segments close to but separated from road		x		\$7,100,000 ⁴
10	124 th Avenue Extension (Tualatin-Sherwood Road to Tonquin Road): Widen from three to five lanes with bike lanes and sidewalks		x		\$14,000,000
11	East-West Arterial (124 th Avenue to Boones Ferry Road): Construct 5 lane roadway with railroad and creek crossings, integrate segment of Tonquin Trail ⁵		x		\$57,900,000
12	Boones Ferry Road (East-West Arterial to Day Road): Widen to five lanes with bike lanes and sidewalks		x		\$1,100,000
13	Kinsman Road Extension (Ridder Road to Day Street): Construct three lane road extension with bike lanes and sidewalks		x		\$10,400,000
14	Day Road (Kinsman Road to Boones Ferry Road): Widen to five lanes with bike lanes and sidewalks		x		\$5,800,000
15	I-5 Southbound off-ramp at Boones Ferry Road/Elligsen Road: construct second right turn lane		x		\$500,000
16	Boones Ferry Road/95 th Avenue Intersection: Access management		x		. ⁶
17	Day Road Overcrossing: Extend new four lane crossing over I-5 from Boones Ferry Road to Elligsen Road			x	\$33,700,000- \$44,100,000 ⁷
18	East-West Arterial Overcrossing: Extend new four lane crossing over I-5 from Boones Ferry Road to Stafford Road. Integrate multi-use path in corridor that connects to Tonquin Trail			x	\$38,000,000
TOTAL		\$59M	\$97M	\$72-82M	\$228-238M

¹ Grade separation for Tonquin Road is optional. An at-grade crossing would reduce cost by around \$2,000,000

² Cost included in Project 1

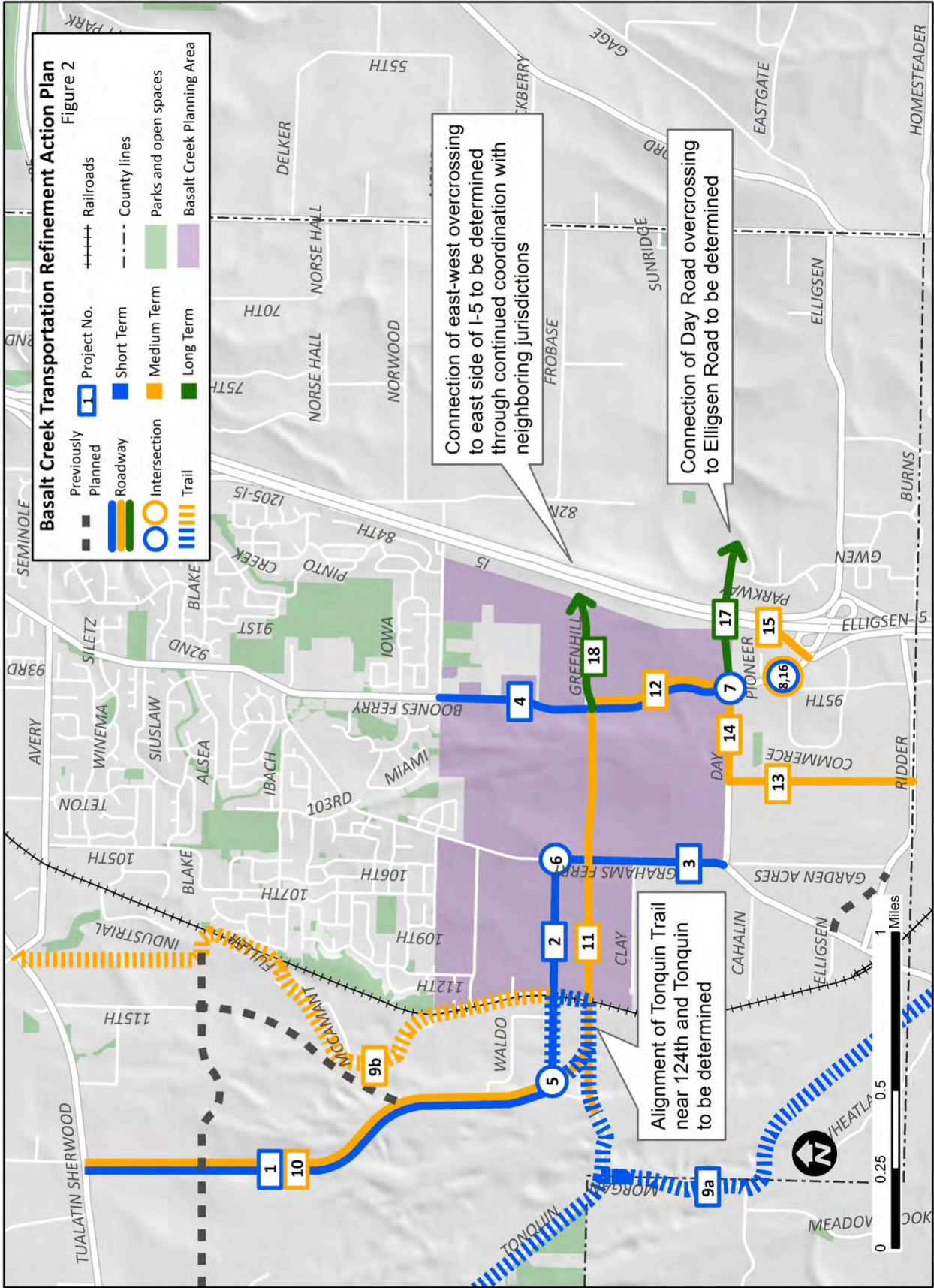
³ Coordinate with Project 4. Cost of approach lane included in estimate for Project 12

⁴ Tonquin Trail cost estimated by Metro as part of trail planning effort

⁵ Project 11 can potentially be built in two phases funded separately, west and east of Grahams Ferry Road. However, traffic benefits needed in the medium term (around 2030) will not be realized unless entire project is completed

⁶ Project details to be determined by further coordination between City of Wilsonville and ODOT. Cost expected to be minimal

⁷ Specific alignment approaching Elligsen Road will determine project cost. Alignment to Parkway Center Drive is estimated at \$33,700,000, and alignment to Canyon Creek Road is estimated at \$44,100,000



Each investment adds important improvements to the major transportation system in the Basalt Creek area to support future development, adding new multimodal facilities and upgrading existing facilities to urban standards. Although not shown on the map, it is expected that future concept planning will identify locations for additional, lower-classification roads and other transportation facilities to serve future development as well.

Are these new projects?

While cost estimates for the entire recommendation may total as high as \$238,000,000, all of the 18 projects have some relation to investments already planned in the adopted RTP. Table 2 shows projects from the RTP that have overlap or similarity to projects contained in the Action Plan. **Note that many of these projects are different in scope from those contained in the Action Plan, and will have different cost estimates. Future RTP updates may include updated cost estimates from this study.**

Table 2: Related projects from the Regional Transportation Plan

RTP ID	RTP Project	Related Action Plan Projects	Time Period	Cost (\$2007)
10736	124 th Avenue: Construct new street from Tualatin-Sherwood Road to Tonquin Road: 5 lanes	1,5,10,11	2008-2017	\$82,500,000
10590	Tonquin Road: Realign and widen to three lanes with bike lanes and sidewalks (Oregon Street to Grahams Ferry Road)	2,6	2018-2025	\$28,406,000
10588	Grahams Ferry Road: Widen to three lanes, add bike/pedestrian connections to regional trail system and fix undersized railroad crossing (Helenius Street to Clackamas County line)	3	2008-2017	\$28,000,000
10732	Boones Ferry Road: Widen to five lanes (Norwood Road to Day Road)	4,7,12	2018-2025	\$40,050,000
10852	95 th /Boones Ferry/Commerce Circle Intersection Improvements	8,16	2008-2017	\$2,500,000
10854	Tonquin Trail: Construct multi-use trail with some on-street segments (Tualatin-Sherwood Road to Clackamas County line)	9a,9b	2008-2017	\$3,000,000
10853	Kinsman Road extension with bike lanes and sidewalks (Ridder Road to Day Road)	13	2008-2017	\$6,500,000
11243	Day Road reconstruction to accommodate trucks (Grahams Ferry Road to Boones Ferry Road)	14	2008-2017	\$3,200,000
11342	I-5/99W Connector Southern Arterial/I-5 Interface ¹	15,17,18	2026-2035	\$50,000,000

¹ Construction of projects specifically related to the I-5/99W Connector Southern Arterial, such as the I-5 interface, are contingent on certain project conditions being met. See Regional Transportation Plan for details.

Policy and Plan Updates

Recommendations in this plan allow new concept planning efforts to move forward and provide guidance for updates of existing transportation plans.

Basalt Creek and West Railroad Area Concept Planning

The transportation system recommended in this plan becomes the framework for more detailed land use concept planning of the Basalt Creek Planning Area and West Railroad Planning Area by the cities of Tualatin and Wilsonville. Key recommendations to be carried forward during concept planning include:

- Protection of the major transportation facility corridors from development encroachment.
- Coordination of the local transportation system with the transportation investments included in this plan (unless amended by the parties of this study). Each roadway in the Basalt Creek area has access spacing standards that protect the safety and operations of the system, and these standards help determine appropriate local street connections. The new east-west facility is limited to accesses at 124th Avenue, Grahams Ferry Road, and Boones Ferry Road.
- Detailed concept planning in the Basalt Creek area should consider multi-use path connections to the Tonquin Trail that emphasize directness and minimize conflicts, enhancing bicycle and pedestrian access to new residential and employment areas. In the West Railroad area, concept planning will also include sections of the Tonquin Trail.

Regional Transportation Plan

In many cases, this transportation refinement plan provides new detail and cost estimates for projects that are already in the adopted RTP. These refined project descriptions, cost estimates, and timing considerations should be considered when projects are forwarded to Metro for the next RTP update. Examples of RTP projects that overlap with projects in this refinement plan include:

- 10590 (Tonquin Road). Action Plan project #2 includes a grade-separated railroad crossing, which is not included in the RTP project description.
- 10852 (95th/Boones Ferry/Commerce). Action Plan projects 8 and 16 will require further coordination with ODOT to determine geometry and timing of intersection improvements.
- 11243 (Day Road). Action Plan project #14, which widens part of Day Road, should also upgrade the roadway structure and pavement conditions to accommodate increasing heavy truck volumes. Although project #14 applies only to the section of Day Road between Kinsman Road and Boones Ferry Road, funding of roadway reconstruction between Kinsman Road and Grahams Ferry Road should also be discussed as part of land use concept planning.
- 10854 (Tonquin Trail). Action Plan projects #2, #5, #11 all need to consider Tonquin Trail in their design, including most recent alignment information and cost estimates from the trail master plan.

Washington County TSP Update

Most of the projects included in the Action Plan are new facilities in unincorporated Washington County or improved facilities already under County jurisdiction. An amendment to update the Washington County TSP will be done in 2013 to incorporate the descriptions, cost estimates, and timing of these projects.

Tualatin and Wilsonville TSP Updates

The Cities of Tualatin and Wilsonville are also currently updating their transportation system plans. However, because concept planning for Basalt Creek will include agreement on the future city limit boundary between the two cities, as well as more detailed transportation network considerations, the projects included in this plan will not be incorporated as part of the current TSP updates. Future TSP updates may reflect elements from this refinement plan by amending project lists, maps, and funding strategies.

Funding

Funding for some short-term Action Plan projects has already been programmed by Washington County through their Major Streets Transportation Improvement Program (MSTIP). This includes \$16.9 million (\$10.9 million in MSTIP funding and \$6 million from other sources) for an interim two-lane extension of SW 124th Avenue from Tualatin-Sherwood Road to Tonquin Road. It also includes an additional \$10 million for right-of-way purchase or other improvements from the list identified by this Plan. Washington County has also provided \$11 million in funding for the current Boones Ferry Road improvement project.

While this recommendation does not identify a specific overall funding strategy for the Action Plan, there are many existing revenue sources that may be used to fund the recommended investments.

Many are subject to a state or regionally competitive process where success can hinge on having a broadly supported plan in place.

The revenue sources listed below form the basis of the financially constrained Regional Transportation Plan and related project list, which already contains many of the recommended Basalt Creek investments. The RTP assumes federal, state, and local sources, all of which will be key to funding the Action Plan.

Federal

Based on MAP-21² legislation, sources may include:

- **National Highway Performance Program (NHPP).** These funds are intended for rehabilitation and expansion of principal arterials, especially those with important freight functions.
- **Regional Surface Transportation Program (STP) funds.** These funds may be used for virtually any transportation purpose short of building local residential streets.
- **Congestion Mitigation/Air Quality (CMAQ) funds.** These funds typically support biking, walking, and transit projects, and other projects that help to achieve air quality standards.
- **Transportation Alternatives (TA) funds.** TA takes the place of previous programs such as Transportation Enhancements and Recreational Trails, and may be used to fund a variety of non-motorized projects.

² For more information see <http://www.fhwa.dot.gov/map21/>

These funds are allocated to projects through a state or regionally managed competitive process for inclusion in the Metropolitan Transportation Improvement Program (MTIP) and the State Transportation Improvement Program (STIP).

State

State sources include the statewide gas tax, vehicle registration fees, and weight-mile taxes on trucks. These funds typically go to road and bridge maintenance projects, but funding for projects of regional significance, such as those provided by Oregon House Bill 2001 Jobs and Transportation Act (JTA), may be made available for modernization. Again, having a plan in place allows projects to access funds when new funding opportunities become available.

Local

A variety of local funding sources are available, although some, such as urban renewal and local improvement districts, are subject to approval. Sources may include:

- Washington County Major Streets Transportation Improvement Program (MSTIP)
- Local portion of State Highway Trust Fund
- Local gas tax
- Transportation System Development Charges (SDCs) or Transportation Development Taxes (TDTs) levied on new development
- Urban renewal funding
- Developer contributions
- Local improvement districts (LIDs)

Basalt Creek Concept Plan: Acknowledgements

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