BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF AMENDING THE URBAN GROWTH BOUNDARY TO INCLUDE LAND ADJACENT TO THE CITY OF TIGARD IN EXCHANGE FOR REMOVING A SUBSTANTIALLY EQUIVALENT AMOUNT OF LAND IN CLACKAMAS COUNTY	)	ORDINANCE NO. 23-1488 Introduced by Marissa Madrigal, Chief Operating Officer, with the concurrence of Lynn Peterson, Council President

WHEREAS, state law requires Metro to assess the capacity of the urban growth boundary (UGB) at least every six years and, if necessary, to increase the region's capacity for housing and employment for the next 20 years; and

WHEREAS, Metro's most recent growth management decision was made in 2018 when Metro adopted the 2018 Urban Growth Report (UGR) via Ordinance No. 18-1427, which forecasted population and employment growth in the region to the year 2038, inventoried the supply of buildable land inside the UGB, and added approximately 2,181 acres to the UGB in four locations adjacent to the cities of Hillsboro, Beaverton, Wilsonville, and King City; and

WHEREAS, in 2021 the City of Tigard submitted a proposal to the Metro Planning Department seeking to add approximately 490.6 acres of land known as River Terrace 2.0 to the UGB through Metro's mid-cycle amendment process under Metro Code Section 3.07.1427; and

WHEREAS, the City of Tigard's proposal includes a concept plan for River Terrace 2.0 that is consistent with Title 11 of the Metro Urban Growth Management Functional Plan and offers a full range of housing opportunities to meet the diverse needs of the people of Tigard while providing accessible parks and open spaces and a transportation system that treats all modes equally with biking and walking trails spread throughout the plan area; and

WHEREAS, the Metro Chief Operating Officer (COO) reviewed the City of Tigard's proposal and issued her COO Recommendation on April 28, 2022, which recommends that the Metro Council adopt a proposed UGB expansion for River Terrace 2.0, but through a UGB exchange process rather than the mid-cycle amendment process; and

WHEREAS, Oregon law authorizes UGB land exchanges to amend the UGB without requiring a new analysis of 20-year regional capacity where land is added to the UGB in one location while a substantially equivalent amount of buildable acreage is simultaneously removed in another location; and

WHEREAS, after receiving the COO Recommendation, the Metro Council directed Metro Planning Department staff to prepare a proposed approach for identifying properties inside the existing UGB that are the preferred candidates for being removed through the proposed UGB exchange; and

WHEREAS, Metro staff created a process for identifying potential exchange candidates that mapped buildable lands in unincorporated areas within a one-mile buffer inside the UGB, followed by consultation with the relevant local jurisdictions and special districts to determine which areas are being planned for future development and which areas are not; and

WHEREAS, after removing lands from consideration that have some level of development readiness, Metro staff presented the remaining land exchange options to the Metro Council at its meeting on September 15, 2022, and discussed potential considerations that could be applied for further narrowing of the UGB exchange areas; and

WHEREAS, the Metro Council endorsed staff's proposal to narrow the remaining options by applying a number of considerations to the remaining areas, including the amount of time property has been in the UGB, parcelization, whether an area was added to the UGB for a special purpose, and the existence of environmental features; and

WHEREAS, based on direction provided by the Metro Council and the Metro Policy Advisory Committee (MPAC) regarding the considerations for UGB exchange areas, on October 20, 2022, the Metro COO issued a recommendation to the Metro Council identifying three options for potential removal from the UGB that apply those considerations and also meet the applicable state law requirements; and

WHEREAS, on November 9, 2022, MPAC voted to recommend that the Metro Council approve a UGB exchange that would allow the addition of the River Terrace 2.0 area to the UGB to provide additional housing options to the region while removing the area identified as "Option 3" in the COO Recommendation, which includes two exchange areas, one in the area formerly known as the City of Damascus and one adjacent to the northeast part of Oregon City; and

WHEREAS, on November 22, 2022, the Metro Council also endorsed the COO's "Option 3," and directed staff to move forward with removal of those areas from the UGB through the exchange process while adding the River Terrace 2.0 area adjacent to the City of Tigard; and

WHEREAS, since the COO Recommendation on April 28, 2022, Metro staff have undertaken a significant amount of public engagement with local jurisdictions and stakeholders regarding the proposed UGB exchange and the areas proposed for removal from the UGB; and

WHEREAS, the addition of River Place 2.0 will add approximately 490.6 gross acres and 346.5 buildable acres of urban reserve land to the UGB and provide a diversity of housing types including single detached dwellings and middle housing types such as accessory dwelling units, duplexes, triplexes, quadplexes, cottage clusters, courtyard units and rowhouses; and

WHEREAS, removal of the areas identified in Exhibits A-3 and A-4 to this ordinance will remove approximately 571.8 gross acres and 351.5 buildable acres from the UGB in areas that are unlikely to be ready for development in the next 20 years; and

WHEREAS, utilizing the UGB land exchange process to provide the region with additional housing in the location proposed by the City of Tigard is consistent with Metro's policy to only add land to the UGB where a city has demonstrated readiness for development and a detailed plan for housing, transportation, parks and other infrastructure; and

WHEREAS, as required by Statewide Planning Goal 14, Metro staff evaluated other areas in the region designated as urban reserves for possible addition to the UGB based upon their relative suitability under the Goal 14 locational factors and the related Metro Code factors; and

WHEREAS, the Metro Council held a public hearing on this ordinance on January 19, 2023; now therefore

THE METRO COUNCIL ORDAINS AS FOLLOWS:

1. The UGB is amended to add and remove the areas as shown on Exhibit A, attached and incorporated into this ordinance; a detailed map of the River Terrace 2.0 area is at Exhibit A-2 and detailed maps of the areas being removed are at Exhibits A-3 and A-4.

2. The conditions set forth in Exhibit B, attached and incorporated into this ordinance, are applied to the UGB expansion areas.

3. The Urban Growth Boundary and Urban and Rural Reserves Map in Title 14 of the Urban Growth Management Functional Plan, attached and incorporated into this ordinance as Exhibit C, is amended to reflect the UGB amendments shown on Exhibit A.

4. The Findings of Fact and Conclusions of Law attached as Exhibit D to this ordinance are hereby adopted to explain how this ordinance is consistent with state law and applicable Metro policies, and to provide evidentiary support for this decision.

5. The Metro COO and planning department staff are directed to work with the City of Tigard toward providing 2040 Planning and Development Grant funding to assist the city with its comprehensive planning of the River Terrace 2.0 area.

ADOPTED by the Metro Council this 2nd day of February 2023.

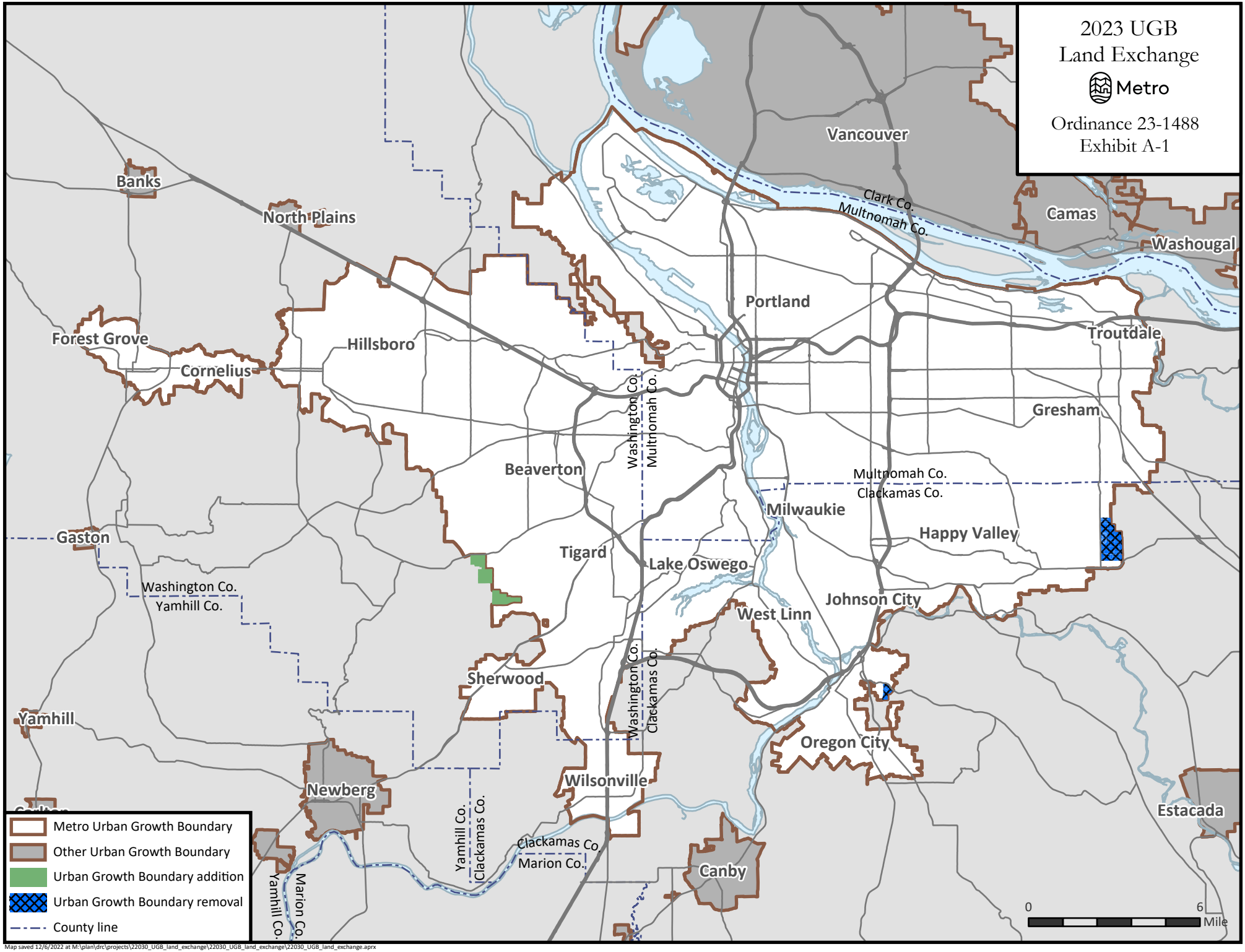
Lynn Peterson, Council President

Attest:

Connor Ayers, Recording Secretary

Approved as to Form:

Carrie MacLaren, Metro Attorney



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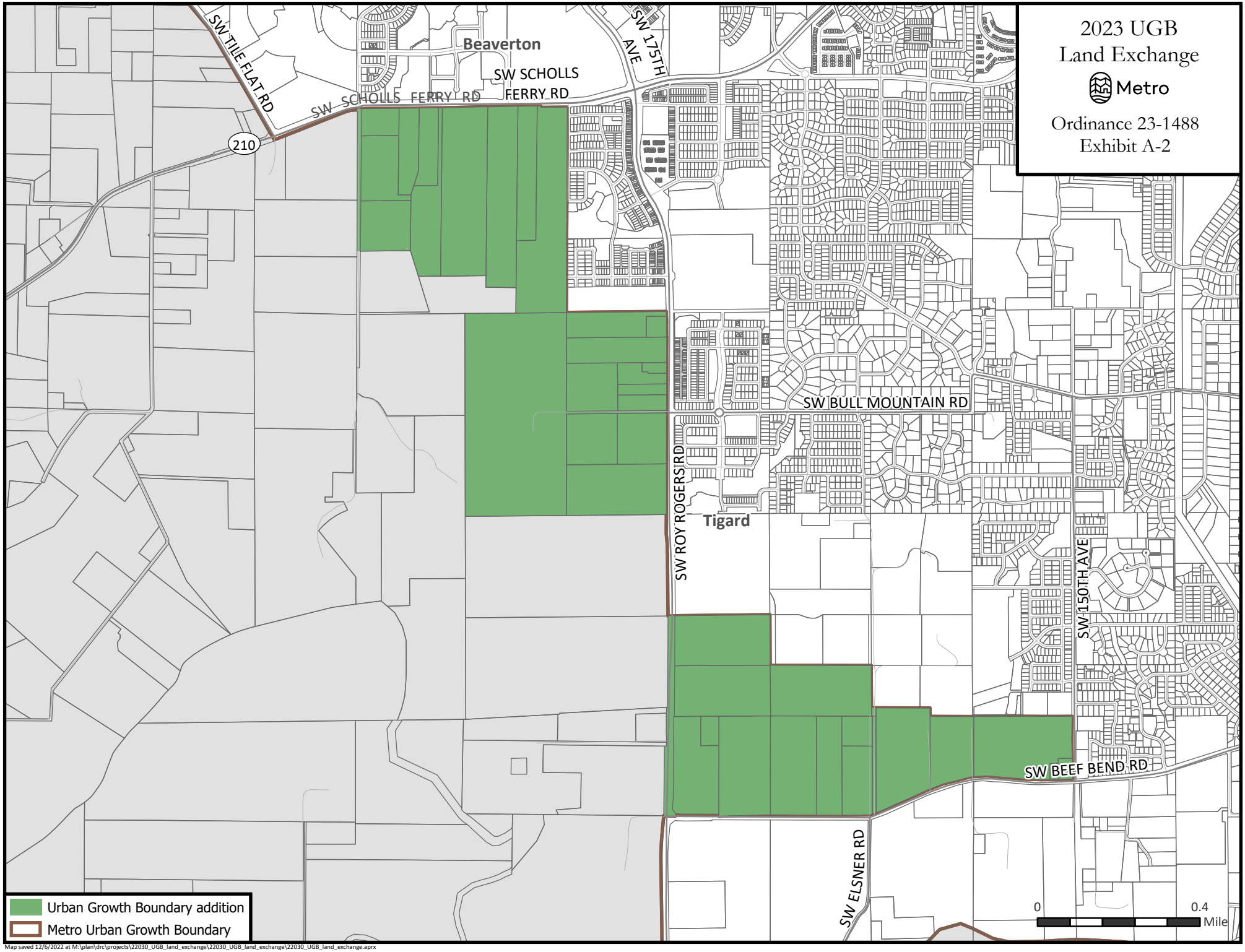

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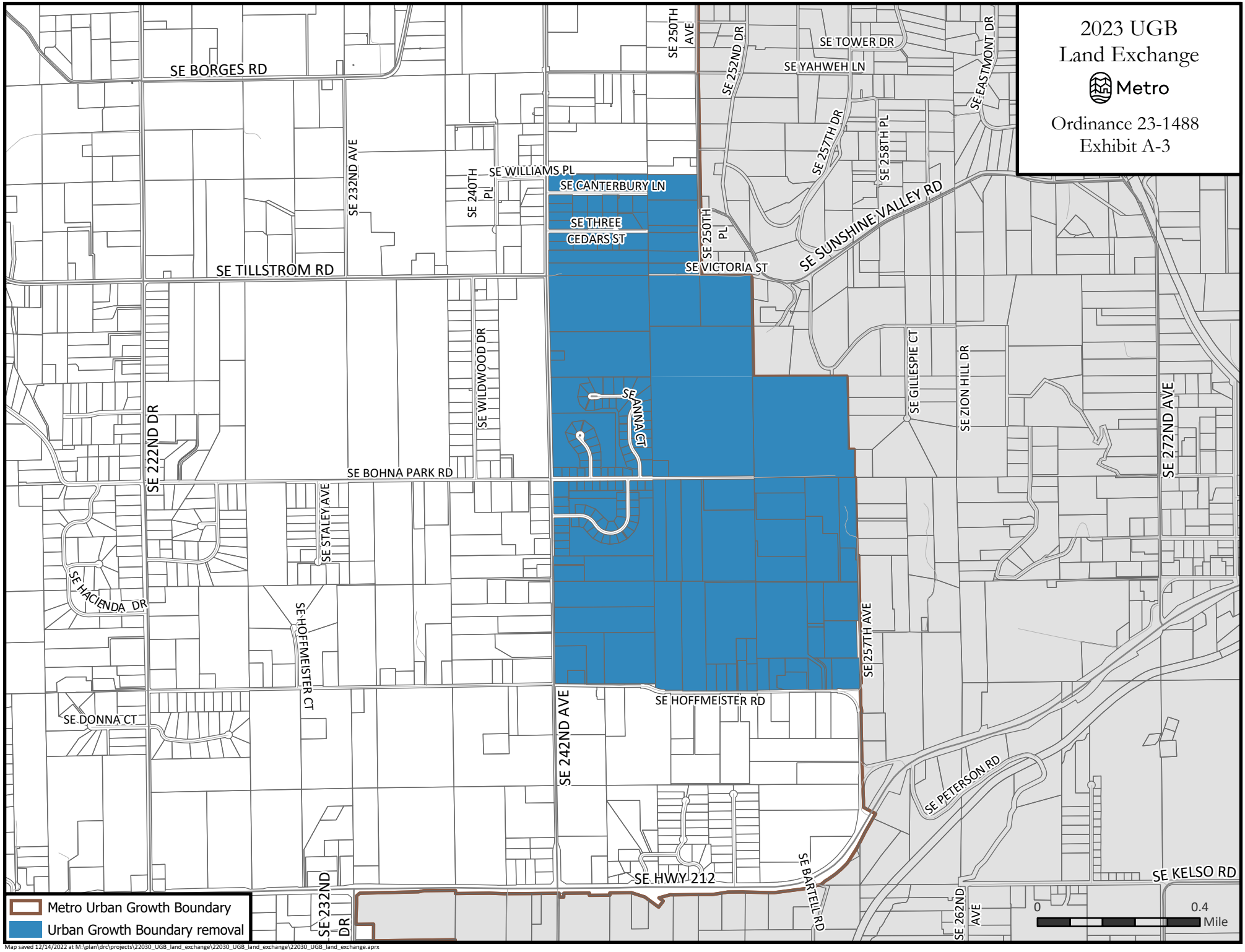

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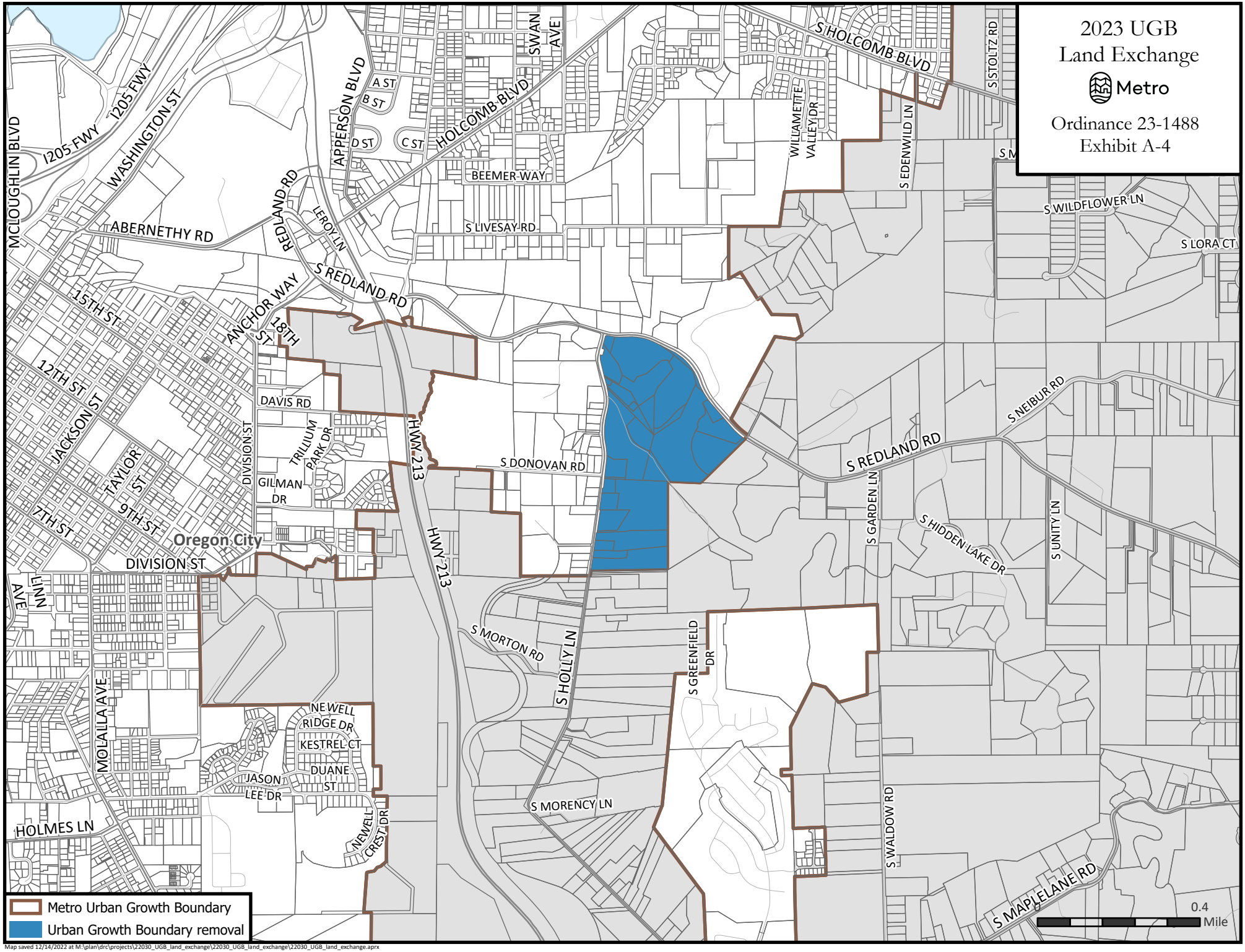

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Conditions of Approval on Land Added to the UGB

A. Comprehensive planning in the area added to the UGB:

1. Within four years after the date of this ordinance, the City of Tigard (city) will complete comprehensive planning consistent with Metro code section 3.07.1120 (Planning for Areas Added to the UGB).

2. As the city conducts comprehensive planning for the expansion areas, it will address how its plans implement relevant policies adopted by Metro in the 2014 regional Climate Smart Strategy regarding: (a) concentrating mixed-use and higher density development in existing or planned centers; (b) increasing use of transit; and (c) increasing active transportation options. The city shall coordinate with the appropriate county and transit provider regarding identification and adoption of transportation strategies.

3. As the city conducts comprehensive planning for the expansion areas, it will regularly consult with Metro Planning and Development staff regarding compliance with these conditions, compliance with the Urban Growth Management Functional Plan, compliance with applicable state law, and use of best practices in planning and development, and community engagement. To those ends, the city will include Metro staff in advisory groups as appropriate.

4. At the beginning of comprehensive planning, the city will develop – in consultation with Metro – a public engagement plan that encourages broad-based, early and continuing opportunity for public involvement. Throughout the planning process, focused efforts will be made to engage historically marginalized populations, including people of color, people with limited English proficiency and people with low income, as well as people with disabilities, older adults and youth.

B. Additional requirements:

1. The city will plan for at least 3,000 homes in the River Terrace 2.0 area being added to the UGB.

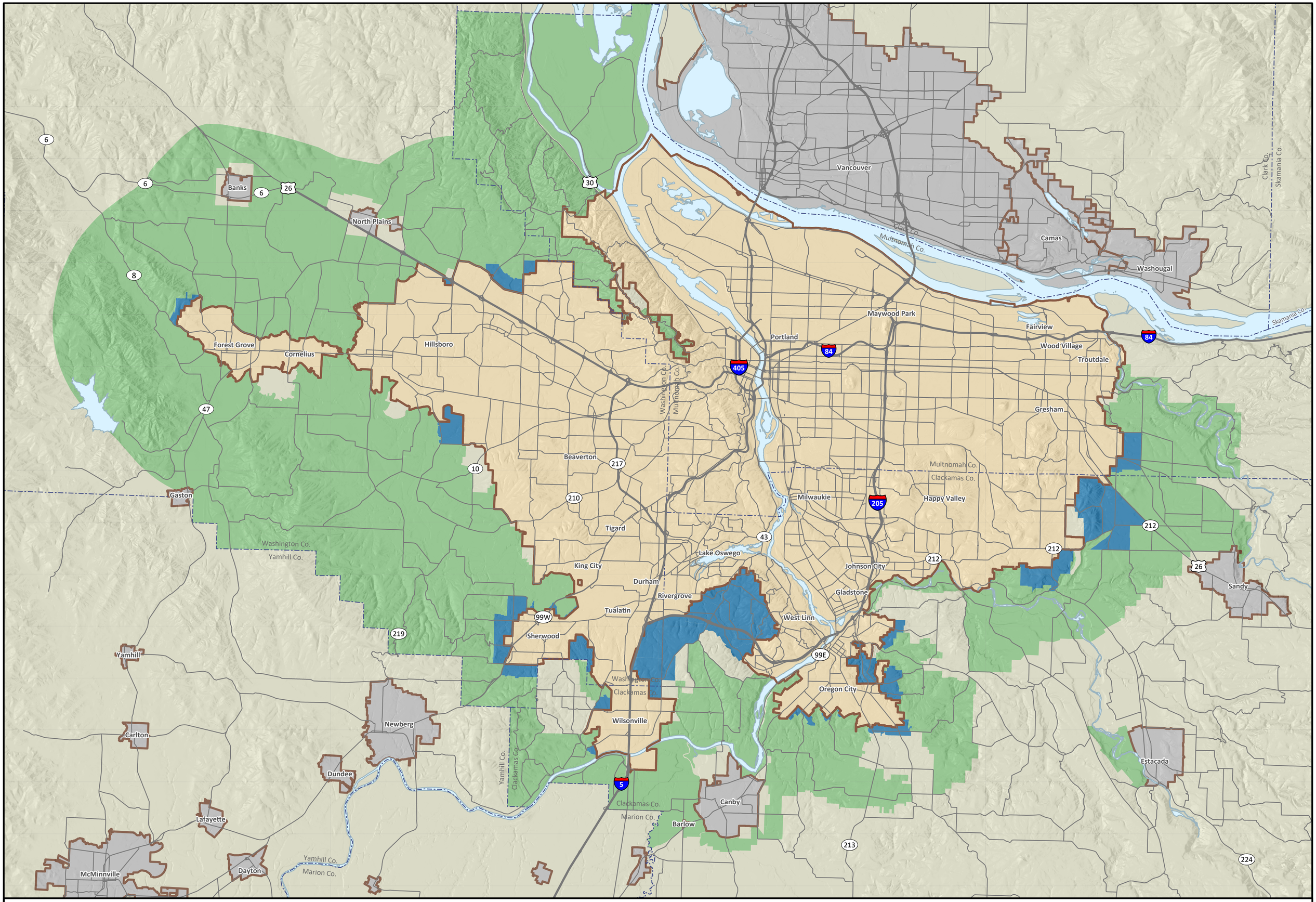
2. The River Terrace 2.0 area will be designated Neighborhood on the Metro 2040 Growth Concept map.

3. The city may propose the addition of Corridors for depiction on the 2040 Growth Concept map as an outcome of comprehensive planning for the area.

4. The city will continue making progress toward the actions described in Metro Code section 3.07.620 (Actions and Investments in Centers, Corridors, Station Communities, and Main Streets).

5. The city will continue to coordinate with Clean Water Services (CWS) regarding the South Bull Mountain Regional Stormwater and Sanitary System Study; all future development in River Terrace 2.0 and other parts of the city must be consistent with construction and design standards adopted by CWS in order to reduce and mitigate erosion impacts caused by stormwater.

6. Metro will work with Oregon City, Clackamas County, and the Oregon Department of Land Conservation and Development to ensure that removal of the two areas from the UGB is reflected in future housing forecast coordination efforts.



Ord. 23-1488 Exhibit C: Title 14, Urban Growth Boundary

February, 2023

0 1 2 3 miles

The information on this map was derived from digital databases on Metro's GIS. Care was taken in the creation of this map. Metro cannot accept any responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this product. However, notification of any errors are appreciated.

- County boundaries
- Urban growth boundaries
- Neighbor cities
- Rural reserve
- Urban reserve

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Findings of Fact and Conclusions of Law

Ordinance No. 23-1488 amends the Metro regional Urban Growth Boundary (UGB) to include approximately 490.6 acres of land adjacent to the City of Tigard in exchange for removing a substantially equivalent amount of buildable land from two locations in Clackamas County. This type of UGB adjustment through a land exchange is specifically authorized under rules adopted by the Oregon Department of Land Conservation and Development (DLCD) at OAR 660-024-0070(3). The following findings of fact and conclusions of law explain how the Metro Council decision complies with state and regional land use laws and policies.

A. Background of Decision

In 2016, the Metro Council convened the Urban Growth Readiness Task Force to explore ways to improve the region's process for growth management decisions. This group included mayors, county commissioners, Metro councilors, the Oregon Department of Land Conservation and Development (DLCD), 1000 Friends of Oregon, and representatives of the homebuilding industry. The Task Force recommended modifications to the UGB process that would allow cities to propose UGB expansions to Metro based on city-adopted concept plans, rather than Metro unilaterally selecting areas to add to the UGB as had been previously done. This approach allows cities to identify how they will accommodate new development by completing a concept plan for the proposed expansion area. The Task Force also laid out a framework for what the region should expect of cities that propose expansions, emphasizing a focus on citywide development readiness and attention to housing affordability.

The Council used this approach of focusing its policy discussions on the merits of city proposals for UGB expansions in its 2018 expansion via Ordinance No. 18-1427. In that decision, the Council found a regional need for more residential growth capacity and added approximately 2,100 acres to the UGB in four well-planned urban reserve areas as proposed by the cities of Beaverton, Hillsboro, King City and Wilsonville.

The 2017 Task Force also recommended a new UGB process to provide for opportunities to expand the UGB for residential needs midway through Metro's regular six-year growth management cycle. Throughout its discussions, the Task Force emphasized that this new process should set a high bar for proposals and that the process should address housing land needs that were not anticipated in Metro's most recent regular-cycle analysis. The Oregon Legislature codified this process in 2017 through the adoption of House Bill 2095, which allows Metro to make mid-cycle residential UGB expansions by amending its most recent Urban Growth Report analysis. In 2017, the mid-cycle process was added to Metro's UGB processes outlined in Title 14 of the Urban Growth Management Functional Plan.

In November 2021, the City of Tigard submitted a proposal to Metro for a UGB expansion through the mid-cycle amendment process. The city proposed to add a total of approximately 508 acres of land to the UGB that is comprised of the two urban reserve areas known as Roy Rogers East and Roy Rogers West. The proposed expansion area is known as River Terrace 2.0 and is comprised of two sub-areas that the city adopted a comprehensive and detailed concept

plan for in 2021, as required for a proposed UGB expansion area under Title 11 of the Metro Urban Growth Management Functional Plan (Metro Code section 3.07.1110).

Metro Planning Department staff reviewed the city's proposal for River Terrace 2.0 and concluded that the city had created an exemplary land use plan for the area that would provide a diversity of single detached and "missing middle" housing choices designed to meet a range of housing needs and income levels, including regulated affordable housing. However, given current slowing of population growth trends and increasing supply of capacity for middle housing inside the UGB under HB 2001 and related local zoning efforts, Metro staff concluded that it would be difficult to legally justify a decision by the Metro Council that there is not enough buildable land inside the existing UGB to accommodate projected growth over the next 20 years.

On April 28, 2022 the Metro Chief Operating Officer (COO) presented a recommendation to the Metro Council that the city's request to add River Terrace to the UGB should be approved, but through the UGB exchange process rather than the mid-cycle process. In her recommendation the COO explained:

> "This approach is consistent with Metro's focus on city readiness in its growth management decisions. It recognizes that Tigard is ready for growth while some other areas that were added to the UGB in the past have not resulted in housing and may not for decades to come. Ultimately, adding land to the UGB can only help us address our housing shortage if it develops in a thoughtful, predictable way. Tigard has demonstrated that it is ready to develop River Terrace with a mix of middle housing types that makes efficient use of land."

At the April 28, 2022 work session, the Metro Council directed staff to return with a proposed approach to identifying possible UGB exchange candidates. At a June 14, 2022 work session, Metro staff presented an approach that included mapping buildable lands in unincorporated areas inside a one-mile buffer within the UGB, followed by consultation with local jurisdictions and special districts. Through that consultation, staff developed its understanding of the planning and development status of these areas. Areas that were further along in their readiness were removed from consideration and areas that lacked readiness were advanced for further discussion.

At a September 15, 2022 work session, the Metro Council discussed the preliminary UGB exchange candidates and possible considerations for narrowing those options. The Metro Council directed Metro staff to narrow the UGB exchange options as proposed by staff and to come back to the Council with an array of options for potential removal areas that would best satisfy the applicable rules and local government preferences.

Metro's COO presented her recommendations to the Metro Council on October 20, 2022, which provided three options for potential exchange areas that would each remove a substantially equivalent amount of buildable land in exchange for the addition of River Terrace. Concurrently, Metro opened a 45-day public comment period on the COO recommendations.

At its meeting on November 9, 2022, the Metro Policy Advisory Committee (MPAC) reviewed the three exchange options as proposed in the COO's recommendation and voted in favor of making a recommendation to the Metro Council to proceed with "Option 3," which would remove approximately 490.5 acres from the UGB in the area formerly known as the City of Damascus and approximately 81.2 acres adjacent to Oregon City in the Park Place area, as shown on the maps attached at Exhibit A-3 and A-4 to Ordinance No. 23-1488.

Following the MPAC recommendation, the Metro Council directed staff at its November 22, 2022 work session to prepare an ordinance for its consideration that would complete the UGB exchange to add River Terrace 2.0 to the UGB and remove the areas described in "Option 3" as depicted in Exhibits A-3 and A-4 to Ordinance No. 23-1488.

B. Coordination with Local Governments and Stakeholders

Since May of 2022, Metro staff and councilors have undertaken significant outreach to local governments, state agencies, and other stakeholders regarding the UGB exchange proposal. The exchange has been discussed five times by MPAC, which is an advisory committee to the Metro Council consisting of elected officials from cities, counties and special districts throughout the region, as well as citizens and representatives of TriMet and DLCD. The exchange was also discussed twice by the Metro Technical Advisory Committee (MTAC), which is the technical advisory group to MPAC consisting of planning and transportation staff who support MPAC members, as well as ODOT staff and citizen representatives from each county. At its meeting on November 9, 2022, a majority of MPAC members voted to recommend that the Metro Council approve the UGB exchange as described in Ordinance No. 23-1488.

Metro staff and councilors have presented the proposed UGB exchange to the following local governments and organizations:

May 18:	Metro Technical Advisory Committee
June 6:	North Clackamas Chamber of Commerce
June 15:	Clackamas County Coordinating Committee (Metro subcommittee)
June 21:	Happy Valley City Council
June 22:	MPAC
June 23:	Gresham Chamber of Commerce
July 20:	Westside Economic Alliance
August 2:	Clackamas County Business Association
August 17:	Metro Technical Advisory Committee
August 24:	MPAC
September 8:	Damascus Community Planning Organization
September 21:	Metro Technical Advisory Committee
September 21:	Clackamas County Board of Commissioners
September 28:	MPAC
October 5:	Oregon City Board of Commissioners
October 13:	Home Building Assoc. of Metropolitan Portland
October 17:	Washington County Coordinating Committee
October 26:	MPAC

November 1:	Washington County Board of Commissioners
November 9:	MPAC
December 1:	Washington County Planning Directors

C. Public Notice

On December 5, 2022, Metro staff sent postcards to all owners of property in the areas proposed for removal from the UGB as well as property owners in the River Terrace 2.0 Urban Reserve. These postcards provided notice of the Metro Council's January 19, 2023 public hearing. Owners of additional properties to the south of Hoffmeister Road in the former City of Damascus also received postcards notifying them of the proposed UGB exchange. Postcards that went to owners of properties in areas proposed for removal from the UGB also included information about a January 5, 2023 virtual townhall.

On December 28, 2022, Metro staff sent postcards to all residents within one mile of the proposed River Terrace 2.0 UGB expansion area. Those postcards notified residents of the proposal and provided them access to a report on the possible impacts of the expansion on existing neighborhoods. This report is required under Metro code. The postcards also provide notice of the Metro Council's January 19, 2023 public hearing.

Metro staff hosted two townhall meetings for owners of property in areas proposed for removal from the UGB. On January 4, 2023, Metro hosted an in-person townhall at the Harmony West campus of Clackamas Community College. On January 5, 2023, Metro hosted a virtual townhall. As noted above, the virtual townhall was publicized in postcards that went to owners of property in areas proposed for removal from the UGB. Details for the in-person event were not available at the time postcards were sent, but Metro advertised the in-person townhall on its website and through relevant community planning organizations.

On January 19, 2022, the Metro Council held a duly noticed public hearing on Ordinance No. 23-1488 and accepted written and oral testimony from interested parties. At the conclusion of that meeting, the Metro Council closed the public hearing and left the record open for additional written materials prior to the second reading of the ordinance and scheduled vote on February 2, 2022.

D. UGB Land Exchange Requirements

1. UGB Land Exchange Rules

The applicable DLCD rules governing UGB land exchanges are set forth at OAR 660-024-0070(3). Those rules authorize cities and Metro to exchange land inside the UGB for land outside the UGB without having to undertake a new housing needs analysis regarding whether there is enough land inside the existing UGB to provide a 20-year supply of buildable land, so long as the amount of buildable land being added to the UGB is substantially equivalent to the amount of buildable residential land being removed.

The total gross acreage of the River Terrace 2.0 area is approximately 490.6 acres. After excluding acreage that will be used for public purposes and that is unbuildable due to steep slopes, existing natural resources, and habitat protection, the buildable acreage in River Terrace is approximately 346.5 acres. As shown on the "Option 3" map in the staff report dated January 11, 2022, the gross acreage being removed from the UGB is approximately 571.8 acres, which includes approximately 351.5 acres of buildable land. As required by OAR 660-024-0070(3)(a), the Metro Council finds that the amount of buildable land being added to the UGB is substantially equivalent to the amount of buildable residential land being removed.

The second part of the appliable DLCD rule provides that "the local government must apply comprehensive plan designations and, if applicable, urban zoning to the land added to the UGB, such that the land added is designated … for the same residential uses and at the same housing density as the land removed from the UGB." This part of the rule contemplates the more typical situation where a city that is approving a UGB exchange is also responsible for the planning and zoning of the property, which would be the case for all other cities across the state but not for Metro, because Metro does not have the ability to annex property into the City of Tigard or to adopt local zoning. After River Terrace is added to the UGB the City of Tigard will annex the property and adopt appropriate plan and zoning designations that are consistent with the city's proposal and the concept plan for River Terrace. The Metro Council has adopted a condition of approval requiring the city to adopt comprehensive plan and zoning designations for River Terrace.

Similarly, the DLCD rule also provides that when land inside the UGB is exchanged for land outside the UGB, "the applicable local government must adopt appropriate rural zoning designations for the land removed from the UGB prior to or at the time of adoption of the UGB amendment." OAR 660-024-0070(1). In the present situation, all of the land being removed from the UGB still retains the same rural zoning designations that existed at the time the land was added to the UGB in 2002. The City Council for the former City of Damascus was unable to adopt urban zoning for land within its boundaries and the city was disincorporated by a majority of its voters in a 2016 election that was ultimately affirmed by the Oregon Supreme Court in 2020. Therefore, the area being removed from the UGB in this exchange still has rural zoning under the Clackamas County Zoning and Development Ordinance, and the purpose and intent of the DLCD rule is met.

2. UGB Location Alternatives Analysis

Statewide Planning Goal 14 directs local governments, including Metro, to consider four locational factors as part of any decision to expand the UGB:

- Factor 1 – Efficient accommodation of identified land needs;
- Factor 2 – Orderly and economic provision of public facilities and services;
- Factor 3 – Comparative environmental, energy, economic and social consequences;
- Factor 4 – Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

The Metro Council's decision does not result in an expansion of the UGB because a comparable amount of land is being added and removed; in fact, more gross acreage is being removed from the UGB than is being added. However, the applicable DLCD rules provide that the location and priority requirements of Goal 14 and OAR 660-024-0060 must still be applied when making a UGB land exchange.

Metro's analysis of the four Goal 14 locational factors is governed by OAR 660-024-0060, which provides that when considering a UGB amendment, "Metro must determine which land to add by evaluating alternative urban growth boundary locations," consistent with the priority of lands specified in ORS 197.298. The highest priority of land available under ORS 197.298 is urban reserve. Because the River Terrace area is designated urban reserve, OAR 660-024-0060(1)(b) directs Metro to apply the location factors of Goal 14 to the urban reserve areas to choose which land in that priority to include in the UGB.

Metro's Goal 14 UGB Location Alternatives Analysis is included and adopted as part of these findings as Attachment 1. As described in that analysis, Metro undertook a two-step process by first applying the Goal 14 factors and other locational requirements in OAR 660-024-0060 to all 29 urban reserve areas. Based on that analysis, seven of the urban reserve areas were determined to be clearly unsuitable for urbanization in the short term and were removed from further evaluation. Next, Metro applied the separate Metro Code location factors to the remaining 22 urban reserve areas that were determined to be the most potentially suitable under the Goal 14 factors. That analysis is included and adopted as part of these findings as Attachment 2. Metro coordinated with the relevant service providers, including ODOT, in the evaluation of relative costs, advantages and disadvantages of providing services to the alternative areas.

The seven urban reserve areas that were determined to be the least suitable for urbanization based on the Goal 14 analysis are: Boring, Boring-Highway 26, Damascus, Stafford, Rosemont, Norwood and Tonquin. These seven areas all share significant infrastructure hurdles that would need to be addressed prior to services such as sanitary sewer and water becoming available. For instance, the closest sanitary sewer services to the Damascus or the Boring urban reserves is well over a mile away and sanitary sewer service for Stafford and Rosemont would need to flow through the Borland urban reserve area, requiring the Borland urban reserve area to be urbanized first. A table showing the results of the analysis and the rankings for all 29 urban reserve areas is attached as Appendix 4 to Attachment 1.

A second group of urban reserves were determined to rate low for more than one public facilities and services type. While the obstacles may not be as significant as in the areas noted above, these areas do face infrastructure difficulties related to large swaths of adjacent undeveloped land inside the UGB, undetermined service providers, current need for improvements to meet existing demand, and high costs for future needed improvements. In addition, a few of these areas are likely to have higher environmental consequences due to the number and location of potential stream crossings. This group includes Beaver Creek Bluffs, Borland, David Hill, Gresham East, Holcomb, Holly Lane, Maplelane, and Sherwood South.

The remaining urban reserve areas rated reasonably well for public facilities and services as well as the other Goal 14 factors. This group includes Bendemeer, Bethany West, Brookwood

Parkway, Elligsen Road North, Elligsen Road South, Grahams Ferry, Henrici, I-5 East, River Terrace South, River Terrace West, Sherwood North, Sherwood West, South and Wilsonville Southwest. Most of these areas rated at medium or high for the four different locational factors.

However, of the eight areas within this group that did not have at least one low rating, four of them are very small and would not provide sufficient buildable land to accommodate needed housing (Brookwood Parkway, Grahams Ferry, Sherwood North and Wilsonville Southwest). Another, Bethany West, is not adjacent to a city, the preferred provider of urban services in Washington County per the Urbanization Forum agreement between Washington County and the cities within the county, which reduces its likelihood of being urbanized in the short term.

In undertaking this review of alternative urban reserve areas, the Metro Council is cognizant of the region's history of expanding the UGB into areas that have failed to develop, or have developed very slowly, due to a lack of city governance and planning for development. Therefore, in its evaluation of the relative merits of the urban reserve areas under the factors in Goal 14 and the Metro Code, the Metro Council is exercising its discretion to place greater weight on the two factors that are impacted by the existence of an adjacent city with an adopted concept plan for the rural reserve area demonstrating that the city is ready to urbanize and ready to develop new housing in the short term. Those two factors are: (1) efficient accommodation of identified land needs, and (2) orderly and economic provision of public facilities and services.

The primary purpose of this UGB exchange is to provide our region with needed housing in a location that has demonstrated it is ready to develop. Therefore, the Metro Council is choosing to prioritize adding land where a city has adopted a concept plan and clearly indicated that it is ready to expedite development. With an adopted land use plan in place, River Terrace South and River Terrace West are the two urban reserve areas that will be able to urbanize the soonest and thereby more efficiently accommodate needed housing. The concept plan also describes Tigard's plans for future development and financing needed infrastructure, thereby making it more likely that River Terrace can provide public facilities and services in an orderly and economic manner.

River Terrace 2.0 is comprised of two urban reserve areas: River Terrace South and River Terrace West. As described in Attachments 1 and 2, these areas ranked comparatively high under the Goal 14 factors and the Metro Code factors, and have the benefit of a completed concept plan adopted by a city that is eager to annex, urbanize, and govern the areas. The concept plan describes the city's ability to provide and pay for urban services, expected housing types and number of units, natural resource protection needs and governance issues. Identifying and planning for these issues in advance dramatically increases the likelihood that those two urban reserve areas will be able to efficiently provide new housing units within a reasonable timeframe and will provide public facilities and services in an orderly and economic manner. Therefore, the Metro Council finds that those two areas will better accommodate new housing and more readily provide urban services under those two locational factors in both the Metro Code and Goal 14.

Application of the non-redundant locational factors in the Metro Code to the remaining 22 urban reserve areas is provided in Attachment 2 to these findings. As noted in Table 3, all urban reserve areas received a high ranking for factor 2 regarding protection of farmland for commercial agriculture, since all areas are urban reserves that by definition are appropriate for

urbanization. All but one of the urban reserve areas received a low ranking under factor 4 regarding contribution to the purposes of Centers and Corridors, primarily due to the distance between the urban reserve areas and the closest designated Center, lack of direct connections and transit service, and the character of the land uses in between.

Turning to the remaining two factors, only two urban reserve areas (Brookwood Parkway and Holly Lane/Newell Creek) received high rankings for those factors regarding transition between urban and rural lands using natural and built features, and avoidance of regionally significant fish and wildlife habitat. However, those two urban reserve areas have unique features that make them less efficient for accommodating new housing. Brookwood Parkway is very small at 53 acres with all but four parcels containing residences or institutional uses, leaving only 24 net buildable acres, which limits its ability to provide land to accommodate the identified residential need.

Holly Lane/Newell Creek is mostly surrounded by the UGB with only a 1,100 foot rural edge and has a state highway (Hwy 213) running through the middle of it. However, a significant amount of the urban reserve area is steeply sloped and a considerable portion of the riparian and upland habitat areas are in public ownership, which accounts for one-third of the land in the reserve area. The main amount of buildable land is along one north-south road, South Holly Lane, which contains numerous rural residences and has limited potential connections to land inside the UGB to the east due to steep slopes and significant natural resources. The Metro Council finds that, although this area has high scores regarding two of the Metro Code factors, on balance those advantages are outweighed by factors 1 and 2 under Goal 14 and the Metro Code. River Terrace, which has an adopted plan for orderly and efficient accommodation of new housing and infrastructure, the topography, parcelization, protected areas, and difficulty of providing urban services to the area make it less able to efficiently accommodate new housing or to provide public facilities and services in an orderly and economic manner.

After applying the locational factors under both the Metro Code and Goal 14, and weighing and balancing those factors as a whole, the Metro Council finds that the two River Terrace urban reserve areas rise to the top of the rankings when all of the factors are considered together. As described above, the Council is exercising its discretion to provide greater weight to the first and second factors under both Goal 14 and the Metro Code regarding efficient accommodation of identified land needs and orderly and efficient provision of public facilities and services. Under this analysis, and based on the evidence and analysis provided in Attachments 1 and 2 to these findings regarding application of the factors to the urban reserve areas, the Metro Council finds that River Terrace South and River Terrace West are better locations for this UGB amendment than any of the other urban reserve areas.

3. Additional Factors for UGB Expansion Proposals

At the direction of the Urban Growth Readiness Task Force, in 2017 the Metro Council adopted amendments to Metro Code section 3.07.1425 identifying certain other factors to be considered in determining which urban reserve areas being proposed by cities for a UGB expansion will better meet an identified need for housing. Those factors are considered and applied in this section. The Metro Council finds that because the purpose of this new code section is to choose

between urban reserve areas being proposed for addition to the UGB by cities, only the area being proposed for an expansion may be considered. The Council also notes that in adopting these factors, the Council's expressly stated intent was not to create criteria that must be satisfied, but factors to be considered and weighed, in the manner of the Goal 14 locational factors.

The first factor is whether the urban reserve area is adjacent to a city with an acknowledged housing needs analysis that is coordinated with the Metro regional growth forecast. The City of Tigard has an acknowledged housing needs analysis that was coordinated with Metro.

The second factor is whether the area has been concept planned consistent with Title 11 of the Urban Growth Management Functional Plan. The River Terrace 2.0 area has been concept planned by the City of Tigard.

The third factor is whether the city that prepared the concept plan has demonstrated progress toward the actions described in Metro Code section 3.07.620 in its existing urban areas. That section of Title 6 provides that in order to be eligible for a regional investment in a Center, Corridor, Station Community, or Main Street, a city must adopt a map showing boundaries for those areas and adopt a plan of actions and investments. As described in detail in the concept plan materials submitted by the City of Tigard in support of its mid-cycle amendment proposal for River Terrace 2.0, the city has demonstrated significant progress toward the requirements of Title 6. The city has one designated Town Center that encompasses the city's downtown and the Tigard Triangle, and one designated Regional Center (Washington Square) that it shares with the City of Beaverton and Washington County. Both of these Title 6 Centers have been the focus of significant investment since their designation in 1995, including recently completed projects to update and streamline the city code to encourage more and improved types of development. For all of the reasons described in the River Terrace 2.0 Concept Plan, the Metro Council finds that the city has city has demonstrated significant progress toward the actions described in Title 6.

The fourth factor is whether the city that prepared the concept plan has implemented best practices for preserving and increasing the supply and diversity of affordable housing in its existing urban areas. As described in detail in the concept plan materials submitted by the City of Tigard in support of its mid-cycle amendment proposal for River Terrace 2.0, the city has been a leader among mid-sized cities in the region regarding encouraging and subsidizing the construction and operation of affordable housing units. For all of the reasons described in the River Terrace 2.0 Concept Plan, the Metro Council finds that the city has implemented best practices, particularly for a mid-sized city, for preserving and increasing the supply and diversity of affordable housing in its urban areas.

The fifth factor is whether the city has taken actions to advance Metro's six desired outcomes in the Regional Framework Plan. As described in detail in the concept plan materials submitted by the City of Tigard in support of its mid-cycle amendment proposal for River Terrace 2.0, the city has proactively and demonstrably advanced Metro's six desired outcomes throughout the city as reflected in its existing plans and policies, including the Affordable Housing Plan, the Tigard Strategic Plan, and the Tigard Comprehensive Plan, and this work is continued in the concept plan for River Terrace 2.0.

E. Statewide Planning Goals

Goal 1 (Citizen Involvement): See findings in Sections B and C above.

Goal 2 (Adequate Factual Base): Findings regarding the coordination element of Goal 2 are set forth above in Section B. The Metro Council finds that the record includes an adequate factual base for these findings and the approval of the UGB exchange. The Metro Council concludes that adoption of Ordinance No. 23-1488 complies with Goal 2.

Goal 3 (Farmland): Under OAR 660-024-0020(1) Goal 3 is not applicable.

Goal 4 (Forestland): Under OAR 660-024-0020(1) Goal 4 is not applicable.

Goal 5 (Natural Resources): The Metro Council finds that adoption of Ordinance No. 23-1488 does not impact any inventoried Goal 5 resources and is therefore consistent with Goal 5 and its implementing rules.

Goal 6 (Air, Water and Land Quality): The Metro Council finds that the adoption of Ordinance No. 23-1488 does not impact any comprehensive plan designations or land use regulations that relate to protection of air, water and land quality. Ordinance No. 23-1488 does not authorize any particular uses of property with environmental impacts, and therefore does not implicate Goal 6.

Goal 7 (Natural Hazards): The Metro Council finds that adoption of Ordinance No. 23-1488 does not impact any existing local plans, polices, or inventories regarding natural hazards and does not authorize any particular uses of property in natural hazard areas; therefore, this decision does not implicate Goal 7.

Goal 8 (Recreation): The Metro Council finds that adoption of Ordinance No. 23-1488 does not involve recreation planning or destination resort siting; therefore, this decision does not implicate Goal 8.

Goal 9 (Economy): Although Goal 9 does not apply to Metro, the Metro Council concludes that adoption of Ordinance No. 23-1488 does not impact local comprehensive plans, policies or inventories regarding economic development.

Goal 10 (Housing): Goal 10 requires local governments to provide an adequate amount of housing to meet the varying financial capabilities of the people of Oregon. Goal 10 is implemented in the Metro region through a DLCD rule called the Metropolitan Housing Rule, which requires cities and counties within the UGB to meet minimum density requirements and to provide the opportunity for 50 percent of new units to be single family attached or multifamily units. *See* OAR 660-007-0030 and 0035. The Metro Council finds that the housing being proposed by the City of Tigard in its concept plan for River Terrace 2.0 appears to satisfy applicable density and housing mix requirements; however, legal compliance with the Metropolitan Housing Rule is not to be determined by Metro at the time of a UGB amendment

based only on a city concept plan. Rather, legal compliance must be determined by DLCD at the time that the city formally adopts comprehensive plan and zoning maps for the new urban area.

Goal 11 (Public Facilities and Services): Metro does not provide public facilities or services and does not adopt public facility plans; Metro is responsible for coordinating public facility planning by cities and counties. The Metro Council finds that adoption of Ordinance No. 23-1488 does not impact the planning for or provision of public facilities and services; therefore, this decision does not implicate Goal 11.

Goal 12 (Transportation): Under OAR 660-024-0020(1) the Goal 12 requirements in the Transportation Planning Rule do not apply to a UGB amendment that does not involve amendment of the local planning designation for the expansion areas allowing development.

Goal 13 (Energy): The Metro Council finds that the adoption of Ordinance No. 23-1488 promotes a compact urban form and the efficient use of energy within the UGB. To the extent Goal 13 applies, the Metro Council concludes that this decision is consistent with Goal 13.

Goal 14 (Urbanization): See findings in Section D above.

Goal 15 (Willamette River Greenway): The Metro Council finds that adoption of Ordinance No. 23-1488 has no impact on the Willamette River Greenway; therefore, this decision does not implicate Goal 15.

Attachment 1: Goal 14 UGB Location Alternatives Analysis
Attachment 2: UGB Alternatives Analysis – Metro Code Factors

Goal 14 UGB Location Alternatives Analysis

Statewide Planning Goal 14

Locational Factors

Public service

We are here to serve the public with the highest level of integrity.

Excellence

We aspire to achieve exceptional results

Teamwork

We engage others in ways that foster respect and trust.

Respect

We encourage and appreciate diversity in people and ideas.

Innovation

We take pride in coming up with innovative solutions.

Sustainability

We are leaders in demonstrating resource use and protection.

Metro's values and purpose

We inspire, engage, teach and invite people to preserve and enhance the quality of life and the environment for current and future generations.

If you picnic at Blue Lake or take your kids to the Oregon Zoo, enjoy symphonies at the Schnitz or auto shows at the convention center, put out your trash or drive your car – we've already crossed paths.

So, hello. We're Metro – nice to meet you.

In a metropolitan area as big as Portland, we can do a lot of things better together. Join us to help the region prepare for a happy, healthy future.

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TABLE OF CONTENTS

Introduction 1

Methodology 1

Results 14

Appendices 15

GOAL 14 UGB ALTERNATIVES ANALYSIS

INTRODUCTION

In support of the 2023 urban growth boundary (UGB) exchange proposal Metro staff completed an assessment of all 29 urban reserve areas under Statewide Planning Goal 14 requirements for an UGB expansion, attached as Appendix 2.

The boundary locational factors of Goal 14 are not independent criteria. When the factors are applied to compare alternative boundary locations and to determine the UGB location, all four of the factors must be evaluated, and weighed and balanced as a whole. The boundary location factors of Goal 14 are:

- *Factor 1 – Efficient accommodation of identified land needs.*
- *Factor 2 – Orderly and economic provision of public facilities and services.*
- *Factor 3 – Comparative environmental, energy, economic and social consequences.*
- *Factor 4 – Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.*

Metro's UGB location analysis consists of two steps. First, this report applies the Goal 14 factors to all 29 urban reserve areas and identifies seven areas that are clearly unsuitable for urbanization in the short term. Those seven areas are removed from the second step of the analysis, which is an evaluation of the remaining urban reserve areas under the separate UGB location factors of the Metro Code; those evaluations are provided in a separate attachment.

METHODOLOGY

Metro staff completed a comprehensive UGB location alternatives analysis under Goal 14 to support the Metro Council's 2018 growth management decision, which is the starting point for this updated analysis. Metro staff has updated relevant portions of the 2018 analysis including the parcelization and development pattern description and Factors 3 and 4, as well as components of the transportation section under Factor 2. In 2018 OTAK, a multidisciplinary design firm, completed the analysis for sanitary sewer, water, and storm water management under Factor 2. Metro staff believes the 2018 OTAK analysis and the corresponding infrastructure needs, and costs are still applicable, thus the OTAK analysis is included in this report. Staff acknowledges that the cost of materials and construction of infrastructure has increased since 2018; however, those costs have increased regionwide and the cost estimates for the different urban reserve areas will have all increased at the same rate and remain valid. Similarly, the 2018 cost estimates generated for the roadway system improvements are utilized in this report. The buildable land assessment for each urban reserve area that the Metro Research Center completed for the 2018 analysis is relied upon and updated in this current analysis. For purposes of a buildable land assessment, the rural landscape in the urban reserve areas has not changed much in the last four years – as discussed below all of the urban reserve land is still considered vacant.

Buildable Land Assessment

The buildable land analysis follows general procedures used for most buildable lands studies. Vacant areas are first identified. Areas that are unbuildable such as steep slopes and environmentally sensitive areas are then removed from vacant lands. Specific categories of public and other tax-exempt lands are also considered unbuildable. The inventory of vacant land is then reduced to account for future streets and public facilities needed to accommodate urbanization.

Most tabular data used in this analysis has been generated from Geographic Information Systems (GIS). In GIS, digital, coordinate-based spatial data layers are used to represent real world features such as tax lots, wetlands and floodplains, and zoning areas. All the GIS data used in this analysis are from Metro's Research Center.

Of course, electronic data representing real world features are rarely perfect. Data representing features like floodplains and tax lots will have some positional inaccuracies, which, in turn, will be reflected in numbers representing them. In addition, much of the assessment information that is included in Metro's Regional Land Information System (RLIS) database comes directly from county assessment offices, where local updates may be conducted at different intervals. For a variety of reasons such as these, the study helps to point out general patterns, but is not intended to be accurate at extremely small levels of geography.

Step 1: Determine which lands within the study areas are vacant

For this study all the land in the analysis areas is assumed to be "vacant", meaning all the non-public land area that is not constrained by environmental resources or other limitations such as power line easements or parks is available for development. This determination is based on a previous comparison of land value to improvement value completed by Research Center staff that indicated the existing rural residences would most likely redevelop due to a substantial increase in land value as the rural lands are added to the UGB. In addition, Metro Planning staff's experience with concept planning and development of new urban areas and observations from past UGB expansion areas such as North Bethany generally validates this assumption. It is understood however, that some high valued residences will remain as rural lands are urbanized, and the presence of many high value homes may slow the urbanization process considerably. This type of decision is very personal for the homeowner, and it is beyond the scope of this study to attempt to determine how long particular parcels would remain rural in the future.

Step 2: Remove environmentally constrained areas from vacant areas

Lands that are considered vacant may not necessarily be buildable. Therefore, the next step in a buildable lands study is to subtract those areas that are environmentally constrained. The following environmentally constrained areas are removed from vacant lands.

- Urban Growth Management Functional Plan Title 3 Water Quality and Flood Management Areas, consisting of:
  - Flood Hazard Areas
  - FEMA 100-year floodplains and 1996 flood inundation areas
  - Wetlands - From an enhanced National Wetlands Inventory and local wetlands inventories
  - Wetland Areas - 50 feet from the edge of wetland or up to 200 feet from the edge of wetland located adjacent to steep sloped areas (slopes > 25 percent).
  - Vegetated Corridor - A vegetated corridor between 15 feet and 200 feet depending upon the area drained by the water feature and the slope of the land adjacent to the water feature.
- Functional Plan Title 13 Nature in Neighborhoods Areas consisting of:
  - Riparian habitat class I & II and upland habitat class A & B as identified on the Metro Regionally Significant Fish and Wildlife Habitat Inventory Map.
- Slopes greater than 25%

Metro maintains GIS data files representing the features described above. Data layers representing environmentally constrained areas are "clipped" out of the data layer representing vacant areas, leaving only those areas that are vacant and buildable.

Functional Plan Title 3 and Title 13 regulations apply only to areas within the Metro jurisdictional boundary. As some of the reserve areas under study extend beyond this boundary, Metro has constructed a supplemental data layer representing Title 3 protections for the areas outside the jurisdictional boundary. The Title 13 Regionally Significant Fish and Wildlife Habitat Inventory extended beyond the jurisdictional boundary. If any of these urban reserve areas are added to the urban growth boundary, they would also be annexed to the Metro jurisdictional boundary, making Title 3 and Title 13 effective. Title 13 regulations apply to both riparian and upland habitats for UGB expansions. In almost all circumstances, the identified Title 13 significant riparian and upland habitats encompass the Title 3 Water Quality and Flood Management Areas. Metro's Title 13 regulations are not a "no touch zone" type of regulation, thus some development can be expected to occur in identified habitat areas as local plans are completed.

Step 3: Remove some categories of tax-exempt parcels

Some categories of tax-exempt lands, consisting of Federal, State, County or City-owned properties, and schools are identified from the assessment database and removed from consideration.

Step 4: Remove parks and open spaces, power line, natural gas, and petroleum easements

There are several other land categories that are considered unbuildable and need to be removed from the vacant land supply. All park types are removed, including developed parks with amenities, open space or natural areas, common areas of subdivisions, cemeteries, golf courses, school grounds, pools, tennis courts, fairgrounds, community centers, and community gardens. In addition, utility easements are removed from the vacant land supply where data is available.

Step 5: Add back ten percent of the Metro Title 13 constrained land total

A key step in planning for areas added to the UGB is the development of an updated environmentally constrained land data layer. Metro's Title 13 data layer was created almost 20-years ago at the regional scale. Current GIS tools allow for a more accurate assessment of the localized landscape and the riparian and upland wildlife habitat areas. As documented in recent UGB expansion area plans, the natural resource protected areas identified by the refined mapping analysis differs from the areas mapped by Metro in 2004. In addition, experience has shown that it is not uncommon for some of the original mapped upland habitat areas be removed through forestry practices, potentially resulting in additional buildable land. Finally, Title 13 provides that development may sometimes encroach into the habitat area, depending on the specific circumstances of the site and the development proposal. Recognizing the expected change in mapped habitat areas and the possibility of encroachment, ten percent of the mapped Metro Title 13 constrained land is added back into the buildable land calculation.

The following table shows the amount of constrained land identified in steps 2-5 that have been removed from the vacant lands supply of the analysis areas. This represents the amount of gross vacant buildable land.

Table 1	
Gross Vacant Buildable Land	
Land Type	**Acres**
Total Land	19,372
Constrained Land	-9,253
Title 13 Add	+403
Gross Vacant Buildable Land	10,522

Step 5: Remove future land needed for streets, parks, schools, and churches/fraternal organizations

As urbanization proceeds, some additional land will be necessary to accommodate different types of public facilities such as future streets, parks, and schools. In this analysis an estimate of future land needed to accommodate these uses is applied to each urban reserve area. The reduction estimates are the same as the reductions used in Metro's 2010 UGB Alternatives

Analysis. Refined acreage needs will be developed through the concept planning requirements of Functional Plan Title 11: Planning for New Urban Areas.

- *Future Streets:* 18.5 percent is removed from the vacant land to account for future streets.
- *Future Parks:* 2.2 percent is removed from the vacant land to account for future park needs.
- *Future Schools:* 2.9 percent is removed from the vacant land to account for future school land needs.
- *Future Places of Worship & Community Gathering:* 1.8 percent is removed from the vacant land to account for future places of worship and community gatherings.

The following table represents the net vacant buildable land.

Table 2		
Net Vacant Buildable Land		
	Acres Removed	**Total Acres**
Gross Vacant Buildable Land		10,522
Future Streets	1,947	8,575
Future Parks	187	8,388
Future Schools	243	8,145
Future Places for Worship & Community Gathering	147	7,998
Net Vacant Buildable Land		7,998

Goal 14 Boundary Locational Factors

A separate report summarizing the Goal 14 locational factors analysis for each urban reserve area can be found in Appendix 2.

Factor 1 – Efficient accommodation of identified land needs.

Based on the buildable land analysis completed by Metro's Research Center, the urban reserve areas were assessed for how efficiently the identified land need would be accommodated, evaluating the amount of buildable land, whether it is dispersed or located in significant pockets to determine how well potential residential and employment uses could be accommodated. In addition, parcelization, existing development pattern, lot sizes and locations, and potential transportation connections to the existing UGB were also evaluated. Finally, whether the urban reserve was located near commercial or employment areas, highways, parks and trails, and other recreational facilities was considered.

Factor 2 – Orderly and economic provision of public facilities and services (Water, Sanitary Sewer, Stormwater Management and Transportation)

Oregon Administrative Rule Chapter 660 Division 24 outlines the procedures and requirements of Goal 14 for an amendment of the UGB. For the purposes of Goal 14 boundary location factor 2, public facilities and services means water, sanitary sewer, stormwater management, and transportation facilities. This requires an evaluation and comparison of the relative costs, advantages, and disadvantages of alternative UGB expansion areas with respect to the provision of public facilities and services needed to urbanize alternative boundary locations. The evaluation and comparison must include:

- The capacity of existing public facilities and services to serve areas already inside the UGB;
- The capacity of existing public facilities and services to serve areas proposed for addition to the UGB;
- The impacts to existing public facilities and services that serve nearby areas already inside the UGB
- The need for new transportation facilities such as highways and other roadways, interchanges, arterials and collectors, additional travel lanes, other major improvements on existing roadways and the provision of public transit service.

As noted previously Metro contracted with OTAK to address the first three bullets above, including development of preliminary cost estimates for providing sanitary sewer, stormwater management, and water for a residential land need. The sanitary sewer, water and stormwater analysis focused on the larger components of the systems and preliminary cost estimates for the urban services addressed, at a minimum, the following:

- Sanitary sewer – Availability of treatment capacity, trunk line and pump station requirements, and existing local system improvements
- Water – Availability of source, availability of treatment capacity, storage, pump station and transmission line requirements, and existing local system improvements
- Stormwater – existing local system improvements including a need for sub-regional systems

Components of OTAK's analysis are included on the urban reserve summary reports in Appendix 2.

Metro staff completed the transportation component of the first three requirements as well as the transportation analysis identified in the last bullet based on a preliminary arterial/collector level road network developed by Metro staff in consultation with local jurisdictions using the connectivity standards in the Regional Transportation Plan (RTP). The ideal spacing for arterials is one mile apart, and the ideal spacing for collectors is one-half mile from another collector or arterial. This spacing reflects the evidence outlined in the RTP that such a connected system best accommodates an urban-level development pattern including vehicular, transit, bicycle, and pedestrian travel. Arterials were assumed to be an 80' roadway within a 120' right-of-way and collectors were assumed to be a 50' roadway within an 80' right-of-way.

The proposed road network was used to develop a rough capital cost estimate of the improved network for each urban reserve area. More detailed cost estimating will be necessary to determine exact costs and phasing of construction. The analysis does not include the local road network as this is assumed to be paid for by developers. It is not intended to depict the level of investment necessary at the onset of development. In addition, a RTP consistent network would serve a larger area beyond just the UGB amendment area, resulting in the potential for a range of funding options. The proposed road network and a summary of the transportation costs for each reserve area can be found in Appendix 2.

The cost estimating approach was derived from the ODOT Highway Economic Requirements System (HERS), which is used for planning-level capital costs for roadway projects. The approach includes assigning higher roadway costs to bridge crossings, floodplains, wetlands, and steep slope areas. It includes a standard right of way cost factor and is expressed as a unit cost per lane mile for a complete street section that includes bike lanes, sidewalk, curb, and gutter. The cost does not include stormwater pipes as the OTAK analysis included stormwater management costs for roadways. The cost estimates were completed using 2025 dollars and the breakout of cost for the arterials and collectors can be seen in the table below. Additional information on the HERS cost estimating approach can be found at http://www.fhwa.dot.gov/infrastructure/asstmgmt/hersindex.cfm

Table 3 - Roadway Cost Assumptions (All costs year 2025)			
Arterial 80' 4-lane divided or 5-lane roadway on 120' right-of-way (ROW)			
	Surface elements	ROW only	Total
Normal	$25,200,000	$18,600,000	$43,800,000
High	$77,700,000	$18,600,000	$96,300,000
Collector 50' 2-lane divided or 3-lane roadway on 80' right-of-way (ROW)			
	Surface elements	ROW only	Total
Normal	$16,100,000	$12,400,000	$28,500,000
High	$41,700,000	$12,400,000	$54,100,000

The remainder of the transportation analysis (capacity to serve areas already inside the UGB, capacity to serve the reserve area and impacts to the facilities) was completed using a variety of data sources including: the 2018 Regional Transportation Plan Base Case (2015 round 1, pm peak) volume to capacity ratio plot to identify the capacity of roadways near the reserve areas, Metro's High Injury Corridors and Intersections Map 2016-2020, GIS data layers showing existing facilities for bike and sidewalk facilities, trails, transit lines and transit stops and 2021 aerial photos.

TriMet and South Metro Area Regional Transit (SMART), the transit agencies that may potentially serve the urban reserve areas, completed preliminary transit evaluations in 2018. Those evaluations were used in this report, and they included estimated transit costs for each area by comparing the assumed road network to nearby land uses and the existing transit

system. Opportunities for line extensions, rerouting, and new service were all considered. Based on these factors, transit service feasibility, headways, and span of service were estimated. It is important to note operating costs will recur annually and are assumed to grow at 3 percent every year. Bus capital costs are assumed to recur every 14-15 years. Cost estimates, both capital and operating, were calculated using current year costs. The estimates are intended as a tool for policymakers to understand the feasibility and costs associated with providing additional transit service to each of the analysis areas. The estimates do not guarantee transit service. Ultimately, any investment in new transit service will depend on the actual level of development that occurs in an area and the corridors leading up to it.

Factor 3 – Comparative environmental, energy, economic and social consequences (ESEE analysis)

The purpose of this analysis is to assess the long-term environmental, social, energy and economic (ESEE) consequences that would result from urbanization of land considered for inclusion within the UGB and to guide the selection of lands from among those considered. Each of the ESEE factors must be evaluated for each urban reserve area. Statewide Planning Goal 2: Land Use Planning, Part II Exceptions, suggests that when considering the conversion of land from rural to urban uses that the evaluation be based on the "Positive/Negative Effects" of the impacts of urbanization on the study areas and the "Advantages/Disadvantages" of a particular site versus another site.

The analysis must find that urbanization may occur in a manner consistent with any special protection of resources or hazards, as identified in a local comprehensive plan and implemented by land use regulations. Any complimentary and adverse economic impacts must also be identified. Evaluation of these factors, on balance, must demonstrate that the lands being considered are no worse than other areas under consideration for urbanization.

ESEE Analysis Process

The four factors of the ESEE analysis were evaluated separately. The environmental component is reported out separately as it is more quantitative in nature whereas the other three components of the analysis are more qualitative in nature and are reported together. Outlined below are general descriptions of the ESEE analysis factors and the expected consequences to each factor because of urbanization.

Environmental

The elements of the environmental consequences are easily quantified (number of streams and length, acreage of wetlands) which helps identify the level of natural resources within the urban reserve areas and the potential for environmental consequences related to urbanizing an individual area. In addition, there are specific regulatory programs in place to ensure that urbanization will occur in a regionally consistent manner through required protection standards.

Metro's Title 3 program provides performance standards to protect and improve water quality and reduce the risk of flooding. Land added to the UGB is subject to the requirements of Title 3 through the concept planning and comprehensive planning requirements of Title 11 of the Functional Plan. Metro's Title 13 program provides performance standards to protect, maintain, enhance, and restore significant fish and wildlife habitat through a comprehensive approach that includes voluntary, incentive based, educational and regulatory elements. Land brought into the UGB is also subject to the requirements of Title 13 through the concept planning and comprehensive planning requirements of Title 11.

However, even with protection requirements urbanization may still impact natural resources through the degradation of water quality and wildlife habitat, the loss of floodplain functions and through increased instability of steep slopes. Urbanization can affect the function of these areas through the reduction of vegetated corridors or by increasing impervious surface that generates additional storm sewer run-off, which can impact the water quality of streams.

Inclusion of land into the UGB does not necessarily mean a negative impact to inventoried natural resources. Often the existing rural uses impact the resource in a way that is not allowed in an urban setting. For instance, in many places agricultural activities occur right up to the edge of a stream corridor, effectively providing no riparian habitat. In an urban context, the same stream would have a required vegetative corridor along it, where development could not occur, thereby resulting in a positive impact on the resource.

Social

The social consequences of urbanization relate to changes to the built environment, the natural landscape, demographics, and an influx of population, which can impact those living both inside and outside the UGB. As the character of an area changes from rural to urban the natural landscape is impacted by a denser built environment which may be a negative consequence for some current residents. However, development of a new urban area with an efficient and compact urban form can create new social, commercial, recreational, and educational opportunities to serve both current and new residents of the expansion area and nearby established residential communities inside the UGB. Mixed-use areas that are part of a planned complete community have the greatest potential to provide social gathering places and community centers or become the focus point for a neighborhood. The closer proximity to services, jobs, and recreational opportunities due to an efficient and compact urban form will result in shorter trips by residents and provide opportunities for other modes of transportation such as transit, bicycling and walking.

As noted, urbanization will affect the rural character of the area, which is a negative social impact for those residents who desire such a lifestyle and rural environment. Residents within the UGB may also be negatively affected by the loss of nearby rural landscapes, the loss of the perception of easy access to open spaces and the perceived loss of protection of natural resources. Those individuals currently engaged in farming nearby land may feel pressure from encroaching urbanization to curtail farming activities.

The urban reserve areas may contain historic resources that have been listed as a historic resource of statewide significance or on the National Register of Historic Places. Non-surveyed historic resources are best addressed through the local jurisdiction's Statewide Planning Goal 5 survey, inventory, and protection ordinances. As an area urbanizes the local government assuming governance will be responsible for the protection of all historic resources.

Clackamas County has identified several historic properties that are designated as historic landmarks in the rural portion of the county. Multnomah County's West of Sandy River Plan has identified a few properties that could be designated as historic resources. Washington County has identified historic resources in the rural area as part of the county's Rural/Natural Resource Plan. The presence of historic resources identified or inventoried in any of the above referenced documents is noted on the appropriate Urban Reserve Area Summary Sheet.

Energy

Statewide Planning Goal 13: Energy Conservation, states that "Priority consideration in land use planning should be given to methods of analysis and implementation measures that will assure achievement of maximum efficiency in energy utilization". Energy impacts are related to additional consumption of fossil fuels to heat and cool buildings and power motor vehicles. As an area urbanizes the number of buildings increases, resulting in an increase in natural gas, electricity, and heating oil use.

The addition of residential dwelling units and non-residential uses in a new urban area also increases the number of vehicles in that area. Increased vehicle miles traveled (VMT) increases gasoline consumption and emissions output associated with internal combustion engines. The total increase in vehicular trips is based on the number of dwelling units or the amount of employment that the area is expected to create through urbanization. Although an increase in energy consumption is inevitable, the urbanization of some reserve areas may improve transportation connectivity and efficiency for areas inside of the existing UGB. Furthermore, maintaining a compact urban form, providing both service and employment opportunities and increasing density along high-capacity transportation corridors will result in smaller increases in energy consumption than disjointed unplanned large lot development.

OAR 660-023-190(1) states that energy sources may include naturally occurring locations, accumulations, or deposits of one or more of the following resources used for the generation of energy: natural gas, surface water (i.e., dam sites), geothermal, solar and wind areas. Energy sources applied for or approved through the Oregon Energy Facility Siting Council (EFSC) or the Federal Energy Regulatory Commission (FERC) are deemed to be significant energy sources that could be impacted by urbanization of the surrounding area. Protection of energy sources means to adopt plan and land use regulations that limit new conflicting uses within the impact area of the site and authorize future development or use of the energy source of the site. There are no known sources of energy in the urban reserve areas as defined in the OAR 660-023-190(1), although some of the areas contain easements for electric power, petroleum, and natural gas transmission facilities.

Economic

The land in the urban reserve areas is currently in rural uses that include large lot residential, schools and churches, farm and forest activities, and limited commercial and industrial uses. Permitted commercial uses are generally confined to wholesale and retail sales of farm and forest products, supplies and other incidental uses including convenience stores or service-based businesses under prescribed conditions. Industrial uses are mainly related to resource-based industries such as sand and gravel, mineral extraction, and equipment storage.

Urbanization allows for a concentration of residential, industrial, commercial and office uses that benefit from economies of scale. As land is brought into the UGB, the range of uses and development types increase. As land values increase activities that are land intensive such as agriculture, forestry and equipment storage may become less economical. The resulting diversified urban economy will serve both the current and new residents that will locate there as well as the nearby established residential communities inside the UGB.

The addition of public facilities and infrastructure increases the value of rural residential land by providing the opportunity to divide property into smaller lots for higher density residential use or by converting rural residential uses to either commercial or industrial uses. These development options would not be available without inclusion of the land in the UGB and the subsequent urban services that are provided.

Although there is economic value in converting land from rural to urban uses as noted above, there also is a cost associated with protecting natural resources in terms of lost development productivity and/or replacement or mitigation of development impacts on natural resources. The cost of lost development productivity from the protection of natural resources must be balanced with the immeasurable value of lost open spaces and the potential for degradation of wildlife habitat. Metro's Goal 5 Phase 1 ESEE Analysis explains in detail how the ecological functions of fish and wildlife habitat provide ecosystem services that have economic value and benefit society. Based on this information it is cost effective to concentrate development in areas where impacts to natural resources can be minimized and to avoid impacts that would require restoration and mitigation.

Oregon's agriculture industry continues to be a major component of the state's economy. The top commodity in 2020 was greenhouse and nursery products with a value of $ 1.19 billion. Most of the greenhouse and nursery products are produced in the Portland metropolitan area. Oregon has numerous commodities ranked in the top ten in national agricultural production including blueberries, cranberries, hazelnuts, hops, and pears. Urbanization of land that is currently in agricultural production, particularly in nursery stock and cane berry production could be economically significant, especially if the area is part of a larger block of agricultural activity and losing this agricultural production could be a critical negative consequence to the local agricultural community.

The vast majority of mining sites in Oregon are aggregate mines. Aggregate is the main ingredient in concrete and asphalt pavement and is used as a base on which roads and buildings

are placed. Other important uses include gravel roads, dams, landscaping, drainage control, and railroad ballast. Due to the finite nature of these resources and the limited supply of aggregate mines located in the region, its value is expected to increase. Because of high transportation costs it is most economical for the construction industry to use resources that are closest to where development is occurring. The relationship between the value of the aggregate resource, the importance to the construction industry and the costs involved with extraction and transportation makes it important to preserve these uses. Furthermore, aggregate resource extraction uses are temporary in nature due to the limited supply of the resource within a mining site. Once a site is no longer economically viable it can be reclaimed for a number of uses including recreation, open space or general development. The presence of mineral and aggregate resource sites in reserve areas is noted as appropriate.

Factor 4 – Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

This analysis looks at the compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. The methodology for this compatibility factor is the same as the analysis that accompanied the legislative amendments to the UGB in 2002, 2011, and 2018.

The Oregon Department of Agriculture's 2007 Study, Identification and Assessment of the Long-term Commercial Viability of Metro Region Agricultural Lands expands on the needs for edges and buffers to protect and moderate adverse impacts between agriculture and other non-compatible land uses and is useful in helping to identify those transition areas between urban and rural uses. In addition, in 2015 Washington County completed an issue paper regarding natural buffers and compatibility between urban uses and agricultural practices that provides additional information for determining compatibility between the two uses.

Zoning Data

Zoning data was obtained from regularly updated county records from Metro's RLIS. Counties designate rural land as resource land (farm and forest land) or exception land (generally rural residential) through the comprehensive planning process, which must be acknowledged by Oregon Department of Land Conservation and Development (DLCD). Counties must go through an exception process to remove resource land from protected status. Metro is required to utilize this local zoning that has been acknowledged by the State when completing an agricultural compatibility analysis.

The zoning within each county that qualifies as resource land and exception land is somewhat different. The resource land zone designations shown below were used for the agricultural compatibility analysis.

Table 4	
County Resource Land Designations	
County	**Resource Land Designation**
Clackamas	Exclusive Farm Use (EFU)
	Agriculture/Forest District (AGF)
	Timber District (TBR)
Multnomah	Exclusive Farm Use (EFU)
	Multiple Use Forest (MUF)
	Commercial Forest Uses (CFU-1, CFU-2, CFU-3, CFU-4, & CFU-5
Washington	Exclusive Farm Use (EFU)
	Agriculture/Forest 20 Acre (AF20)
	Exclusive Forest & Conservation (EFC)

Agricultural and Forest Activities

Agricultural and forest activities occurring on nearby farm and forest land outside the UGB were interpreted from computerized aerial photographs taken in the year 2021. Aerial photos are generally taken in June or July; thus, many crops may be young and difficult to identify at the time the photo was taken. Crops were grouped into broad categories of nursery stock, orchards, row crops (corn, vineyards, cane berries, etc.) and field crops (grasses and grains). Forest activities are essentially impossible to detect based on aerial photos that represent a snapshot in time due to the very long timber harvest cycle. Metro staff recognizes that this evaluation may not precisely identify all crops being cultivated or whether forest harvesting is expected to occur.

Compatibility Factors

Compatibility considerations include:

- Increased traffic resulting from urbanization may impede the movement of farm or forest equipment and hinder the transport of agricultural goods to market.
- Urbanization may result in the isolation of certain agricultural areas from the greater farming community. This may hinder normal practices of sharing equipment and knowledge among farmers.
- Conflicts due to dust, noise, odor, and chemical spray resulting from urban development being near active farming.
- An increase in impervious surface generates additional storm water run-off that can impact the water quality of streams, prevent ground water infiltration and re-charge, and scour streambeds that nearby agricultural activities are dependent upon.

The agricultural practices used in the production of the identified crop categories vary in the levels of pesticide use or noise produced that may conflict with new urban development in close proximity. In addition, one of the strengths of agriculture is its ability to change crops over time

to reflect current market conditions. For these reasons, the intensity of the agricultural uses occurring within the surrounding areas and the degree to which active farming of these crops may be hindered by nearby urban development was not ranked. Metro staff simply noted when the potential for such conflicts existed. The base assumption was that areas that support intensive and uninterrupted agricultural uses would be most impacted by the proximity of new urban development.

RESULTS

Based on the Metro staff analysis of the Goal 14 locational factors, seven urban reserve areas were determined to be clearly unsuitable for urbanization in the short term and are therefore removed from further evaluation under the Metro Code UGB factors. Those seven areas are: Boring, Boring-Highway 26, Damascus, Stafford, Rosemont, Norwood and Tonquin. All seven areas share significant infrastructure hurdles that would need to be addressed prior to services such as sanitary sewer and water becoming available. For instance, the closest sanitary sewer services to the Damascus or the Boring urban reserves is well over a mile away and sanitary sewer service for Stafford and Rosemont needs to flow through the Borland urban reserve area, thus requiring the Borland urban reserve to be urbanized first. A table showing the results of the analysis for all 29 urban reserve areas can be found in Appendix 4. It should be noted that the ESEE analysis in factor 3 looks at the consequences of urbanizing the land, thus the score or ranking for factor 3 is inverse, meaning a low consequence is a high score for that factor.

The preliminary cost estimations that were developed for providing sanitary sewer, water, stormwater, and transportation services are from the 2018 Goal 14 Analysis and were estimated using very general assumptions on future growth expectations. Detailed concept plans, consistent with the requirements of Metro's Functional Plan Title 11 will develop refined cost estimates that better reflect the expected development pattern and uses and take into consideration costs for infrastructure materials at the expected time of construction as most of these areas may not urbanize for a number of years.

APPENDICES

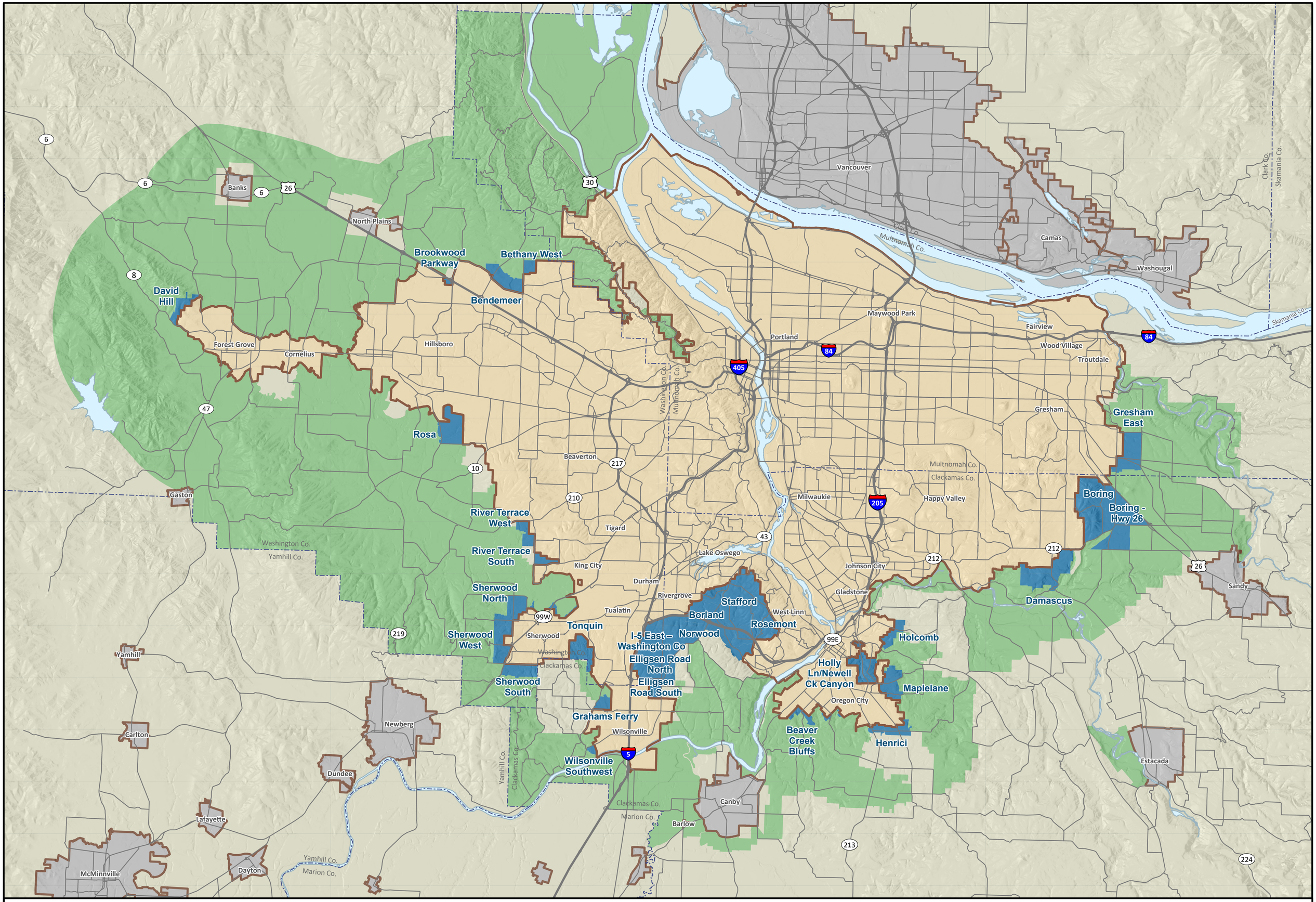
Appendix 1: Urban Reserve Map

Appendix 2: Urban Reserve Area Summary Reports

- Beaver Creek Bluffs
- Bendemeer
- Bethany West
- Boring
- Boring-Highway 26
- Borland
- Brookwood Parkway
- Damascus
- David Hill
- Elligsen Road North
- Elligsen Road South
- Grahams Ferry
- Gresham East
- Henrici
- Holcomb
- Holly Lane-Newell Creek Canyon
- I-5 East
- Maplelane
- Norwood
- River Terrace East
- River Terrace West
- Rosa
- Rosemont
- Sherwood North
- Sherwood South
- Sherwood West
- Stafford
- Tonquin
- Wilsonville Southwest

Appendix 3: 2018 OTAK Report: Assessment of Potential Urban Growth Boundary Expansion Areas

Appendix 4: Goal 14 UGB Location Alternatives Analysis Results



Goal 14 UGB Alternatives Analysis Appendix 1

January, 2023

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County boundaries
Urban growth boundaries
Neighbor cities
Rural reserve
Urban reserve

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Appendix 2: Urban Reserve Area Summary Reports

BEAVER CREEK BLUFFS URBAN RESERVE AREA

Total Acres	228	Parcel Acres	225
Gross Vacant Buildable Acres	142	Net Vacant Buildable Acres	108

General Description (see attached map)

The Beaver Creek Bluffs Urban Reserve Area is composed of three sub-areas running east to west along the bluffs south of Oregon City. The eastern sub-area (22 acres) is adjacent to the UGB in the vicinity of Nobel Road, is bordered by the Mud and Caufield Creek drainages, and is composed of two parts separated by a short segment of the UGB. The central sub-area (43 acres) sits between Mud Creek and another tributary of Beaver Creek, is bounded by S Leland Road to the east, bluffs to the south and west, and the UGB to the north. A one parcel sub-set of this central area is located at the end of S McCord Road. The western sub-area (163 acres) lies on both sides of S Center Point Road, sitting between the bluffs overlooking Beaver Creek with the UGB to the north. Of the 228 acres within these three sub-areas, 22 acres are constrained by steep slopes over 25% along the bluffs. The remainder of the area is generally flat and is a logical extension of Oregon City.

Parcelization and Development Pattern (see attached aerial photo)

The entire area contains 35 parcels, with most of the land in rural residential use, although a few of the larger parcels do appear to have minor agricultural activities. The eastern sub-area contains four parcels ranging from three to eight acres. The central sub-area contains 17 parcels, all less than five acres except for one at 8.9 acres. The western sub-area contains 14 parcels ranging from less than one to 40 acres. Overall, 24 of the 35 parcels have improvements. There are three power lines running through the western sub-area, crossing through six parcels. There is no evidence of other public easements. The Mahonia Land Trust Conservancy owns a large parcel immediately adjacent to the eastern edge of the western sub-area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This area is composed of three subareas that are 22, 43 and 163 acres in size. Given the small size of the three individual areas, their location on a flat bench at the top edge of a steep sloped area, and being located adjacent to existing residential areas, this area can efficiently accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Oregon City's Infrastructure Master Plan includes planned improvements and funding necessary to support the expected growth within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities such as wastewater treatment and conveyance. Currently the City is not completing necessary infrastructure planning for growth in the urban reserve areas. Development in the reserve area will include infrastructure changes and costs for improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Impacts to existing facilities that serve nearby areas already inside the UGB

There will be impacts to existing facilities and most of this infrastructure would be built by the development community.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$2.47
Force main	$1.23
Pump station	$1.45
Total	**$5.15**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary. Oregon City has annexed portions of the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve all of the Beavercreek area. Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). CRW has adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 MGD water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. The treatment plant is 50 years old, and a pending facility master plan will determine what types of upgrades will be needed in the future. The city is currently exploring opportunities to site a new reservoir to serve all of the Beavercreek (previous UGB expansion) area. Within five years, CRW

expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the Beavercreek area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW is planning for the urban reserve areas and most the Beaver Creek Bluffs reserve area is in CRW. However, they will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As reserve areas are included in the UGB, the City intends to serve them. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the reserve area. There would be an exception for facilities that are needed to go beyond the area in question such as large-scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban. CRW has more than enough water to serve the urban reserve area and is expected to build a new storage reservoir within the next few years. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, CRW has water networks in place that can serve the reserve area without significant upgrades; however it is not clear that CRW will be the future water provider. Oregon City will need to provide new facilities.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$2.18
Storage/pumping	$1.4
Total	**$3.58**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized. Stormwater will be complex but manageable given the infrastructure will be at the upstream edge of the surrounding basins.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$5.4
Water quality/detention	$5.23
Total	**$10.63**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in Oregon City have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) as does most of I-205 in both directions through Oregon City and across the Abernathy Bridge. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0) as does short portions of I-205 through Oregon City. Highway 213 also has a small severely congested section in both directions between Meyers Road and Glen Oak Road.

Molalla Ave from Division Street to Highway 213 and McLoughlin Boulevard from the Clackamas River to I-205 are classified as high injury corridors for automobiles. The Highway 213/Redland Road intersection is classified as a top 5% high injury intersection.

Transit: Four TriMet bus lines serve Oregon City all of which focus on the downtown and central portion of the city along Molalla Ave. Service is provided to Clackamas Community College, but large portions of the city are not served by transit.

Bike: Oregon City has 29 miles of dedicated bike lanes and 3.5 miles of established bikeways with most of them located in the "up-top" section of the city. The Park Place neighborhood is also fairly well served, and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as bike with caution streets and the South End neighborhood has minimal bike facilities.

Pedestrian: Downtown Oregon City is well served by sidewalks as is Molalla Ave as it extends to the "up-top" portion of the city. There are a number of pockets of older subdivisions that do not have sidewalks with more recent developments well served by sidewalks.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Leland Road and Central Point Road are the main access ways to the reserve areas and both roadways have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Other nearby roads including Meyers Road and South End Road also has an acceptable volume/capacity

ratio for the pm peak. As noted above Highway 213 has a small severely congested section in both directions between Meyers Road and Glen Oak Road.

Transit: No bus line provides service near the reserve subareas. The closest bus stop via Leland Road is 1.5 miles away.

Bike: The closest bike lane to any of the reserve areas is on Frontier Parkway which is about ¼ mile away via Leland Road. There are bike lanes on a portion of Leland Road, starting near S Kalal Court which connect to some of the other bike facilities "up-top". Central Point Road is classified as a bike with caution street.

Pedestrian: The newer subdivisions near the reserve areas have sidewalks and there are potential connection points to the different reserve areas. There are significant sidewalk gaps between these subdivisions and other parts of the city.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Leland Road and Central Point Road are the main access ways to the reserve areas and both roadways have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Other nearby roads including Meyers Road and South End Road also have an acceptable volume/capacity ratio for the pm peak. These roads would not be impacted by urbanization of these small reserve areas.

Transit: No bus line provides service near the reserve areas. See transit analysis below.

Bike: The bike lanes on Frontier Parkway and Leland Road could see additional use however the portion of Leland Road already inside the UGB between the reserve areas and the existing bike lanes will need to be improved with bike facilities. This is also true for the short section of Frontier Parkway that does not have bike lanes.

Pedestrian: The sidewalks in the newer adjacent subdivisions could see additional use once the areas urbanize. However, there are significant sidewalk gaps between these subdivisions and other parts of the city which would reduce any additional impact.

Need for new transportation facilities and costs (see attached transportation map)

S Central Point Road and Parrish Road will need to be improved to urban collector standards. Parrish Road is considered a ½ street improvement as a portion of the roadway is already inside the UGB. A new collector is needed that extends south from Parrish Road and ultimately arcs west through the UGB to connect with South End Road.

Facility Class		
Collectors	Type	Cost (in millions)
	Existing/Improved	$4.99
	Existing/Improved ½	$5.56
	New	$16.72
Total		**$27.27**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 45-minute headways for all day service, weekdays only, with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $360,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Approximately 327 feet of Mud Creek flows through a ravine on the edge of the eastern sub-area and about 2,100 feet of an unnamed stream flows south through the western sub-area. A 900-foot segment of this stream, including an associated 1.5 acre National Wetland Inventory wetland is located on the flat portion of the area above the bluff. Riparian habitat is identified along both stream segments as well as upland habitat. Urbanization of this area may impact the stream, wetland, and upland habitat areas on the flatter portion of the western sub-area, but the remainder of the stream flows through a wooded sloped area and would be minimally impacted. The eastern sub-area stream and habitat area would be less impacted by urbanization as it is located over 200 feet from the flat portion of the sub-area. Overall urbanization of the area could occur with minor to moderate impacts to the stream corridor in the western sub-area along the flat portions where development is appropriate, depending on street connectivity requirements. Overall, this urban reserve has low environmental consequences.

Energy, Economic & Social

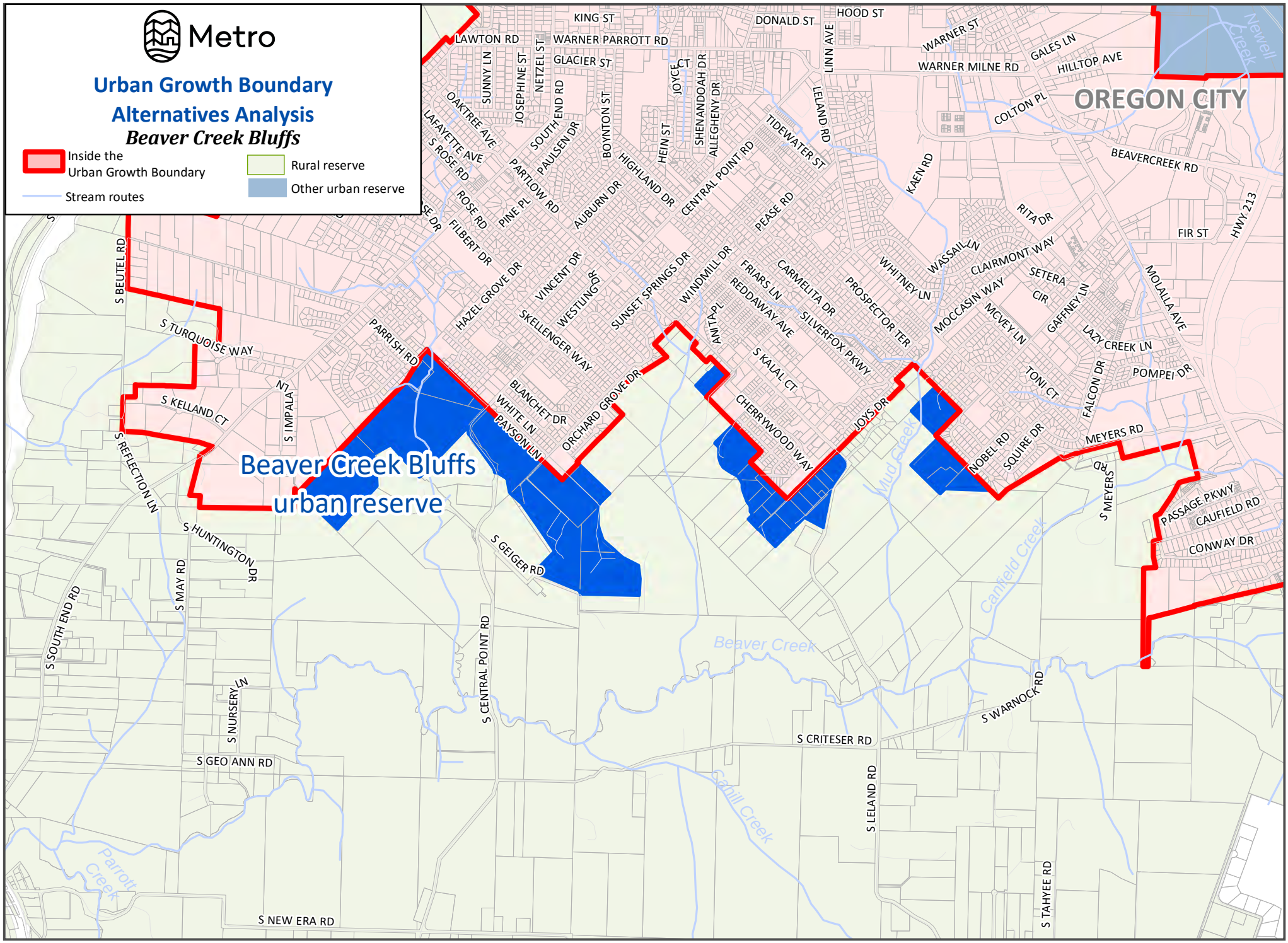
This urban reserve area is made up of three very small land areas, and over half of the reserve area is adjacent to urban subdivisions with the remaining area adjacent to undeveloped urban land zoned single family residential. The main use in the area is rural residential and 69% of the parcels have improvements. Existing urban streets provide access to these parcels. Urbanization of these reserve areas will not cause negative social impacts for the current residents as these small isolated areas are in effect more urban than rural due to their location to the adjacent urban development.

There are minimal agricultural activities occurring in this reserve which minimizes any potential negative economic impacts of a lost farming economy. The additional VMT generated through urbanization of this very small area will be minimal. Overall, this urban reserve area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

The entire edge of the three urban reserve sub-areas borders land zoned for resource use. The vast majority of this resource land is zoned Timber (TBR) except for a small portion of land zoned Exclusive Farm Use (EFU) in the vicinity of S Central Point Road and S Geiger Road. There are significant slopes along almost the entire edge of the reserve sub-areas, most of which are forested except those areas that abut a power line easement. The small portion of EFU-zoned land that is located between the western sub-area and Beaver Creek contains significant pockets of forest land, some rural residences and very limited agricultural activities consisting of pasture land. Beaver Creek provides an edge to the larger block of EFU land to the south that also includes nursery stock. The majority of the adjacent TBR-zoned land drops steeply to the south from the reserve areas. Most of these parcels include rural residences and streams, including Mud and Canfield Creeks.

Due to the very limited nature of the nearby agricultural and forest activities, the number of rural residences spread throughout the resource lands and the significant change in elevation between the reserve sub-areas and the resource lands, the proposed urban uses have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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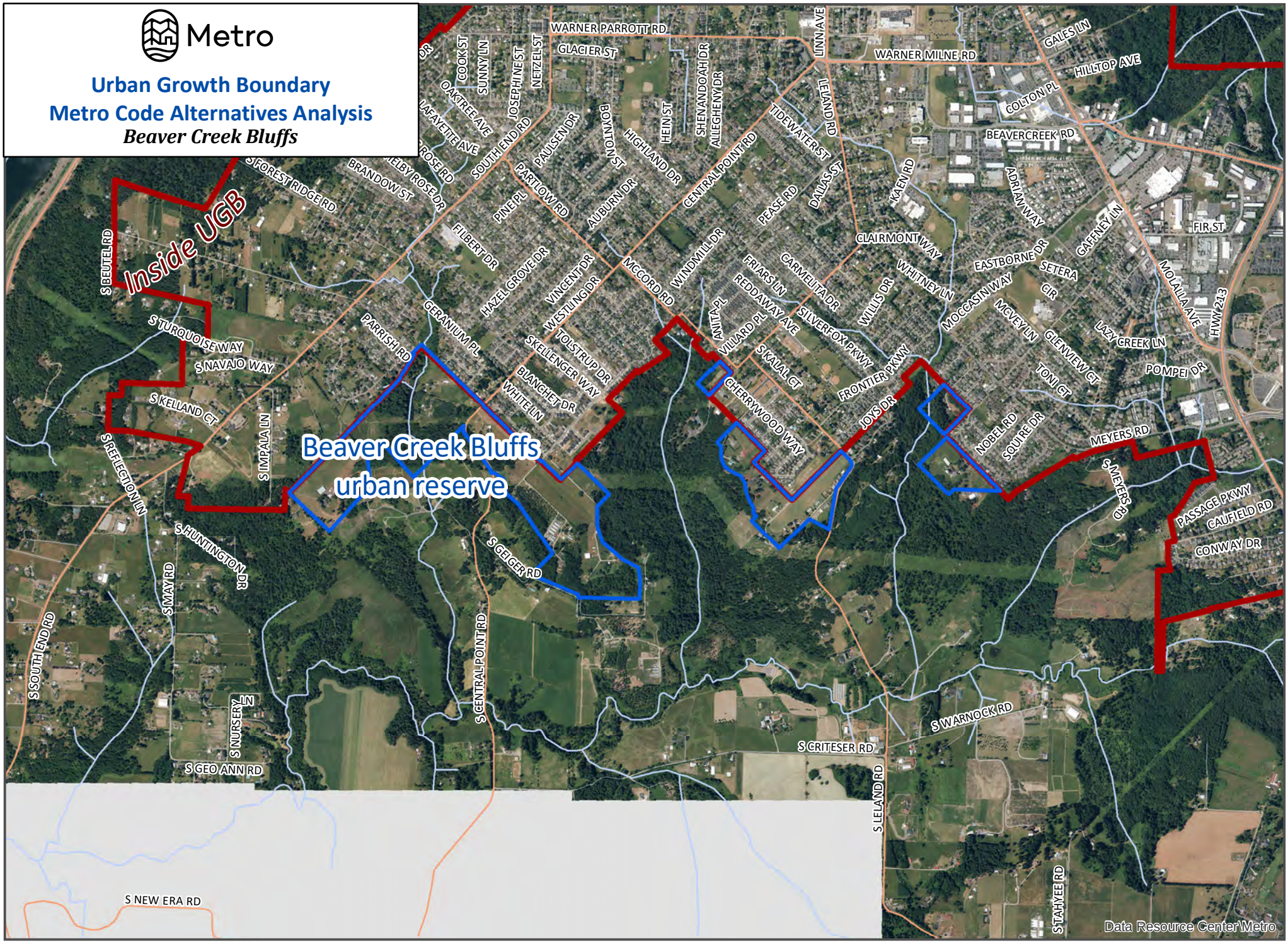
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Beaver Creek Bluffs



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Urban Growth Boundary
Metro Code Alternatives Analysis
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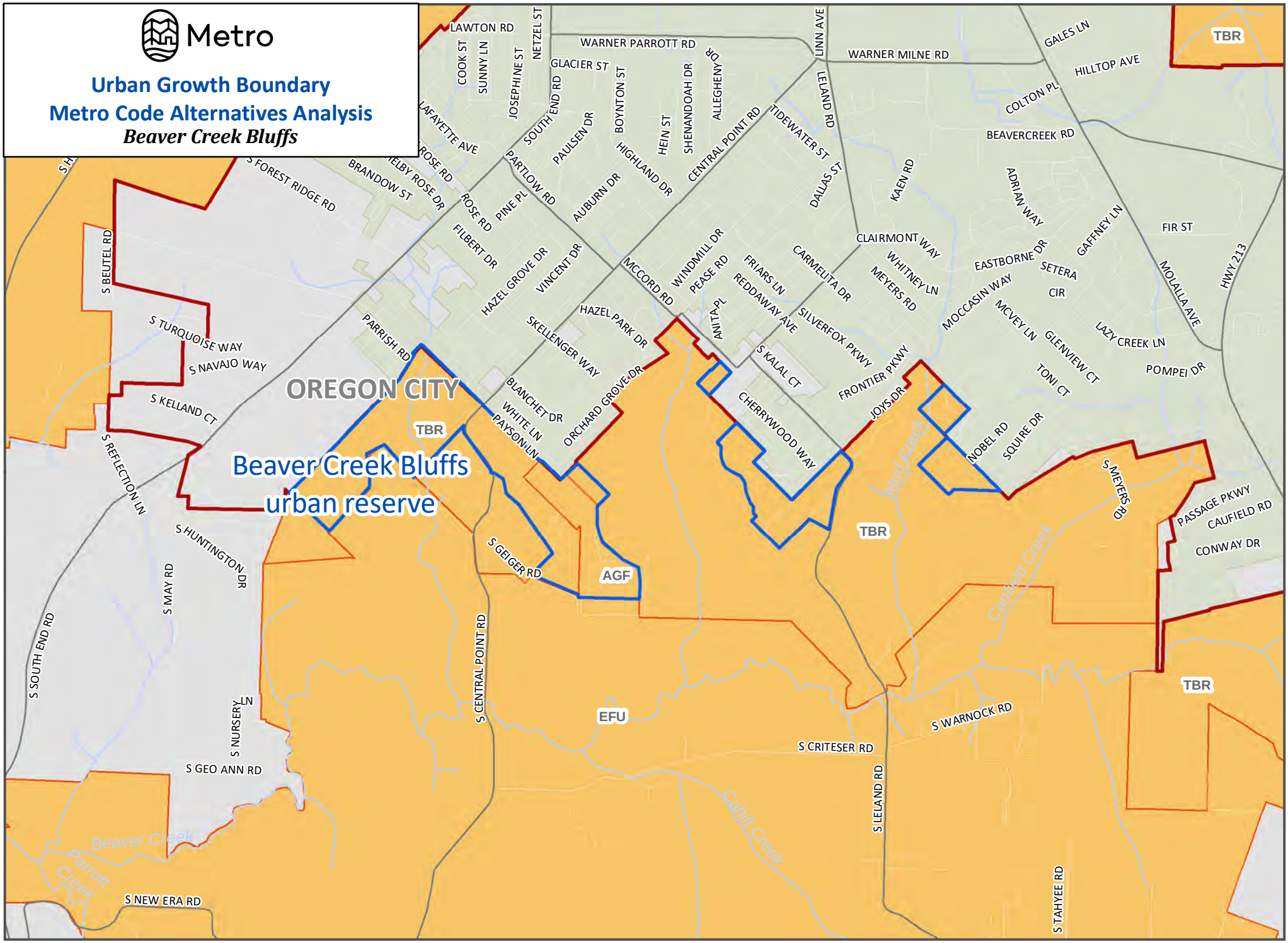

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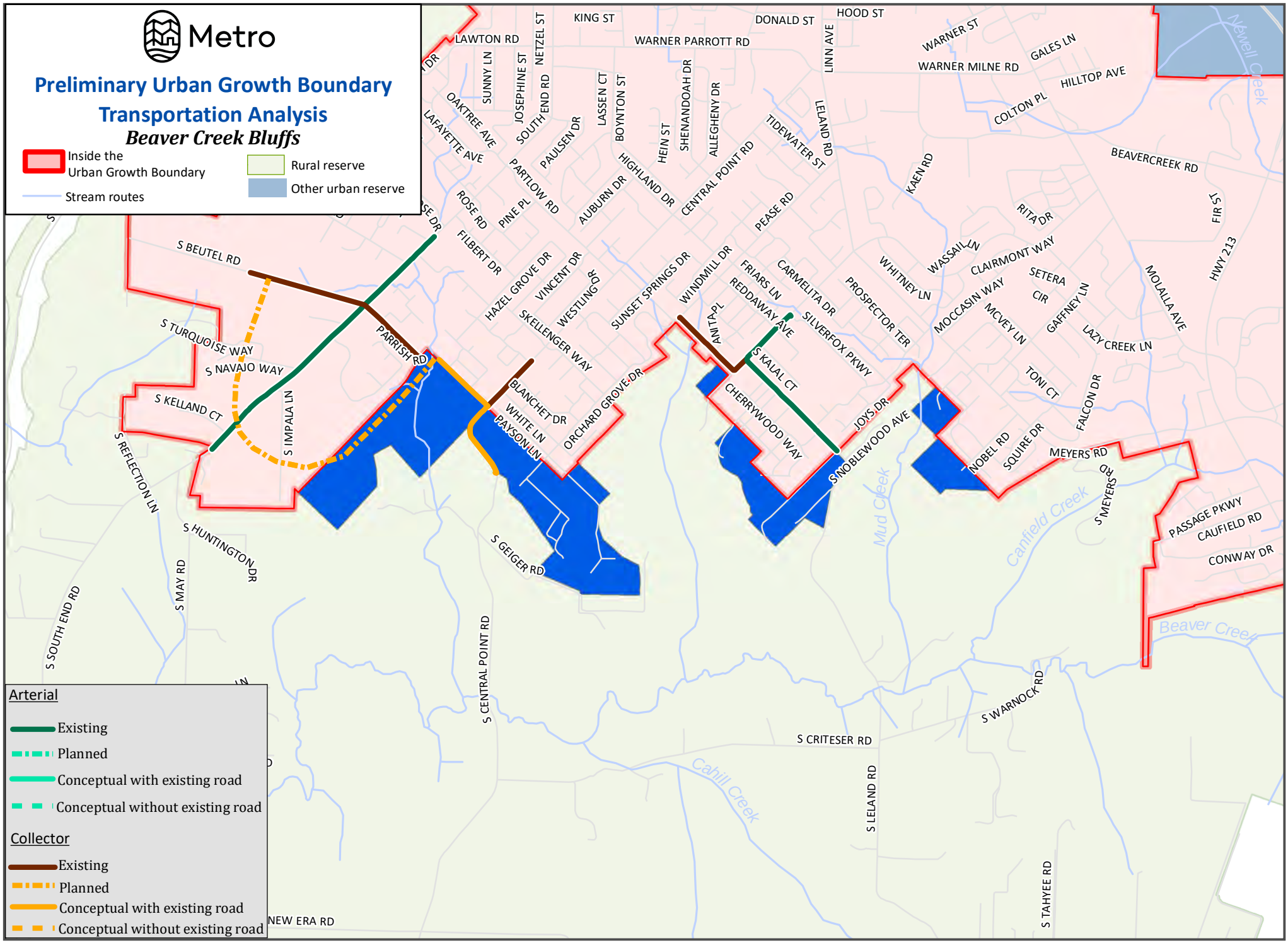

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BENDEMEER URBAN RESERVE AREA

Total Acres	577	Total Constrained Acres	535
Gross Vacant Buildable Acres	275	Net Vacant Buildable Acres	209

General Description (see attached map)

The Bendemeer Urban Reserve Area is an irregular shaped area located north of NW West Union Road between NW Bendemeer Road and NW 185th Ave. The UGB forms the boundary on the southern and eastern edges and rural reserves are to the west and north. Holcomb Creek and Holcomb Lake form a portion of the northern edge of the reserve area. Access to the area is provided by NW West Union Road, NW Cornelius Pass Road, and NW 185th Ave.

Parcelization and Development Pattern (see attached aerial photo)

This mid-size reserve area contains 70 parcels, 57 of which are less than five acres and the majority of those are between one and two acres. Four parcels are greater than 40 acres with the two largest being 71 and 119 acres in size. The western portion of the area between NW Bendemeer Road and NW Cornelius Pass Road is almost entirely made up of rural residences on small, wooded lots with two parcels engaged in agricultural activities. Alternatively, the area between NW Cornelius Pass Road and NW 185th Ave is almost entirely in agricultural production with the exception of natural resource locations, including a 32-acre Metro owned natural area centered on Holcomb Creek. Overall, 57 of the 70 parcels have improvements.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This urban reserve area contains two very different existing land development patterns. The western portion contains a number of rural residences on lots between two and four acres in size that provides some additional opportunity for residential development. East of NW Cornelius Pass Road stream corridors dissect the reserve area into a few large locations of relatively flat land that could accommodate residential and employment development. There is a significant amount of employment land to the west inside the UGB and there is relatively good access to Highway 26. Most of the land directly south of the reserve area inside the UGB is in residential use. Thus, this area is able to accommodate a residential and employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Clean Water Services (CWS) provides sewer services for development within unincorporated Washington County. The City of Hillsboro has existing facilities that extend near the intersection of NW West Union Rd and NW Cornelius Pass Road, which feeds into the CWS system. CWS provides wastewater treatment through the Rock Creek Waste Water Treatment Plant and indicated there is capacity to serve areas within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The topography of the reserve area suggests that sewer flows from the eastern portion of the site will flow toward the existing 24-inch CWS Rock Creek trunk line that traverses through the site. The western portion of the site generally flows toward NW Cornelius Pass Road. The City of Hillsboro has existing sewer pipes near the intersection of NW West Union Road and NW Cornelius Pass Road. These pipes range in size from 8-inch to 18-inch before connecting to the CWS trunk line. The additional capacity within the existing pipes is unknown at this time. CWS has indicated that there is additional capacity at the Rock Creek treatment plant.

Impacts to existing facilities that serve nearby areas already inside the UGB

New sewer mains will be required for development to occur, and laterals will be constructed by the development community. Impacts to the treatment plant are expected to be minimal with no anticipated upgrades due to the nominal amount of development from the relatively small amount of buildable land. The amount of up-sizing (if any) that would be needed is not known at this time.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$0.93
12 – 18" pipe (gravity)	$1.85
Total	**$2.78**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Water is supplied to the nearby land within the UGB by the Tualatin Valley Water District (TVWD). TVWD has indicated that there is sufficient capacity in terms of water supply, treatment, storage, and piping to serve areas within the current UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

TVWD indicated there appears to be adequate water to serve the reserve area or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the reserve area is approximately 0.8 MG and there is an existing 16-inch water line in NW West Union Road.

Impacts to existing facilities that serve nearby areas already inside the UGB

New water mains will be required for development to occur. The amount of any up sizing (if any) that would be needed is unknown at this time. Laterals will be constructed by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$2.03
18" and larger	$0.35
Storage/pumping	$2.7
Total	**$5.08**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of issues with existing stormwater facilities to serve the areas already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$5.13
Water quality/detention	$5.32
Total	**$10.45**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Hillsboro and unincorporated Washington County have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Three road sections have a congested volume/capacity ratio (<1.0): E Main Street east of NW Brookwood Parkway in both

directions and highway 26 east bound at NW Cornelius Pass Road and NW 185th Ave. A few road sections in nearby unincorporated Washington County also have a congested volume/capacity ratio (<1.0): SW Farmington Road between 198th Ave and SW Kinnaman Road in both directions, SW Tualatin Valley Highway (TV Highway) east of SW 198th Ave westbound, SW TV Highway east of SW 185th Ave in both directions, and SW TV Highway west of SW 170th Ave in both directions. The following road sections have a severely congested volume/capacity ratio (>1.0): W Baseline at SW 197th Ave westbound, NE Evergreen Road east of NW Jackson School Road westbound and SW TV Highway east of SW 170th Ave in both directions.

High injury corridors include: SW/SE Baseline Road, SW Oak Street, SW Walnut Street, E Main Street, NE Cornell Road, SW TV Highway, SE River Road, SE/NE Brookwood Parkway, NE Evergreen Parkway, NE/SE Cornelius Pass Road, NW 185th Ave, and NE Jackson School Road.

Transit: Six TriMet bus routes provide service to Hillsboro or nearby unincorporated Washington County, mainly along the arterial streets in the central portion of the city, focusing on the Hillsboro and Tanasbourne-Amber Glen Regional Centers, the Orenco Town Center and employment areas. There is transit to nearby Portland Community College Rock Creek. There is no transit service to the southern and northern portions of the city. The MAX Light Rail Blue Line stops at nine stations within Hillsboro.

Bike: Hillsboro has over 54 miles of dedicated bike lanes, 24 miles of established bikeways and numerous streets considered bike friendly that together create a fairly well-connected system that is focused mostly in the central portion of the city and the regional centers. In addition, there are some local trails that provide key connections to the greater bike network.

Pedestrian: A large proportion of the residential neighborhoods in Hillsboro have sidewalks although there are significant pockets that do not. The Hillsboro Regional Center is mostly served by sidewalks except for the industrial area south of TV Highway. The other employment areas are fairly well served by sidewalks and trails such as the Rock Creek Trail provide additional pedestrian opportunities.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: The roads in Hillsboro near the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 26 eastbound at NW Cornelius Pass Road has a congested volume/capacity ratio (<1.0). NW Cornelius Pass Road, outside the UGB, between the reserve area and the junction with NW Germantown Road also has a congested volume/capacity ratio in both directions.

Transit: TriMet bus route 52 travels along a portion of the eastern edge of the reserve area on NW 185th Ave and provides service between Portland Community College Rock Creek and the Beaverton Transit Center. There is one south bound and two north bound transit stops adjacent to the reserve area.

Bike: There is a dedicated bike lane on NW 185th Ave adjacent to a portion of the reserve area north of NW Springville Road. South of NW Springville NW 185th Ave has an established bikeway that

extends south past Westview High School and Rock Creek Elementary. The Rock Creek Trail which runs east for over two miles and west for over a mile intersects with NW 185th Ave. The Waterhouse Trail connects to the Rock Creek Trail providing a north-south route that extends to Highway 26. NW West Union Road has a short section of a dedicated bike lane on either side of the 185th Ave intersection. The remainder of NW West Union Road is classified as bike with caution.

Pedestrian: There are sidewalks on NW West Union Road east of the 185th Ave intersection that extend for approximately one mile with direct connections to the Rock Creek Trail and the Waterhouse Trail. Sidewalks on NW 185th Ave extend north from NW West Union to NW Springville Road on one side and south past Westview High School and Rock Creek Elementary school to south of Highway 26 on both sides of the road. There are a couple of sidewalk connections to the residential neighborhoods south of NW West Union Road, two of which ultimately connect to the Rock Creek Trail. Otherwise, the sidewalks provide internal circulation for the neighborhood.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: NW Cornelius Pass Road, NW West Union Road, NW 185th Ave and NW Springville Road would see additional traffic because of urbanization of the reserve area. This additional traffic would most likely not contribute to the p.m. peak congestion issue on Highway 26 eastbound at NW Cornelius Pass Road, as that is traffic that is heading towards Portland in the p.m. versus home towards the reserve area. The increased traffic on NW Cornelius Pass Road would most likely impact the congestion issue outside the UGB, between the reserve area and the junction with NW Germantown Road. Washington County is expected to begin construction on phase 4 of the safety and capacity improvements to NW Springville Road, between NW Joss Avenue and PCC Rock Creek in Spring 2024. This is the final section of urban street improvements for NW Springville Road between NW 185th Ave and NW Kaiser Road and may help alleviate any additional traffic as a result of urbanizing the reserve area.

Transit: TriMet bus route 52 that stops on NW 185th Ave would expect to see additional ridership. See transit analysis below.

Bike: The established bike way on NW 185th Ave that extends south past Westview High School and Rock Creek Elementary School would likely see additional use. This is especially true if the bike lanes on NW West Union Road are extended west along the entire edge of the reserve area. Likewise, the Rock Creek Trail and the Waterhouse Trail would likely see additional use as they traverse through numerous parks and greenways.

Pedestrian: The sidewalks on NW West Union Road that connect to the Rock Creek Trail and the Waterhouse Trail would likely see additional use as the trails traverse through numerous parks and greenways. The sidewalks on NW 185th Ave that connect to Westview High School and Rock Creek Elementary School would likely see additional use. If NW West Union Road is improved with sidewalks and cross walks, the connections to the residential neighborhoods south of NW West Union Road and the Rock Creek Trail would also be expected to see additional use.

Need for new transportation facilities and costs (see attached transportation map)

NW Cornelius Pass Road, NW West Union Road, and NW 185th Ave north of NW Springville Road will need to be improved to urban arterial standards. NW West Union Road and the portion of NW 185th Ave are considered to be ½ street improvements as the land inside the UGB is responsible for the other half of the road. A new arterial is needed between NW West Union Road and NW 185th Ave at NW Springville Road. A new collector is needed between NW West Union Road and NW Cornelius Pass Road to provide access to the middle of the reserve area.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$18.62
	Existing/Improved ½	$36.40
	New	$22.34
Collectors	Type	Cost (in millions)
	New	$26.59
Total		**$103.95**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 60-minute headways for all day service weekdays only with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $364,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Holcomb Creek flows into the reserve area just north of NW Old Pass Road, crosses under NW Cornelius Pass Road and flows southeast for approximately 3,200 feet into Holcumb Lake. Rock Creek enters the reserve area just prior to joining Holcomb Creek on the east side of Holcomb Lake and flows south through a Metro owned natural area for approximately 4,500 feet to NW West Union Road. Two unnamed tributaries to Rock Creek flow through the eastern portion of the reserve area for just over a mile, ultimately joining Rock Creek at the southern end of the Metro property. Two unnamed streams flow through the middle portion of the reserve area, join and flow north into Holcomb Lake. These two streams total approximately 4,900 feet. There are two wetlands identified on the 1998 National Wetlands Inventory (NWI) that are located in the eastern portion of the reserve area. The first is associated with Rock Creek and is mostly on the Metro

property (32.5 acres) and the second is associated with a tributary of Rock Creek (2.6 acres). Additional NWI wetlands associated with Holcomb Creek and Holcomb Lake are located along the northern edge of the reserve area and would need to be delineated for development to occur. There is riparian and upland habitat associated with the stream corridors and wetlands. The increased protection levels for streams, habitat areas, and floodplains within the UGB will provide protection to these areas, however given how the stream corridors form four distinct pockets of unconstrained land, significant impacts to the habitat areas may occur depending on street connectivity requirements. The Metro owned property will limit east–west street connections in that portion of the reserve area. Overall urbanization of the area can occur with moderate to high impacts to stream corridors and habitat areas depending on connectivity requirements.

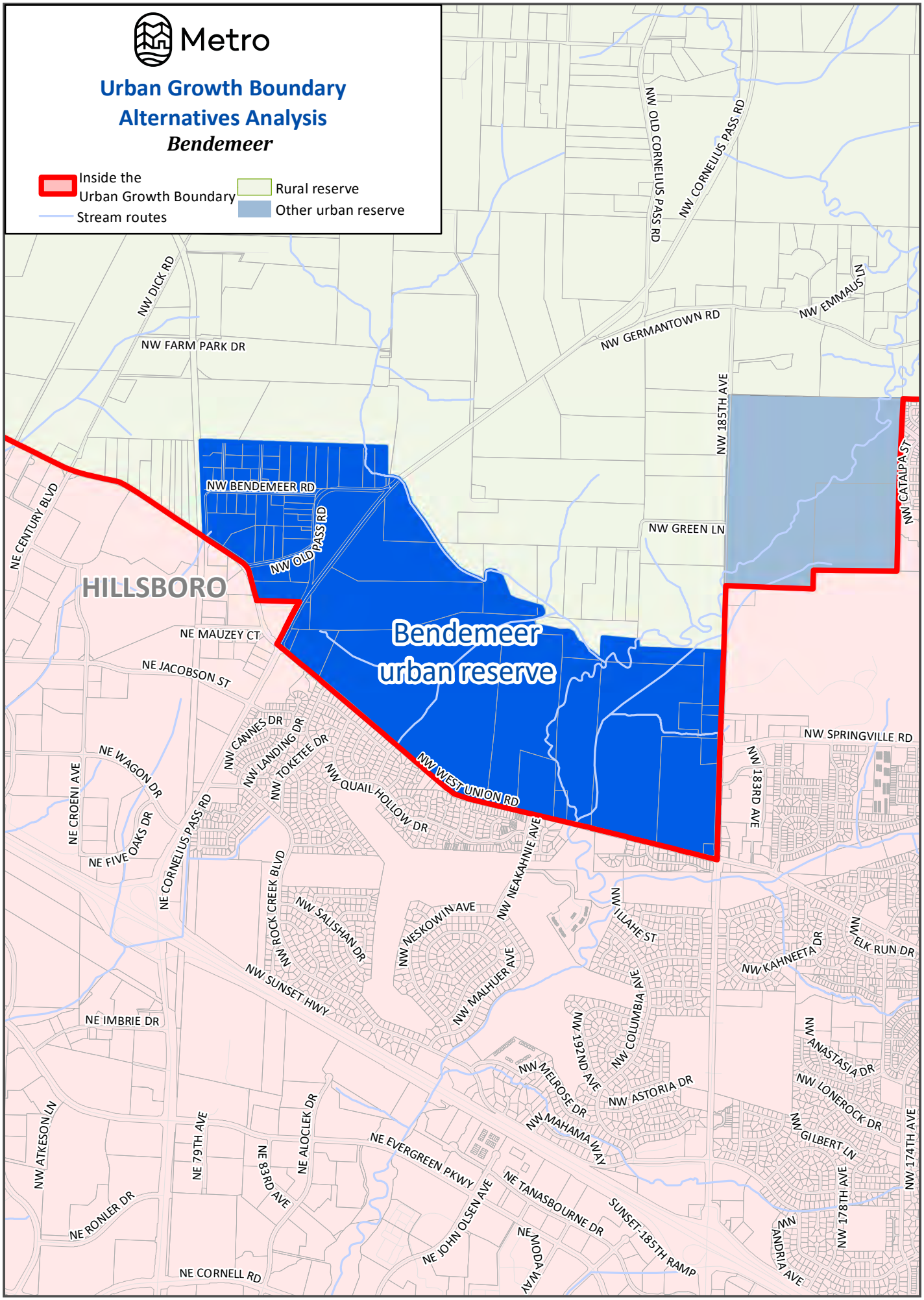
Energy, Economic & Social

This urban reserve area contains two very different existing land development patterns. The western portion contains numerous rural residences on lots between two and four acres in size that provides some additional opportunity for residential development. East of NW Cornelius Pass Road stream corridors dissect the reserve area into a few large locations of flat land that could accommodate residential and employment development. Thus, the overall urbanization impact on the existing residents of the area in terms of loss of sense of place and rural lifestyle will be minimal. The additional traffic generated through urbanization will be moderate and would contribute negative energy impacts. Traffic will access Highway 26 from either NW Cornelius Pass Road or NW 185th Ave, which could lead to congestion issues. To the south and further west is employment land inside the UGB that is being developed at a consistent rate. In addition, further west there is still a very large amount of undeveloped employment land in the North Hillsboro Industrial Area, although development in this area is also occurring at a steady rate. Once these areas develop, the additional employment opportunities they will provide could reduce VMT for current and future residents. The conceptual Oregon Electric Railway Trail runs along the western edge of the reserve area which could provide an alternative option for travel to locations in the UGB thereby reducing VMT as well. There are four pockets of agricultural activities occurring on the areas that are separated by stream corridors from each other and the agricultural activities to the north. These agricultural areas are small and focused on field crops. The economic loss from these existing agricultural uses would be minimal. Overall, this reserve area has moderate economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

North of the reserve area is a significant block of Exclusive Farm Use (EFU) zoned land that extends for several miles. This land is mostly in nursery and field crop production with associated rural residences. There is a portion of a parcel zoned rural industrial on NW Farm Park Drive and the use is associated with the adjacent agricultural uses. Holcomb Creek, Holcomb Lake and Rock Creek and their associated habitat areas provide a large buffer to most of the agricultural activities occurring east of NW Cornelius Pass Road. There is a large, forested area along with some rural residences that provide a buffer for most of the agricultural activities occurring west of NW Cornelius Pass

Road. The 100-foot railroad right-of-way along the western edge of the reserve area provides a buffer for the agricultural activities occurring northwest of the area near NW Dick Road. Urbanization would increase traffic on NW Cornelius Pass Road and NW 185th Ave, which could impact the movement of farm goods to Highway 26. Overall, the proposed urban uses have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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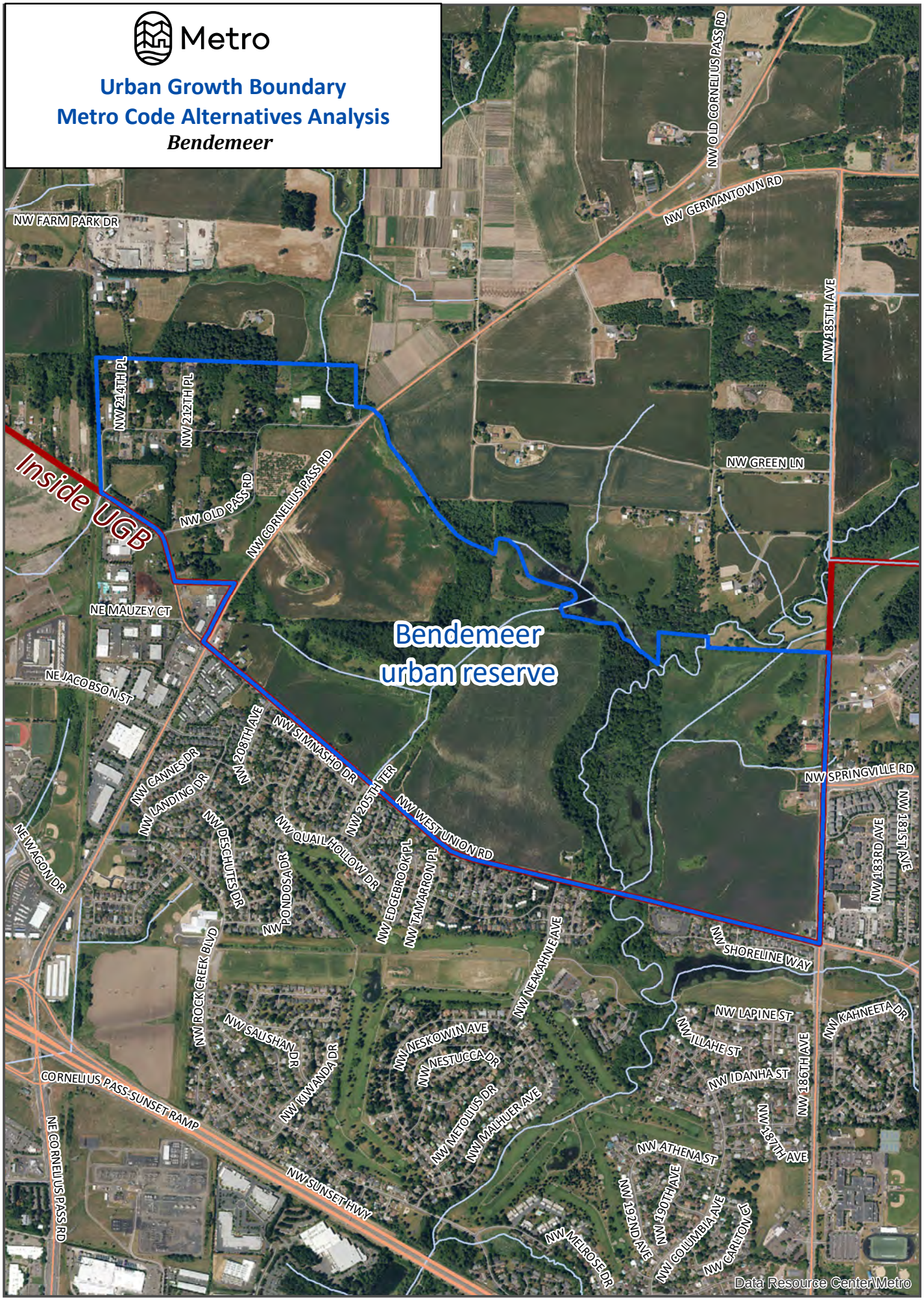
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Bendemeer



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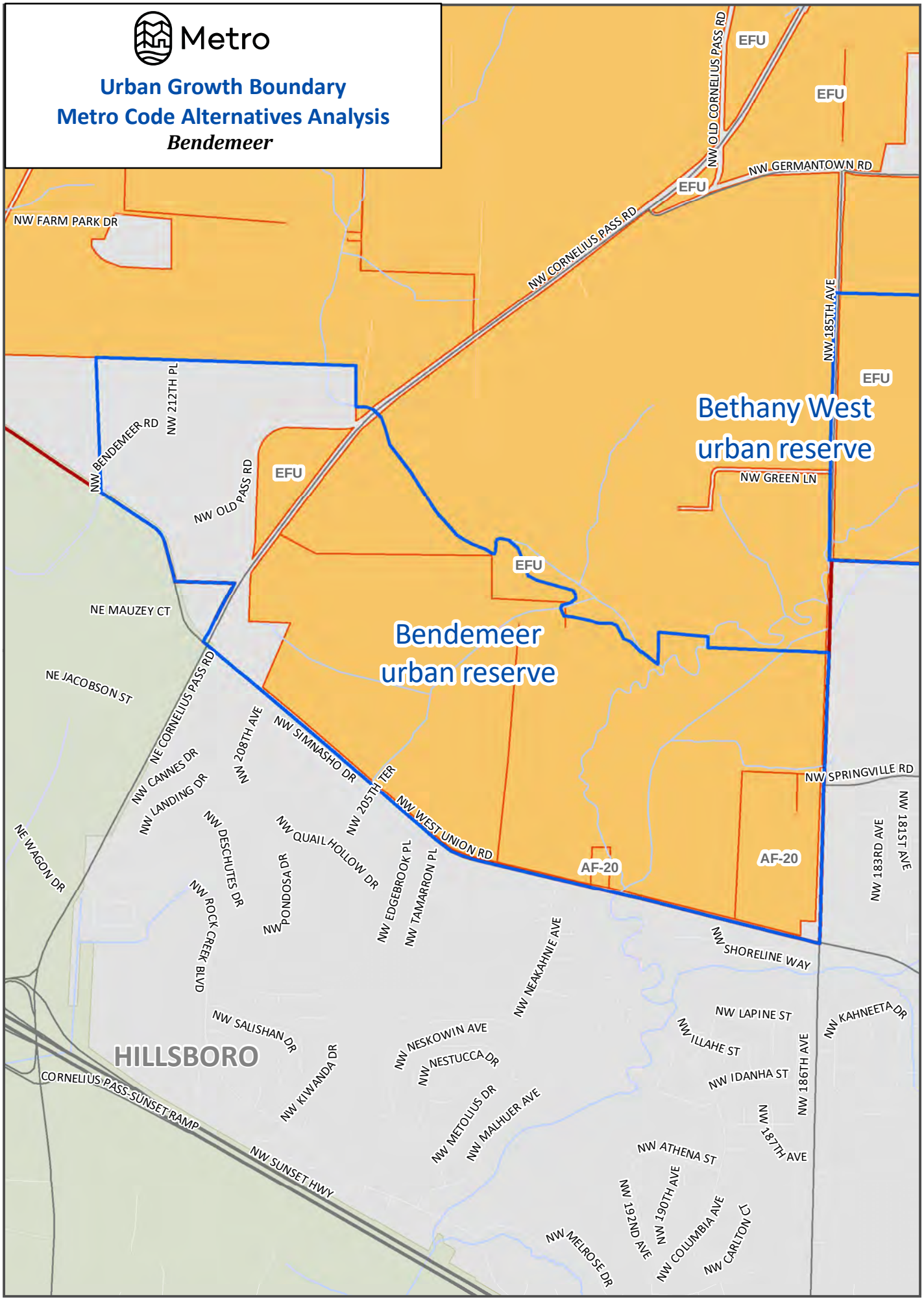

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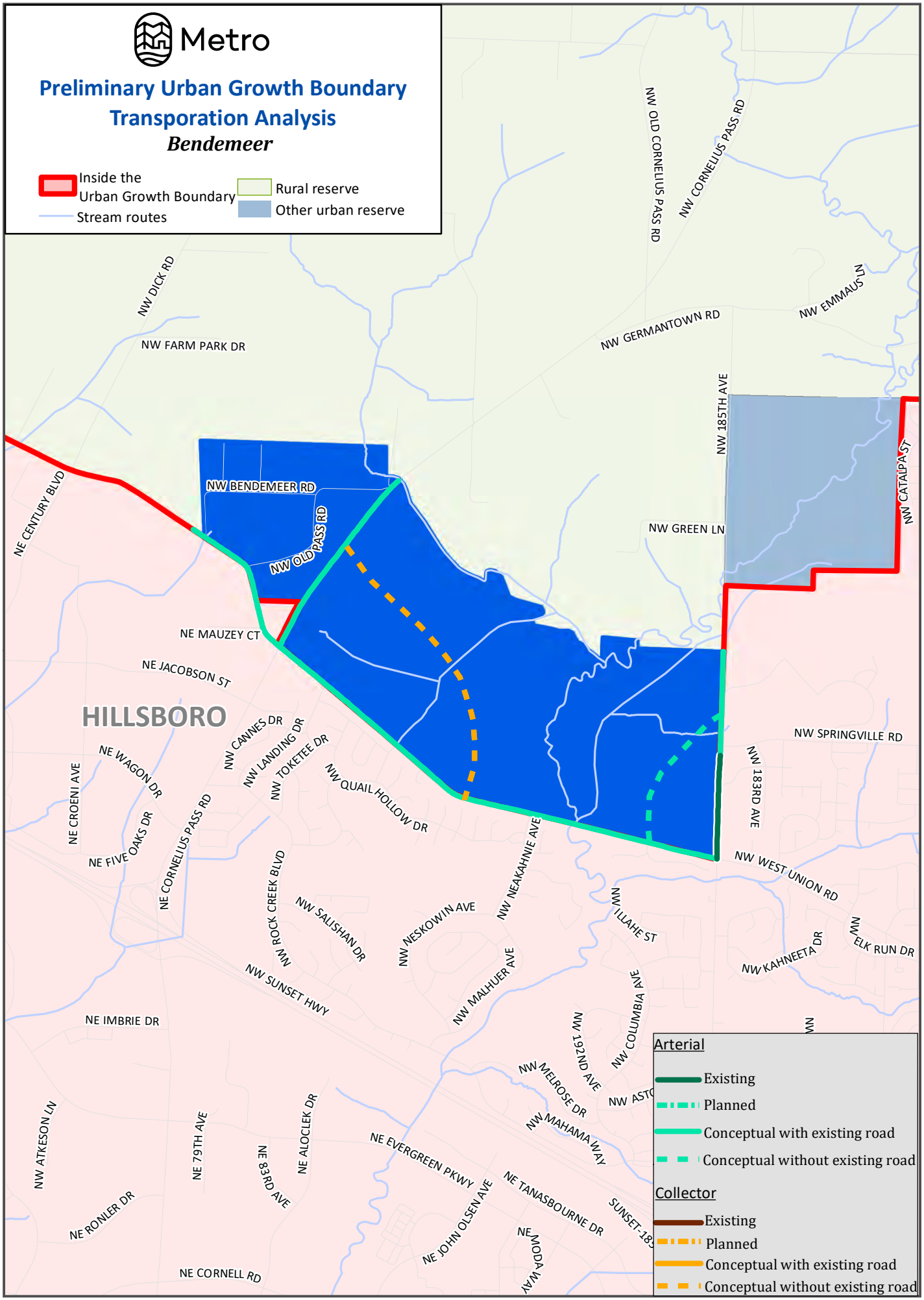

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BETHANY WEST URBAN RESERVE AREA

Total Acres	170	Parcel Acres	166
Gross Vacant Buildable Acres	97	Net Vacant Buildable Acres	74

General Description (see attached map)

The Bethany West Urban Reserve Area is a very small square shaped area on the north side of the Portland Community College Rock Creek campus. The UGB forms the boundary on the southern and eastern edges and rural reserves are to the west and north. Access to the area is provided by NW 185th Ave and NW Shackelford Road in North Bethany.

Parcelization and Development Pattern (see attached aerial photo)

This small reserve area contains one complete parcel and one partial parcel that total 166 parcel acres. The partial parcel is a vacant 40 acre portion of the Portland Community College (PCC) Rock Creek campus and includes an unnamed stream and a power line that runs diagonally through the reserve area. Just over half of the other 126-acre parcel is in agricultural production. The remaining portion of this parcel includes Rock Creek and a small section of the power line.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This very small reserve area contains a significant amount of natural resources along Rock Creek and the unnamed stream that reduces the buildable area to an approximately 73 acre piece in the northwest section of the area. This 73 acre section borders NW 185th Ave and is relatively flat The isolated nature of the reserve area reduces its efficiency for employment use although employment may provide a better buffer for the agricultural lands to the north and west. This area is able to accommodate a small portion of a residential or employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Clean Water Services (CWS) is the service provider for unincorporated Washington County. CWS provides wastewater treatment through the Rock Creek Waste Water Treatment Plant. It appears that there is adequate capacity to meet UGB needs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

An existing 24-inch sanitary sewer trunk crosses the reserve area along the north side of Rock Creek. Flows continue via gravity through the CWS trunk and interceptor sewer lines and reach the Rock Creek treatment plant. CWS has indicated that the Rock Creek treatment plant has capacity available and the existing sewer trunk and interceptor line presumably also have available capacity.

Impacts to existing facilities that serve nearby areas already inside the UGB

New sewer mains will be required for development to occur and laterals will be constructed by the development community. Impacts to the treatment plant are expected to be minimal with no anticipated upgrades due to the nominal amount of development expected in this small reserve area. The amount of up-sizing (if any) that would be needed is not known at this time.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$1.14
Total	**$1.14**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Water is supplied to the adjacent area inside the UGB by the Tualatin Valley Water District (TVWD). TVWD has indicated that there is sufficient capacity in terms of water supply, treatment, storage, and piping to serve areas within the current UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

TVWD indicated water for this reserve area appears to be adequate; or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the reserve area is approximately 0.2 MG.

Impacts to existing facilities that serve nearby areas already inside the UGB

Water New water mains will be required for development to occur and laterals will be constructed by the development community. The amount of up-sizing (if any) that would be needed is unknown at this time. TVWD noted that the bridge on NW Shackelford Road in North Bethany that would ultimately connect to NW 185th Ave would need to be constructed in order to provide water service

to the area from North Bethany. For the purposes of this report, it is assumed that the bridge will be constructed along with the transportation improvements.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$0.72
18" and larger	$2.16
Storage/pumping	$0.56
Total	**$3.44**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$1.67
Water quality/detention	$1.65
Total	**$3.32**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All of the nearby roads in the UGB have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. NW 185th Ave is classified as a high injury corridor.

Transit: TriMet bus line 52 provides service to Portland Community College (PCC) Rock Creek from the Beaverton Transit Center along NW Springville Road and 185th Ave. TriMet bus lines 47 and 67

also provide service to PCC Rock Creek along NW Springville Road from the Hillsboro Transit Center and the Merlo MAX Station respectively, via NW Bethany Boulevard.

Bike: There is a dedicated bike lane on NW 185th Ave north of NW Springville Road that changes to an established bikeway south of NW Springville Road and extends south past Westview High School and Rock Creek Elementary School. There is a dedicated bike land on NW Shackleford Road that extends east for just over a half a mile. A short 880-foot local trail runs along the edge of the reserve area connecting NW Shackleford Road and NW Twinberry Lane. The Rock Creek Trail which runs east for over two miles and west for over a mile intersects with NW 185th Ave. The Waterhouse Trail connects to the Rock Creek Trail providing a north-south route that extends to Highway 26.

Pedestrian: There are sidewalks in the new residential development adjacent to the east in North Bethany. A short 880-foot local trail runs along the edge of the reserve area connecting NW Shackleford Road and NW Twinberry Lane. There are no pedestrian facilities on the PCC Rock Creek campus near the reserve area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All of the nearby roads in the UGB have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Washington County is expected to begin construction on phase 4 of the safety and capacity improvements to NW Springville Road, between NW Joss Avenue and PCC Rock Creek in Spring 2024. This is the final section of urban street improvements for NW Springville Road between NW 185th Ave and NW Kaiser Road may help alleviate any additional traffic as a result of urbanizing the reserve area.

Transit: There is a north bound transit stop for TriMet bus line 52 approximately ½ mile from the reserve area at the corner of NW Springville Road NW 185th Ave. The closest south bound transit stop for line 52 is at the corner of NW 185th Ave and NW West Union Road. There are numerous transit stops on NW Springville Road.

Bike: The dedicated bike lane on NW 185th Ave is a little over a ½ mile from the reserve area. This bike facility connects to an established bikeway at NW Springville Road and continues south for about a mile. The bikeway connects to the Rock Creek Trail which runs for several miles and provides the opportunity to connect to additional trails. There is bikeway on NW Springville Road that extends to PCC Rock Creek. The phase 4 road improvements noted above will connect this bikeway to the established bikeway that extends east of NW Joss Avenue. Finally, a dedicated bike lane extends east from the reserve area on NW Shackelford Road into North Bethany.

Pedestrian: It appears there will be one connection to the reserve area from North Bethany along NW Shackleford Road which has sidewalks on both sides and connects to numerous other streets. The sidewalks in North Bethany provide connections to additional residential developments, Springville Elementary School, new park facilities as well as a future commercial area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: NW 185th Ave and NW Springville Road would see additional traffic as a result of urbanization of the reserve area, although the impact would be minimal from this very small constrained urban reserve.

Transit: TriMet bus line 52 would most likely see some additional ridership especially if the ½ mile distance from the transit stop to the reserve area was improved with pedestrian facilities.

Bike: The bike facilities on NW 185th Ave and NW Springville Road would most likely see some additional use especially if the bike lane is extended to the reserve area. This would probably result in additional use of the Rock Creek Trail as well. The bike lane on NW Shackleford Road would also see additional use especially when the commercial component of North Bethany is developed.

Pedestrian: The sidewalks in the adjacent residential area in North Bethany would most likely see additional use since future schoolchildren from the reserve area would attend either Springville or Sato Elementary School in North Bethany. Sidewalks extending to the transit stop would also see additional use.

Need for new transportation facilities and costs (see attached transportation map)

NW 185th Ave will need to be improved to urban arterial standards. A new collector will be needed to connect NW 185th Ave to NW Shackleford Road in North Bethany.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$22.90
Collectors	Type	Cost (in millions)
	New	$16.55
Total		**$39.45**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 60 minute headways for all day service five days a week by extending line 52, with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $364,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE Analysis)

Environmental

Rock Creek flows diagonally in a southwest direction through the reserve area for 4,700 feet through wooded and open land. A second unnamed stream that is located south of Rock Creek also flows in the same direction for approximately 3,180 feet, mostly in open fields. Both streams are located within a large floodplain and two National Wetland Inventory (NWI) wetlands (0.8 & 2.3 acres) and one PCC identified wetland (12.5 acres) are associated with the stream corridors. There is riparian and upland habitat associated with the streams and floodplain area. Given the increased protection levels for streams, wetlands, habitat areas and floodplains within the UGB, and the location of the stream corridors and the power line in the southern portion of the reserve area adjacent to the Portland Community College, urbanization of the area can occur with minimal impact to this stream corridor and habitat areas.

Energy, Economic & Social

This small reserve area contains no existing rural residences, thus the impact of urbanization on the existing residents of the area in terms of loss of sense of place and rural lifestyle is nonexistent. The additional traffic generated through urbanization will be small, however some traffic will be directed to NW 185th Ave which could contribute minor negative energy impacts, as 185th Ave is heavily used, and it would expect to see additional traffic as North Bethany is built out. The area contains limited agricultural activities and the economic loss from these existing agricultural uses would be small, while the potential economic impact of urbanizing this area near Portland Community College will outweigh the economic loss from the limited agricultural uses. Overall this reserve area has low economic, social and energy consequences from urbanization.

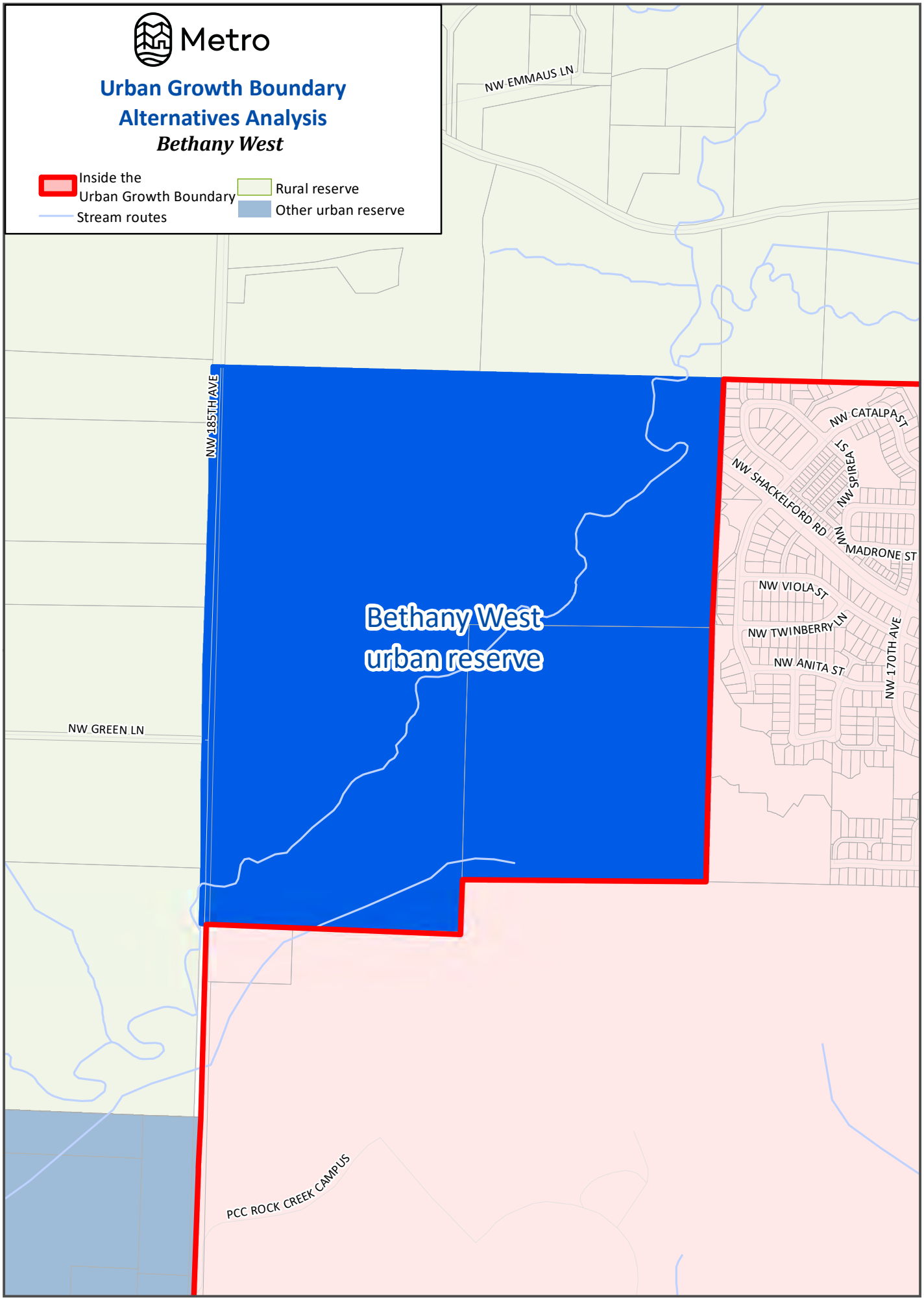
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Farm and forest land borders the reserve area to the north and west whereas the UGB borders the area to the east and south. To the north is a small block of Exclusive Farm Use (EFU) zoned land between the reserve area and NW Germantown Road that contains some agricultural activities but also two rural residences and forested land along Rock Creek. Urbanization of the reserve area would result in new development directly adjacent to this actively farmed land, which could result in issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer. Urbanization would increase traffic on NW 185th Ave which could impact the movement of both farm equipment and goods, although most of the traffic would be expected to move south towards Highway 26 away from the agricultural activities. The proposed urban uses are not compatible with the directly adjacent agricultural activities occurring to the north and mitigation will be needed.

To the west is a block of EFU zoned land that extends for quite a distance and includes field and row crops and nursery production. The land directly adjacent to the reserve area includes a forested parcel and a few rural residences with some associated agricultural activities. NW 185th Ave

provides a buffer between the agricultural activities occurring in this location and the new urban area, however the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of pesticides and fertilizer, although the forested parcel and the limited agricultural uses that are directly adjacent to the reserve area should lessen complaints. In addition, the improvement of NW 185th Ave to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would increase traffic on NW 185th Ave which could impact the movement of both farm equipment and goods, although most of the traffic would be expected to move south towards Highway 26 away from the agricultural activities. In addition, most of the agricultural activities occurring further west gain access from NW Cornelius Pass Road, which would help reduce traffic impacts. Thus, the proposed urban uses are generally compatible with the agricultural activities occurring on the farm land west of NW 185th Ave with mitigation and road design efforts.

Overall, the proposed urban uses have medium compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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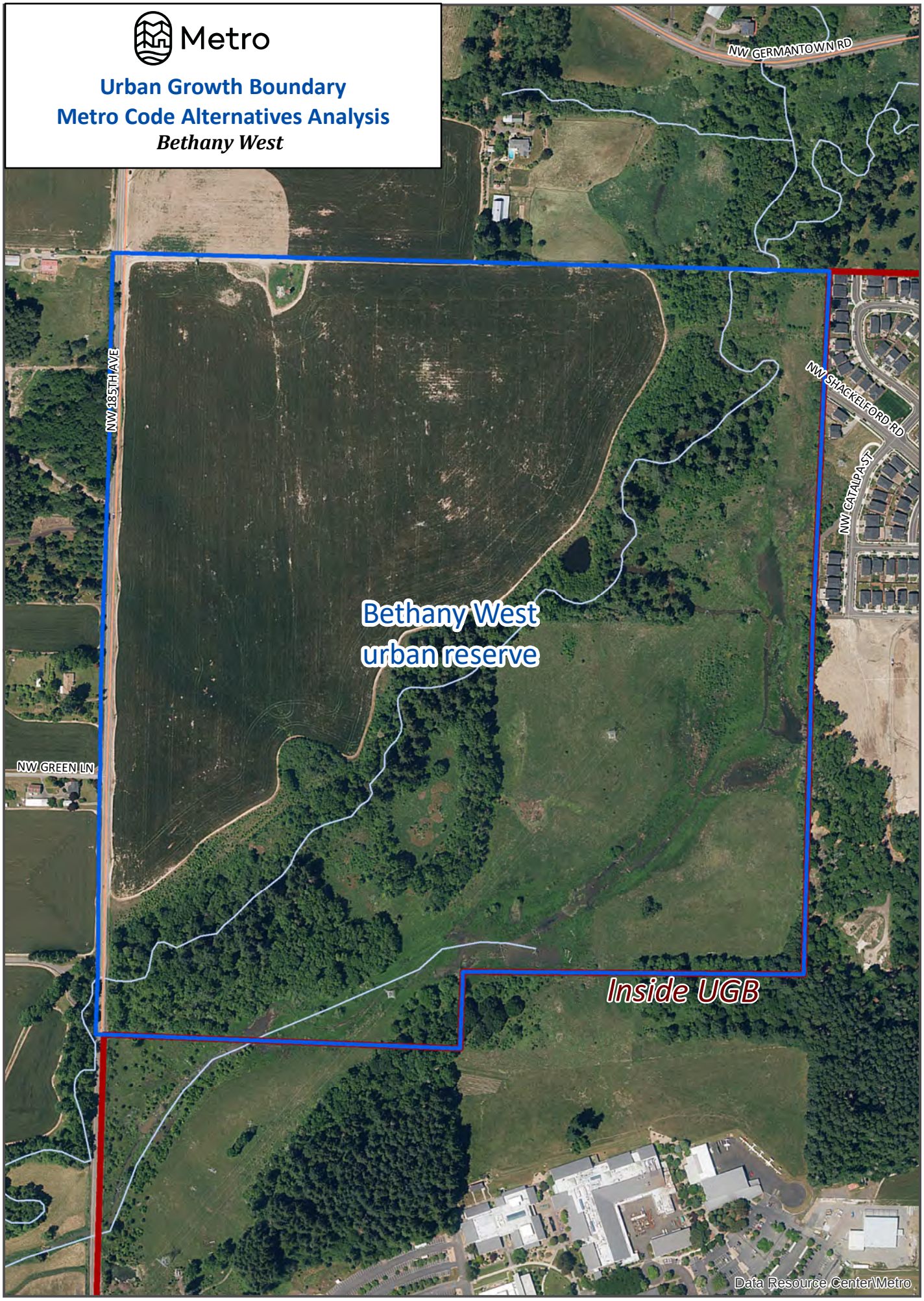
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Bethany West



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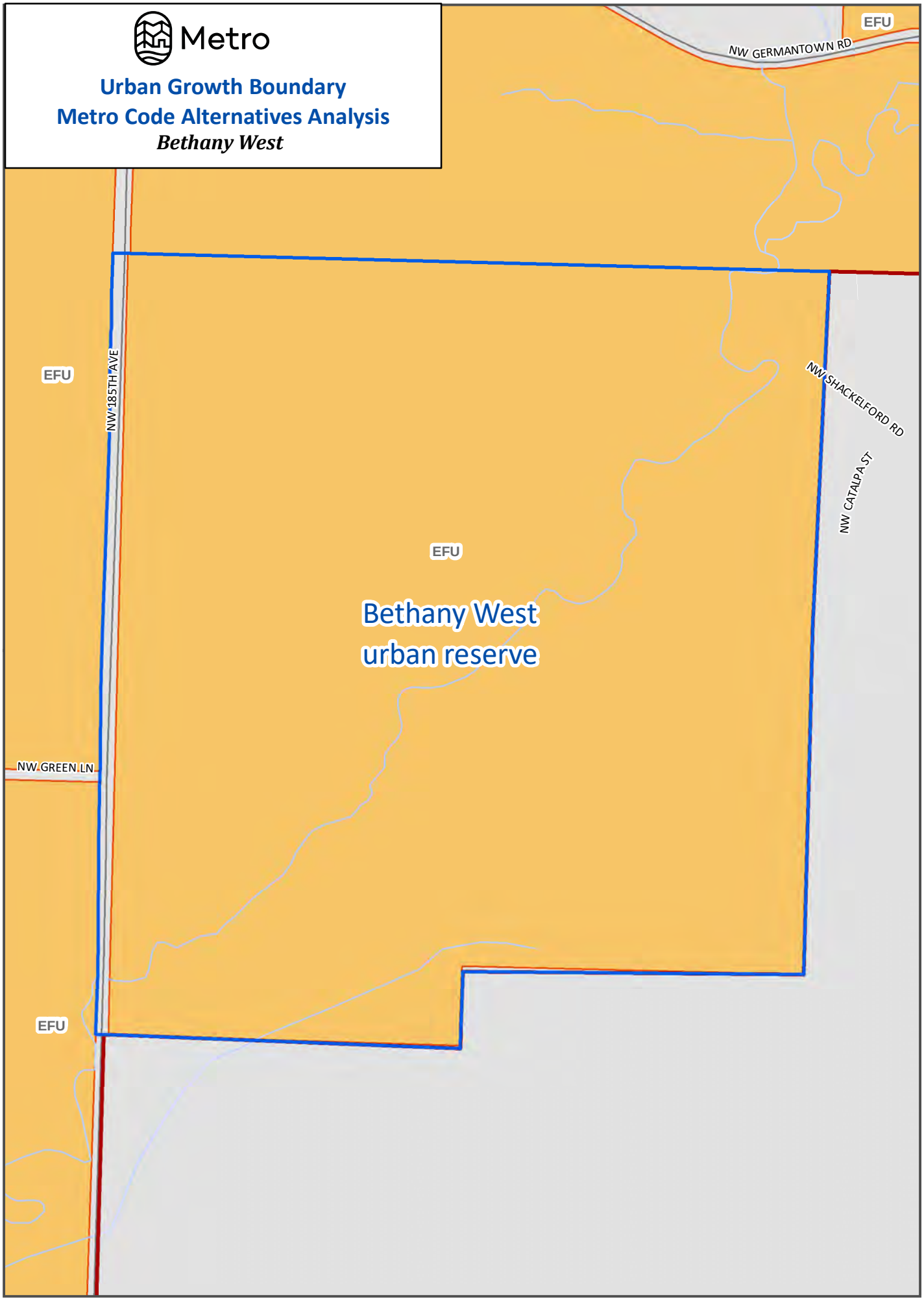

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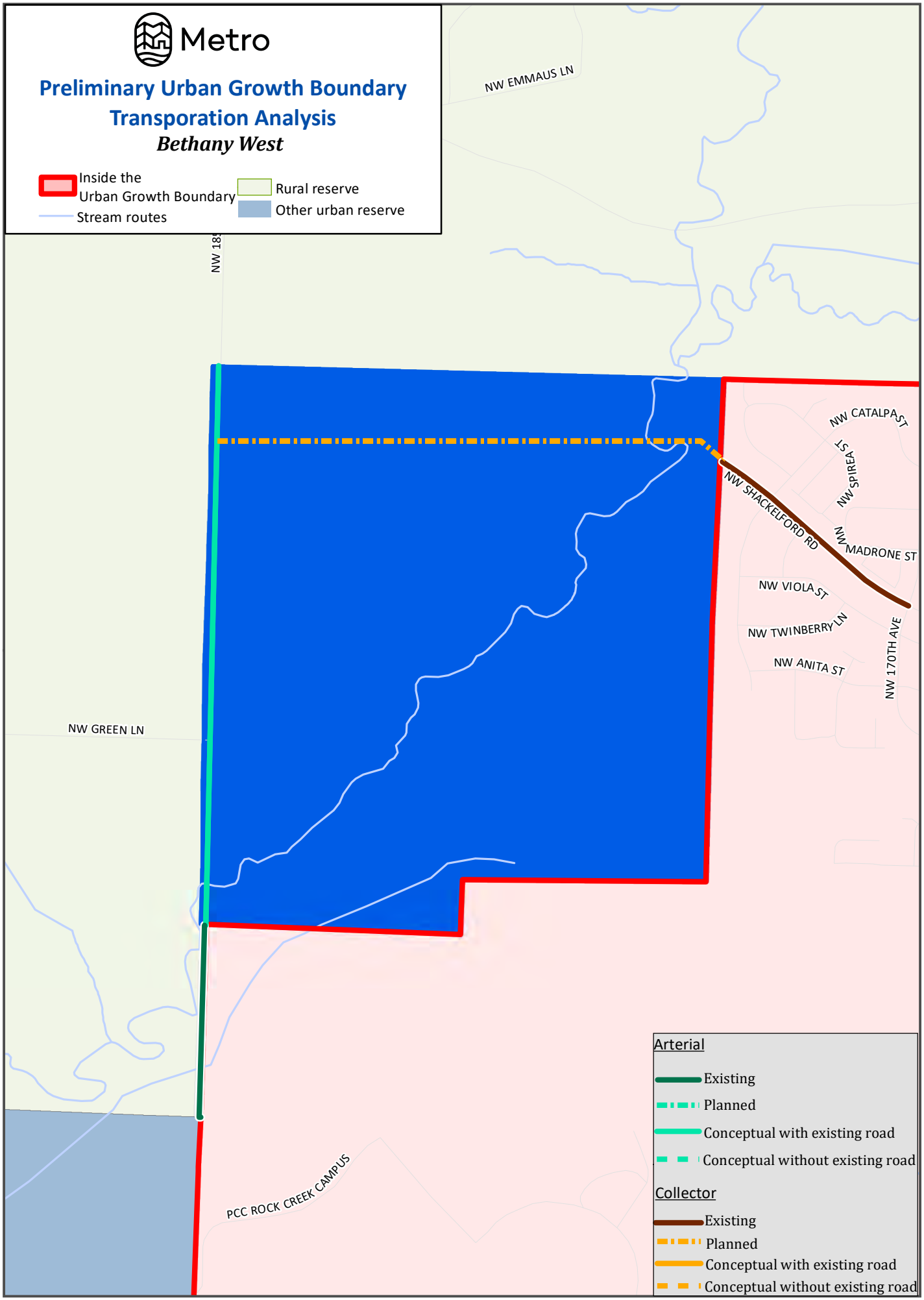

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BORING-HIGHWAY 26 URBAN RESERVE AREA

Total Acres	680	Parcel Acres	591
Gross Vacant Buildable Acres	503	Net Vacant Buildable Acres	382

General Description (see attached map)

The Boring-Highway 26 Urban Reserve Area is a triangular shaped area bordered by State Highway 26, SE 282nd Avenue and State Highway 212. It is composed mostly of small parcels with a handful of large parcels, is served by the three main roadways that form the edges of the area and has excellent access to Highway 26 through the Highway 212 interchange and the SE Haley Road intersection. The urban reserve area is primarily flat and the North Fork Deep Creek flows south through the southeast corner of the area and two tributaries of Johnson Creek flow west through the central and northern portion of the area.

Parcelization and Development Pattern (see attached aerial photo)

This urban reserve area contains 150 parcels that range in size from a quarter acre to 79 acres. Eighty-five percent of the parcels are five acres or less and 35% of those are less than one acre. Overall, 133 of the 150 parcels have improvements. Three distinct land uses define the reserve area: rural residential pockets along SE Haley Road and SE Andy Street, commercial/industrial uses near the Highway 212 interchange and two significant pockets of nursery land. A U.S. Postal Service facility and the Boring Fire District 59 station are located along Highway 212 near the commercial center of the Boring community. The Good Sheppard Community Church and School is in the center of the area along SE Haley Road and encompasses over 30 acres of land and includes a mile long secondary access from Highway 212 through the John Holmlund Nursery property. Available data does not suggest the existence of power lines or other public easements within this urban reserve.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This area is a mixture of small lot rural residences and larger lot areas of agriculture activity and commercial use. The larger lot areas contain a significant amount of land free of existing structures and provide the easy opportunity for future urbanization while the rural residential areas will require the consolidation of lots. The large lot areas that are situated close to the Highway 212 interchange and the SE Haley Road intersection provide opportunity for future employment use with easy access to Highway 26. Therefore, this area can efficiently accommodate both residential end employment land needs.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The nearby area within the existing UGB is served by individual septic systems. Clackamas Water and Environment Services (WES) operates a sewer treatment plant in Boring that is capable of continued operation serving the low-density area but is not sized for urban densities. This wastewater treatment plant treats wastewater from approximately 700 water users.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The Boring sewer treatment plant would need to increase its capacity exponentially to serve urban levels of density. Discharge from the plant follows the North Fork Deep Creek drainage to the Clackamas River. Expansion of the treatment plant is not viable due to the limited flow in the drainage. Accordingly, sewer would likely need to be provided by the City of Gresham, four and half mile away. Gresham does not have any facilities proximate to the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Nearby facilities do not serve areas already inside the UGB.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$3.27
Force main	$0.36
Pump station	$0.70
Total	**$4.33**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The Boring Water District provides service to most of the reserve area and provides service to a very small amount of land inside the UGB. If they were to serve additional land inside the UGB, 1.5 miles of pipe would need to be upgraded. The highest use recorded was in 2017 at 49% of maximum capacity. Two reservoirs, totaling 800,000 gallons serve the gravity customers. A 100,000-gallon reservoir serves customers on a pumped system (roughly 150 customers). The existing pipe network size works for their coverage area. The main network is comprised of asbestos concrete pipe that is nearing the end of its useful life. The district is working to fund replacement of the older pipes. The Sunrise Water Authority provides water to some of the nearby land within the UGB although the district boundary is about two miles from the reserve area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The current water use is approximately 700 water customers and the district still has about half of its supply available. The magnitude of increase to serve urban densities would be a significant challenge for a provider of this size. A new well coming online in 5 years will add 5.0 to 8.0 MGD. This will be the district's fifth well. Sand filtration is the only treatment. There is a possibility that they could obtain water services from Gresham, which is roughly 4.5 miles to the northwest, although that would be very costly.

Impacts to existing facilities that serve nearby areas already inside the UGB

The district runs a two-inch line to serve a very small area inside the UGB. There are no interties to other providers to provide for an alternate source in case of emergency, although they do have a backup generator to support the plant. The district believes the well in 5 years and possibly another in 15 could support a limited urbanized reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$1.82
18" and larger	$9.32
Storage/pumping	$4.73
Total	**$15.87**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

No nearby existing facilities serve areas already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

There are no existing facilities to serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

There is no impact to existing conveyance, detention, or treatment facilities. New facilities will be built commensurate with development.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$8.11
Water quality/detention	$8.41
Total	**$16.52**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways that serve nearby areas within the UGB have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service in the nearby area inside the UGB. The closest bus line is TriMet's Route 84 Powell Valley/Orient Drive which is approximately 1.4 miles away. Route 84 provides weekday rush-hour service between Gresham Central Transit Center and SE 282nd and SE Orient Drive.

Bike: There are no bike facilities in the nearby unincorporated area inside the UGB. SE Stone Road and SE Telford Road are considered bike friendly streets and Highway 26 has wide shoulders. The Springwater Corridor Trail is approximately one-half mile away but there is no direct access from the urban reserve area.

Pedestrian: There are no sidewalks in the nearby areas inside the UGB and the closest residential sidewalks in Gresham are two miles away. The Springwater Corridor Trail is approximately one-half mile away but there is no direct access from the urban reserve area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service near the reserve area.

Bike: There are no bike facilities in the nearby unincorporated area inside the UGB. SE Stone Road and SE Telford Road are considered bike friendly streets and Highway 26 has wide shoulders. The Springwater Corridor Trail is approximately one-half mile away but there is no direct access from the urban reserve area.

Pedestrian: There are no sidewalks or trails adjacent to or within the urban reserve. The Springwater Corridor is approximately one-half mile away.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Highway 26 will be expected to see additional traffic and currently it has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 212 would also be expected to see additional traffic which could impact the very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service to nearby areas already inside the UGB. See transit analysis below.

Bike: The Springwater Corridor is the only facility that serves the nearby area and may see increased use; however, there would be a one-half mile gap between the urban reserve area and the trail facility.

Pedestrian: The Springwater Corridor is the only facility that serves the nearby area and may see increased use; however, there would be a one-half mile gap between the urban reserve area and the trail facility.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SE Highway 212 and SE 282nd Ave that border the reserve area will need to be improved to urban arterial standards. Both roadways are considered to be a ½ street improvements as the property on the other side of the roadway that is within the Boring urban reserve would be responsible for that portion of the improvements. SE Haley Road would be improved to urban collector standards and a new collector road would extend from SE Highway 212 to SE Haley Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$54.13
Collectors	Type	Cost (in millions)
	Existing/Improved	$12.66
	New	$21.38
Total		**$88.17**

Provision of public transit service

This area withdrew from the TriMet service district; thus no analysis of transit service was completed.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

North Fork Deep Creek flows south through the southeast corner of the reserve area for approximately 2,290 feet. About half of it flows either through or along the edge of a parking lot with the other half flowing through an open lot that is associated with a nursery before crossing under Highway 212. There are sporadic locations of trees along the stream, but no continuous riparian corridor. The centrally located tributary of Johnson Creek flows west mostly through open fields with a couple of forested locations for approximately 2,900 feet. There is no riparian corridor associated with most of the stream. The northerly located tributary of Johnson Creek flows through a nursery and consists of two segments that form a "Y". The lower main segment is about 2,800 feet

in length and mostly flows through open land, although there is a 500-foot segment that is forested. The upper segment is about 950 feet in length and flows through open land. Riparian habitat is identified along all the stream corridors. There are two wetlands identified through the National Wetland Inventory. The first wetland is a 0.6-acre pond located on a commercial property that includes some limited adjacent buffer vegetation. The second wetland, about 5.7 acres in size is located on a vacant parcel and appears to have been significantly altered. The proximity of flat, open, developable land adjacent to all the streams and wetlands indicates potential impact from urbanization of this area, except for the forested segment of the Johnson Creek tributary. Required restoration of degraded stream edges and enhancement of the wetland buffer to meet required urban riparian habitat and water quality needs will provide some level of protection from urbanization. Overall urbanization of the area could occur with low to moderate impacts to the stream corridors and wetlands depending on street connectivity needs. There is the potential to significantly improve the riparian corridors given the increased natural resource protection requirements on land inside the UGB.

Energy, Economic & Social

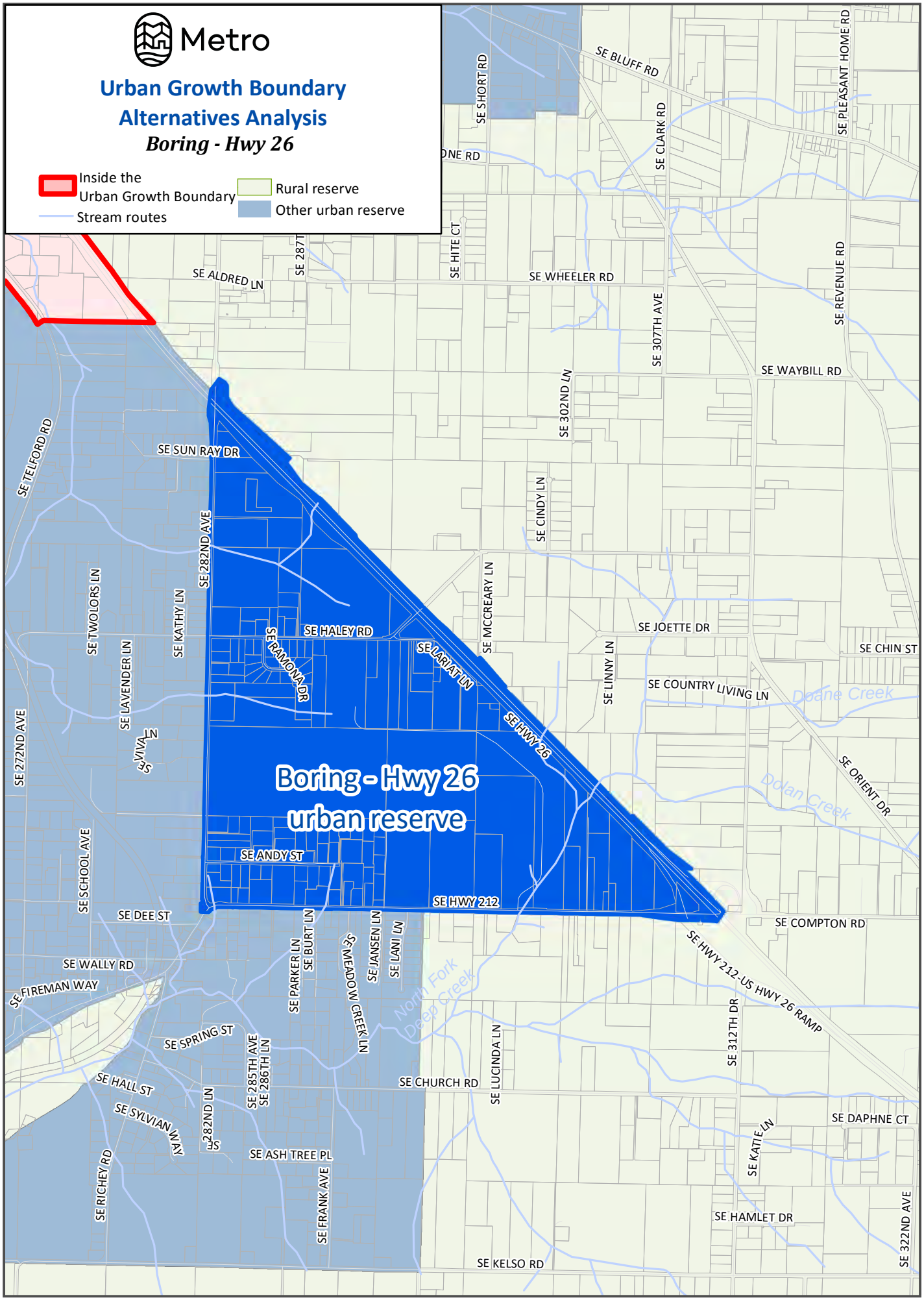
This urban reserve area is generally made up of three different land uses: rural residential pockets, commercial/industrial uses and two significant pockets of nursery land. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. This will result in significant social consequences due to a loss of a rural lifestyle for existing rural residents. Due to difficulties of consolidating smaller lot sizes, the rural residential development along SE Haley Road would probably redevelop at a slower pace than the residential development along SE Andy Street, thereby delaying the social consequences. Any additional residential development near the commercial center of Boring would increase the opportunities for additional retail and commercial services due to a larger customer base thereby creating new civic, entertainment and socializing opportunities for all residents. There are approximately 46 acres of rural industrial land with excellent access to Highway 26. While there is the potential for loss of the current jobs, the potential to generate a significant number of additional jobs through more intense commercial/industrial uses may be a positive for the area. There are two large locations of nursery activity within the reserve area. The loss of the economic impact from these agricultural uses may be considerable; however the potential economic impact of urbanization on these large relatively flat lands would likely outweigh this loss, especially considering potential employment uses. Access to the area would remain the same and the increased VMT from urbanization of the area would be significantly larger than current levels, although direct access to Highway 26 and the Gresham Regional Center and the Springwater Industrial area may reduce the impact compared to other areas that have limited transportation connections to centers or employment areas. In addition, the potential for employment development is high, which could further reduce the VMT impact of existing and future residents. The nearby Springwater Corridor trail is an existing connection to the potential employment areas in Gresham and TriMet's MAX service that provides the opportunity for non-single occupancy vehicle travel, lessening the overall VMT consequences. Finally, the adjacent Boring urban reserve would need to be urbanized first before this reserve area, which would change the overall character of the Boring community, reducing any loss of a rural lifestyle

for the existing residents. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are three separate locations where farm and/or forest land is contiguous to the urban reserve area. The first location is a block of EFU land across Highway 26 in the northern portion of the reserve area between SE 282nd Avenue and SE Haley Road. While this area has some significant agricultural activities occurring the 200 foot plus right-of-way of Highway 26 will limit any impact urbanization of the reserve area would have on this agricultural land. Additional traffic along SE 282nd to and from Gresham could impede the movement of farm equipment. There is less possibility of traffic impacts along SE Haley Road as most of the increased traffic would not continue east into the rural area but head either east or west on Highway 26. South of Highway 212 there are two locations where EFU zoned land abuts the urban reserve area. The first area is a 750-foot stretch of land just east of SE Lani Lane that is not currently in agricultural production. The majority of the additional EFU land to the south is in rural residential use. The second location is a very small segment adjacent to the eastbound on-ramp for Highway 26 that also is not currently in agricultural production.

Due to the very limited nature of the nearby agricultural and forest activities occurring on farm and forest land and the buffer actions of the Highway 26 right-of-way, the proposed urban uses would have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Boring - Hwy 26

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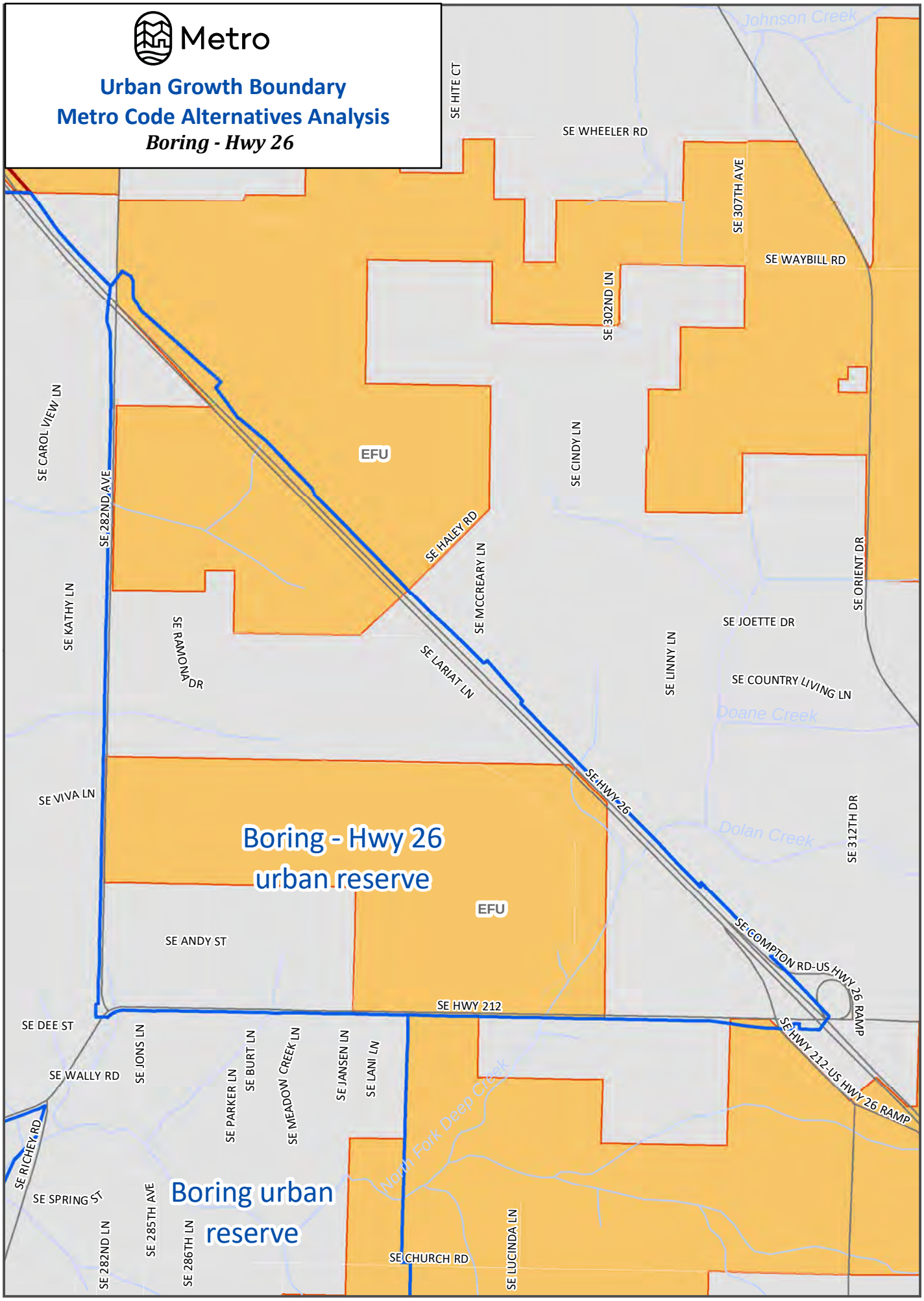

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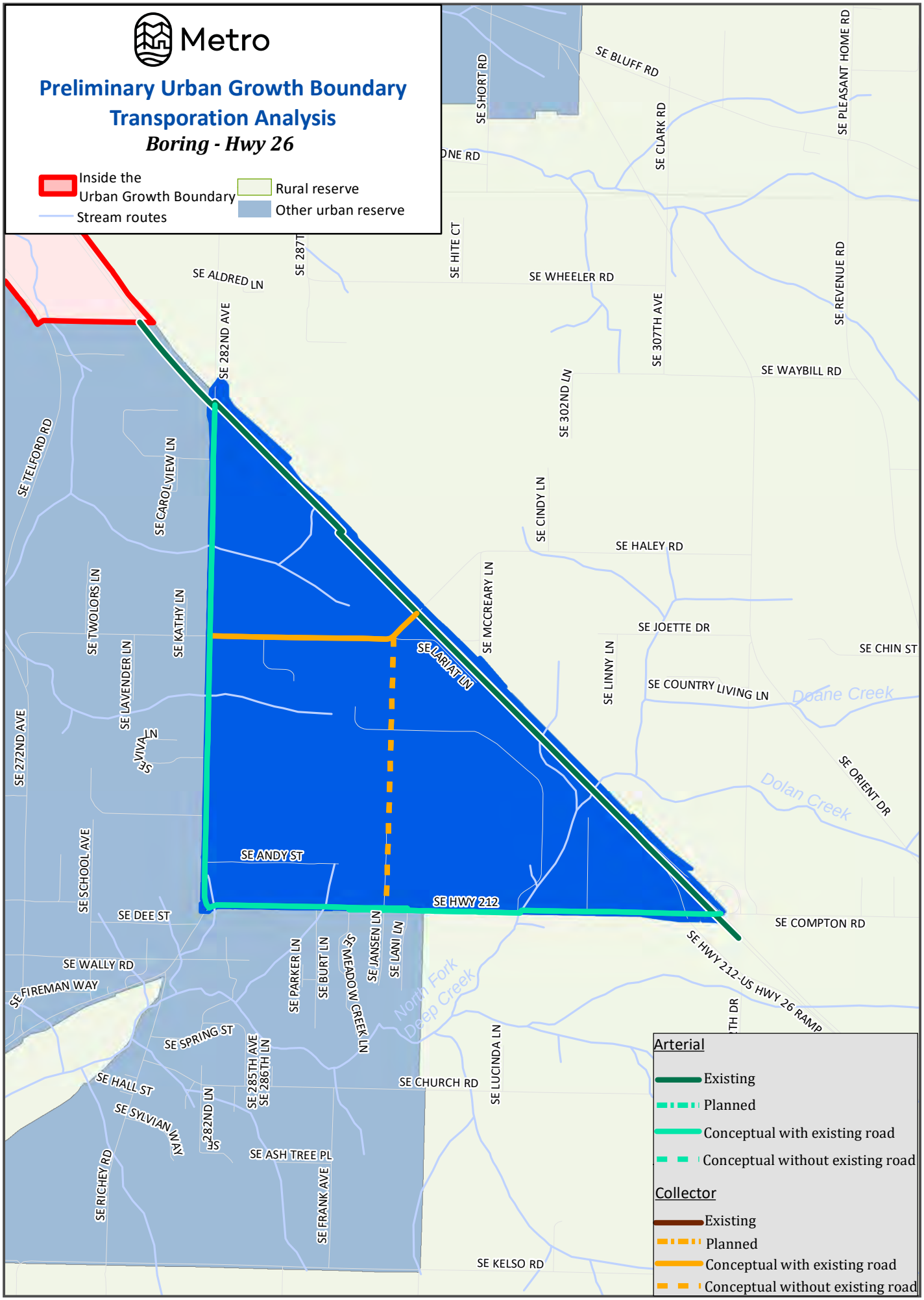

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BORING URBAN RESERVE AREA

Total Acres	2,718	Parcel Acres	2,562
Gross Vacant Buildable Acres	1,260	Net Vacant Buildable Acres	957

General Description (see attached map)

The Boring Urban Reserve Area is an irregular shaped area that is split lengthwise by the Springwater Corridor Trail and includes the business district of the community of Boring. It is served by Highway 212 and SE 282nd Ave, is 2,718 acres in size and has good access to Highway 26 through the Highway 212 interchange. The western portion of the area north of Highway 212 includes two steep forested buttes, Tower and Zion, which dominate the landscape. Relatively flat areas are located south of Highway 212 and west of SE 282nd Ave. An intrusion of rural reserve land follows the Springwater Corridor in the North Fork Deep Creek Canyon from SE 262nd Ave/SE Kelso Road to the center of the business district. The North Fork Deep Creek, along with a few tributaries generally flow west towards the canyon area along the Springwater Corridor Trail. A few tributaries to Johnson Creek flow north and west through the area north of Highway 212.

Parcelization and Development Pattern (see attached aerial photo)

This large urban reserve area contains 1,043 parcels that range in size from a tenth of an acre to 53 acres. Ninety percent of the parcels are less than five acres in size and only seven are greater than 20 acres. Overall, 879 of the 1,043 parcels have improvements. Four distinct land uses define the reserve area: larger lot forested rural residential development on the buttes, small to mid-sized rural residential between SE 282nd Ave and the Springwater Corridor Trail, pockets of agricultural land and the community of Boring that includes both residential and employment uses. A Clackamas County Sanitary Sewer Treatment Facility is located along SE Richey Road, a PGE substation is located off SE 282nd Ave, two Boring Water District storage facilities and one parcel owned by Sunrise Water Authority are in the urban reserve. The urban reserve area also includes the Boring Middle School, Naas Elementary School, and the majority of the Mountain View Golf Course. The Springwater Corridor Trail is on land owned by the City of Portland and Clackamas County and power lines run in a portion of the corridor. Metro owns two parcels along North Fork Deep Creek adjacent to SE Richey Road.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

A large portion of the urban reserve is either developed or limited by natural features such as steep slopes. Most of the central area of the Boring community is built out, however there is some underdeveloped land in the commercial/business area that could provide additional employment uses. There are two large pockets of agricultural land near SE Kelso Road that provide the opportunity for either residential or employment uses. While an employment use in these areas would be at the edge of the future urbanized area, the location has good access to Highway 26, and an employment use may provide a better buffer than a residential use for the significant agricultural activity that is nearby. There are two land areas on either side of SE Haley Road, west of SE 282nd Ave that provide the opportunity for residential use based on parcel size and adjacent uses. There are additional small pockets of land throughout the area that could provide for future residential use depending on the efficiency of providing urban services and the ability to consolidate parcels. Therefore, this area can efficiently accommodate both residential end employment land needs.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The nearby area within the existing UGB is served by individual septic systems. Clackamas Water and Environment Services (WES) operates a sewer treatment plant in Boring that is capable of continued operation serving the low-density area but is not sized for urban densities. This treatment plant treats wastewater from approximately 700 water users.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The Boring sewer treatment plant would need to increase its capacity exponentially in order to serve urban levels of density. Discharge from the plant follows the North Fork Deep Creek drainage to the Clackamas River. Expansion of the treatment plant is not viable due to the limited flow in the drainage. Accordingly, sewer would likely need to be provided by the City of Gresham, four and half miles away. Gresham does not have any facilities proximate to the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Nearby facilities do not serve areas already inside the UGB.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$6.96
12 – 18" pipe (gravity)	$3.71
Force main/bore	$2.17
Pump station	$1.35
Total	**$14.19**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The Boring Water District provides service to most of the reserve area and provides service to a very small amount of land inside the UGB. If they were to serve additional land inside the UGB, 1.5 miles of pipe would need to be upgraded. The highest use recorded was in 2017 at 49% of maximum capacity. Two reservoirs, totaling 800,000 gallons serve the gravity customers. A 100,000-gallon reservoir serves customers on a pumped system (roughly 150 customers). The existing pipe network size works for their coverage area. The main network is comprised of asbestos concrete pipe that is nearing the end of its useful life. The district is working to fund replacement of the older pipes. The Sunrise Water Authority provides water to some of the nearby land within the UGB although the district boundary is about two miles from the reserve area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The current water use is approximately 700 water customers and the district still has about half of its supply available. The magnitude of increase to serve urban densities would be a significant challenge for a provider of this size. A new well coming online in 5 years will add 5.0 to 8.0 MGD. This will be the district's fifth well. Sand filtration is the only treatment. There is a possibility that the area could obtain water services from Gresham, which is roughly 4.5 miles to the northwest, although that would be very costly.

Impacts to existing facilities that serve nearby areas already inside the UGB

The district runs a two-inch line to serve a very small area inside the UGB. There are no interties to other providers to provide for an alternate source in case of emergency, although they do have a backup generator to support the plant. The district believes the well in 5 years and possibly another in 15 years could support a limited urbanized reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$17.62
18" and larger	$5.07
Storage/pumping	$12.32
Total	**$35.01**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

No nearby existing facilities serve areas already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

There are no existing facilities to serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

There is no impact to existing conveyance, detention or treatment facilities. New facilities will be built commensurate with development.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$30.2
Water quality/detention	$29.89
Total	**$60.09**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways that serve nearby areas inside the UGB have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service in the nearby area inside the UGB. The closest bus line is TriMet's Route 84 Powell Valley/Orient Drive which Drive which is approximately 1.4 miles away Route 84 provides weekday rush-hour service between Gresham Central Transit Center and SE 282nd and Orient.

Bike: There are no on road bike facilities in the nearby areas inside the UGB. There are a few streets that are considered bike with caution streets (SE 242nd and SE 222nd Aves) and Highway 212 has wide shoulders. SE Stone Road and SE Telford Road are classified as bike friendly streets. The Springwater Corridor Trail is adjacent to the north edge of the reserve area and Highway 26 has wide shoulders.

Pedestrian: There are no sidewalks in the nearby areas inside the UGB and the closest residential sidewalks in Gresham are two miles away. The Springwater Corridor Trail is adjacent to the north edge of the reserve area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service near the reserve area.

Bike: The Springwater Corridor runs north-south through the center of the reserve area providing a connection to Gresham. There are no other on road bike facilities adjacent to or within the reserve area. Highway 26 is classified as having wide shoulders and there are numerous nearby roadways classified as bike with caution and a couple classified as bike friendly.

Pedestrian: The Springwater Corridor runs north-south through the center of the reserve area. There are no other pedestrian facilities adjacent to or within the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Highway 26 will be expected to see additional traffic and currently it has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 212 would also be expected to see additional traffic which could impact the very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service to nearby areas already inside the UGB. See transit analysis below.

Bike: The Springwater Corridor is the only facility that serves the nearby area and would see increased use.

Pedestrian: The Springwater Corridor is the only facility that serves the nearby area and would see increased use.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SE 282nd Ave and SE Highway 212 that border the reserve area will need to be improved to urban arterial standards. Both roadways are considered to be a ½ street improvements as the property on the other side of the roadway that is within the Boring-Highway

26 urban reserve would be responsible for that portion of the improvements. SE Highway 212 west of Boring SE Richey Road and SE Kelso Road will need to be improved to urban arterial standards. The following roads will need to be improved to urban collector standards: SE Church Road, SE 257th Ave, SE Stewart Lane, SE Fireman Way, SE Gillespie Court/SE Zion Hill Drive, SE School Ave, SE 272nd Ave, SE Sunshine Valley Road/SE Victoria Street, SE 258th Place/SE 257th Drive, SE Telford Road, and SE Haley Road. In addition, five new collectors will need to be built.

Facility Class		
Arterials	Type	Cost (in millions
	Existing/Improved ½	$37.78
	Existing/Improved	$119.12
Collectors	Type	Cost (in millions)
	Existing/Improved	$200.00
	New	$111.57
	Total	**$468.47**

Provision of public transit service

This area withdrew from the TriMet service district; thus no analysis of transit service was completed.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

North Fork Deep Creek flows west through the community of Boring for just shy of a mile, mostly through an intact riparian corridor. About one and half miles of very small tributaries also flow through this area, mostly through residential development; 1,600 feet of the tributaries flow through agricultural land. Riparian habitat is identified along the stream corridors with some upland habitat near the eastern edge of the reserve area. Two additional tributaries to North Fork Deep Creek totaling approximately 6,100 feet flow south through the southwest corner of the urban reserve area, on the north side of Highway 212. These streams flow through pastureland and wooded parcels. Riparian habitat is identified along the stream corridors with some upland habitat identified along the wooded portions of the streams. A two and half acre wetland identified through the National Wetland Inventory is located along North Fork Deep Creek at the eastern edge of the urban reserve area. The existing established riparian corridor of North Fork Deep Creek and the tributaries could be enhanced as a result of the urbanizing the area, as urban water quality and habitat regulations would require increased protection levels for the resources.

The area between SE 282nd Ave and the Springwater Corridor contains a few tributaries to Johnson Creek that flow north and total approximately two miles. A significant portion of these small

streams flow through a forested riparian corridor and the remaining portion traverses open fields. Riparian habitat is identified along the stream corridors with some upland habitat identified along the wooded portions of the streams. In numerous locations it appears that the streams have been altered to create ponds. Urbanization of the area may protect and even enhance the existing forested riparian corridor due to increased urban water quality and habitat regulations. A 2,000-foot stream section in the vicinity of SE Sunshine Valley Road and SE 250th Place flows west out of the urban reserve area to connect with other streams, ultimately flowing into Johnson Creek to the north. This stream is in a forested portion of the large rural residential lots and both riparian and upland habitat is identified along the stream.

The proximity of flat, developable land adjacent to most of the streams within the urban reserve area indicates a potential impact from urbanization of this area, except for North Fork Deep Creek and the forested segments of the streams near the Springwater Corridor. Restoration of degraded stream edges and enhancement of the wetland buffer will provide protection from urbanization. The tributaries that mostly flow through the residential areas may be impacted by future development as they generally flow through the remaining developable portions of the properties, although the existing housing pattern and lot consolidation concerns may reduce options for future development that could limit impacts. Urbanization of the agricultural lands provides the opportunity to restore and enhance the riparian corridor of the streams that flow along the edges of the fields. There are some significant locations of upland habitat identified in the butte areas, although most of it is also located on slopes greater than 25% which would limit the amount of urbanization that could occur. Overall urbanization of the area could occur with moderate to high impacts to the stream corridors, habitat areas and the wetland depending on building and lot consolidation opportunities given the existing development pattern on relatively small lots and the opportunity to enhance riparian corridors on agricultural lands.

Energy, Economic & Social

This urban reserve area is generally made up of four distinct land uses: forested rural residential development on the buttes, small to mid-sized rural residential between SE 282nd Ave and the Springwater Corridor, pockets of agricultural land and the community of Boring that includes both residential and employment uses.

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. This will result in significant social consequences due to a loss of a rural lifestyle for existing rural residents. This would occur in both the residential area between SE 282nd Ave and the Springwater Corridor and the residential portion of Boring. The presence of stream corridors and associated habitat areas will create pockets of the new development that may soften the impact. New residential development combined with new retail/commercial opportunities in the center of Boring will provide new civic, entertainment and socializing opportunities for all residents. The land on the buttes would see limited additional development due to the forested steep slopes and the expense of providing urban services for a limited number of additional houses, resulting in less social consequences for those existing residents.

While there is the potential for loss of existing jobs through redevelopment of the existing commercial/employment center of Boring, the potential to generate a significant number of additional jobs through more intense commercial/employment uses may be positive for the Boring community. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of urbanization on these relatively flat lands will outweigh this loss.

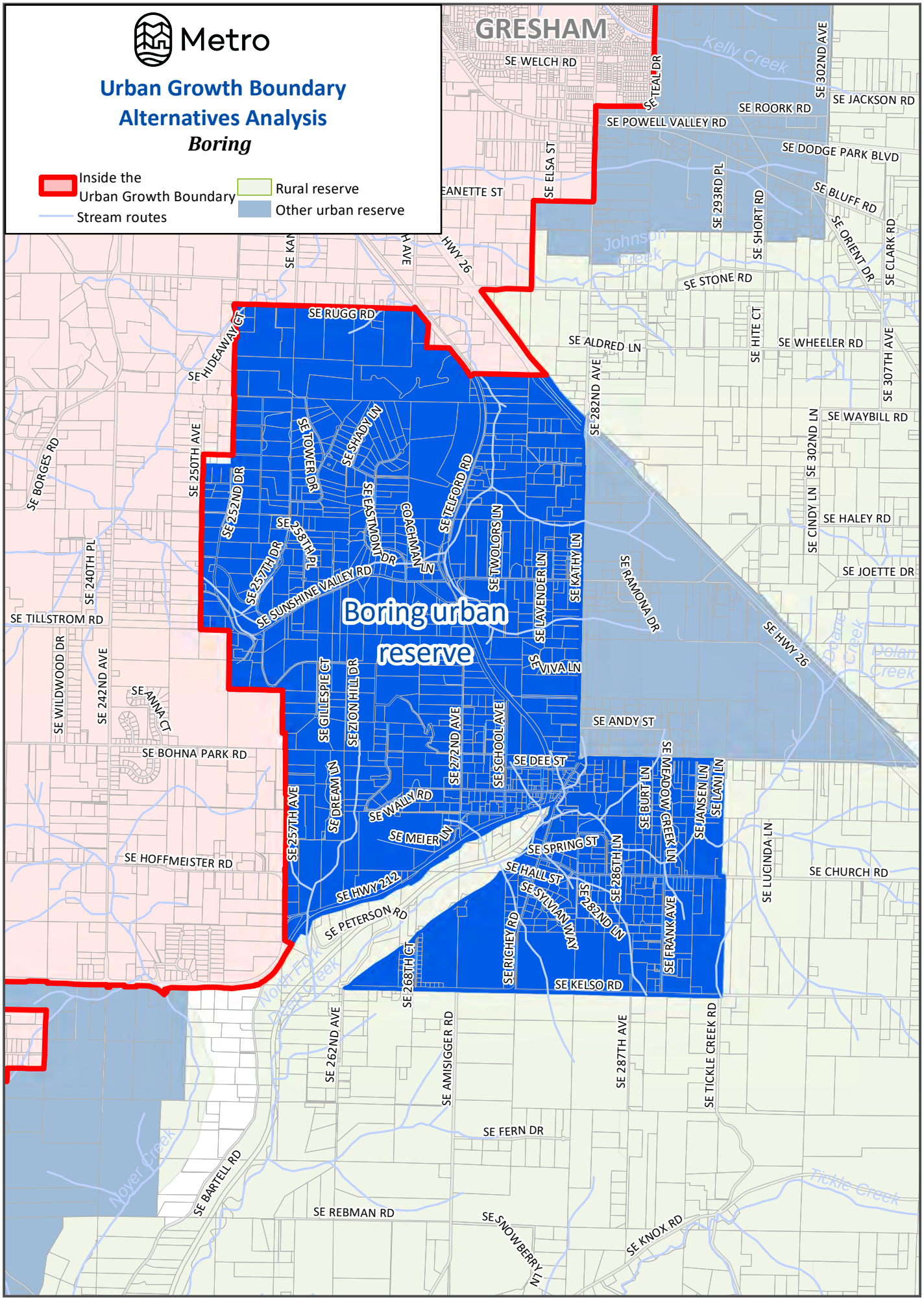
Access to the reserve area would remain the same and the increased VMT from urbanization of the area would be significantly larger than current levels, although good access to Highway 26 via Highway 212 and SE Kelso Road and to the Gresham Regional Center and the Springwater Industrial area may reduce the impact compared to other areas that have limited transportation connections to centers or employment areas. In addition, the potential for employment development is relatively high, which could further reduce the VMT impact of existing and future residents. Finally, the Springwater Corridor trail is an existing connection to these potential employment areas and the TriMet MAX line that provides the opportunity for non-single occupancy vehicle travel, lessening the overall VMT consequences. Overall, this analysis area has high economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are three separate locations where farm and/or forest land is contiguous to the urban reserve area. The first location is a small block of EFU land across SE 282nd Ave near Highway 26. While this is a relatively small area it is almost entirely in nursery production. Additional traffic along SE 282nd to and from Gresham could impede the movement of farm equipment and SE 282nd Ave would not provide an appropriate buffer between urban and agricultural uses and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. The second location is east of SE 282nd Ave in the vicinity of SE Viva Lane and consists of one 80-acre parcel that is part of the larger Holmund Nursery to the east. Additional traffic along SE 282nd to and from Gresham could impede the movement of farm equipment, however since this parcel has field access from the remainder of the nursery that is headquartered off Highway 212 there is alternative ways to move equipment. Even though the frontage of the EFU land along SE 282nd Ave is not very long, the street would not provide an appropriate buffer between urban and agricultural uses and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. The third location is an extensive block of EFU land south of SE Kelso Road and east of the urban reserve area along both sides of SE Church Road. The agricultural land south of SE Kelso Road is in nursery production and extends over a mile south in some locations. Additional traffic along SE Kelso Road to and from Highway 26 could impede the movement of farm equipment and goods as that is the most direct route to the highway from this extensive agricultural area. This is especially true if the large parcels in the urban reserve developed in residential use. SE Kelso Road would not provide an appropriate buffer to between urban and agricultural uses and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. The EFU land adjacent to SE Church Road is in nursery and field crop

use and is also more intermixed with pockets of residences. However, there is some large single owner operations occurring that would be impacted by increased traffic on SE Church Road, which also provides good access to Highway 26. Most of the EFU land directly adjacent to the urban reserve is in residential use and would provide a bit of a buffer between the new urban area and the agricultural activities further east.

The nearby agricultural and forest activities occurring on farm and forest land would be impacted by urbanization of the reserve area, especially in the southern portion of the area. Thus, the proposed urban uses would have low compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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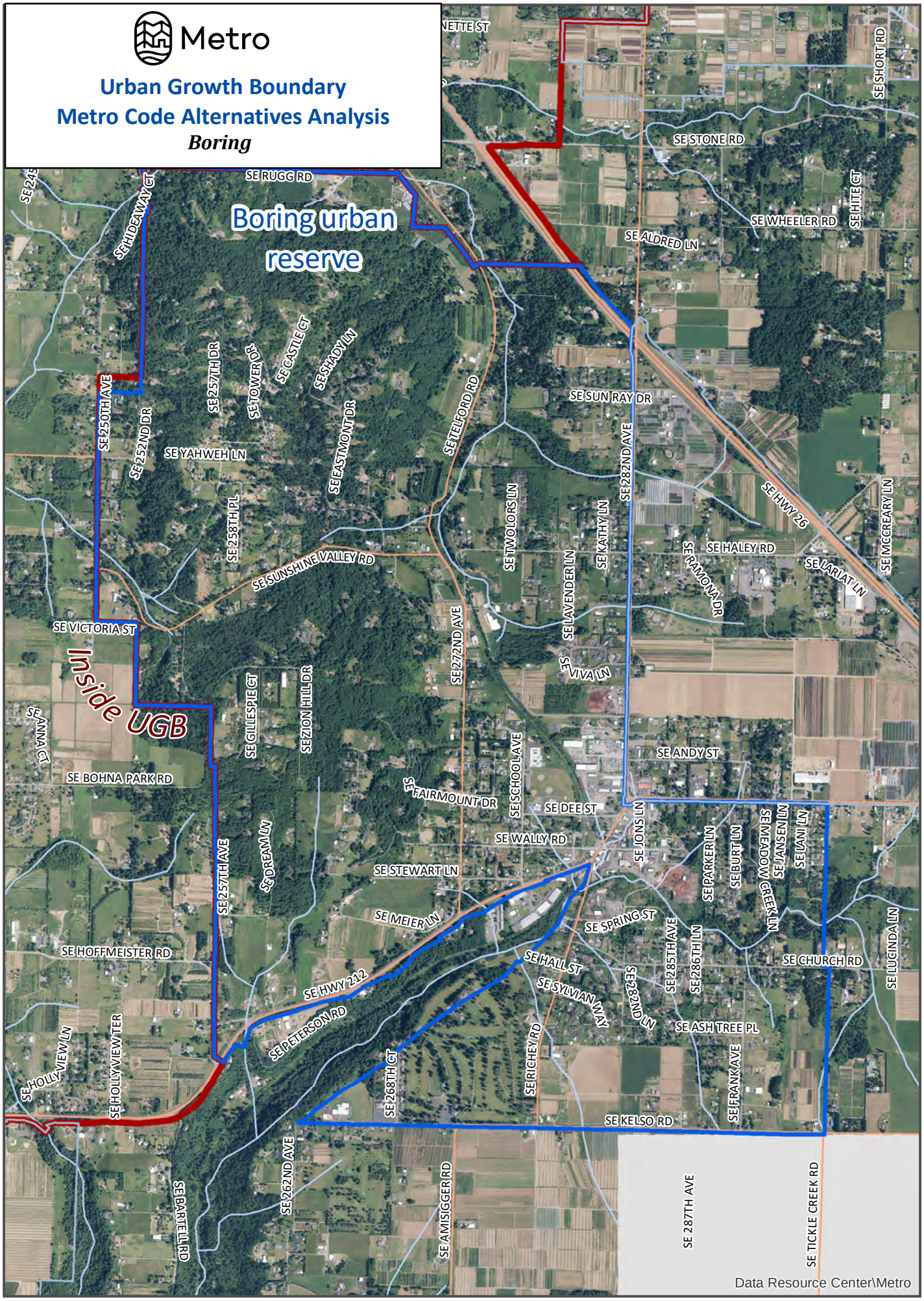
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Boring



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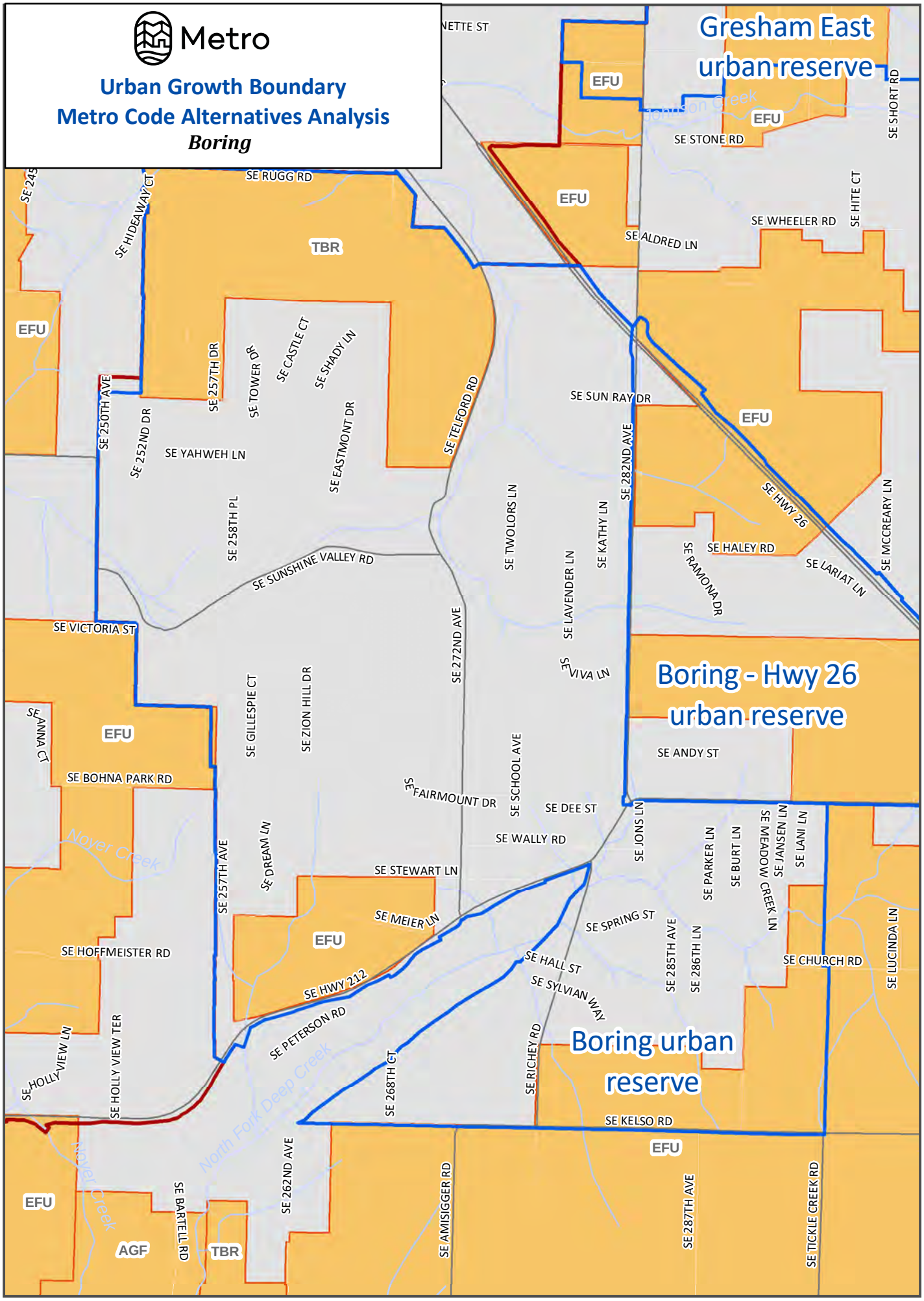

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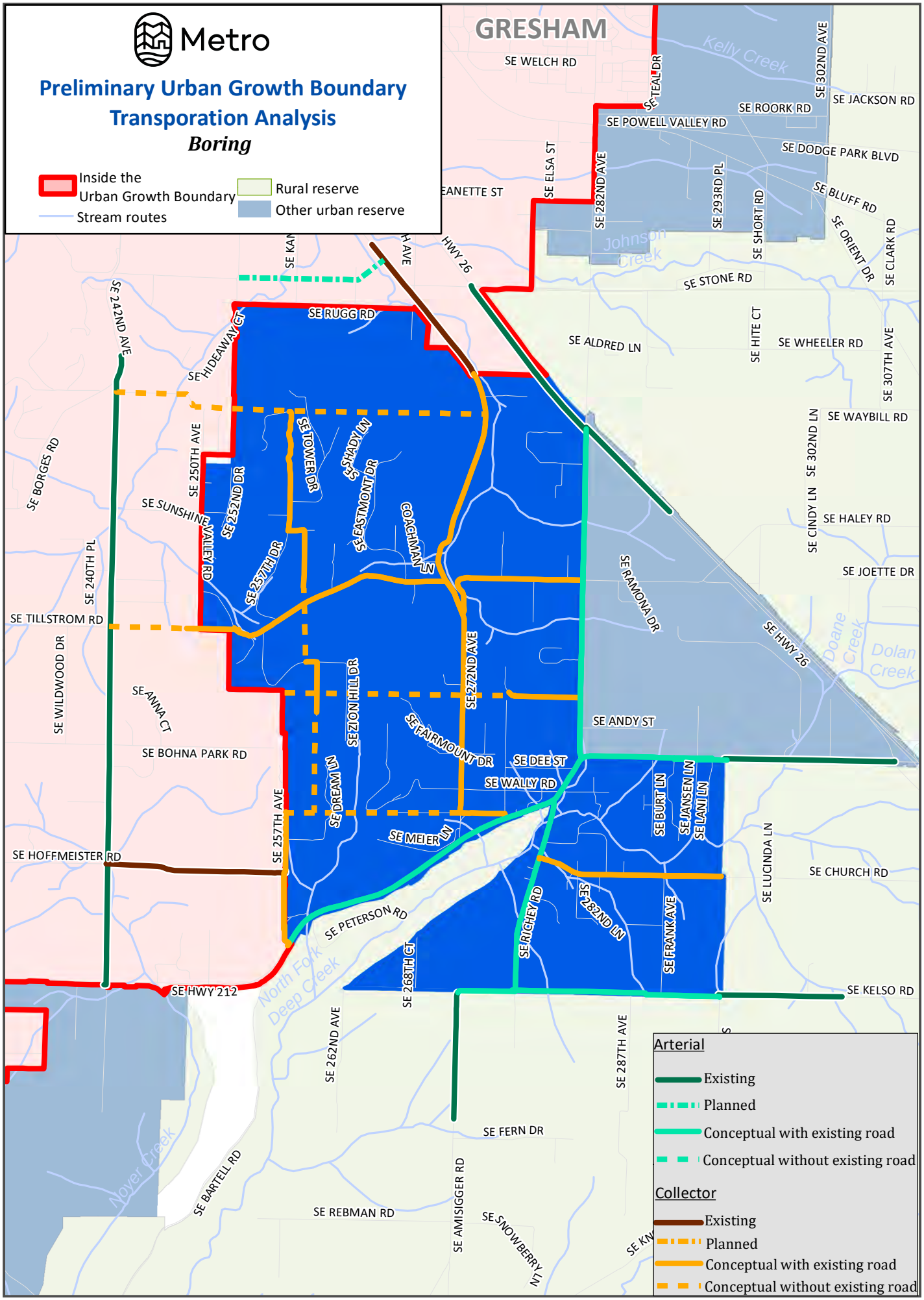

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BORLAND URBAN RESERVE AREA

Total Acres	1,354	Parcel Acres	1,170
Gross Vacant Buildable Acres	508	Net Vacant Buildable Acres	385

General Description (see attached map)

The Borland Urban Reserve Area is a large irregular shaped area that straddles Interstate 205 along SW Borland Road and is 1,354 acres in size. The UGB forms the eastern boundary and a portion of the western boundary with the Tualatin River forming the northern edge. Athey Creek and Fields Creek flow north through the reserve area and Saum Creek flows north along the western edge of the reserve area. All three streams flow into the Tualatin River and have numerous tributaries. There are a few other unnamed streams that also flow to the Tualatin River. The area is generally flat with some slopes greater than 10% along the stream corridors and some very minor areas of slopes greater than 25%. Access to the area is provided by SW Borland Road and SW Stafford Road.

Parcelization and Development Pattern (see attached aerial photo)

This large reserve area is a mixture of numerous uses including rural residences, pockets of agricultural land, schools and churches, and a commercial section along Borland Road. The reserve area contains 342 parcels that range in size from 4,356 square feet to 37 acres. Fifty-six of the parcels are less than ½ acre, 124 are less than one acre, and 263 are less than five acres in size. Only 19 parcels are greater than 10 acres and eight are greater than 20 acres in size. Three of the five largest parcels are occupied by a school and two churches. Two hundred and sixty-eight of the 342 parcels have improvements. There are two public schools, Athey Creek Middle School and Stafford Primary School, and two private schools, Arbor School of Arts and Sciences and Three Rivers Charter School, that combined occupy 70 acres. There are five churches; Athey Creek Christian Fellowship, Neighborhood Church Assembly of God, Rolling Hills Community Church, Resurrection Catholic Church and International Church Foursquare Gospel, that combined occupy 138 acres. Finally, the State of Oregon owns seven parcels (5.1 acres), Metro owns four open space parcels (19.3 acres) and Clackamas County owns four parcels (43.26 acres).

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

Three quarters of the parcels in this reserve area are five acres or less in size and almost half of those are less than one acre, most of which contain single family homes. Redevelopment of these residential areas will be challenging. The numerous stream corridors and associated riparian habitat areas, public lands, school, and church sites reduce the buildable area to a few select

locations. A couple of these locations are near the SW Borland Road and SW Stafford Road intersection and would be large enough to accommodate an employment land need. Overall, this area can accommodate an employment and residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin provides the wastewater collection system for nearby land inside the UGB to the west and wastewater treatment is provided by Clean Water Services (CWS) Durham Wastewater Treatment Plant which appears to have capacity to serve the areas already inside the UGB. The City of West Linn provides the wastewater collection system for nearby land inside the UGB to the east and wastewater treatment is provided by the Tri-City Service District treatment plant. The Tri-City Service District is made up of West Linn, Oregon City and Gladstone and is managed by Clackamas County Water Environment Services (WES). Improvements to the treatment plant in 2018 will provide sufficient capacity to meet current UGB needs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Waste from the western portion of the reserve area would be routed into the CWS system. The nearest connection point is an existing 8-inch line in SW Sequoia Drive, which utilized the Sequoia Ridge Pump Station. Downstream of the pump station 8-inch gravity pipes convey flows to a City of Tualatin 18-inch trunk line, which connects to a large diameter CWS interceptor to the Durham treatment plant. CWS has indicated that the treatment plant has capacity; however, significant additional flows may require plant improvements. In addition, the capacity of the existing pump stations and sewer lines are unknown. The eastern portion of the reserve area would be routed to the City of West Linn and the Tri-City Service District treatment plant. The sewer would connect to an existing gravity line in Willamette Falls Drive. With the completion of the treatment plant improvement project, some capacity may be available. In addition, the capacity of the existing pump stations and sewer lines are unknown.

Impacts to existing facilities that serve nearby areas already inside the UGB

CWS' Durham treatment plant is a large facility with a broad service area. The cumulative addition of multiple urban reserves could result in a need for some expansion in order to handle additional load. The upgrades and financial impacts are beyond the scope of this report. Wastewater services (digesters) in the WES system are expected to need some upgrades to provide service for growth beyond that in the current UGB. The upgrades and financial impacts are beyond the scope of this report. The significant impacts to the wastewater system are primarily from the financial contributions required to build the mains within the reserve area. A portion of the reserve area is located north of I-205, thus a sewer crossing under I-205 will likely be needed in order to convey flows to the existing Willamette Falls Drive sewer.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
12 – 18" pipe (gravity)	$1.07
Greater than 18" pipe (gravity)	$4.1
Bore	$5.73
Total	**$10.90**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin serves the adjacent areas inside the UGB to the west, and it appears to have enough capacity to meet the needs of land inside the UGB based on its Water Master Plan. However, water storage improvements are needed to serve future development within the existing UGB. The City of West Linn serves the adjacent areas inside the UGB to the east. The West Linn Water System is part of the Lake Oswego – Tigard Water Partnership. Potable water comes from the South Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWB operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division St. in Oregon City. The water treatment plant was upgraded in October 2016. According to the City of West Linn, there are no issues serving the area currently within the UGB in regard to pumping, storage, and piping.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water could be provided from either Tualatin or West Linn. The Tualatin water supply appears to be adequate to serve the reserve area, or they will be able to generate the supply as this area is developed. The City of West Linn indicated that there are no issues with water supply to serve the reserve area. The treatment plant will likely require upgrades to convey the additional potable supply if the city did provide water to the eastern portion of the area.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, water services could be provided from either Tualatin or West Linn. Service from Tualatin could be somewhat more efficient as it would not require crossing the river. Any further impacts to the water system are primarily financial. New water mains must be provided to allow development of the reserve area and the laterals off the mains are provided by the development community

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$3.64
18" and larger	$6.77
Storage/pumping	$5.15
Total	**$15.56**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$10.1
Water quality/detention	$10.62
Total	**$20.72**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Tualatin, which borders the reserve area on the west side, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Boones Ferry Road at the Tualatin River has a severely congested volume/capacity ration (>1.0) for the southbound lane and a congested volume/capacity ratio (<1.0) for the northbound lane. Highway 99W at SW Tualatin Road and I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions. Most of the roadways in West Linn, which borders the reserve area on the east side, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Willamette Drive at I-205 has a congested volume/capacity ratio (<1.0) in both directions as

does I-205 between Willamette Drive and Salamo Road. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio.

Transit: Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SE Tualatin-Sherwood Road and SW Boones Ferry Road providing service to the Town Center and employment areas. Two TriMet bus lines serve West Linn. Route 35 runs along Willamette Drive and Route 154 runs along Willamette Falls Drive providing transit service to the Town Centers and a small portion of the city.

Bike: Tualatin has a fairly well-established bike route system of dedicated bike lanes (25 miles), established bikeways (7 miles) and local trails that connect the employment areas and Town Center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city. The Tualatin River Greenway Trail runs under I-5 from the Tualatin Town Center, but a gap in the trail forces users onto Nyberg Lane in order to connect to Browns Ferry Park. There are nine miles of dedicated bike lanes and five miles of bikeways in West Linn that generally run in a north south alignment due to topography limitations, thereby limiting east-west bike travel. Several residential areas and neighborhoods, such as Willamette and Barrington Heights have few bike facilities that connect to other parts of the system.

Pedestrian: Most of the residential areas of Tualatin have sidewalks with less pedestrian connections in the employment areas. The Town Center has a fairly well-established pedestrian network that also includes access to some trails. The Tualatin River Greenway Trail runs under I-5 and connects the Tualatin Town Center to the east side of the city, but a gap in the trail forces users onto Nyberg Lane in order to connect to Browns Ferry Park. Large portions of West Linn are well served by sidewalks, mostly in areas that have been developed more recently. The Willamette Falls Drive Streetscape Project improved pedestrian accessibility in the historic Willamette neighborhood. The Rosemont and Salamo Trails provides a pedestrian connection route along Rosemont and Salamo Roads that ties the lower and upper portions of the city together on the west side.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All the roads in Tualatin that border the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions. All the roadways in West Linn that border the reserve area have an acceptable volume/capacity ratio for the 2015 pm peak with the exception of I-205 in the northbound direction at the UGB line and both directions of I-205 near Salamo Road that has a congested volume/capacity ratio (<1.0).

Transit: TriMet bus route 76 that serves Tualatin is approximately 0.8 of a mile from the reserve area along SW Borland Road. TriMet bus route 154 that serves West Linn is approximately ⅔ of a mile from the reserve area via Willamette Falls Drive. Most of the reserve area is well over a mile and a half from transit.

Bike: A portion of SW Borland Road in Tualatin has a dedicated bike lane however it ends approximately 1,000 feet from the reserve area. There also is a gap between SW 65th Ave and SW 61st Terrace. SW 50th Ave and SW Nyberg Lane also have dedicated bike lanes but do not completely connect with the rest of Tualatin. The Tualatin River Greenway Trail is located fairly close to the reserve area and follows a similar route as the bike lane on SW Nyberg Lane. There is a dedicated bike lane on Dollar Street that connects to the Tualatin River Greenway Trail in West Linn and the sidewalks on the bride across the Tualatin River along SW Borland Road/Willamette Drive. There are dedicated bike lanes along portions of SW Borland Road and SW Stafford Road within the reserve area.

Pedestrian: The residential subdivision in Tualatin that is nearest the reserve area has sidewalks although there are numerous gaps along SW Borland Road that connect to other parts of Tualatin. The Tualatin River Greenway Trail, which is close to the reserve area, extends along the river to the west side of I-5 with one small gap that has yet to be completed. A small portion of the adjacent residential subdivisions in West Linn contain sidewalks and there are sidewalks along the SW Borland Road/Willamette Drive bridge that crosses the Tualatin River but there are no sidewalks leading up to the bridge structure from either direction. A short section of the Tualatin River Greenway Trail is nearby but does not extend beyond Fields Bridge Community Park.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: All the roads in Tualatin that border the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The local roads could see some impact from additional traffic especially if I-205 is congested. I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions. Urbanization of the reserve area could impact the congestion level on I-5 depending on the commute pattern of the future residents. All the roadways in West Linn that border the reserve area have an acceptable volume/capacity ratio for the 2015 pm peak with the exception of I-205 in the northbound direction at the UGB line and both directions of I-205 near Salamo Road that has a congested volume/capacity ratio (<1.0). Likewise, the local roads could see some impact from additional traffic and the congestion level on I-205 is currently congested in both directions and would be expected to see some impact as well.

Transit: Urbanization of the reserve area would not impact the current bus routes serving the nearby areas already inside the UGB. See transit analysis below.

Bike: The bike lane on SW Borland Road would see additional use because of urbanization of the reserve area. This could provide the necessary pressure to complete the gaps in the current bike lanes for optimal use of the bike facilities and connection to the rest of Tualatin. The Tualatin River Greenway Trail is located fairly close to the reserve area and if the small gap was completed it could see additional use. The bike lane on Dollar Street that connects to the Tualatin River Greenway Trail in West Linn could also see additional use. The dedicated bike lanes along portions of SW Borland Road and SW Stafford Road within the reserve area would see additional use.

Pedestrian: Urbanization of the reserve area would not impact the sidewalks in the residential subdivision in Tualatin that is nearest the reserve area as they provide internal circulation and the numerous gaps along SW Borland Road limits connections to other parts of Tualatin. The Tualatin River Greenway Trail is located fairly close to the reserve area and if the small gap was completed it could see additional use as it extends to the Tualatin Town Center on the west side of I-5. Likewise, urbanization of the reserve area would not impact the limited sidewalks in the adjacent residential subdivisions in West Linn as they only provide internal circulation. A short section of the Tualatin River Greenway Trail is nearby but does not extend beyond Fields Bridge Community Park.

Need for new transportation facilities and costs (see attached transportation map)

SW Stafford Road and SW Borland Road would need to be improved to urban arterial standards. SW Ek Road would need to be improved to urban collector standards. Transportation costs due not reflect a need for new bridge structure on SW Stafford Road or SW Borland Road as the determination of what improvements would be necessary is beyond the scope of this analysis.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$141.86
Collectors	Type	Cost (in millions)
	Existing/Improved	$17.66
Total		**$159.52**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, five days a week, with three additional buses at a capital cost of $1,200,000 (recurs every 16 years). Annual service cost is $1,092,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There are six main stream corridors that flow through the area. Saum Creek meanders along the western edge of the reserve area for just over a mile. Wetlands, identified in the Tualatin local wetland inventory coincide with the stream corridor and total approximately 7.1 acres. The creek and wetlands are located on wooded portions of smaller rural residential lots that are also identified as riparian and upland habitat and contain some areas of slopes greater than 25%. In

addition, a portion of the northwest corner of the reserve area where Saum Creek joins the Tualatin River is within the 100-year floodplain. The increased protection levels for streams, wetlands, steep slopes and habitat areas within the UGB will lessen any potential impacts. Given the relatively small size of the parcels and the fact that nearly all of them contain residences, most likely there will be limited amounts of future development that will further lessen any impact on the stream corridors and habitat areas.

Two short tributaries to Saum Creek, both approximately 1,500 feet in length are located along the western edge of the area, one north of I-205 and one south of the interstate. The stream on the north side flows through wooded portions of a few larger parcels, including the Arbor School of Arts and Sciences property, and includes riparian and upland habitat. The stream south of I-205 flows through a wooded ravine that has slopes greater than 25% and includes a 0.44-acre wetland identified on the National Wetland Inventory (NWI). As one would expect this stream also has adjacent riparian and upland habitat identified along the corridor, which would be protected once the land was added to the UGB. Based on the increased protection levels for streams, wetlands, steep slopes, and habitat areas for streams inside the UGB, these two stream segments would be minimally impacted by future urbanization.

Athey Creek and a small tributary flows north through the reserve area for approximately 1.3 miles. The portion of the creek that is south of I-205 flows mostly through a private open space and then is piped under I-205. The portion of the creek north of I-205 flows mainly through a wooded ravine that contains slopes greater than 25%. There is a 2.8-acre wetland that coincides with the stream corridor identified in the NWI and an additional pond that is not identified as a wetland. Riparian and upland habitat is identified along the stream corridor. In addition, the area where Athey Creek joins the Tualatin River is within the 100-year floodplain. Most of the parcels Athey Creek flows through are large enough to be subdivided and the stream corridor would complicate additional east-west transportation connections. However, the location of the public schools on the eastern side of the stream reduces the need for new east-west street connections north of SW Borland Road and the land that is east of Athey Creek and south of SW Borland Road has an existing access point on SW Stafford Road. Based on the increased protection levels for streams, wetlands, steep slopes and habitat areas, urbanization could occur with minimal impacts to Athey Creek, depending on local street connection requirements.

The third stream flows north through the area where SW Borland Road crosses under I-205 for approximately 3,100 feet before draining into the Tualatin River. The stream flows mainly through forested portions of parcels that either contain rural residences or are vacant. Riparian habitat is identified along the stream corridor with some upland habitat identified on the more forested parcels near I-205. There are small locations where the adjacent slopes are greater than 25%. A small area of 100-year floodplain is located where the stream meets the Tualatin River. Most of the stream flows along edges of developed rural residential properties and would not be further impacted by urbanization of the area. However, there are a couple of locations where the stream could be impacted by future development, depending on the density and design of the development and street connection requirements. A second stream or drainage area flows within the I-205 right-of-way and appears to join the first stream on the north side of the highway. Given the locations of

the stream corridors, the increased protection levels for streams and habitat areas on land inside the UGB, urbanization of the area could occur with minimal impact to the streams and habitat areas depending on local street connection requirements.

The fourth stream flows north through the area, just east of the SW Borland Road/SW Ek Road intersection. This stream flows mainly along the side and back portions of rural residential properties for approximately 2,650 feet. The stream is mainly within a forested canopy and both riparian and upland habitat is identified along the stream corridor. This area is mostly developed with single family homes on 1-3 acre lots. Impacts to the stream would be minimal given the increased protection level for streams and habitat areas for land inside the UGB.

The fifth stream flows north through the area near the SW Borland Road/SW Turner Road intersection. This stream corridor flows between two rural residential properties and then through an undeveloped parcel owned by the Lake Oswego Corporation before it drains into the Tualatin River. Like above, the stream is mainly within a forested canopy and both riparian and upland habitat is identified along the stream corridor. In addition, there is an area of 100-year floodplain where the stream meets the Tualatin River. Given the location of the stream within a narrow location of the reserve area and the presence of slopes greater than 25% at the back of the lots that would limit any additional development, urbanization could occur with no or very limited impacts to the stream corridor.

Finally, Fields Creek flows through the very eastern portion of the reserve area in the vicinity of SW Bosky Dell Lane and SW Elderberry Lane for approximately 2,000 feet. Similar to the other streams, Fields Creek also flows along forested edges of one-to-three-acre parcels that contain rural residences and has riparian and upland habitat identified along the stream corridor. In addition, there is an area of 100-year floodplain where the stream meets the Tualatin River. Redevelopment of the land near the stream will be challenging and take place over a long period of time. There are a few locations near SW Bosky Dell Lane where minor impacts on the stream corridor could occur, depending on density and design of the development. The parcels along SW Elderberry Lane and SW Alderwood Drive are less than 1 acre and additional development will be challenging. Impacts to the stream would be minimal given the increased protection level for streams and habitat areas for land inside the UGB. There is a small 820-foot tributary to Fields Creek that also flows along forested edges of parcels at the end of SW Alderwood Drive. Similarly, redevelopment of the parcels in this area will be challenging.

Overall, urbanization could occur with minimal to moderate consequences to the stream corridors and habitat areas.

Energy, Economic & Social

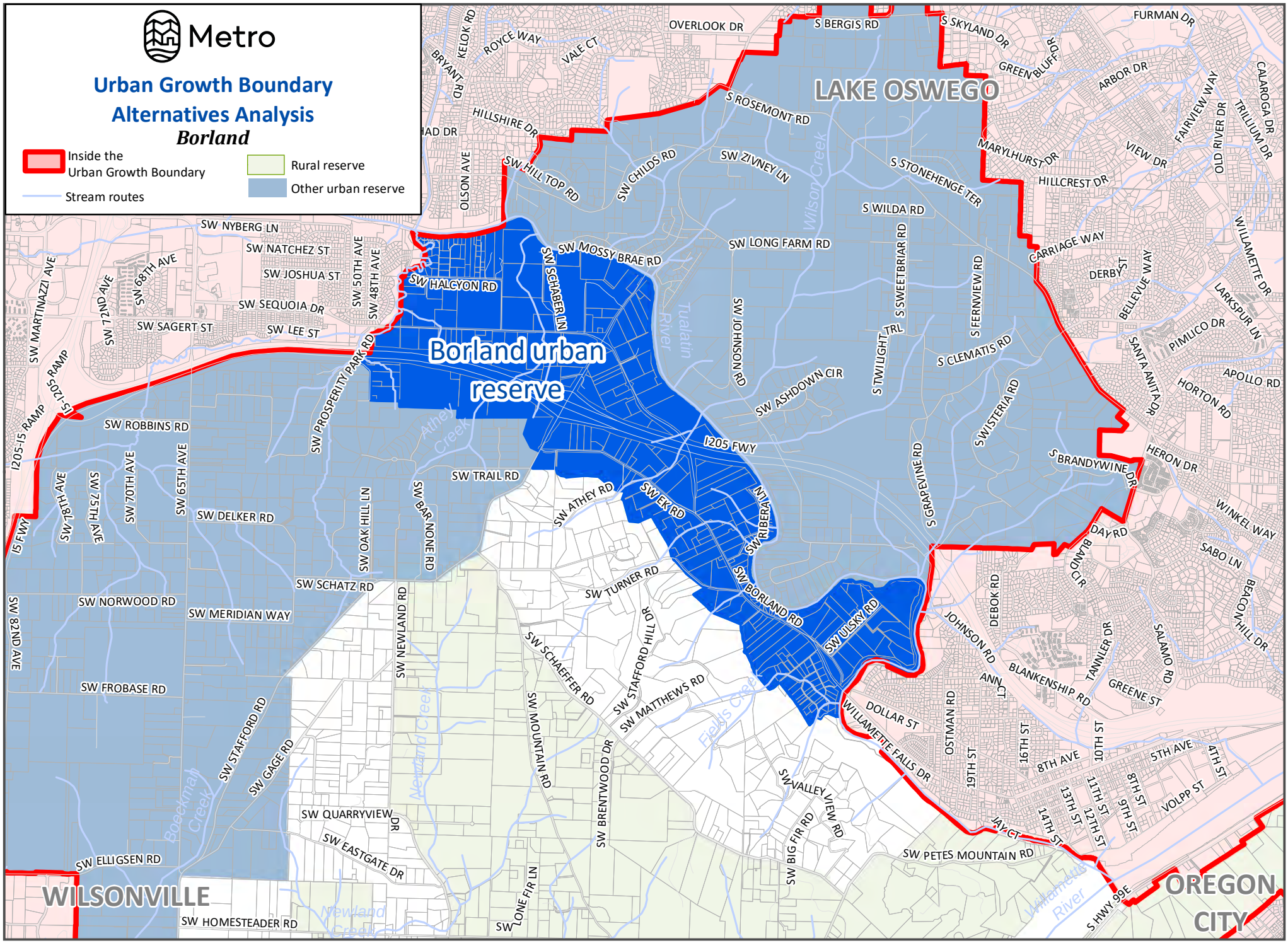
It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. However, as noted previously, three-quarters of the parcels have improvements, approximately one-third of the parcels are less than one acre and approximately 78% of the parcels are less than five acres in size. This combined with the public lands, school and church sites, and stream and habitat corridors that divide the area up, results in

the potential for a slow redevelopment process in the area overall. Thus, any social impacts related to loss of sense of place and rural lifestyle for current residents will be minimal. There are some locations along SW Borland Road, west of SW Stafford Road, that could see localized impacts but this area is also close to the City of Tualatin and I-205. The additional traffic generated through urbanization, even though it will not be significant, will impact SW Stafford Road, SW Borland Road and I-205 which could provide negative energy impacts and also impact the Tualatin and West Linn neighborhoods where SW Borland Road transitions to city streets. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential or in some cases employment development of these lands, even though it is not great, should outweigh this loss. Overall, this reserve area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There is a large block of Exclusive Farm Use (EFU) zoned land that is on the north side of the Tualatin River in the vicinity of SW Johnson Road. Only a small portion of the land closest to the river is in agricultural production with the remainder of the land forested or with rural residences. The river, including the riparian habitat that is along both banks, provides an adequate buffer for the limited agricultural activities that are occurring on this farm land. To the south is a 340-acre block of Timber (TBR) zoned land near SW Turner Road that is on a bluff overlooking the urban reserve area. The timber land has been divided up into 21 parcels and about three quarters of the parcels have very high value homes. Five parcels are currently vacant and wooded. There are three streams that flow through the timber land. Given the number and value of the homes, timber harvesting will most likely not occur beyond the necessary amount to develop the five vacant parcels. In addition, as the timber land is located along a bluff above the urban reserve area, urbanization of the reserve area would not impact the timber land.

Overall, the proposed urban uses have high compatibility with nearby agricultural activities occurring on farm land outside the UGB to the north and forest activities that may occur on forest land outside the UGB to the south.



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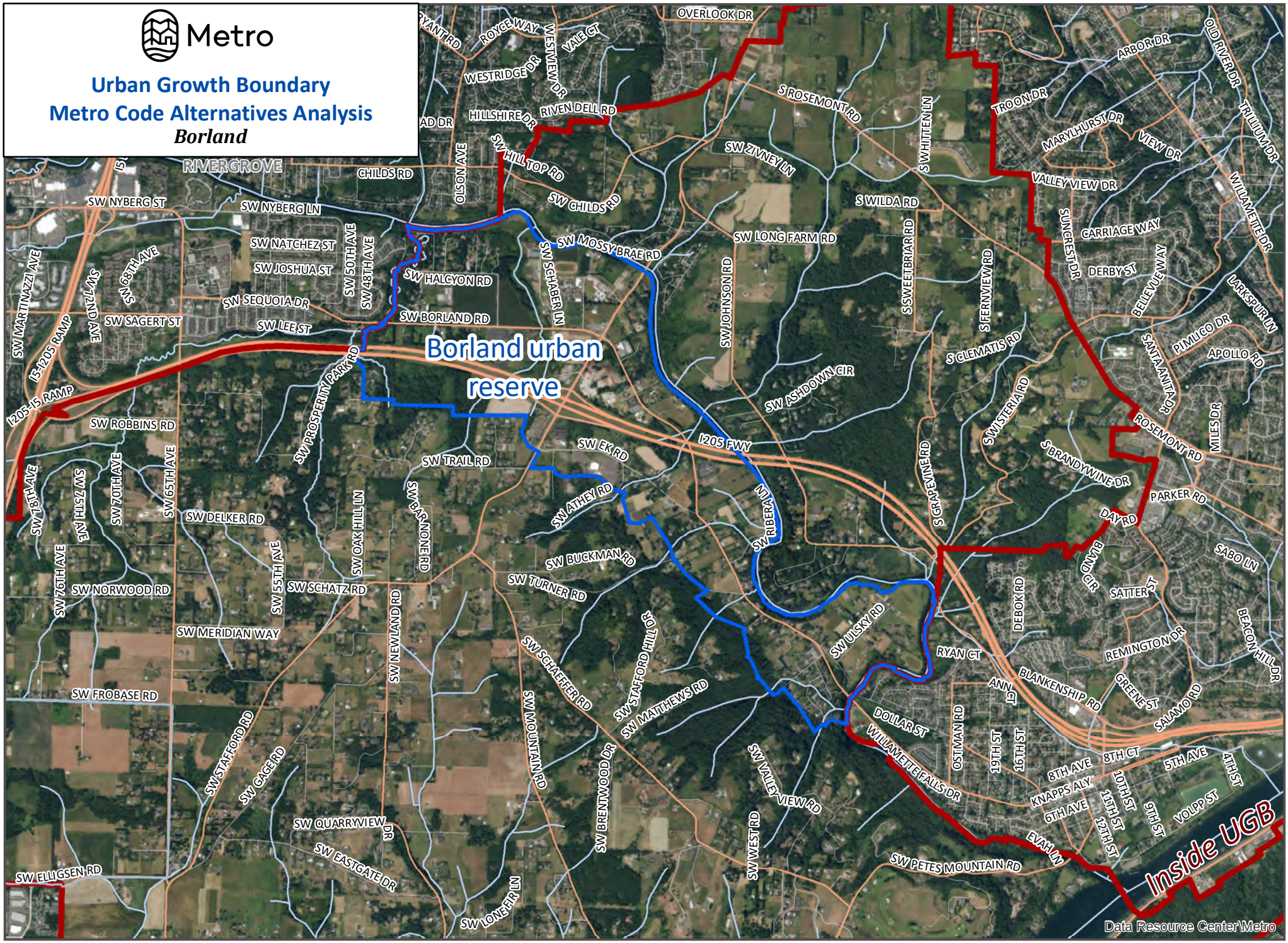
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Borland



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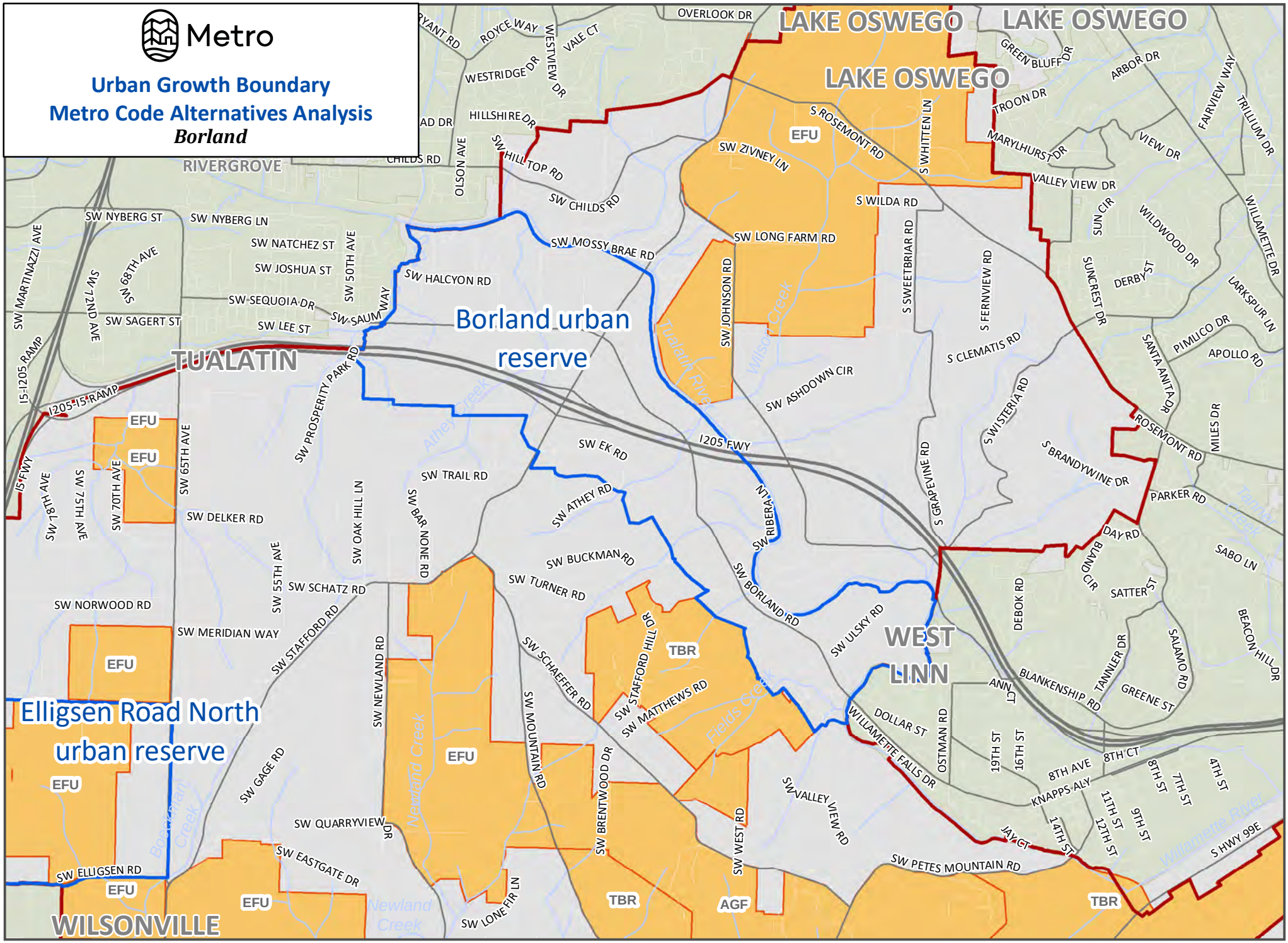

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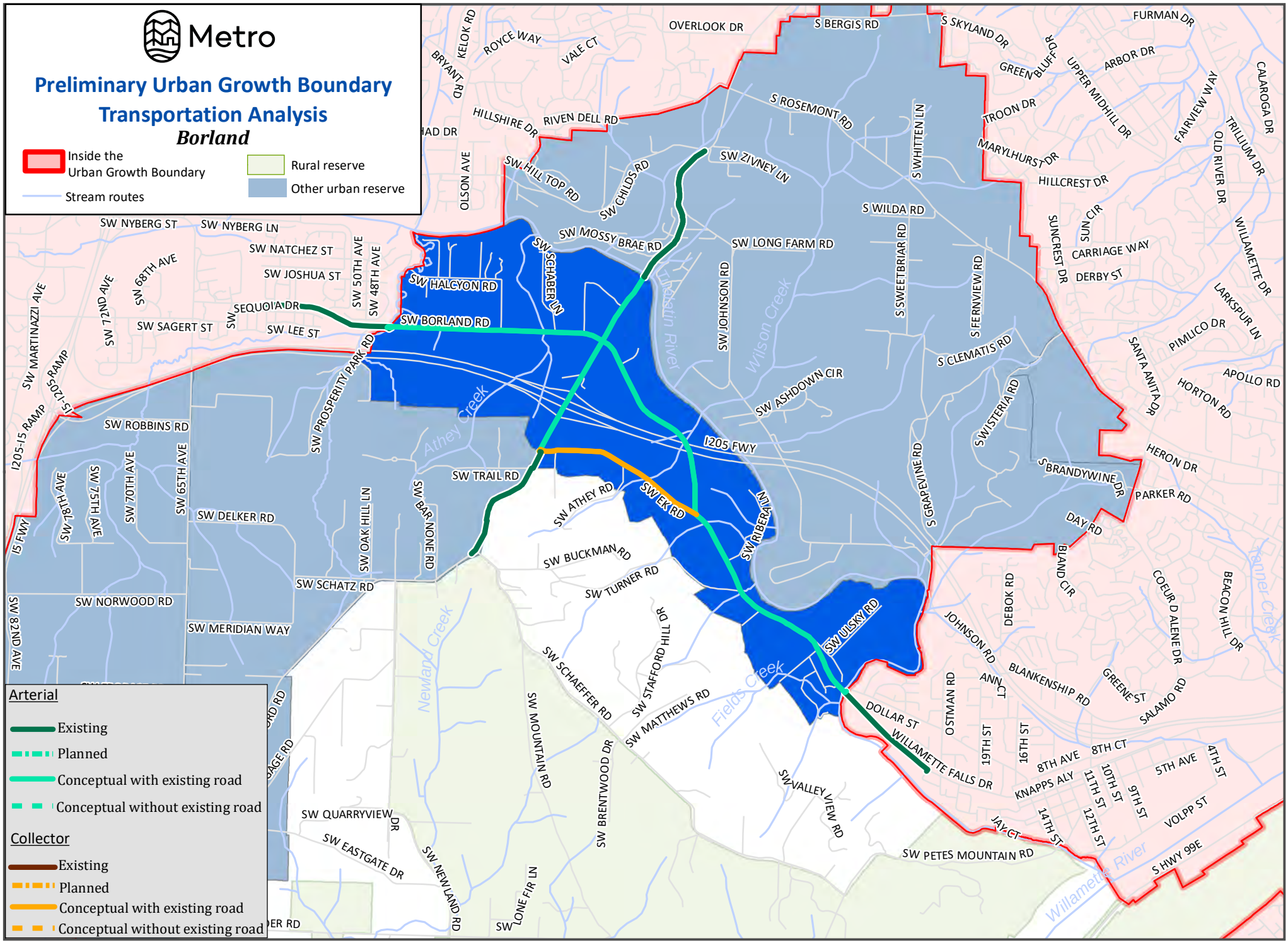

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BROOKWOOD PARKWAY URBAN RESERVE AREA

Total Acres	53	Parcel Acres	39
Gross Vacant Buildable Acres	32	Net Vacant Buildable Acres	24

General Description (see attached map)

The Brookwood Parkway Urban Reserve Area is a very small area on the north side of Hillsboro located at the Brookwood Parkway/Highway 26 Interchange. The UGB forms the boundary on the eastern, southern, and western sides and Highway 26 forms the edge to the north. Access to the area is provided by NW Meek Road, NW Oak Drive and NW Birch Ave.

Parcelization and Development Pattern (see attached aerial photo)

This very small reserve area contains 24 parcels, eight of which are smaller than one acre, four are greater than two acres and only one is greater than five acres. The area contains rural residences on small lots, the North Hillsboro Congregation of Jehovah's Witnesses Church, and no agricultural activities. Overall, 21 of the 24 parcels have improvements.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This very small reserve area is almost entirely built out with rural residences on lots less than two acres in size. There are three vacant parcels that total 2.9 acres. Even with redevelopment of the existing parcels at a higher density this area can accommodate a very small portion of a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Hillsboro provides sanitary sewer services that feed into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS provides wastewater treatment through the Rock Creek Waste Water Treatment Plant and there is adequate capacity to meet current UGB needs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

There is a sewer connection available in NE Brookwood Parkway; however, based on existing topography, a pump station may be needed to use the connection. As another alternative, the City of Hillsboro noted that they are requiring an adjacent development to construct a sewer line in an easement through their property to serve the reserve area. This line would connect to an existing 24-inch sewer in NE Huffman Road. Depending on the type of industrial development that happens in the area, the 24-inch sewer line could be sufficient, or it may not have enough available capacity and therefore require upsizing.

Impacts to existing facilities that serve nearby areas already inside the UGB

A very small number of new dwelling units would be accommodated in this very small reserve area, thus future impacts are relatively small. New wastewater mains and laterals will be provided by the development community. The amount of any upsizing that would be needed, while unlikely, is not known at this time.

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Water is supplied to the areas already inside the UGB by the City of Hillsboro and there is adequate capacity to serve those areas.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Hillsboro indicated there is adequate water supply to serve the reserve area. The estimated average daily demand generated by the development of the reserve area is approximately 0.2 MG.

Impacts to existing facilities that serve nearby areas already inside the UGB

Connections to existing water lines are available in NE Brookwood Parkway and NE Starr Blvd. The City of Hillsboro noted they are considering a future storage tank north of Hwy 26 that would serve the adjacent Jackson Employment area as well as the reserve area. If that occurred a waterline would need to be bored under Hwy 26. New water mains and laterals within the reserve area will be developer funded. The amount of any upsizing that would be needed is unknown at this time.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12” and smaller	$0.73
Storage/pumping	$0.32
Total	**$1.05**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$0.48
Water quality/detention	$0.52
Total	**$1.0**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Hillsboro have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Three road sections have a congested volume/capacity ratio (<1.0): E Main Street east of NW Brookwood Parkway in both directions and highway 26 east bound at NW Cornelius Pass Road and NW 185th Ave. A few road sections in nearby unincorporated Washington County also have a congested volume/capacity ratio (<1.0): SW Farmington Road between 198th Ave and SW Kinnaman Road in both directions, SW Tualatin Valley Highway (TV Highway) east of SW 198th Ave westbound, SW TV Highway east of SW 185th Ave in both directions, and SW TV Highway west of SW 170th Ave in both directions. The following road sections have a severely congested volume/capacity ratio (>1.0): W Baseline at SW 197th Ave westbound, NE Evergreen Road east of NW Jackson School Road westbound and SW TV Highway east of SW 170th Ave in both directions.

High injury corridors include: SW/SE Baseline Road, SW Oak Street, SW Walnut Street, E Main Street, NE Cornell Road, SW TV Highway, SE River Road, SE/NE Brookwood Parkway, NE Evergreen Parkway, NE/SE Cornelius Pass Road and NE Jackson School Road.

Transit: Six TriMet bus routes provide service to Hillsboro or nearby unincorporated Washington County, mainly along the arterial streets in the central portion of the city, focusing on the Hillsboro and Tanasbourne-Amber Glen Regional Centers, the Orenco Town Center and employment areas.

There is no transit service to the southern and northern portions of the city. The MAX Light Rail Blue Line stops at nine stations within Hillsboro.

Bike: Hillsboro has over 54 miles of dedicated bike lanes, 24 miles of established bikeways and numerous streets considered bike friendly that together create a fairly well-connected system that is focused mostly on the central portion of the city and the regional centers. In addition, there are some local trails that provide key connections to the greater bike network.

Pedestrian: A large proportion of the residential neighborhoods in Hillsboro have sidewalks although there are significant pockets that do not. The Hillsboro Regional Center is mostly served by sidewalks except for the industrial area south of TV Highway. The other employment areas are fairly well served by sidewalks and trails such as the Rock Creek Trail that provides additional pedestrian opportunities.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: The roads in Hillsboro near the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 26 eastbound at NW Cornelius Pass Road has a congested volume/capacity ratio.

Transit: The closest transit stop to the reserve area is ¾ mile south on NE Evergreen Road via NE Brookwood Parkway for TriMet bus route 46, which runs from this location to the Hillsboro Transit Center.

Bike: There is a dedicated bike lane on NE Brookwood Parkway adjacent to the reserve area that connects to a dedicated bike land on NW Jacobsen Road, north of the Highway 26 Interchange. This bike lane extends east through an employment area to NW Cornelius Pass Road. An established bikeway runs south from the southern edge of the reserve area on NE Brookwood Parkway to south of NE Evergreen Parkway. A dedicated bike lane on NE Huffman Street connects to a dedicated bike lane on NE Starr Blvd. that is just west of the western edge of the reserve area. The dedicated bike lane on NE Huffman Road that is east of NE Brookwood Parkway runs through an employment area and connects to the Gordon Faber Recreation Complex via NE Bennett Street. This bike lane continues south on NE Century Boulevard to connect with numerous other bike facilities.

Pedestrian: Sidewalks on NE Brookwood Parkway connect the reserve area to employment areas to the east on NE Huffman Road and to the south of NE Evergreen Road.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: NE Brookwood Parkway, NE Starr Boulevard NE Huffman Street and NW Meek Road would be expected to see additional traffic from urbanization of the reserve area although any increase would be minimal give the extremely small size of the reserve. Highway 26 would also most likely see a small amount of additional traffic that would not impact the congestion level eastbound at NW Cornelius Pass Road.

Transit: TriMet bus route 46 may see a small increase in use, but the ¾ mile distance to the closest transit stop on NE Evergreen Road will hinder much of the potential increase in ridership. See transit analysis below.

Bike: The dedicated bike lane on NW Jacobsen Road may see a small amount of additional use, as this bike lane connects to an extensive system that extends for miles. The same is true for the dedicated bike lane on NE Huffman Road. The established bikeway on NE Brookwood Parkway may also see a small amount of additional use as it connects to an extensive bike system to the south.

Pedestrian: The sidewalks on NE Brookwood Parkway may see additional use as they connect to employment areas to the east and south, although any increase would be small. The sidewalks that extend to the transit stop may also see a small increase in use.

Need for new transportation facilities and costs (see attached transportation map)

No additional transportation facilities are needed.

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service by a new line from the Orenco Light Rail Station. This new line will provide service to the North Hillsboro Industrial Area with three additional buses at a capital cost of $1,200,000 (recurs every 16 years). Annual service cost is $1,528,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

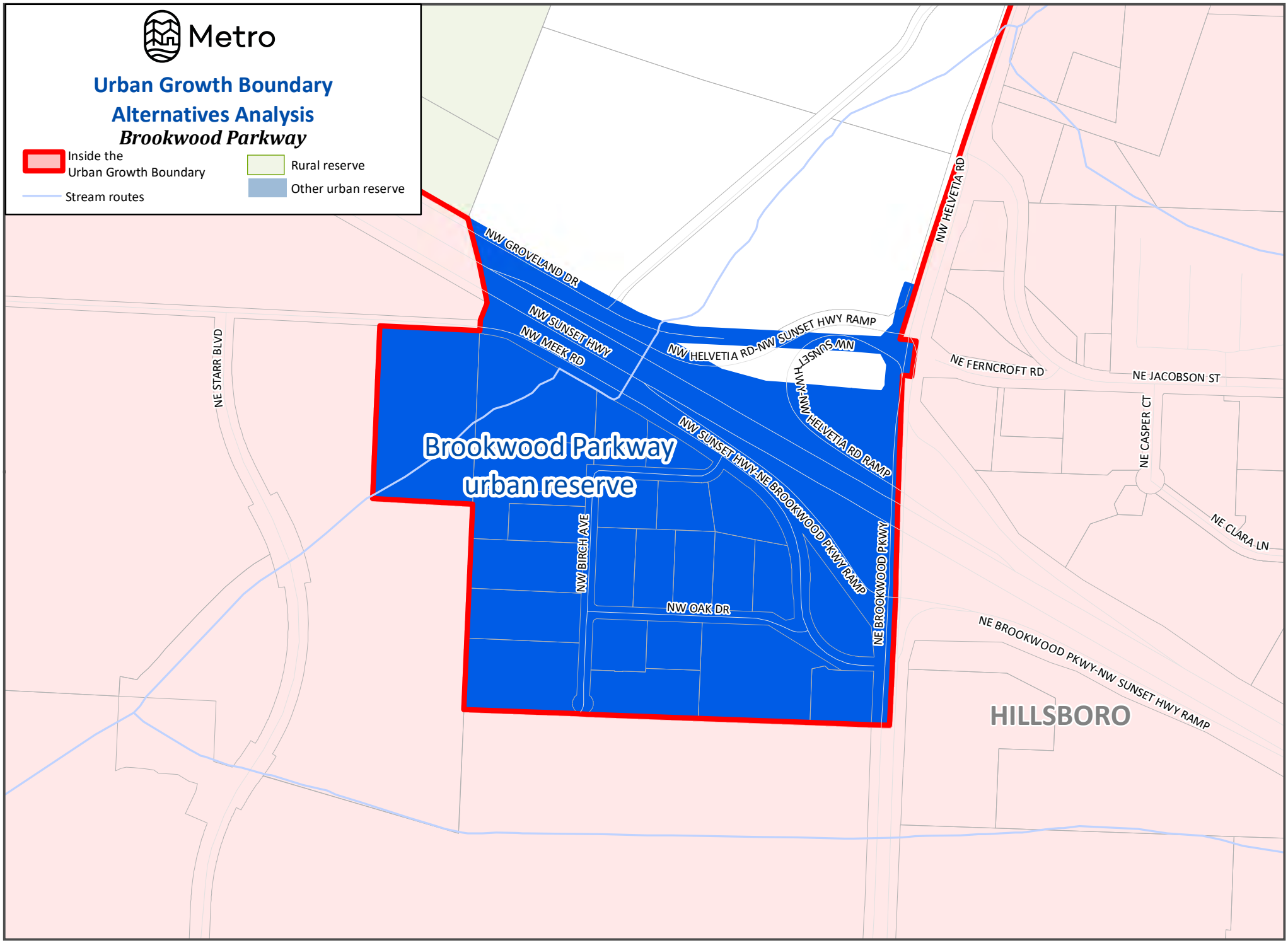
Waible Gulch flows in a southerly direction through the northwest corner of the reserve area for 1,120 feet. The stream flows through both open land and a small, wooded section of a residential lot and is located within the floodplain. There is riparian habitat associated with the stream and there are no wetlands identified in the reserve area. The stream isolates a small corner of the reserve area, however since the land to the west is within the UGB this isolated corner can be accessed from the west resulting in no need to provide a stream crossing for connectivity. Given the increased protection levels for streams, habitat areas and floodplains within the UGB and the ability to provide access from the west to the isolated corner, urbanization of the area can occur with minimal impact to this stream corridor and habitat areas.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. Although the small amount of vacant land and the small parcel sizes may slow the redevelopment process. This small rural enclave is adjacent to Highway 26 and has vacant land inside the UGB to the west, south and east that will eventually urbanize, thereby possibly eroding the rural lifestyle feel prior to urbanization of the reserve area. The additional traffic generated through urbanization will be negligible and would not contribute negative energy impacts. Directly to the west is a significant area of land inside the UGB designated for employment use that has seen a consistent level of development occurring over the last several years. Once this area is fully developed, it may provide additional employment opportunities which could reduce VMT for current and future residents. The area contains no agricultural activities so there is no economic loss from existing agricultural uses. Overall, this reserve area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Farm and forest land borders the reserve area to the north across Highway 26. This large block of Exclusive Farm Use (EFU) zoned land extends north for several miles. This land is mostly in field crop production; however, the 300 foot plus Highway 26 right-of-way and the Waible Gulch stream corridor provide an adequate buffer between the reserve area and these agricultural activities. Thus, the proposed urban uses have high compatibility with the extensive nearby agricultural activities occurring on the farm land to the north.



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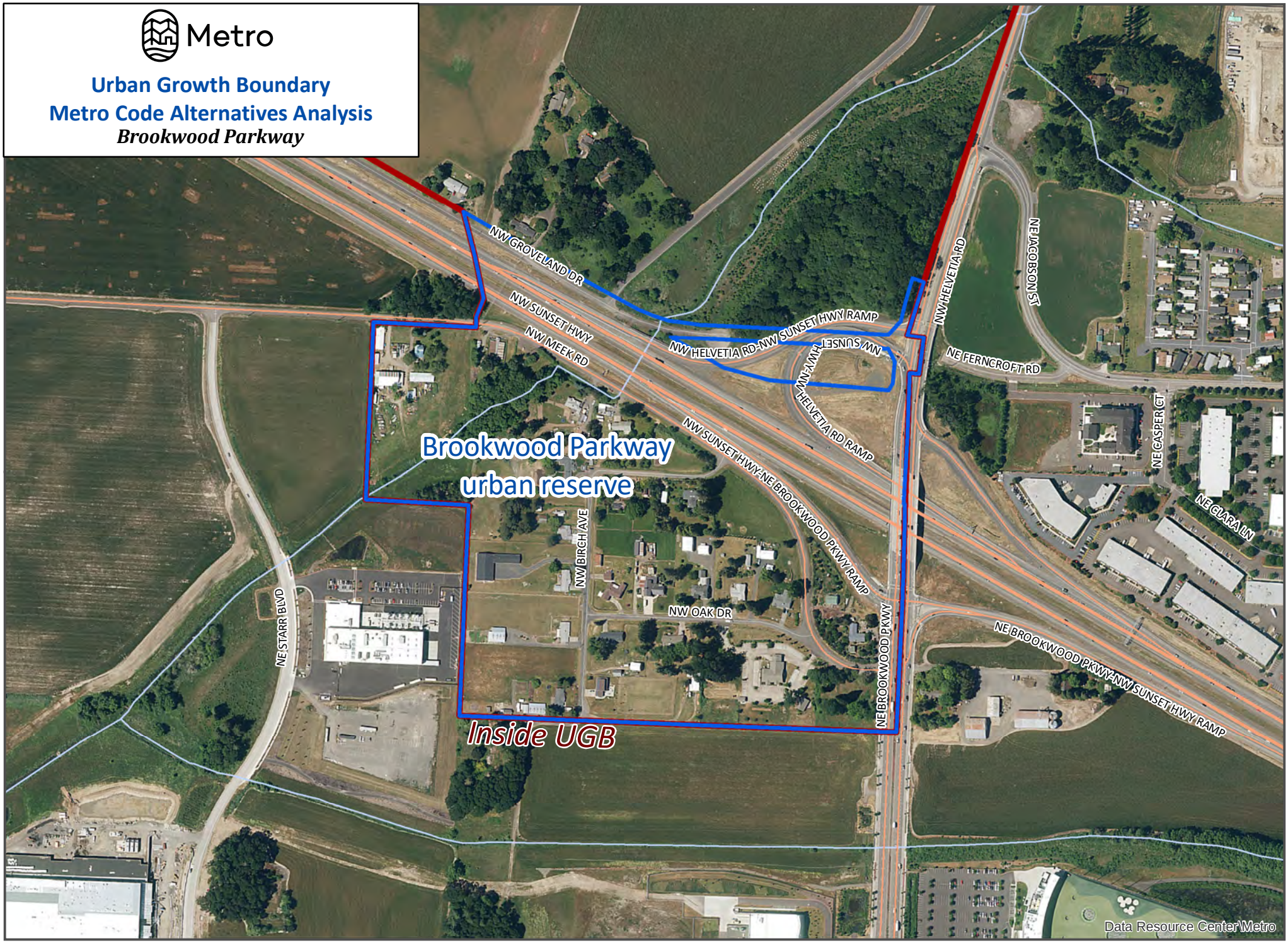
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Brookwood Parkway



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Metro

Urban Growth Boundary
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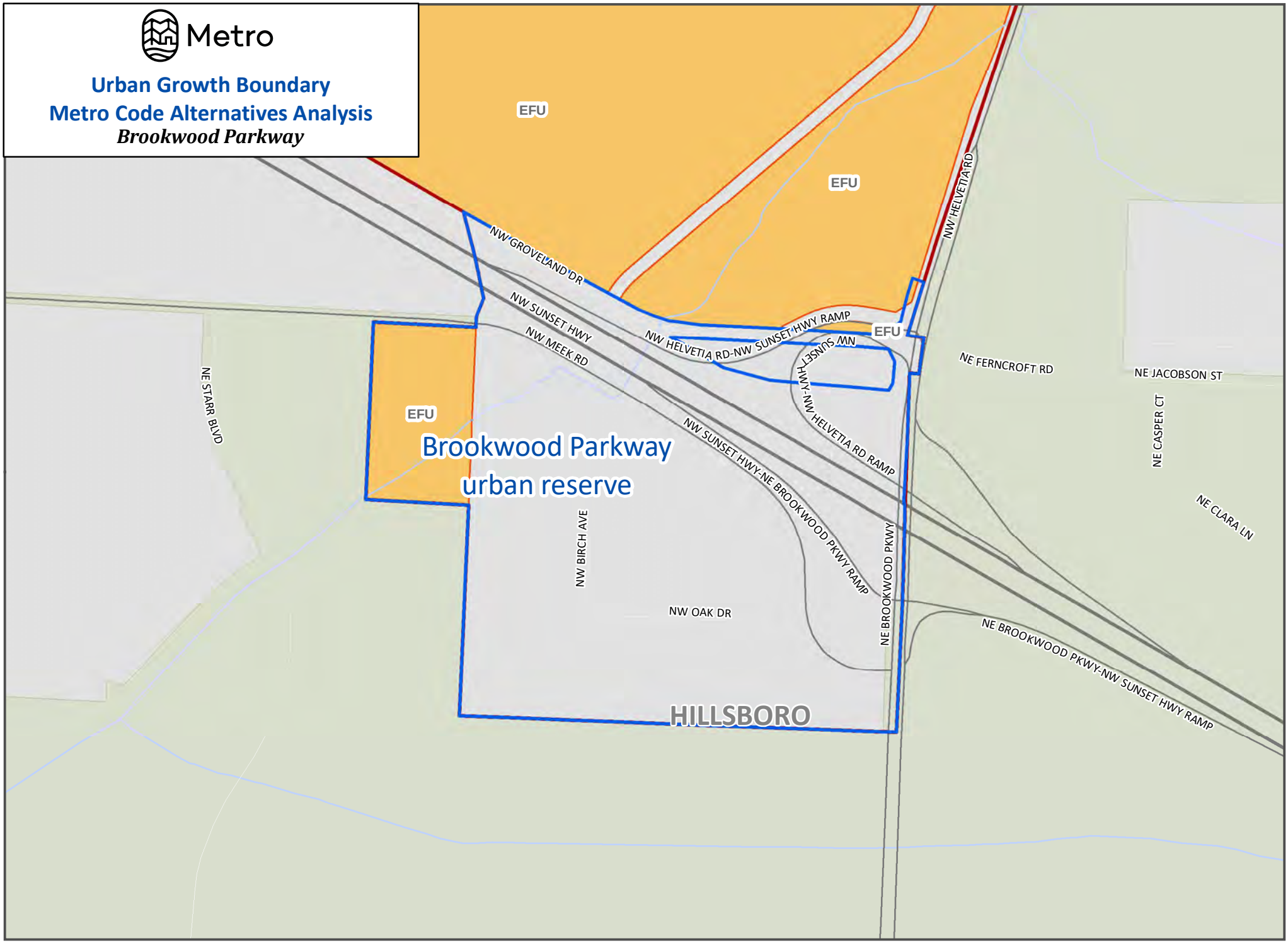
Brookwood Parkway



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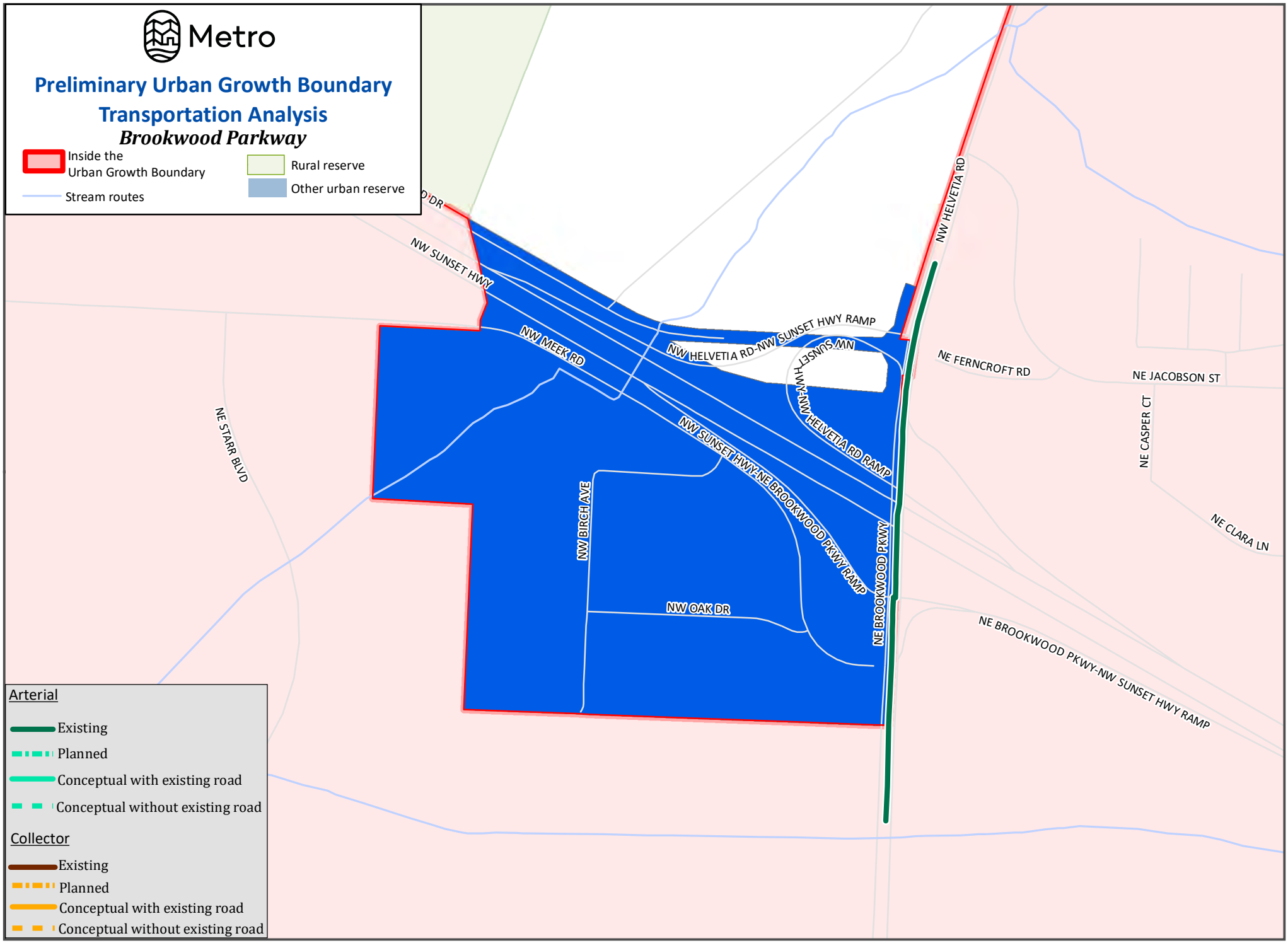

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DAMASCUS URBAN RESERVE AREA

Total Acres	1,233	Parcel Acres	1,208
Gross Vacant Buildable Acres	801	Net Vacant Buildable Acres	608

General Description (see attached map)

The Damascus Urban Reserve Area is an irregular shaped area totaling 1,233 acres. The eastern boundary is defined by Noyer Creek on the south side of Highway 212 and the western edge is in the area of SE Dolphin Road and SE Walgren Road. SE 232nd Drive bisects the urban reserve and is one of two main access points, the other being SE Royer Road. The area is a mixture of flat agricultural land and rolling hills that contain rural residences on smaller lots. A 6.6-acre parcel at 17010 SE Tong Road, which is separate from the main area, is also part of the urban reserve.

Parcelization and Development Pattern (see attached aerial photo)

This fairly large urban reserve area contains 214 parcels that range in size from 3,500 square feet to 81 acres. Almost 71% of the parcels are less than five acres in size and only 11 are greater than 20 acres. Overall, 177 of the 214 parcels have improvements. The reserve area contains a significant block of agriculture land near Highway 212 and additional land in agricultural production is spread throughout the area. Most of the rural residences are centered on SE 232nd Drive and SE Royer Road. The Deep Creek-Damascus K-8 School is in the middle of the area along SE 232nd Drive and St. Paul Damascus Lutheran Church is located on Highway 212. Alpha Broadcasting has four antennas located on a 37-acre parcel along the western boundary of the urban reserve. Available data does not suggest the existence of power lines or other public easements within this urban reserve.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This area is a mixture of small lot rural residences and larger lot areas of agriculture activity. The larger lot areas contain a significant amount of land free of existing structures that provide the opportunity for efficient urbanization while the smaller acreage rural residential pockets lend themselves to a less efficient level of urbanization. The large lot area that is situated adjacent to Highway 212 provides the opportunity for future employment or residential use. Employment uses in this area would have relatively easy access to Highway 26 through the community of Boring. Therefore, this area can efficiently accommodate both residential end employment land needs.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The Damascus area within the existing UGB is served by individual septic systems.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Much planning and discussion as to who would serve the Damascus area and by extension the urban reserve area has not resulted in solid conclusions. Clackamas County's Water and Environmental Services (WES) is the logical provider due to topography and location within the County. However, they are prohibited from adding significant new flows to the Clackamas River basin. In short, serving the reserve area will be difficult.

Impacts to existing facilities that serve nearby areas already inside the UGB

As mentioned above, the local sewer providers do not have plans to serve the reserve area. If services come from WES it is likely that upsizing would be needed and new trunk lines would be developed in the portion of Damascus within the UGB and would logically be sized to serve the reserve area. On its own, urbanization of the reserve area would not likely have negative impacts on existing systems. The larger issue, however, is that there are no facilities leading to the site; they would need to be built before development could occur. The cost estimates do not include the extension of a trunk line to Damascus or improvements to existing infrastructure. It is assumed that these costs would be part of the development of the Damascus community inside the UGB, and that those improvements would also serve the reserve area.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$7.52
Force main	$0.39
Pump station	$0.25
Total	**$8.16**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The Sunrise Water Authority currently serves the area from east of I-205 and north of the Clackamas River, including Happy Valley. They will also serve Pleasant Valley and Carver when they are annexed into Happy Valley. The Sunrise Water Authority has recently completed a 20-year CIP that includes the necessary investments to serve the district's service area for the current planning horizon.

Sunrise Water Authority currently purchases 3 MGD of water from the Clackamas River Water District, but they have the option to purchase up to 10 MGD. In addition, the district also has two wells located in Damascus that can produce approximately 3.5 MGD. The estimated peak day demand for the current 20-year planning horizon in their master plan is 20 MGD. The water authority also has an intertie connecting to South Fork Water Board, which they can use 10 MGD during an emergency circumstance. Water is treated at two treatment plants. The water treatment plant was built in 1964 and will need upgrades in the future. Sunrise Water Authority has not determined the cost or timing of the water treatment plant upgrades. The agency plans to build 10 to 15 million gallons of additional storage to serve growth expected within the existing UGB

Capacity of existing facilities to serve areas proposed for addition to the UGB

As noted above, current water capacity covers the growth expected within the UGB. There are no plans to serve the urban reserve at this time. However, much of the land in the reserve area is inside of the district's boundary and is currently served at rural densities.

Impacts to existing facilities that serve nearby areas already inside the UGB

Plenty of water rights are available to serve the reserve area. If the urban reserve is developed the items identified in the water master plan would simply need to be constructed earlier than expected. Additionally, the Clackamas River Water treatment plant will need to be expanded at some point. Expansion and development in the Damascus area inside the UGB could require the improvements to be made sooner. Due to the unknown nature of the treatment plant upgrades, costs have not been included in the estimate.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$6.62
18" and larger	$6.52
Storage/pumping	$7.77
Total	**$20.91**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

No public stormwater facilities exist to serve the adjacent area already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

No public stormwater facilities exist.

Impacts to existing facilities that serve nearby areas already inside the UGB

There is no public stormwater system to be impacted by urbanization of the reserve area. Storm water conveyance, water quality, and detention for roadways would be developed during construction and used to handle the public sector runoff. Private property runoff would need to be treated onsite.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$9.87
Water quality/detention	$9.76
Total	**$19.63**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways that serve nearby areas inside the UGB have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service in the nearby area inside the UGB. The closest bus line is TriMet's Route 155 which provides service between Clackamas Town Center and SE 172nd Ave and SE Sunnyside Road. The closest stop is approximately 3.3 miles away.

Bike: There are no bike facilities in the nearby areas inside the UGB although Highway 212 has wide shoulders. There are bike lanes on Highway 212 in the Damascus Center area. There are a few streets that are considered bike with caution streets (SE 242nd, SE 232nd and SE 222nd Aves).

Pedestrian: The only sidewalks in the nearby area inside the UGB are a couple of very short segments on Highway 212 near SE Foster Road.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for a very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service near the reserve area. The closest bus line is TriMet's Route 155 Sunnyside which provides service between Clackamas Town Center and SE 172nd and Sunnyside Roads which is approximately 3.3 miles away.

Bike: There are no nearby bike facilities inside the UGB to serve the area. There are a few streets that are considered bike with caution streets (SE 242nd and SE 222nd Aves) and Highway 212 has wide shoulders.

Pedestrian: The only sidewalks in the Damascus area are a couple of very short segments on Highway 212 near SE Foster Road, which do not serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Highway 212 would be expected to see additional traffic which could impact the very short section of eastbound Highway 212 at SE 242nd Ave that has a congested volume/capacity ratio (<1.0).

Transit: There is no transit service to nearby areas already inside the UGB. See transit analysis below.

Bike: There are no bike facilities that serve nearby areas already inside the UGB.

Pedestrian: There are no pedestrian facilities that serve nearby areas inside the UGB. The sidewalks near SE Foster Road and Highway 212 will not be impacted.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SE 232nd Ave that border the reserve area will need to be improved to urban arterial standards. These sections are considered to be ½ street improvements as the property on the other side of the street that is currently in the UGB would be responsible for their portion of the improvements. The remainder of SE 232nd Ave will need to be improved to urban arterial standards. SE Royer Road will need to be improved to urban collector standards and two new collectors will be needed in the eastern portion of the reserve area.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$6.90
	Existing/Improved	$50.70
Collectors	Type	Cost (in millions)
	Existing/Improved	$31.96
	New	$52.38
Total		**$141.94**

Provision of public transit service

This area withdrew from the TriMet service district; thus no analysis of transit service was completed.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Two small segments of Noyer Creek that total approximately 2,200 feet flow south along the eastern edge of the reserve area. Two small tributaries also connect to Noyer Creek along the eastern edge and total approximately 3,200 feet. All four stream segments are in wooded ravines that provide protection for the stream segments from future urbanization. A third tributary to Noyer Creek flows northeasterly through the edge of the large block of agricultural land near Highway 212 for approximately 3,125 feet. A portion of the stream in this location is redirected under a loading area related to the nursery. This stream section is susceptible to impacts from urbanization given its location, already altered state and lack of an existing riparian corridor. However, restoration of this degraded stream edge, including the altered section, would provide protection from urbanization. Two tributaries to Richardson Creek flow north through the western portion of the reserve area for approximately 4,450 feet. A little more than half of the tributaries length flows through pasture land and the remaining portion flows through locations of sporadic trees and shrubs, but no continuous riparian corridor. However, there is some riparian and upland habitat identified along the stream corridors. These two streams are susceptible to impacts of future urbanization and given their location near SE Royer Road impacts to the upland habitat would be likely. A 2,100-foot segment of Deep Creek and a 450-foot segment of Noyer Creek form the southern boundary of the urban reserve near Highway 224. There is a 50–100-foot riparian buffer along the creeks with limited ability to develop additional land given their location at the edge of the reserve area. An un-named stream flows south along SE 232nd Drive for approximately 3,000 feet before flowing into Noyer Creek near the confluence with Deep Creek. The stream is mostly located in steep sloped wooded areas of rural residential lots and would be less impacted by urbanization due to steep slope protection measures.

There are two National Wetland Inventory wetlands identified in the reserve area. The first wetland is a 6,000 square foot pond located on a rural residential property that is isolated from any stream corridor and includes both tree and shrub buffer vegetation. The isolated nature of this wetland may or may not make it susceptible to impacts from urbanization, depending on the ultimate redevelopment of this residential pocket. The second wetland, about 0.6 acres in size, is located along one of the tributaries to Richardson Creek adjacent to a residence. The wetland does have some significant adjacent tree canopy that continues along the stream corridor which is identified as riparian habitat. The location of this wetland along a stream corridor with riparian habitat may make the wetland less susceptible to impact given the required protection levels for stream, wetland and habitat areas within the UGB. There is a non-wetland identified pond located near the intersection of Highway 224 and SE 232nd Drive that may require protection in the future.

There are areas near SE Royer Road and SE 232nd Drive that may have upland wildlife habitat considerations. A significant portion of these areas also contain slopes greater than 25% that would limit the impacts of future development, however, impacts to some upland habitat areas would be likely. Overall urbanization of the area could occur with low to moderate impacts to the natural resources; most stream corridors and wetlands would be protected due to existing buffers in

ravines and steep slopes, and increased stream and wetland protection requirements on land inside the UGB. The identified upland habitat areas will need to be evaluated for future protection levels.

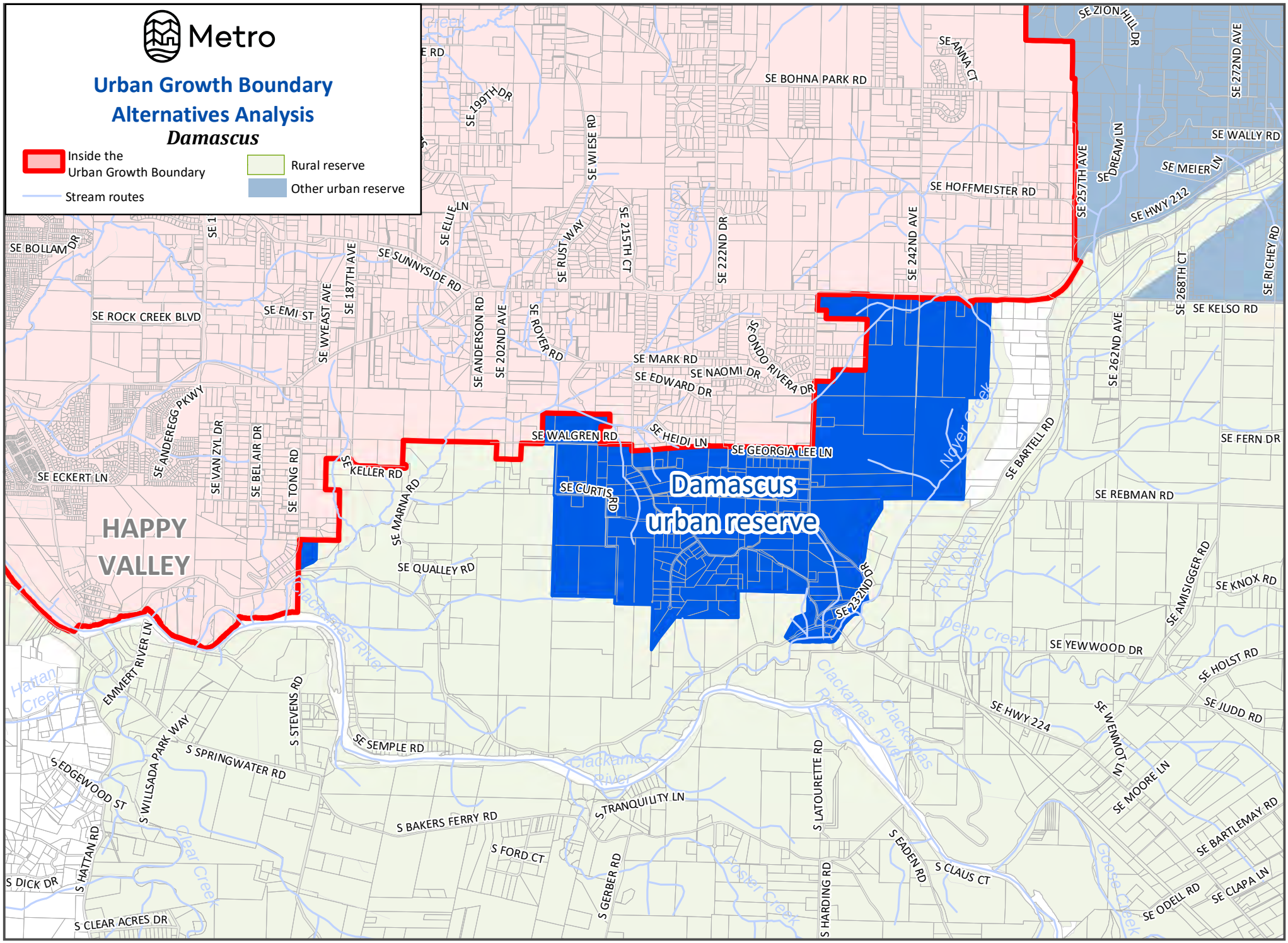
Energy, Economic & Social

This urban reserve area is generally made up of two different land uses, rural residential development on rolling hills and a significant block of agricultural activity near Highway 212. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. The rural residential development along smaller streets such as SE Forest Hill Drive, SE Weatherly Lane an SE Cielo Court as well as portions of SE Royer Road would probably see limited new development due to restricted developable area. The portion of the reserve area from SE Curtis Road to east of SE Royer Road contains numerous large unrestricted parcels that provides the opportunity for a more robust residential development pattern. This also applies to the land south of the Deep Creek-Damascus K-8 School. Urban level development in these two locations would negatively impact the existing residents that are in the less developable areas due to increased traffic on SE 232nd Drive and loss of sense of place and rural lifestyle. The loss of the economic impact from the large nursery area may be considerable; however, the potential economic impact of urbanization on this large block of relatively flat land may outweigh this loss, especially if it developed for commercial or employment use. Development of commercial uses in this area would provide easy access to goods and services for existing and future residents. Vehicular access to the area would remain the same and the increased VMT from urbanization of the area would be significantly larger than current levels, especially given that SE 232nd Drive is the main access between Highways 212 and 224. Overall, this analysis area has high economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

The urban reserve area is almost surrounded by farm and forest land with the vast majority being zoned for timber use (TBR). There is a relatively small area zoned agriculture-forest (AGF) adjacent to the eastern portion of the area that includes the Noyer Creek canyon and some agricultural activity along SE Bartell Road. The canyon provides a very good buffer for the agricultural activities in this area. If urbanization occurred right up to the edge of the timber land it would not be compatible with any forest activities that might occur, although restrictions on logging adjacent to Noyer Creek reduces the likely hood that the canyon area would be harvested. There is a small pocket of exclusive farm use (EFU) zoned land south of SE Walgren Road and west of SE Dolphin Road along the western edge of the reserve area. About half of this 68-acre area is in agricultural production, mostly for row crops with some pasture land and is under two ownerships. Directly adjacent to one of the row crop areas is the Alpha Broadcasting property that, if it stayed in its current use with antennas, would provide a buffer between the agricultural activities and the future urban area. SE Dolphin Road would not provide a satisfactory buffer for the other row crop area and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. Additional traffic along SE Dolphin Road may impact the movement of farm equipment, but since most of the future traffic would expect to travel

east towards SE 232nd Road the impact would be slight. The remaining land adjacent to the urban reserve is zoned TBR. Much of the land slopes downward from the urban reserve towards Highway 224 and is in rural residential use, some with very large homes. Since the TBR zoned area contains numerous residents, forest activities would be minimal. Due to the very limited nature of nearby agricultural and forest activities occurring on farm and forest land and the presence of the Noyer Creek canyon as a buffer, the proposed urban uses would have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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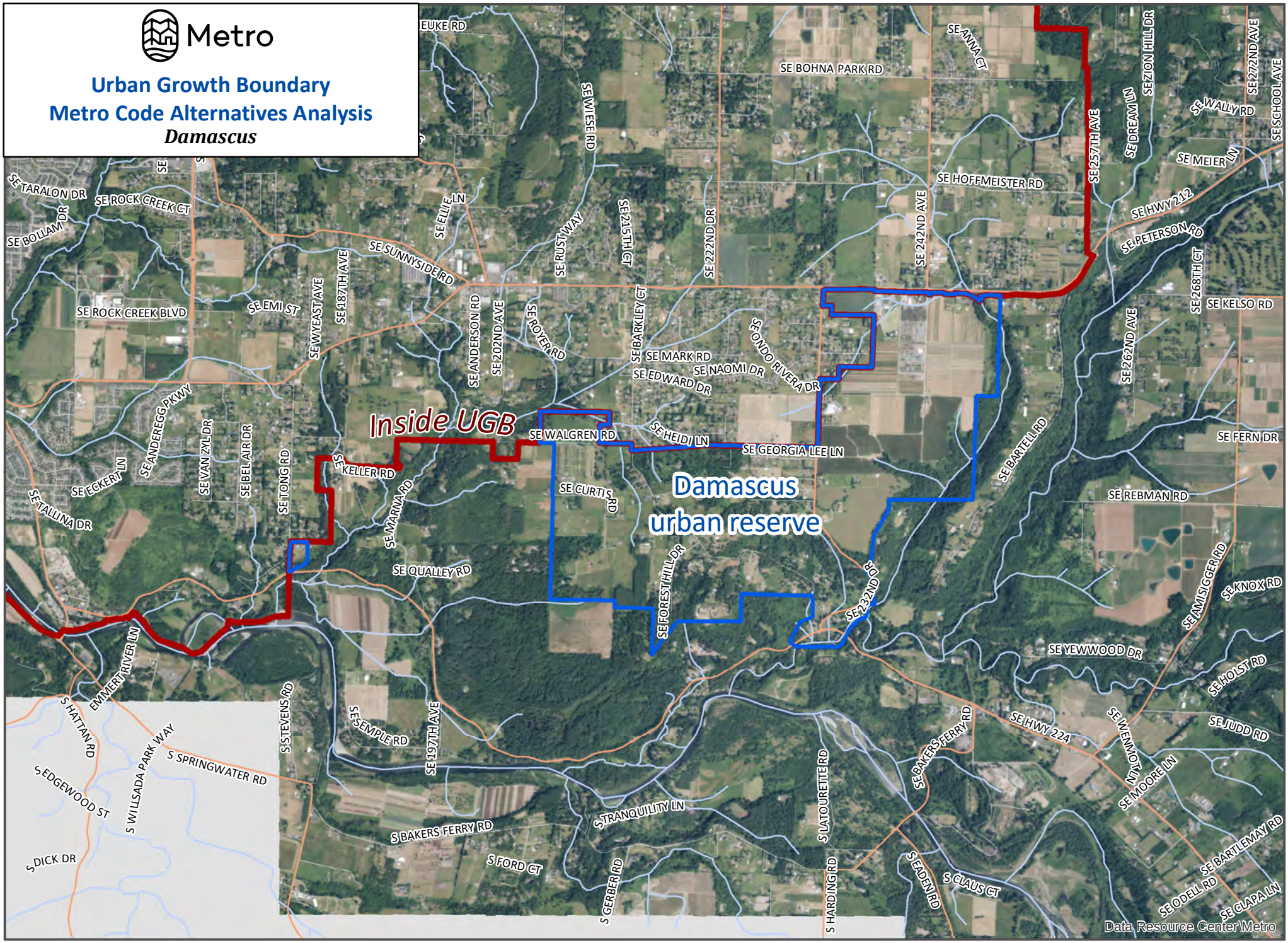
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Damascus



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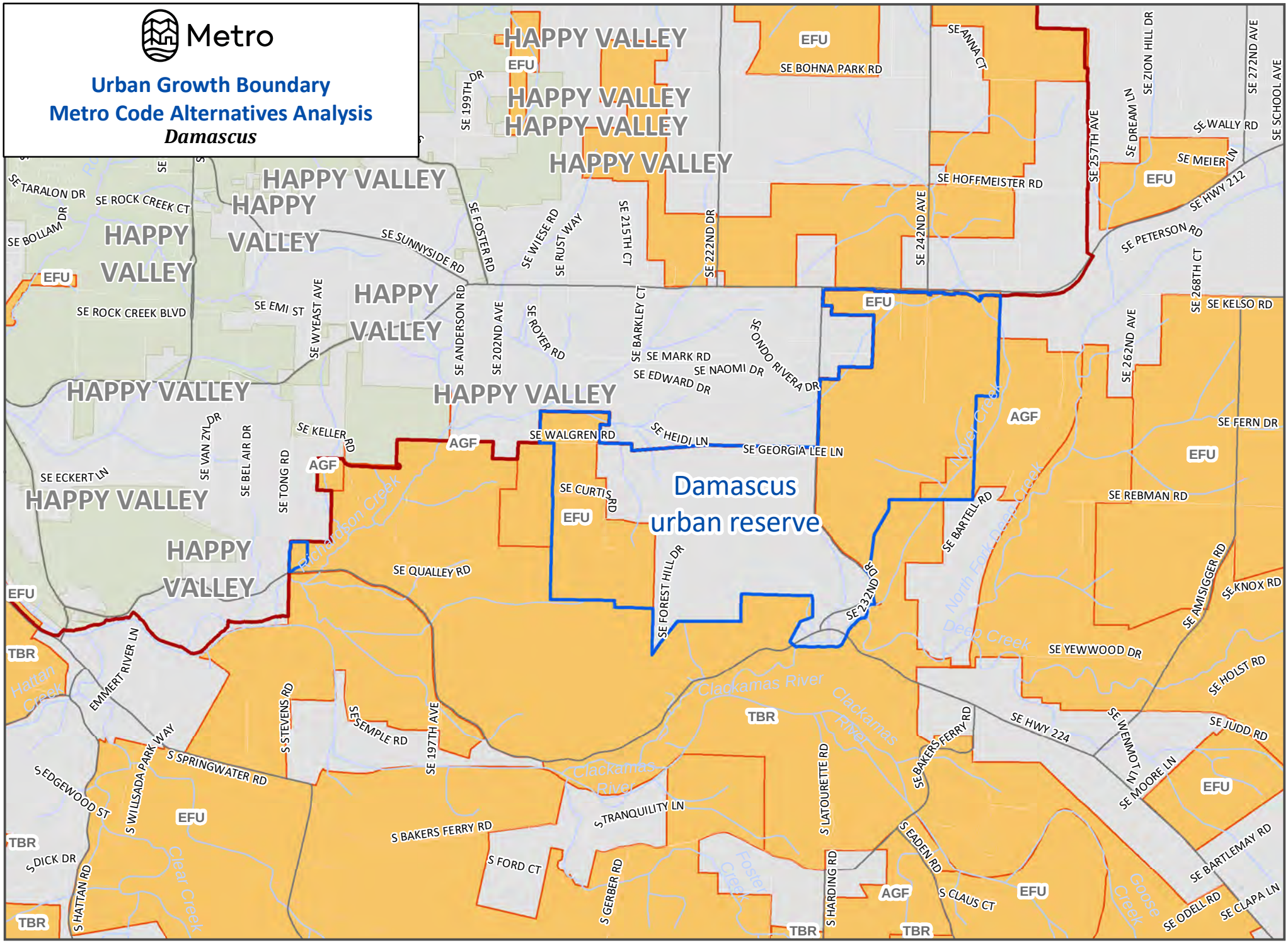

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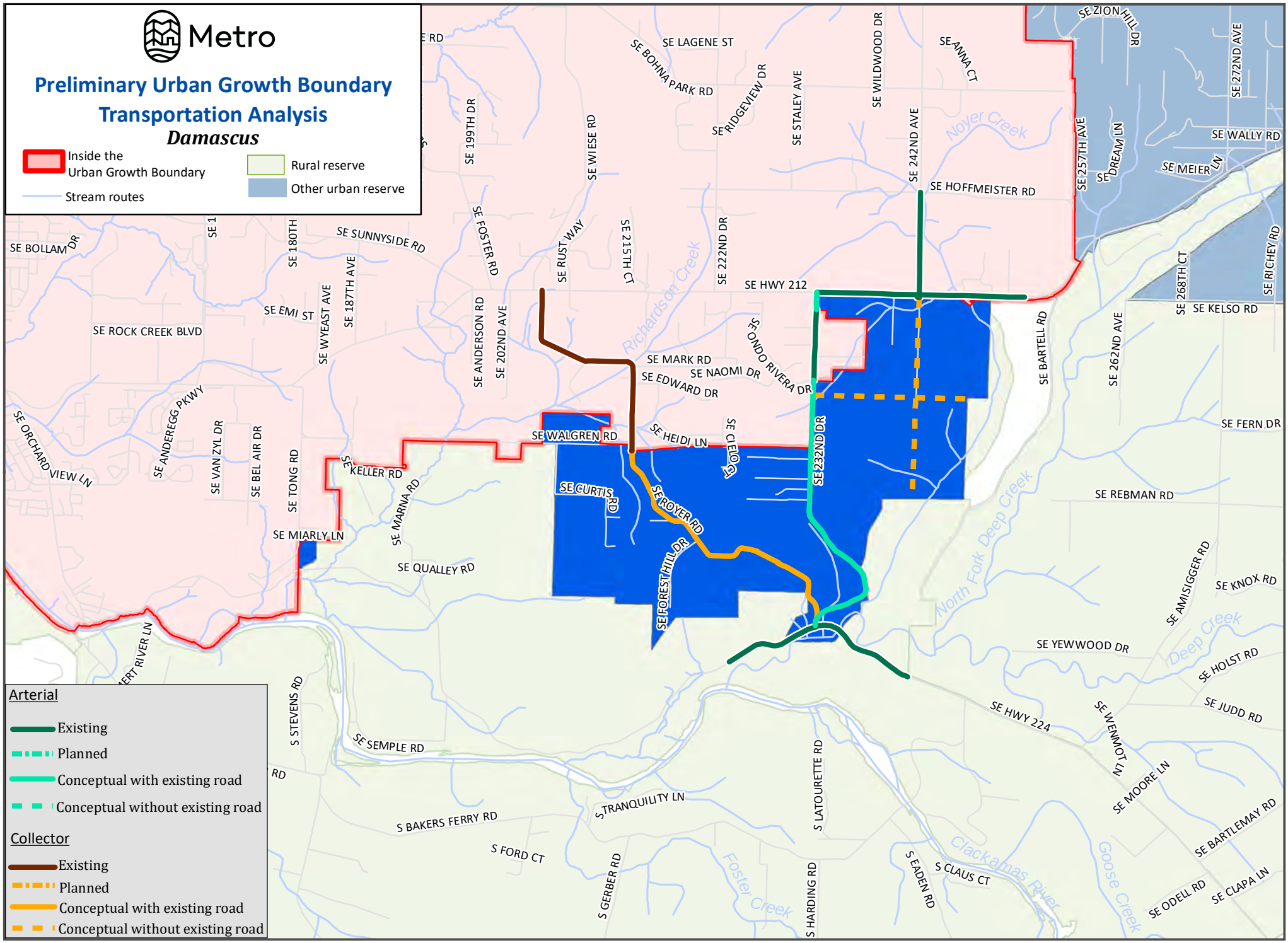

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DAVID HILL URBAN RESERVE AREA

Total Acres	328	Parcel Acres	321
Gross Vacant Buildable Acres	180	Net Vacant Buildable Acres	137

General Description (see attached map)

The David Hill Urban Reserve Area is an irregular shaped area on the northwest edge of Forest Grove located in the vicinity of NW David Hill Road. The UGB forms the boundary on the eastern side and rural reserve land is to the west, north and south. The high point of the area is near David Hill Road and the land slopes down to the south towards NW Gales Creek Road and east towards NW Thatcher Road losing 440 and 360 feet, respectively. Access to the area is provided by NW David Hill Road, NW Gales Creek Road, and NW Thatcher Road.

Parcelization and Development Pattern (see attached aerial photo)

This small reserve area contains 23 parcels that range from just under an acre to 57 acres in size. Eleven parcels are greater than ten acres in size and four parcels are greater than 25 acres. Two parcels are split by the urban reserve boundary with a small portion of each already inside the UGB. The area contains rural residences mostly on forested parcels and very limited agricultural activities. Overall, 17 of the 23 parcels have improvements. A City of Forest Grove water reservoir is in the reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This reserve area is almost entirely composed of land with slopes greater than ten percent, which eliminates the ability to accommodate employment land needs. There also are some significant locations of land with slopes greater than 25%, which could impact the ability to design a compact residential community. This area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Forest Grove operates a local sanitary sewer utility that feeds into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS provides wastewater treatment through the Rock Creek Waste Water Treatment Plant. CWS has indicated that the Rock Creek

treatment plant has sufficient capacity. The City of Forest Grove has a current project to replace old pipes within their system.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The estimated peak flow added to the system with the development of the reserve area is approximately 2.0 cfs (1.3 MGD). The southern portion of the site would connect to an existing City of Forest Grove gravity sewer line in NW Gales Creek Road. The northern portion of the site would connect to an existing City of Forest Grove gravity sewer line in NW Thatcher Road. Existing lines vary from 12-inch to 21-inch. City of Forest Grove lines connect to a CWS interceptor near Hwy 47 and Sunset Drive and waste is conveyed to the Hillsboro and/or Rock Creek treatment plants. CWS indicated that the Hillsboro treatment plant is undergoing improvements; however, there are no plans for future expansion. Flows that exceed the capacity of the Hillsboro treatment plant are sent to the Rock Creek treatment plant which has available capacity. Available capacity within the City of Forest Grove and CWS sewer lines is unknown at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

In order to connect to existing facilities, sewer lines will need to be constructed through the undeveloped portion of David Hill (inside the UGB). If the David Hill area is developed prior to the reserve area, those lines would be constructed with capacity for the reserve area. Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of the reserve area and a small upgrade to the treatment plant may be necessary. The amount of any upsizing that would be needed is not known at this time. The upgrades and financial impacts are beyond the scope of this narrative.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12” pipe (gravity)	$3.60
12 – 18” pipe (gravity)	$1.35
Total	**$4.95**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Forest Grove is currently in the process of updating their Water Master Plan. According to the City, if current growth trends continue, they will have enough water capacity through the year 2050. If growth trends exceeded expectations, the city would have options to purchase additional water or become a partner in the Willamette Water Supply. The city has its own treatment plant that can treat 3.7 MGD. They can supplement with up to 10 MGD of water from the Joint Water Commission. Treatment capacity is sufficient for areas currently within the UGB. City of Forest Grove water storage capacity is sufficient based on current growth trends. Anticipated industrial growth within the city could create a storage deficit within the next 10 years. If the industrial growth occurs, the city plans to utilize SDC funds to construct additional storage. A

currently undeveloped area of David Hill (located within the existing UGB) is located at an elevation higher than what they can serve with existing storage. New storage and associated pumps will be needed to serve this area of the UGB. The City indicated that most piping within the current UGB is sufficient; however, some piping within the David Hill area may need upsizing. If needed, these improvements would likely be completed by developers, as development occurs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Availability of water for the reserve area appears to be adequate; or they will be able to generate the supply as this area is urbanized. New storage and associated pumps are necessary to serve the reserve area as well as the David Hill area as noted above. Once constructed, this storage could also be utilized by the David Hill reserve area if sized appropriately. The city indicated that some piping within the David Hill area already inside the UGB may need upsizing. If needed, these improvements would likely be completed by developers, as development occurs.

Impacts to existing facilities that serve nearby areas already inside the UGB

New reservoirs, water pumps, and water mains will be needed to develop the area. For the purpose of this report and cost estimate, it is assumed that a water line will be constructed in NW Thatcher Road along the boundary of the existing undeveloped David Hill area, in order to connect to existing facilities. If the David Hill area (inside the UGB) is developed prior to the reserve area, then the water line would likely be constructed with that development. The amount of any upsizing from the serving utility that would be needed is unknown at this time.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$2.49
18" and larger	$4.45
Storage/pumping	$1.75
Total	**$8.69**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of issues with existing stormwater management facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$7.94
Water quality/detention	$7.35
Total	**$15.29**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All the roads in Forest Grove have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Pacific Ave between Highway 47 and the Cornelius city limits is classified as a high injury corridor.

Transit: TriMet bus line 57 provides service to Forest Grove from the Beaverton Transit Center along the Pacific Ave/19th Ave couplet. Line 57 connects with the MAX Light Rail Blue Line in Hillsboro. Grove Link is a locally run bus service that serves a greater part of the city and connects residents to downtown Forest Grove and TriMet line 57. West Link connects Forest Grove to Banks, North Plains and Hillsboro.

Bike: Forest Grove has 10 miles of dedicated bike lanes, 3.7 miles of established bikeways and a handful of streets considered bike friendly. Most of these facilities are either focused on the Town Center and Pacific University or provide routes along the edge of the city paralleling Highway 47. Significant portions of the city do not have bike facilities including employment areas.

Pedestrian: Most of the residential neighborhoods in Forest Grove have sidewalks including both older historic neighborhoods and more recent residential development projects. The Town Center is well served by sidewalks however the employment areas are not. The Gales Creek Trail and the Highway 47 Trail connect the outer edges of the city with some nearby residential areas.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All the roads in Forest Grove have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: TriMet bus line 57 does not run near the reserve area and the closest transit stop is well over two miles away at B Street and 19th Ave. Grove Link stops approximately three-quarters of a mile from the reserve area at Watercrest Road and Forest Gale Drive.

Bike: The Emerald Necklace Trail that can be accessed off Ridge Pointe Drive runs through Forest Glen Park to NW Gales Creek Road where it connects to a dedicated bike lane that runs almost the entire way to downtown. However, the only way to access the trail from the reserve area is to

follow local neighborhood streets three-quarters of a mile due to steep slopes and the development pattern of the adjacent homes within the UGB.

Pedestrian: The sidewalks within the nearby residential neighborhoods do not connect to the reserve area and given the existing development pattern it would be difficult to connect to them in the future, except for one location near NW David Hill Road.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: NW Gales Creek Road, NW David Hill Road, NW Thatcher Road, and Forest Gale Drive would see additional traffic as a result of urbanization.

Transit: There is potential impact to TriMet bus line 57. See transit analysis below.

Bike: The bike lane on NW Gales Creek Road is the only bike facility that may see additional use, especially if the bike lane is extended 3,000 feet to the urban reserve boundary.

Pedestrian: The existing sidewalks within the nearby residential neighborhoods would not be impacted.

Need for new transportation facilities and costs (see attached transportation map)

NW Gales Creek Road will need to be improved to urban arterial standards. NW David Hill Road will need to be improved to urban collector standards and four new collectors are needed to provide access to the central portion of the area and additional connections to the east.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$34.10
Collectors	Type	Cost (in millions)
	Existing/Improved	$17.60
	New	$70.45
Total		**$122.15**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service seven days a week by extending line 57 with two additional buses at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $1,310,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

A stream flows south along the middle portion of the eastern edge of the reserve area for approximately 2,600 feet. All but 460 feet of the stream is located within an area of slopes greater than 25% and is mostly wooded. There is riparian habitat associated with the stream sections along with a few small locations of upland habitat identified. There are no wetlands or floodplains identified in the reserve area. The land east of the stream inside the UGB is either owned by the City of Forest Grove as open space or is developed with single family homes that face the opposite direction with no connection potential. This eliminates the ability or need for any east-west road connections that would impact the stream corridor. Given the increased protection levels for streams, habitat areas and steep slopes within the UGB and the adjacent land uses to the east inside the UGB, urbanization of the area can occur with minimal impact to this stream corridor and habitat areas.

Energy, Economic & Social

This small reserve area is a mixture of forested parcels, rural residences and agricultural activities on a hill that descends 400 feet from the high to the low point. Much of the land is on slopes greater than 25% that would result in a less dense development pattern. This will reduce the overall urbanization impact on the small number of existing residents in terms of loss of sense of place and rural lifestyle. Directly to the east is a large area of land that is inside the UGB but is currently undeveloped. Assuming this area is developed to urban levels first, the loss of the rural lifestyle for the current residents of the reserve area will be less as they will be closer to established urban neighborhoods. The area contains a limited amount of the agricultural activities and the potential economic impact of urbanizing this area should outweigh the loss of the economic impact from these agricultural uses. There are 0.5 miles of stream corridors and approximately 45% of the land is identified as containing riparian or upland habitat areas. The cost for protecting these natural resource areas is considerable in contrast to the potential economic impact of urbanizing the developable lands in a well-connected manner. The additional traffic generated through urbanization will impact NW David Hill Road, NW Thatcher Road, and NW Gales Creek Road which could provide negative energy impacts, although currently these roads are lightly traveled. This may change when the substantial amount of land already inside the UGB builds out at urban densities. Overall, this reserve area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

To the south across NW Gales Creek Road is a large block of Exclusive Farm Use (EFU) zoned land that extends for several miles. All the land that abuts the south side of NW Gales Creek Road is in field crop production. NW Gales Creek Road would provide a buffer between the agricultural activities occurring in this location and a new urban area; however the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of

pesticides and fertilizer. In addition, the improvement of NW Gales Creek Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian activity that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization of the reserve area would increase traffic on NW Gales Creek Road which could impact the movement of both farm equipment and goods, although the amount of traffic would not be great from this relatively small reserve area with significant slopes. Thus, the proposed urban uses are not compatible with the extensive nearby agricultural activities occurring on the farm land to the south and mitigation measures on the urban land will be necessary.

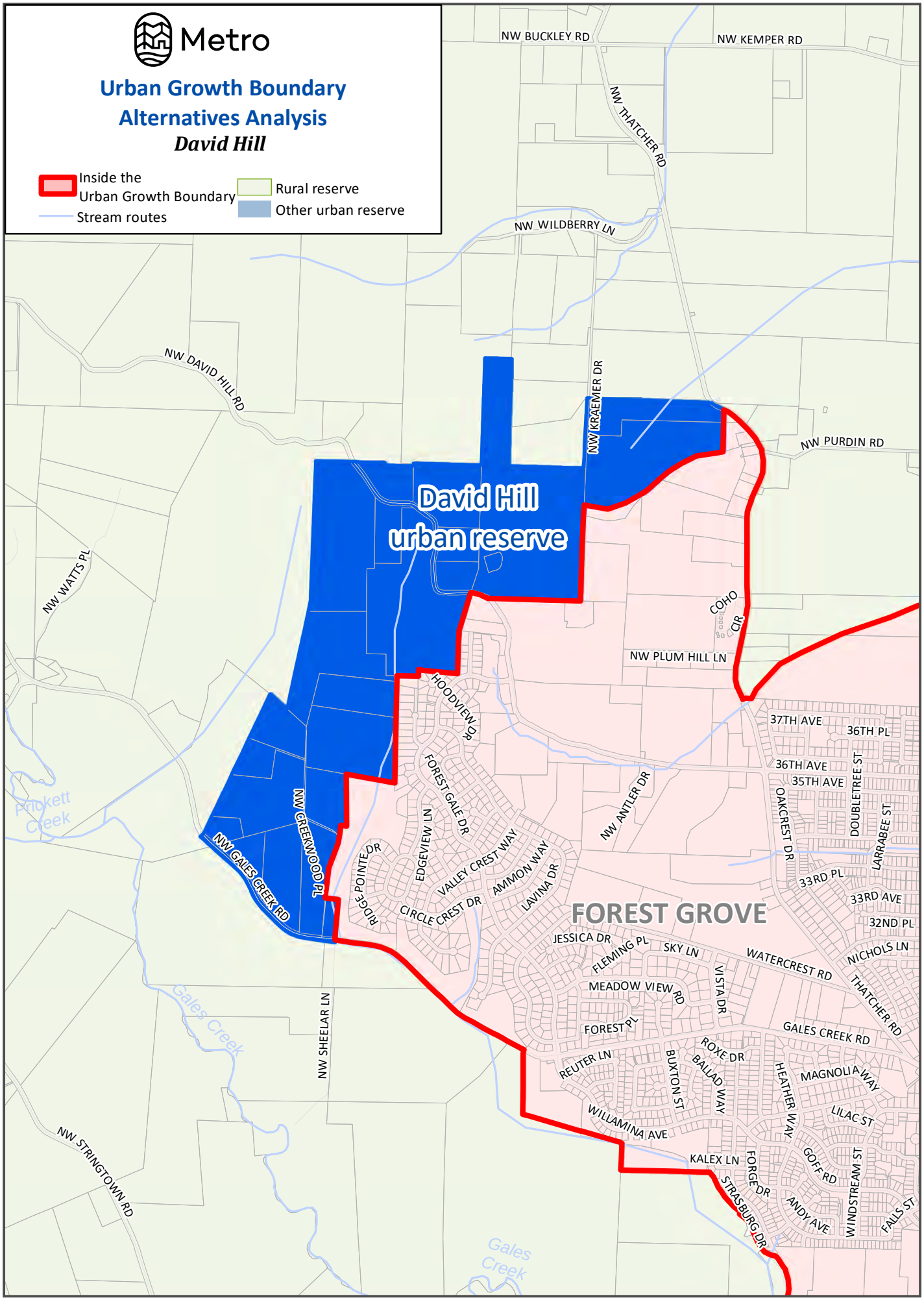
To the west between NW Gales Creek Road and NW David Hill Road is a large block of Agriculture Forest (AF20) zoned land that is mostly forested with some sporadic locations of agricultural activities including the David Hill Vineyards and Winery. An unnamed stream flows in a forested ravine along the western edge of the reserve area, essentially buffering the vineyard from the proposed urban area. There does not appear to be any active forest activities occurring to the west, thus the proposed urban uses would be compatible with nearby agricultural and forest activities in this location.

There is a small area of AF20 land on the north side of the reserve area boundary in the vicinity of NW David Hill Road. It appears that some of the property has been logged in the past. In addition, directly north is land zoned Exclusive Forest and Conservation (EFC) that is owned by Stimson Lumber and has been logged in the recent past. While it is conceivable that the trees will be harvested again in the future it is not known what the timing would be given the long-term cycle of forest harvesting. Urbanization of the reserve area would increase traffic on NW David Hill Road which could impact the movement of both forestry equipment and goods, however again the timing of these activities is unknown. Thus, the proposed urban uses are compatible with the nearby forest activities occurring on the forest land in this location in the near term, but conflicts may occur in the long-term.

There is a block of EFU zoned land that straddles NW Thatcher Road and extends for several miles to the north/northeast. The land directly adjacent to the reserve area is in agricultural production and includes mainly nursery crops. Urbanization of the reserve area would impact the small area of agricultural production that is directly adjacent to the reserve boundary as there could be complaints due to noise, odor, dust and the use of pesticides and fertilizer. Mitigation measures on this short northern edge may be needed. To the east of NW Thatcher Road is a significant block of nursery and field crops that extend north to NW Kemper Road and east to Highway 47. This area of agricultural activity could be impacted by the increase in traffic on NW Thatcher Road, although the amount of increased traffic would not be great from this relatively small area with steep slopes. The vast majority of the area east of the reserve that is inside the UGB is still in a rural state. Once this area urbanizes overall impacts to the agricultural activities in this location will increase, especially as more traffic moves north to access Highway 47.

In summary, the proposed urban uses are generally compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the west and north of the reserve area. As noted above, there may be compatibility issues with the forestry lands to the north at some

point in the future if and when those lands are harvested. The proposed urban uses are not compatible with the agricultural activities occurring on the farm land to the south and mitigation measures on the urban land will be necessary. Thus, the reserve area is moderately compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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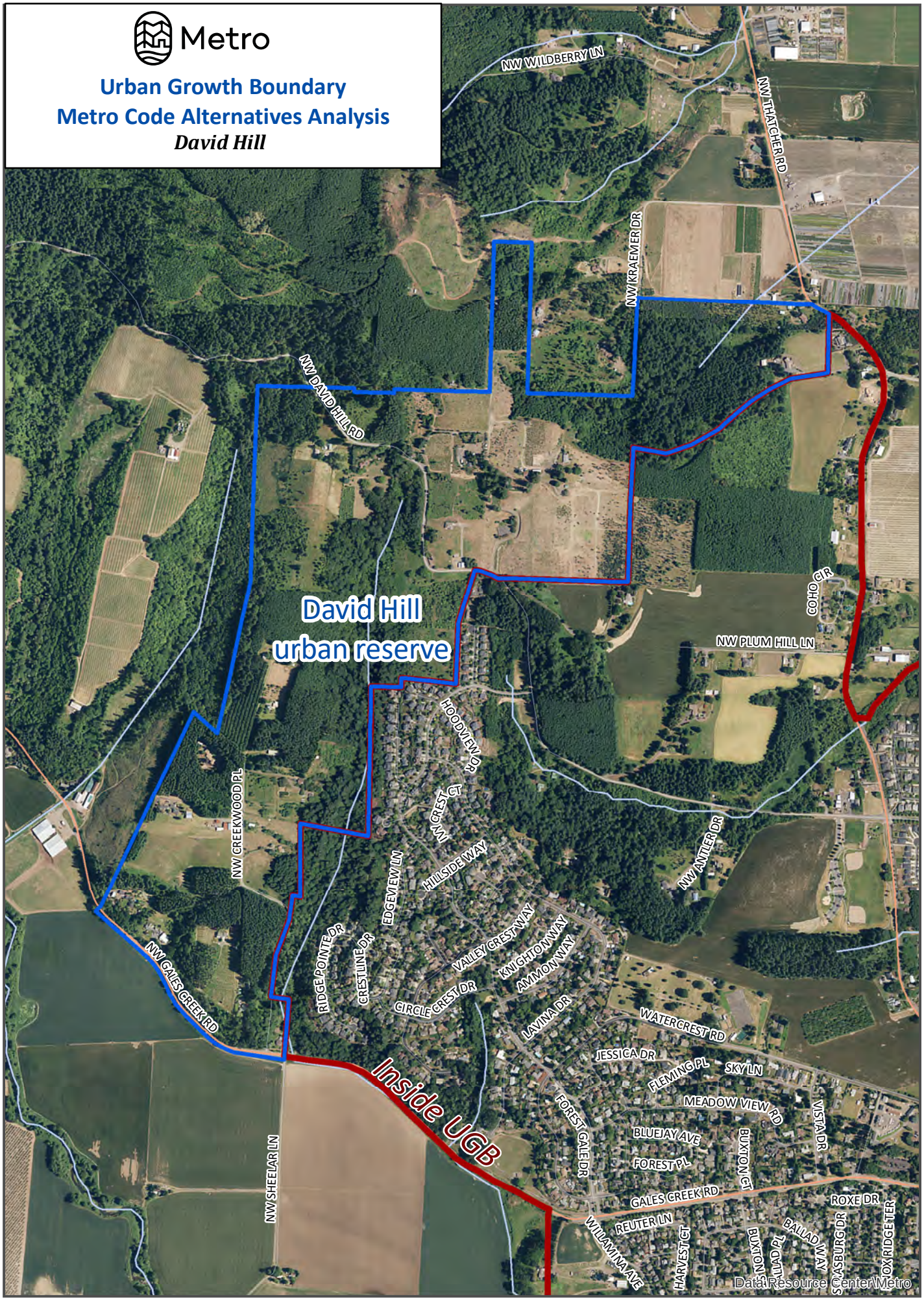
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
David Hill



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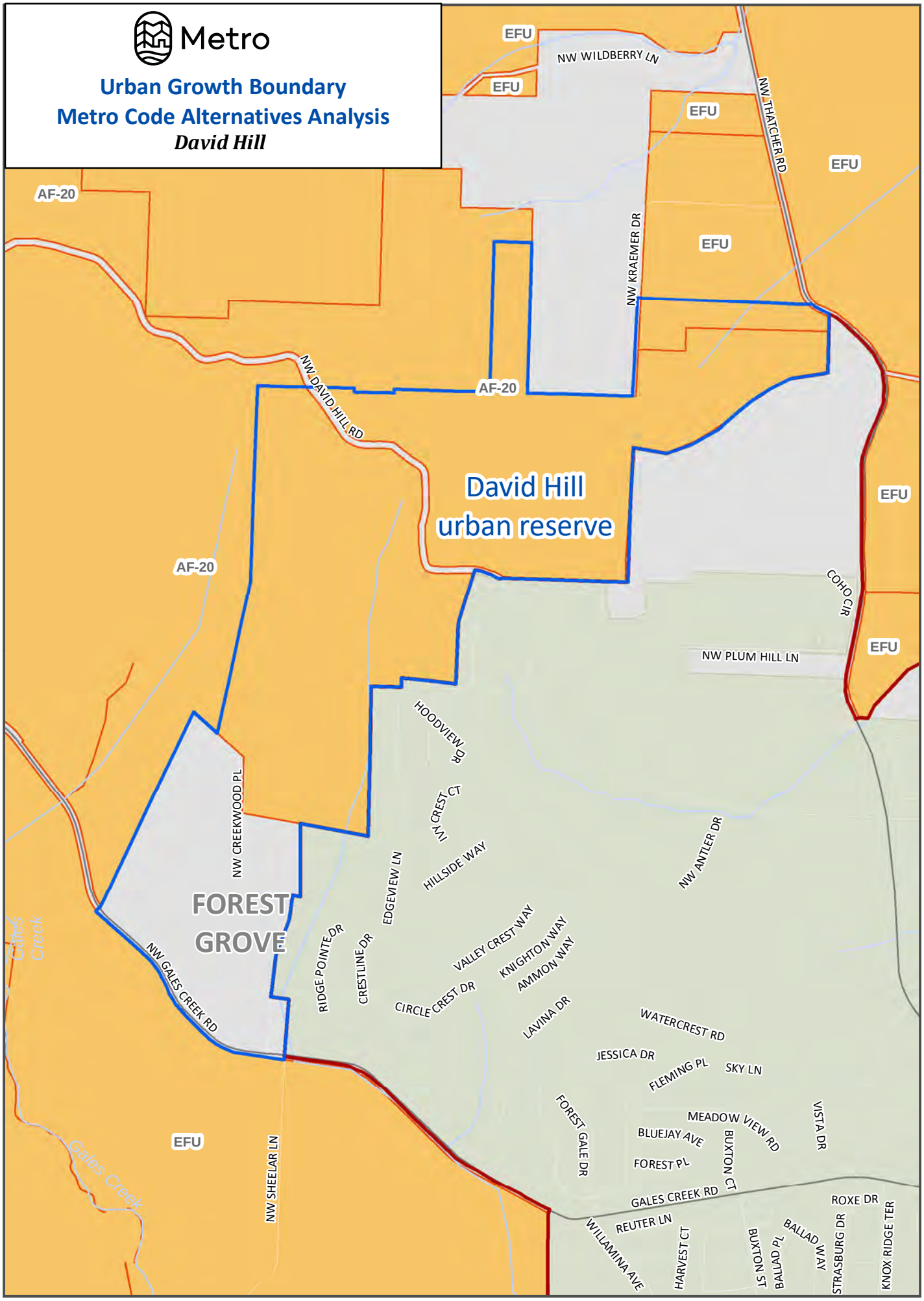

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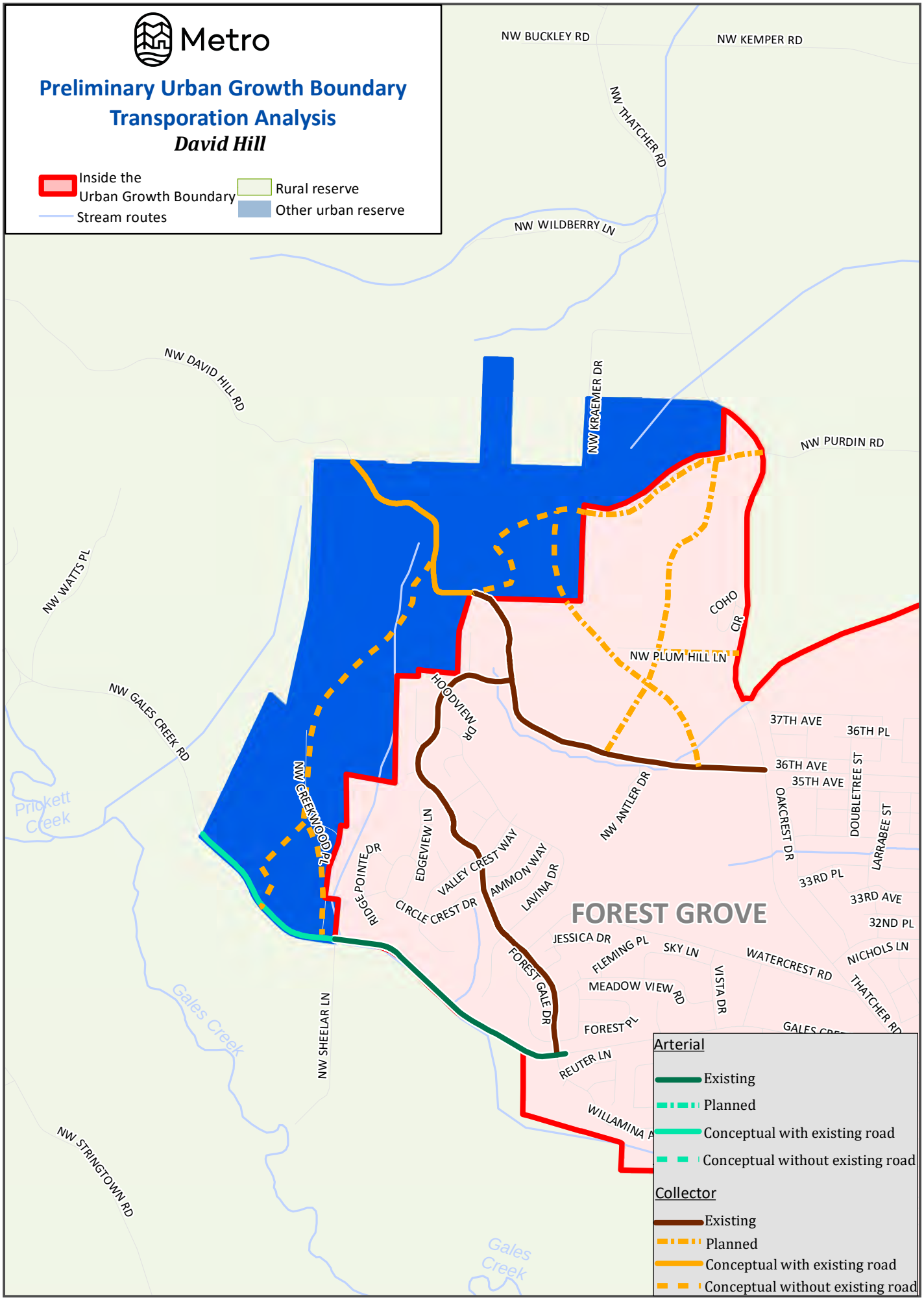

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ELLIGSEN ROAD NORTH URBAN RESERVE AREA

Total Acres	633	Parcel Acres	588
Gross Vacant Buildable Acres	439	Net Vacant Buildable Acres	333

General Description (see attached map)

The Elligsen Road North Urban Reserve Area is a somewhat rectangular shaped area on the north side of Wilsonville that lies north of SW Elligsen Road, west of SW 65th Ave and south of SW Frobase Road and totals 633 acres. The UGB forms the western boundary and a portion of the southern boundary with urban reserve land to the east and north. Interstate 5 borders a portion of the western edge of the reserve area. A tributary to Boeckman Creek flows south from the middle of the reserve area and then along SW Elligsen Road before crossing underneath to the farmland to the south. The reserve area contains a series of moderately steep hills with some slopes greater than 10% through the middle of the area. Access is provided by SW Elligsen Road, SW 65th Ave and SW Frobase Road.

Parcelization and Development Pattern (see attached aerial photo)

This reserve area contains 58 parcels that range in size from ¾ of an acre to 95 acres in size. Thirty-four of the parcels are five acres or less and 47 are less than ten acres. Five of the largest parcels, all greater than 40 acres total 326 acres or 55% of the parcel acreage. Rural residences are focused on SW 65th Ave with the remainder of the area in agricultural use or forested parcels. Thirty-seven of the 58 parcels have improvements numerous high value homes located along SW 65th Ave. There are two water reservoirs located at the high point of the reserve area, one for the City of Wilsonville and one for the City of Tualatin. The Pleasant Ridge RV Park is in the southwest corner of the reserve area and the Meridian United Church of Christ Cemetery is located along SW 65th Ave.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

There is a significant amount of land in the middle and southern portions of the reserve area that contains slopes greater than 10% that may limit employment uses, however there is a 100-acre section of land adjacent to SW Frobase Road that is generally flat that could be used for employment purposes. Given the concentration of high-value homes along SW 65th Ave a residential use may be a more appropriate use for the reserve area. This area can accommodate both a residential and a limited amount of employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The wastewater treatment plant was upgraded in 2014 which increased capacity from 2.5 MGD to 4.0 MGD resulting in excess capacity. The city has a 20-year program in place to replace aging concrete pipe. There is capacity to serve areas already in the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area will use some of the additional capacity, but will not likely trigger any treatment plant upgrades. The City is planning to expand the treatment plant in 2030, however future industrial development in the Basalt and Coffee Creek areas could require capacity upgrades sooner depending on the timing of the industrial development. The City did not provide information on the capacity of the existing trunk line proposed to serve the reserve area; therefore, it is unknown how much additional capacity is available.

Impacts to existing facilities that serve nearby areas already inside the UGB

Based on conceptual level sewer sizing analysis, approximately 4.4 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows will utilize the existing gravity trunk line ranging in size from 10-inch (at the upstream connection at Elligsen Road) to 30-inch (at the treatment plant). The capacity of the existing line is not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12” pipe (gravity)	$0.94
12 – 18” pipe (gravity)	$4.40
Force main	$0.16
Pump station	$0.50
Total	**$6.00**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Wilsonville owns and maintains the Willamette River Water Treatment Plant, which is capable of processing 15 MGD. A planned improvement will bring the treatment plant capacity to 20 MGD in order to serve the existing UGB through the year 2036. Current storage capacity is at 11 MG and the City has funded a project to provide additional storage to serve proposed development within the existing UGB. At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City has ample water rights for the long term, so water supply is not an issue. The expected additional 10 MG expansion of the treatment plant in 2035 should provide capacity for the reserve area. Existing storage tanks do not have capacity to serve development outside of the existing UGB.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City feels confident that it will have water capacity and storage to serve the reserve area. Numerous connection points exist at the edge of the reserve area and are assumed to be of adequate size. Transmission lines within the reserve area are expected to be built as development occurs.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.08
18" and larger	$5.76
Storage/pumping	$4.27
Total	**$15.11**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater conveyance, treatment, and discharge are anticipated to occur within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$7.54
Water quality/detention	$6.86
Total	**$14.4**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways in Wilsonville have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The intersection of SW Stafford Road and SW 65th Ave is in the top 5% of high injury intersections.

Transit: South Metro Area Regional Transit (SMART) provides full transit services to the City of Wilsonville through seven bus lines, medical transport services, a Villebois shopping shuttle and connections to Keizer and Woodburn. The vast majority of the city's developed areas are within ¼-mile of a transit stop. TriMet's Westside Express Service (WES) Commuter Rail originates its route in Wilsonville, servicing four other stations on its way to Beaverton.

Bike: Wilsonville has a well-defined bike network of dedicated bike lanes (19 miles) and established bikeways (8.25 miles) that connects neighborhoods, schools, parks, community centers, business districts and natural resource areas.

Pedestrian: Wilsonville has a fairly well-defined pedestrian network in its residential neighborhoods with less pedestrian amenities in the industrial and employment areas. Interstate 5 provides a barrier for east-west pedestrian connections.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Currently there is no regular SMART service to the reserve area. Route 2X runs adjacent to the southwest corner of the reserve area on SW Elligsen Road before turning south on SW Canyon Creek Road.

Bike: A small portion of a dedicated bike lane on SW Elligsen Road is adjacent to the reserve area. Dedicated bike lanes are also found on SW Canyon Creek Road and SW Parkway Center Drive on the south side of SW Elligsen Road.

Pedestrian: A small portion of SW Elligsen Road adjacent to the reserve area has sidewalks on both sides of the street. The remaining portion of the road has no sidewalks. Sidewalks are also found on SW Canyon Creek Road and SW Parkway Center Drive on the south side of SW Elligsen Road that extend south to commercial and employment areas of the city.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW Elligsen Road would see additional traffic, most of which may funnel to I-5 or continue west to the employment areas. SW Stafford Road would also be expected to see additional traffic flow south towards the Town Center area.

Transit: Existing SMART route 2X may see additional ridership, see transit analysis below.

Bike: Bike facility additions on SW Elligsen Road as part of the improvement of the road to urban standards will provide appropriate bike access to the facilities on SW Canyon Creek Road and SW Parkway Center Drive. These existing bike lanes would see additional use as they connect to commercial and employment areas of the city.

Pedestrian: Sidewalk improvements on SW Elligsen Road as part of the improvement of the road to urban standards will provide appropriate pedestrian access to the facilities on SW Canyon Creek Road and SW Parkway Center Drive which may see additional use as they connect to commercial and employment areas of the city.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SW Elligsen Road and SW 65th Ave that border the reserve area will need to be improved to urban arterial standards. Both roads are considered to be a 1/2 street improvement as the Elligsen Road South urban reserve and the land inside the UGB would be responsible for half of the improvements on SW Elligsen Road and the Norwood urban reserve would be responsible for half of the improvements on SW 65th Ave. A new arterial extends from SW Elligsen Road to connect with SW Day Road. SW Frobase Road would be improved to urban collector standards and three new collectors will provide access to the remainder of the reserve area.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$42.08
	New	$34.51
Collectors	Type	Cost (in millions)
	Existing/Improved ½	$9.59
	New	$64.24
Total		**$150.42**

Provision of public transit service

South Metro Area Regional Transit (SMART) evaluated the reserve area for providing transit service. SMART could provide services to the reserve area although actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area, however there is no guarantee of service. Service could be provided weekdays at 30-minute headways with one additional bus at a capital cost of $650,000 (recurs every 14-15 years). Bus capital costs reflect electric vehicle costs as SMART plans to provide services with a zero-emission fleet. Annual service cost is $79,000 and grows 3% per year. The Elligsen North reserve area is within the TriMet service boundary and SMART would need to negotiate with TriMet to provide bus service to the area.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. It is

expected that the concept plan process will develop more refined public facility and service needs and cost estimates for the reserve area or portion thereof.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

A 3,400-foot segment of a tributary to Boeckman Creek flows south through the middle of the reserve area. Most of the stream has been manipulated to flow along the edge of agriculture fields and then along SW Elligsen Road before crossing under the road to the south. Riparian habitat has been identified along the stream corridor along with some upland habitat in the steeper sloped sections of the reserve area. A 15,000 square foot wetland identified on the National Wetland Inventory (NWI) is located in the northeastern portion of the reserve area and a man-made pond presumably used for irrigation purposes is located on farm land in the center of the area. Given the increased protection levels for streams, wetlands, and habitat areas within the UGB, urbanization could occur with minimal to moderate impacts to the stream tributary, depending on east-west road connections. Overall urbanization of the area could occur with low impacts to the natural resources.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. There is a considerable amount of land that could be developed to urban densities which may contribute to social impacts in terms of loss of sense of place and rural lifestyle for the existing residents. However, as noted previously, there are numerous high-valued homes along SW 65th Ave that results in the potential for a slow or very minimal redevelopment process in the eastern portion of the area, reducing the social impacts on those existing residents in terms of loss of sense of place and rural lifestyle. The additional traffic generated through urbanization of the area will mostly funnel on to SW Stafford Road and SW Elligsen Road which could provide negative energy impacts as these roads provide access to I-5 and I-205. However, SW Norwood Road is a short distance to the north and provides an alternative east-west connection across I-5 which could reduce the energy impacts. Adjacent to the south is the Argyle Square Shopping Center and a large employment cluster, providing close shopping and employment opportunities for future residents thereby reducing VMT. The loss of the economic impact from the agricultural uses in this area would not be significant and the potential economic impact of future residential development should outweigh this loss. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

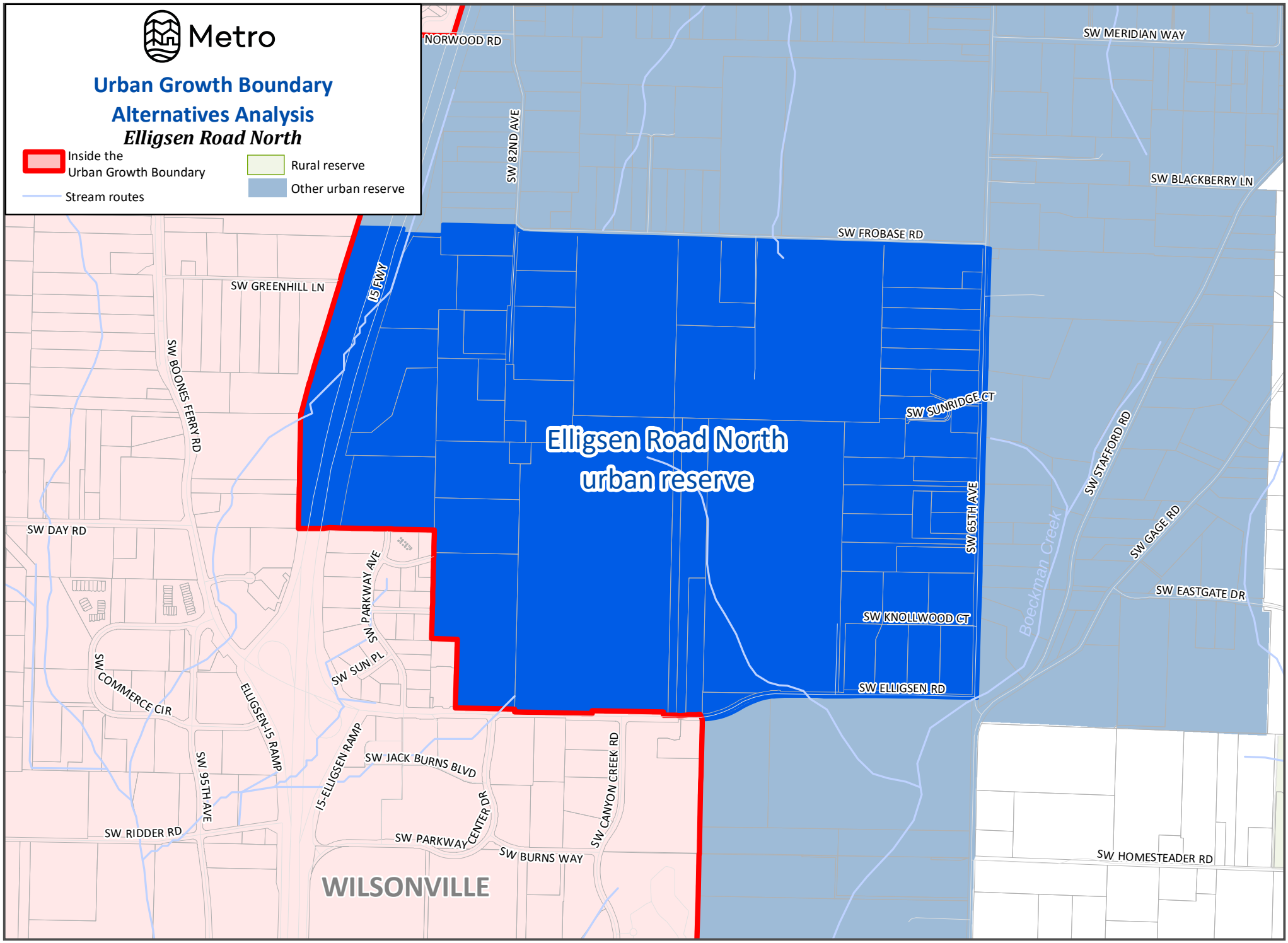
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Exclusive Farm Use (EFU) zoned land borders the reserve area on the south and partially to the north. The 90-acre block of EFU land to the north is completely in agricultural production, mostly in field crops and a Christmas tree farm. SW Frobase Road provides a buffer for the reserve area, although the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and

fertilizer could still occur. In addition, the improvement of SW Frobase Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would increase traffic on SW Frobase Road and SW 65th Ave which could impact the movement of both farm equipment and goods. The proposed urban uses are not compatible with the nearby agricultural activities occurring on the farm land to the north.

The EFU land to the south is being actively farmed with field crops and includes one residence not associated with agricultural activities. SW Elligsen Road provides a buffer for the reserve area, although the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. In addition, the improvement of SW Elligsen Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would increase traffic on SW Elligsen Road which could impact the movement of both farm equipment and goods. The proposed urban uses are not compatible with the nearby agricultural activities occurring on the small portion of farm land to the north.

Overall, the proposed urban uses would not be compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the north and the south and mitigation will be required on the urban side.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road North

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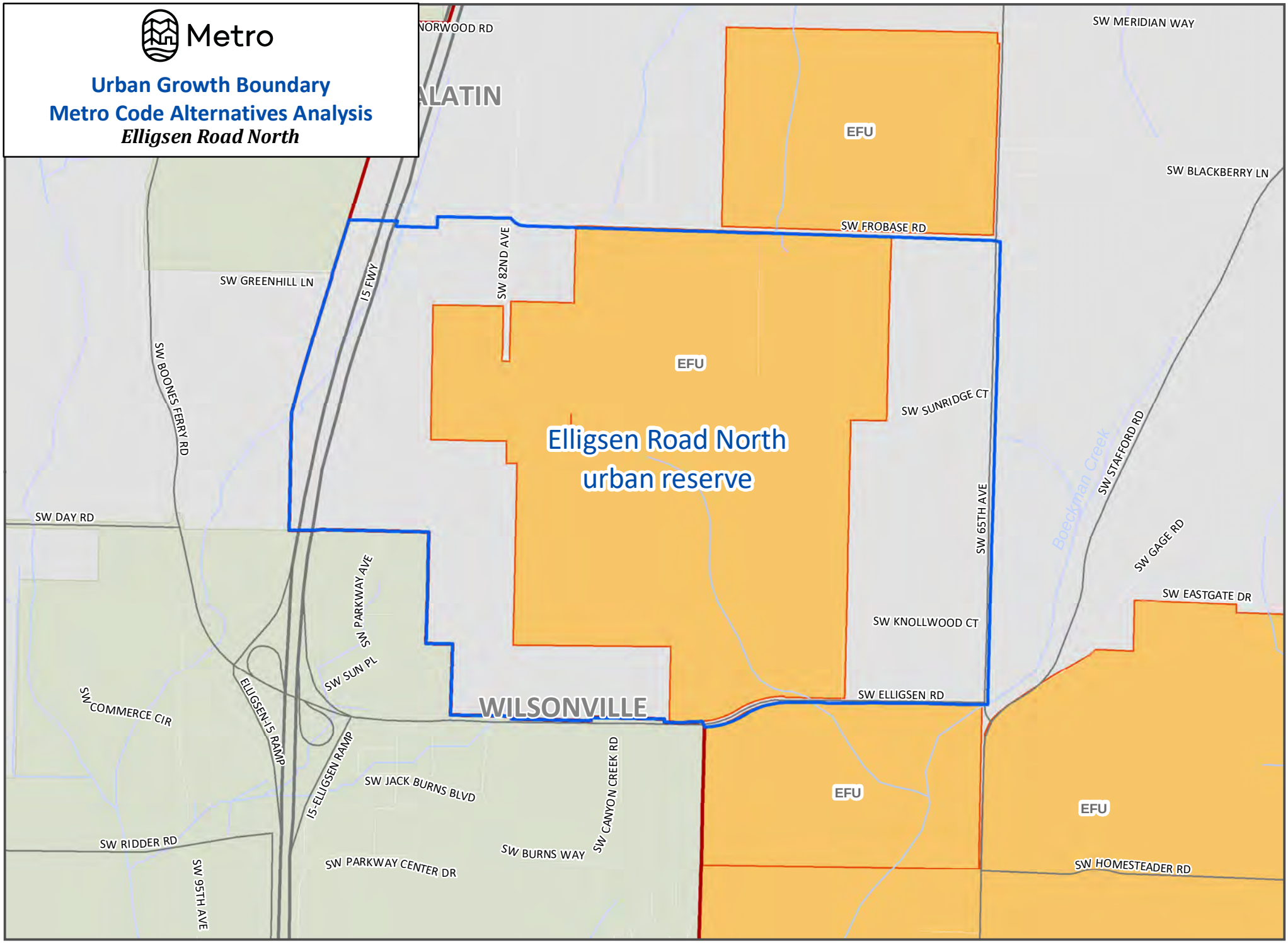
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road North



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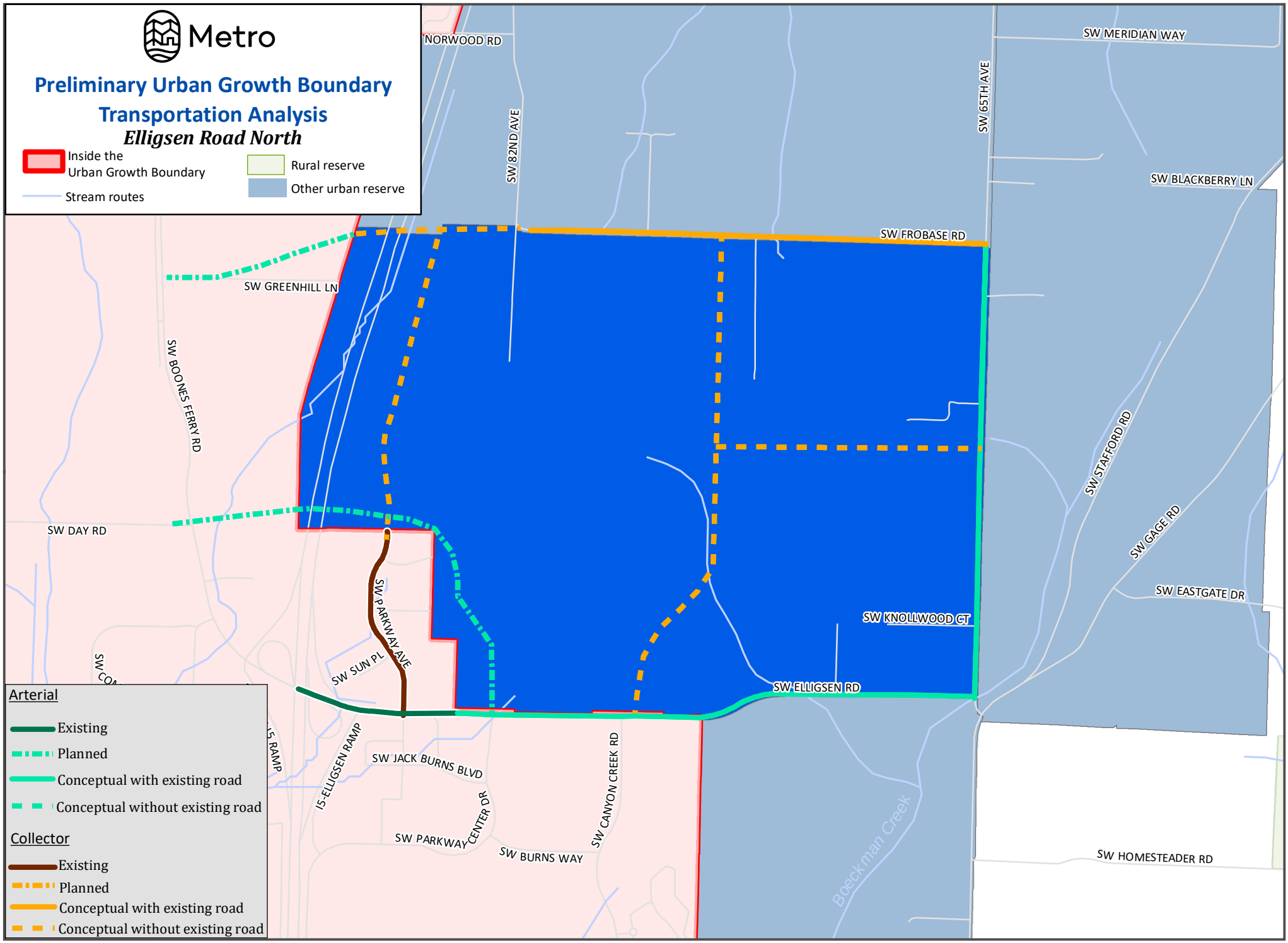

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ELLIGSEN ROAD SOUTH URBAN RESERVE AREA

Total Acres	256	Parcel Acres	252
Gross Vacant Buildable Acres	214	Net Vacant Buildable Acres	162

General Description (see attached map)

The Elligsen Road South Urban Reserve Area is rectangular shaped area on the east side of Wilsonville that lies west of SW Stafford Road and south of SW Elligsen Road and totals 256 acres. The UGB forms the western and southern boundary with undesignated land to the east and urban reserve land to the north. Boeckman Creek, which flows diagonally through the center of the reserve, splits the area into two evenly sized segments. The land is generally flat with some slopes greater than 10% along Boeckman Creek. Access to the area is provided by SW Stafford Road and SW Elligsen Road.

Parcelization and Development Pattern (see attached aerial photo)

This reserve area contains 12 parcels that range from 8,000 square feet to 59 acres in size. Seven of the parcels are greater than ten acres and three are less than five acres. The four largest parcels, all greater than 40 acres, total 190 acres or 75% of the land area in the reserve. The area contains rural residences associated with the agricultural activity that is occurring in most of the area. Eight of the 12 parcels have improvements. Three separate power lines run east-west then turn in a southeasterly direction through the southern portion of the reserve area. In addition, a fourth power line runs in an east-west direction through the northern portion of the reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This reserve area is generally flat with some sloped land along Boeckman Creek that in combination with the power lines divides the area into small pockets of land. The adjacent lands within the UGB are composed of residential uses with limited opportunities for road connections, excluding the Frog Pond area to the south. Some of the land pockets are large and flat enough to be appropriate for employment uses and given the power lines that pass through the reserve area, employment may be the best use for some locations. Access to I-5 is good via SW Elligsen Road and the reserve area is adjacent to existing employment land within the city. This area can accommodate both a residential and employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The wastewater treatment plant was upgraded in 2014 which increased capacity from 2.5 MGD to 4.0 MGD resulting in excess capacity. The city has a 20-year program in place to replace aging concrete pipe. There is capacity to serve areas already in the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area will use some of the additional capacity but will not likely trigger any treatment plant upgrades. The City is planning to expand the treatment plant in 2030, however future industrial development in the Basalt and Coffee Creek areas could require capacity upgrades sooner depending on the timing of the industrial development. Trunk lines are currently utilizing approximately 50% of their capacities. The development of Frog Pond West will use some of that capacity and any additional capacity could be available for use by the reserve area. Existing pump stations are currently being upgraded for existing and currently planned uses. It is unknown at this time if additional pump station capacity will be available for development within the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Based on conceptual level sewer sizing analysis, approximately 1.9 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows from the reserve area will be divided into two basins. The western basin could connect to an existing 12-inch sewer in SW Thornton Drive. These flows will pass through the Canyon Creek lift station before continuing to the wastewater treatment plant in existing 12-inch to 18-inch gravity pipes. The eastern basin will connect to the Boeckman interceptor (existing sizes 12-inch to 18-inch) and will pass through the Memorial Park lift station before reaching the wastewater treatment plant. The capacity of the existing sewer lines and pump stations are not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12” pipe (gravity)	$0.69
12 – 18” pipe (gravity)	$1.91
Total	**$2.60**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Wilsonville owns and maintains the Willamette River Water Treatment Plant, which is capable of processing 15 MGD. A planned improvement will bring the treatment plant capacity to 20 MGD in

order to serve the existing UGB through the year 2036. Current storage capacity is at 11 MG and the City has funded a project to provide additional storage to serve proposed development within the existing UGB. At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City has ample water rights for the long term, so water supply is not an issue. The expected additional 10 MG expansion of the treatment plant in 2035 should provide capacity for the reserve area. Existing storage tanks do not have capacity to serve development outside of the existing UGB.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City feels confident that it will have water capacity and storage to serve the reserve area. Numerous connection points exist at the edge of the reserve area and are assumed to be of adequate size. Transmission lines within the reserve area are expected to be built as development occurs.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
18" and larger	$0.56
Storage/pumping	$2.0
Total	**$2.56**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater conveyance, treatment, and discharge are anticipated to occur within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$4.65
Water quality/detention	$4.66
Total	**$9.31**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways in Wilsonville have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The intersection of SW Stafford Road and SW 65th Ave is in the top 5% of high injury intersections.

Transit: South Metro Area Regional Transit (SMART) provides full transit services to the City of Wilsonville through seven bus lines, medical transport services, a Villebois shopping shuttle and connections to Keizer and Woodburn. Most the city's developed areas are within ¼-mile of a transit stop. TriMet's Westside Express Service (WES) Commuter Rail originates its route in Wilsonville, servicing four other stations on its way to Beaverton.

Bike: Wilsonville has a well-defined bike network of dedicated bike lanes (19 miles) and established bikeways (8.25 miles) that connects neighborhoods, schools, parks, community centers, business districts and natural resource areas.

Pedestrian: Wilsonville has a fairly well-defined pedestrian network in its residential neighborhoods with less pedestrian amenities in the industrial and employment areas. Interstate 5 provides a barrier for east-west pedestrian connections.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Currently there is no regular SMART service to the reserve area. The closest bus routes are on SW Canyon Creek Road (routes 6 & 2X) which is 800 feet from the reserve area and SW Wilsonville Road and SW Advance Road (route 4) which is one-half mile from the reserve area.

Bike: There are no bike facilities adjacent to the reserve area. The closest facility is a dedicated bike lane that runs south on SW Canyon Creek Road that is approximately one-third of a mile from the center of the area along SW Elligsen Road. There is a small segment of bike lane on SW Elligsen Road at SW Parkway Center Drive.

Pedestrian: There are no sidewalks or trails near the reserve area. The closest sidewalks run south on SW Canyon Creek Road, which is approximately one-third of a mile from the center of the area

along SW Elligsen Road. A portion of SW Elligsen Road near SW parkway Center Drive has sidewalks on both sides of the street.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW Elligsen Road and SW Stafford Road would see additional traffic. If employment uses were developed much of the traffic would access I-5 at the Elligsen Road interchange. SW Canyon Creek Road could also see additional traffic if an east-west road connection is made with the reserve area along the undeveloped SW Wiedemann Road right-of-way.

Transit: Existing SMART routes 6 and 2X could see additional ridership, see transit analysis below.

Bike: Bike facility improvements on SW Elligsen Road as part of the improvement of the road to urban standards will provide appropriate bike access to the facilities on SW Canyon Creek Road which would likely see additional use as it connects to commercial and employment areas of the city.

Pedestrian: Sidewalk improvements on SW Elligsen Road as part of the improvement of the road to urban standards will provide appropriate pedestrian access to the facilities on SW Canyon Creek Road which could see additional use as it connects to commercial and employment areas of the city, although it is still a considerable distance from most of the reserve area.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SW Elligsen Road and SW Stafford Road that border the reserve area will need to be improved to urban arterial standards. The SW Elligsen Road portion is considered a ½ street improvement as the Elligsen Road North urban reserve would be responsible for the other half of the road. Two new collectors will provide access to the middle of the area.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved 1/2	$9.07
	Existing/Improved	$31.97
Collectors	Type	Cost (in millions)
	New	$42.00
Total		**$83.04**

Provision of public transit service

South Metro Area Regional Transit (SMART) evaluated the reserve area for providing transit service. SMART could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 15-minute headways peak weekday and 30-minute headways off-peak weekday and Saturday with one additional bus at a capital cost of $650,000 (recurs every 14-15 years) Bus capital costs reflect electric vehicle costs as SMART plans

to provide services with a zero emission fleet. Annual service cost is $270,000 and grows 3% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. The concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Boeckman Creek flows diagonally through the reserve area in a northeast to southwest direction for just over a mile. The northern portion flows mostly through agricultural fields while the southern portion flows within a forested riparian corridor with some slopes greater than 25%. Riparian habitat has been identified along the stream corridor and most of the forested section is identified as wetland (5.8 acres of a larger 22-acre wetland) on the Wilsonville local inventory. In addition, there is an additional 0.2-acre wetland identified on the National Wetland Inventory (NWI) along the stream corridor. Given the increased protection levels for streams, wetlands, habitat areas and steep slopes within the UGB, urbanization could occur without significant impacts to Boeckman Creek. However, the creek and power lines divide the reserve area into pockets of land, which could lead to impacts related to street connectivity needs. This is especially true for residential use, thus some impacts to Boeckman Creek and habitat areas may occur through urbanization of the area depending on the design and level of street connectivity needs.

A tributary of Boeckman Creek flows south through the northern portion of the area for approximately 1,490 feet between agricultural land and a farmstead before joining Boeckman Creek. This stream also appears to drain into a couple of ponds, one of which has been identified as a NWI wetland (0.1 acre). This stream also has riparian habitat identified along the stream corridor. Given the increased protection levels for streams, wetlands, and habitat areas within the UGB, urbanization could occur without significant impacts to this stream corridor. Nevertheless, this small stream corridor along with Boeckman Creek isolates a small land area from the remainder of the urban reserve, which could lead to stream impacts related to street connectivity needs, especially for residential use. Thus, some impacts to the stream and habitat area may occur through urbanization of the area depending on the use and level of street connectivity needs.

A tributary flows southwest through the southern portion of the area, mostly through agricultural land and appears to flow into a pond. The small stream section that is forested also is identified as a wetland (0.25 acre) and includes riparian habitat. Given the required protection levels for streams, wetlands, and habitat areas within the UGB, urbanization could occur without significant impacts to this stream corridor. Consistent with the other streams in the area, impacts related to street connectivity needs, especially for residential use could occur. Thus, some impacts to the stream and habitat area may occur through urbanization of the area depending on the use and level of street connectivity needs.

Boeckman Creek and the southern tributary also flow within the power line easements which provide a level of protection due to the inability to urbanize at a high level within the easement. However, if employment uses occurred in this area the stream corridors could be susceptible to impacts related to providing parking facilities within the easement as can be seen in other locations in Wilsonville. Overall urbanization of the area could occur with moderate to high impacts to the natural resources depending on street connectivity needs and other site needs such as parking or storage related to non-residential uses.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing or employment uses replacing the existing eight rural residences. While the social impact of losing the rural lifestyle may be considerable for the individual homeowners the cumulative impact will be small given so few residents. The stream corridors and habitat areas plus the power line easements divide the reserve area into small sections for urban development which may help reduce the loss of sense of place and rural lifestyle. The additional traffic generated through urbanization of the area will ultimately funnel on to SW Stafford Road due to limited potential east-west connections which could provide negative energy impacts. Preservation of the stream corridors and the power line easements provide the opportunity for development of trails, such as the conceptual Boeckman Creek Trail, that could reduce some local automobile trips, thereby reducing VMT. The loss of the economic impact from the agricultural uses in this small area would be minimal and the potential economic impact of future residential and/or employment development should outweigh this loss. Overall, this reserve area has low economic, social and energy consequences from urbanization.

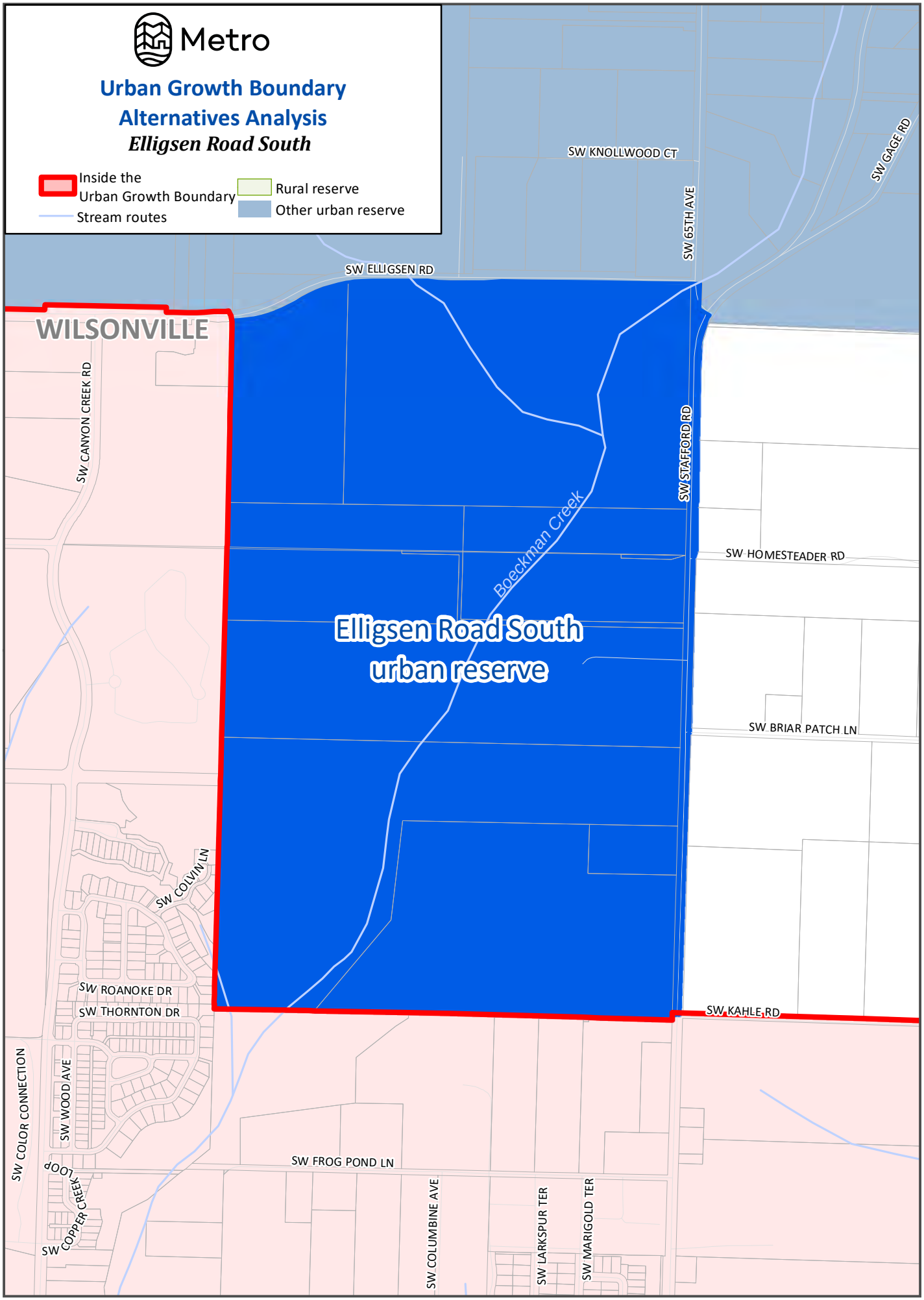
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Exclusive Farm Use (EFU) zoned land borders the reserve area on the east and partially to the north. Most of the farmland to the east is in agricultural production that includes field crops, nursery and pastureland with a few rural residences that don't appear connected to the farming activities. SW Stafford Road provides a buffer for the reserve area, although the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. In addition, the improvement of SW Stafford Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would increase traffic on SW Stafford Road which could impact the movement of both farm equipment and goods. The proposed urban uses are not compatible with the nearby agricultural activities occurring on the farm land to the east.

The small section of EFU land adjacent to the north is being actively farmed with field crops and includes one residence. SW Elligsen Road provides a buffer for the reserve area, although the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. In addition, the improvement of SW Elligsen Road to urban standards includes its own set of

compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. The limited frontage between the two uses should help reduce potential conflicts. Urbanization would increase traffic on SW Elligsen Road which could impact the movement of both farm equipment and goods. The proposed urban uses are not compatible with the nearby agricultural activities occurring on the small portion of farm land to the north.

Overall, the proposed urban uses would have low compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the east and to a lesser extent to the north. Mitigation would be required on the urban side of the boundary.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road South

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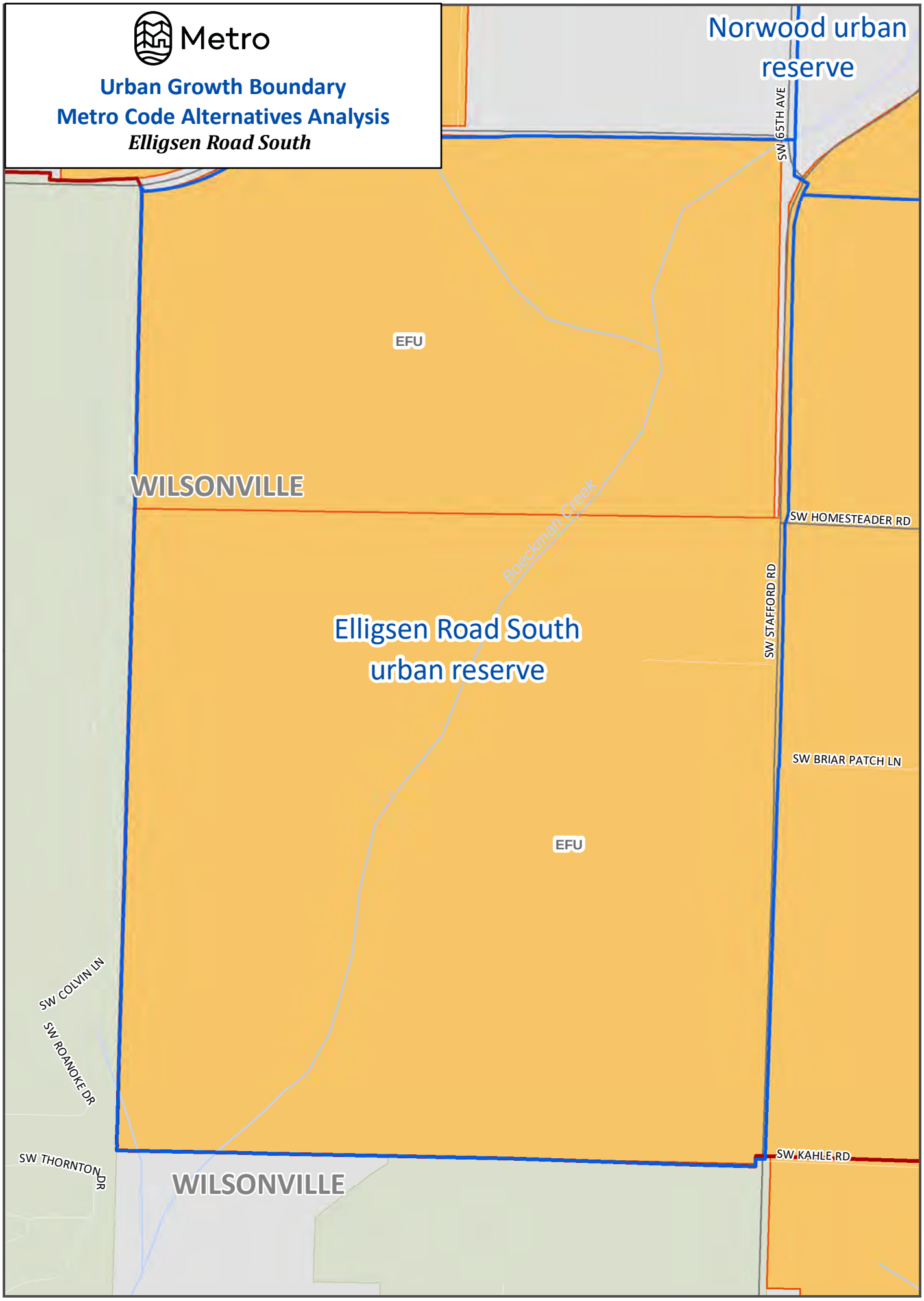
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road South



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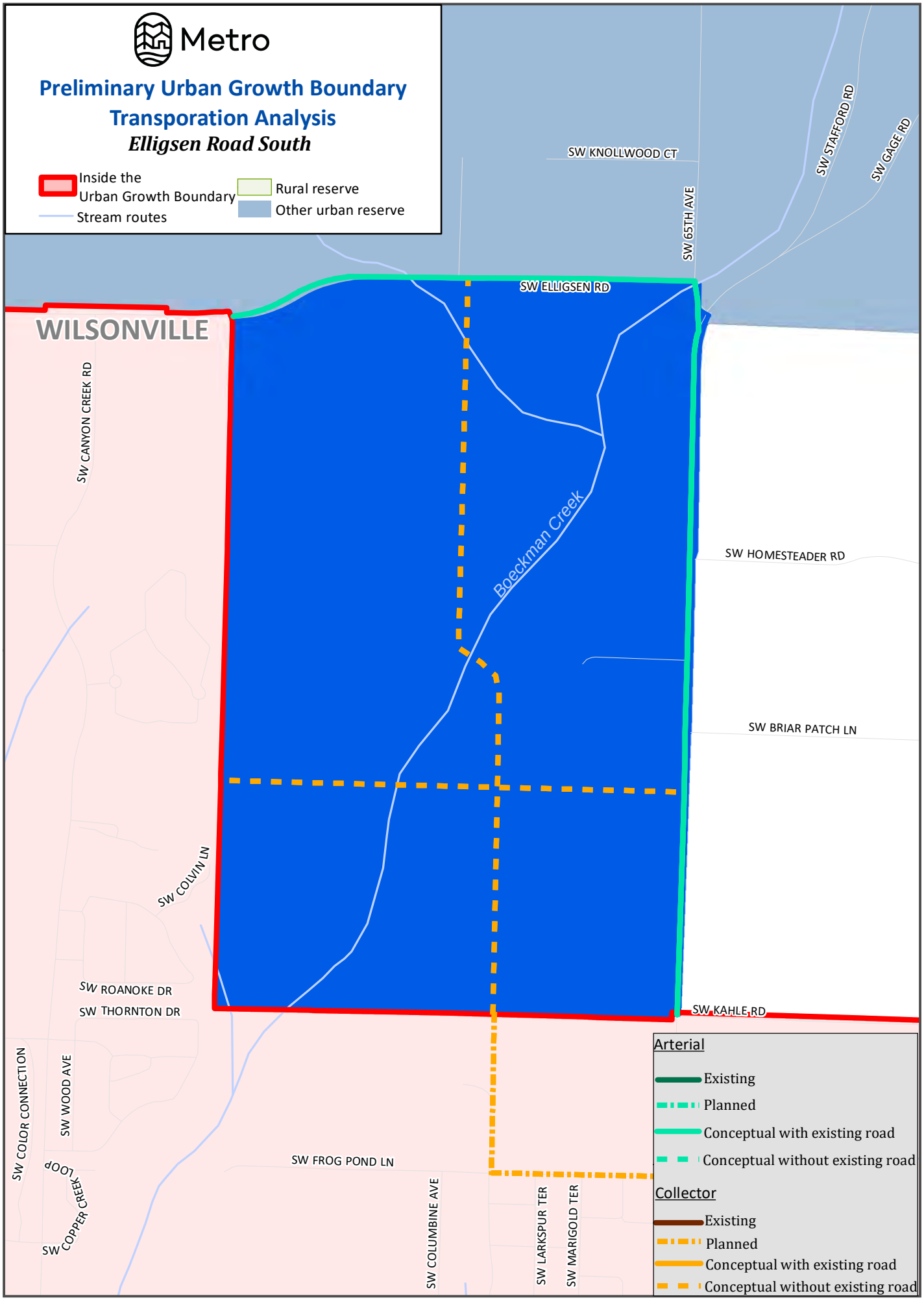

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GRAHAMS FERRY URBAN RESERVE AREA

Total Acres	203	Parcel Acres	200
Gross Vacant Buildable Acres	92	Net Vacant Buildable Acres	70

General Description (see attached map)

The Grahams Ferry Urban Reserve Area is a block shaped area on the west side of Wilsonville, east of SW Grahams Ferry Road that totals 203 acres in size. The current UGB forms the southern and eastern boundaries of this primarily flat area. The area is served by SW Grahams Ferry Road and SW Tooze Road. The Metro owned Coffee Lake Wetlands natural area is east of the reserve area, inside the UGB.

Parcelization and Development Pattern (see attached aerial photo)

This small urban reserve area contains 24 parcels that range from 2,200 square feet to 60 acres in size. Nineteen of the 24 parcels are less than ten acres in size and the five largest parcels account for 78% of the land in the reserve area. The area includes both rural residential development and limited agricultural activity, mostly in pastureland. Overall, 18 of the 24 parcels have improvements. Available data does not suggest the existence of power lines or public easements through this area. There is a large block of Metro-owned open space that borders the reserve area to the east effectively eliminating any connections to the industrial uses to the east within the UGB.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The reserve area is flat with two small locations of slopes greater than 10% that would not impact future development. The five largest parcels, which total 155 acres, are adjacent to each other forming a considerable block of land. However, there are some significant natural resources located on these parcels that will direct development to the western portion of the reserve area, away from the existing employment center of Wilsonville. Therefore, this area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The wastewater treatment plant was upgraded in 2014 which increased capacity from 2.5 MGD to 4.0 MGD resulting in excess capacity. The city has projects planned for the Memorial Park lift station over the next three years and a 20-year program in place to replace aging concrete pipe. There is capacity to serve areas already in the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area (existing UGB) will use some capacity but will not likely trigger any treatment plant upgrades. The City is planning to expand the treatment plant in 2030, however future industrial development in the Basalt and Coffee Creek areas could require capacity upgrades sooner depending on the timing of the industrial development. At this time, it is unknown if the treatment plant will have additional capacities to serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Based on conceptual level sewer sizing analysis, approximately 1.2 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows will utilize the existing gravity trunk line ranging in size from 15-inch (at the upstream connection at Coffee Lake Drive) to 30-inch (at the treatment plant). The capacity of the existing line is not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$1.77
Total	**$1.77**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Wilsonville owns and maintains the Willamette River Water Treatment Plant, which is capable of processing 15 MGD. A planned improvement will bring the treatment plant capacity to 20 MGD in order to serve the existing UGB through the year 2036. Current storage capacity is at 11 MG and the City has funded a project to provide additional storage to serve proposed development within the existing UGB. At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City has ample water rights for the long term, so water supply is not an issue. The expected additional 10 MG expansion of the treatment plant in 2035 should provide capacity for the reserve area. Existing storage tanks do not have capacity to serve development outside of the existing UGB.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City feels confident that it will have water capacity and storage to serve the reserve area. Numerous connection points exist at the edge of the reserve area and are assumed to be of adequate size. Transmission lines within the reserve area are expected to be built as development occurs.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$0.87
18" and larger	$1.44
Storage/pumping	$0.98
Total	**$3.29**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater conveyance, treatment, and discharge are anticipated to occur within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$2.5
Water quality/detention	$2.54
Total	**$5.04**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways in Wilsonville have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The intersection of SW Stafford Road and SW 65th Ave is in the top 5% of high injury intersections.

Transit: South Metro Area Regional Transit (SMART) provides full transit services to the City of Wilsonville through seven bus lines, medical transport services, a Villebois shopping shuttle and connections to Keizer and Woodburn. Most the city's developed areas are within ¼-mile of a transit stop. TriMet's Westside Express Service (WES) Commuter Rail originates its route in Wilsonville, servicing four other stations on its way to Beaverton.

Bike: Wilsonville has a well-defined bike network of dedicated bike lanes (19 miles) and established bikeways (8.25 miles) that connects neighborhoods, schools, parks, community centers, business districts and natural resource areas.

Pedestrian: Wilsonville has a fairly well-defined pedestrian network in its residential neighborhoods with less pedestrian amenities in the industrial and employment areas. Interstate 5 provides a barrier for east-west pedestrian connections.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Currently there is no regular SMART service to the reserve area. SMART's Route 7 – Villebois is over one-half mile from the reserve area and provides limited connecting service to the SMART Transit Center for connections to WES trains. The Route 7 Villebois Shopper Shuttle provides connection the Town Center. Route 5 – 95th Avenue runs between the Wilsonville Transit Center and Commerce Circle via Ridder Road and Grahams Ferry Road. Route 5 is approximately 2/3rd of a mile from the north end of the reserve area.

Bike: SW Tooze/Boeckman Road adjacent to the reserve area has either an established bikeway or a dedicated bike lane that extends east across I-5. There is also a bike lane connection south into Villebois proper that provides access to numerous other bike facilities. There are no bike facilities on SW Grahams Ferry Road.

Pedestrian: SW Tooze/Boeckman Road has sidewalks on both sides and sidewalks are present in all the developed portions of Villebois. Access to the nearby Ice Age Tonquin Trail is in Villebois, which extends south through Graham Oaks Nature Park to the Willamette River. Significant natural areas border the east side of the reserve area, thereby limiting pedestrian access to the east. There are no pedestrian facilities on SW Grahams Ferry Road.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW Tooze/Boeckman Road would see additional traffic as it provides access to employment areas as well as to the east side of Wilsonville. SW Kinsman Road would see additional traffic as it provides a connection to I-5 via SW Wilsonville Road.

Transit: SMART transit service would be expected to see additional use, see below for details.

Bike: Bike facilities on SW Tooze/Boeckman Road would see additional use as they provide the easiest and most direct connection to the rest of Wilsonville.

Pedestrian: Pedestrian facilities on SW Tooze/Boeckman Road would see additional use as they provide the easiest and most direct connection to the rest of Wilsonville. Additional use of the Ice Age Tonquin Trail would also be expected.

Need for new transportation facilities costs (see attached transportation map)

The portion of SW Grahams Ferry Road that borders the reserve area will need to be improved to urban arterial standards. A new collector is needed north of SW 110th Ave through the middle of the reserve area to SW Grahams Ferry Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$22.36
Collectors	Type	Cost (in millions)
	New	$15.11
	Total	**$37.47**

Provision of public transit service

South Metro Area Regional Transit (SMART) evaluated the reserve area for providing transit service. SMART could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 60-minute headways weekday with one additional bus at a capital cost of $650,000 (recurs every 14-15 years). Bus capital costs reflect electric vehicle costs as SMART plans to provide services with a zero-emission fleet. Annual service cost is $140,000 and grows 3% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Coffee Lake Creek flows south along the northern edge of the reserve area and then continues south through the eastern portion of the area for approximately 1,260 feet. A 44-acre portion of a much larger wetland system identified on the local Wilsonville inventory is located west of the portion of Coffee Lake Creek that flows through the area. The wetland appears to contain some irrigation ponds and an irrigation channel. This wetland extends south and east to connect with the wetland that is located on the Metro owned open space within the UGB to the east, essentially surrounding the very eastern portion of the reserve area. As you would expect a substantial amount of riparian habitat is identified along the wetland and stream, essentially encompassing the entire east side of the reserve area. Given that all the natural resources are in the eastern portion of the reserve area, urbanization of the western section could occur with no impacts to the stream and wetland areas. Overall urbanization of the area could occur with minimal impacts to the stream corridor and the wetland area if future development is focused away from the wetland/stream complex.

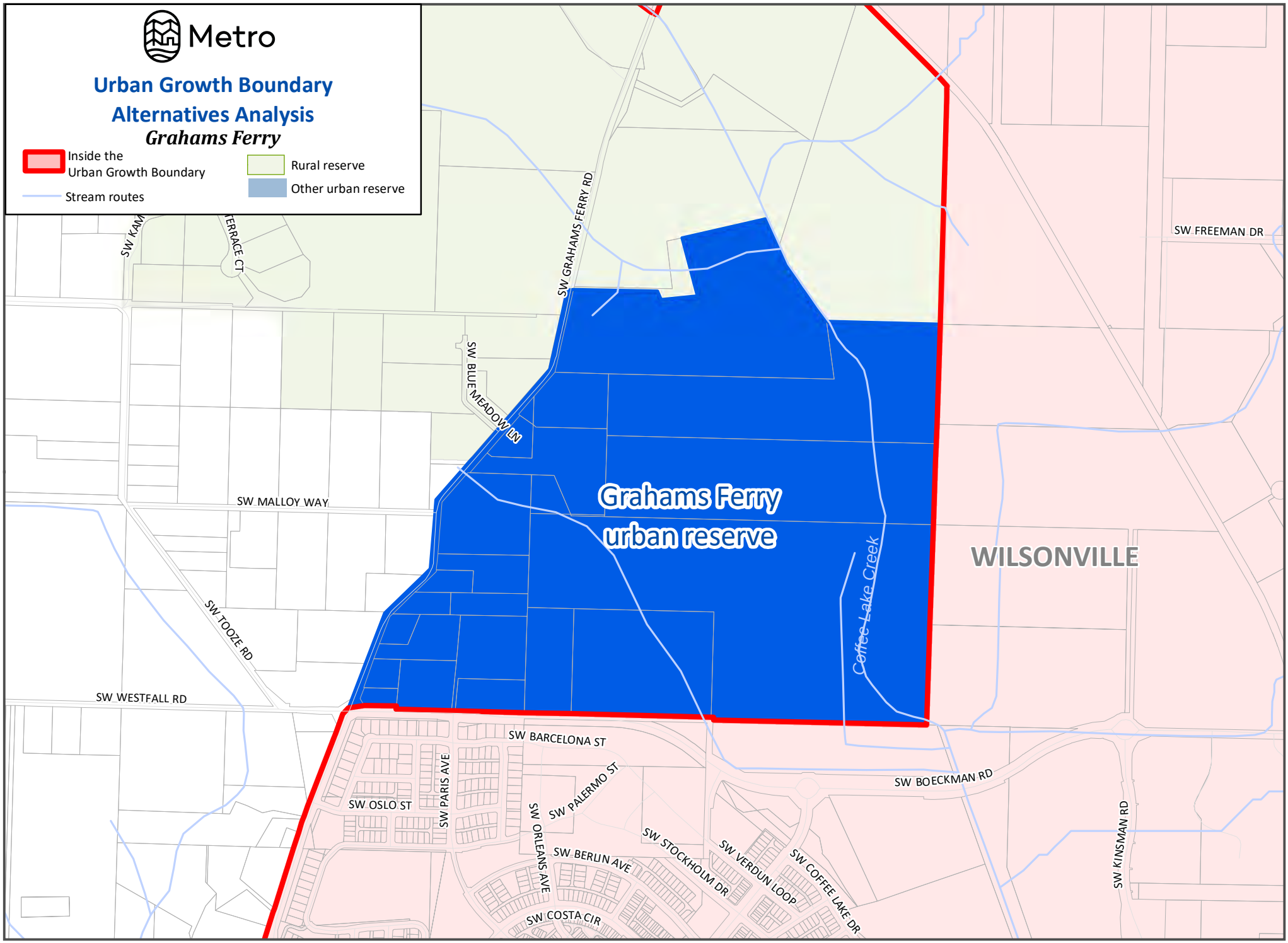
Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. This would result in a loss of sense of place and rural lifestyle for the few residents of the area. The significant natural resources in the area decreases the overall amount of development that can occur, while at the same time providing a significant amount of land that will stay in a natural state, thus potentially reducing the social impacts of future urbanization on the existing residents of the area. SW Tooze/Boeckman Road provides an easy connection to employment areas in the City of Wilsonville which could help reduce the increase in VMT resulting from urbanization of the area. However, given the modest amount of development that would occur, the increase in traffic would not be great and would not have significant energy consequences. In addition, the future build out of the commercial area of Villebois will provide the opportunity for pedestrian or bike connections to the commercial area that could reduce some local automobile trips. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential development, even though it is not significant will outweigh this loss. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There is a 160-acre block of exclusive farm use (EFU) zoned land directly adjacent to the north edge of the reserve area that extends west of SW Grahams Ferry Road. The resource land to the west of SW Grahams Ferry Road is forested with no agricultural activities and the resource land to the north contains some minimal agricultural activities and forested land. Most of this farmland is open space owned by Metro. Due to the very limited nature of the agricultural activities occurring on the

adjacent EFU zoned land, the proposed urban uses would be compatible with nearby agricultural activities occurring on farm land outside the UGB.



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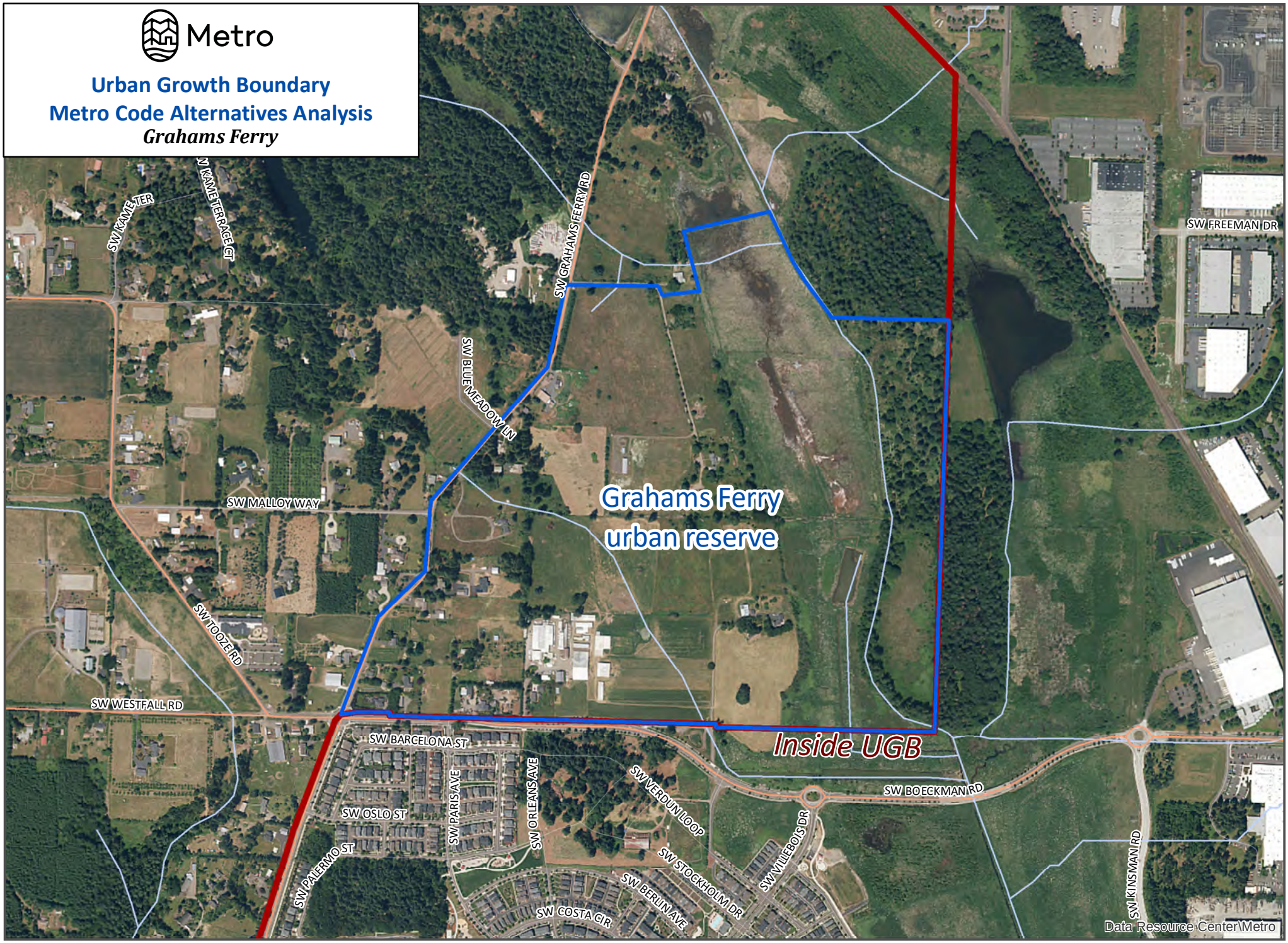
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Grahams Ferry



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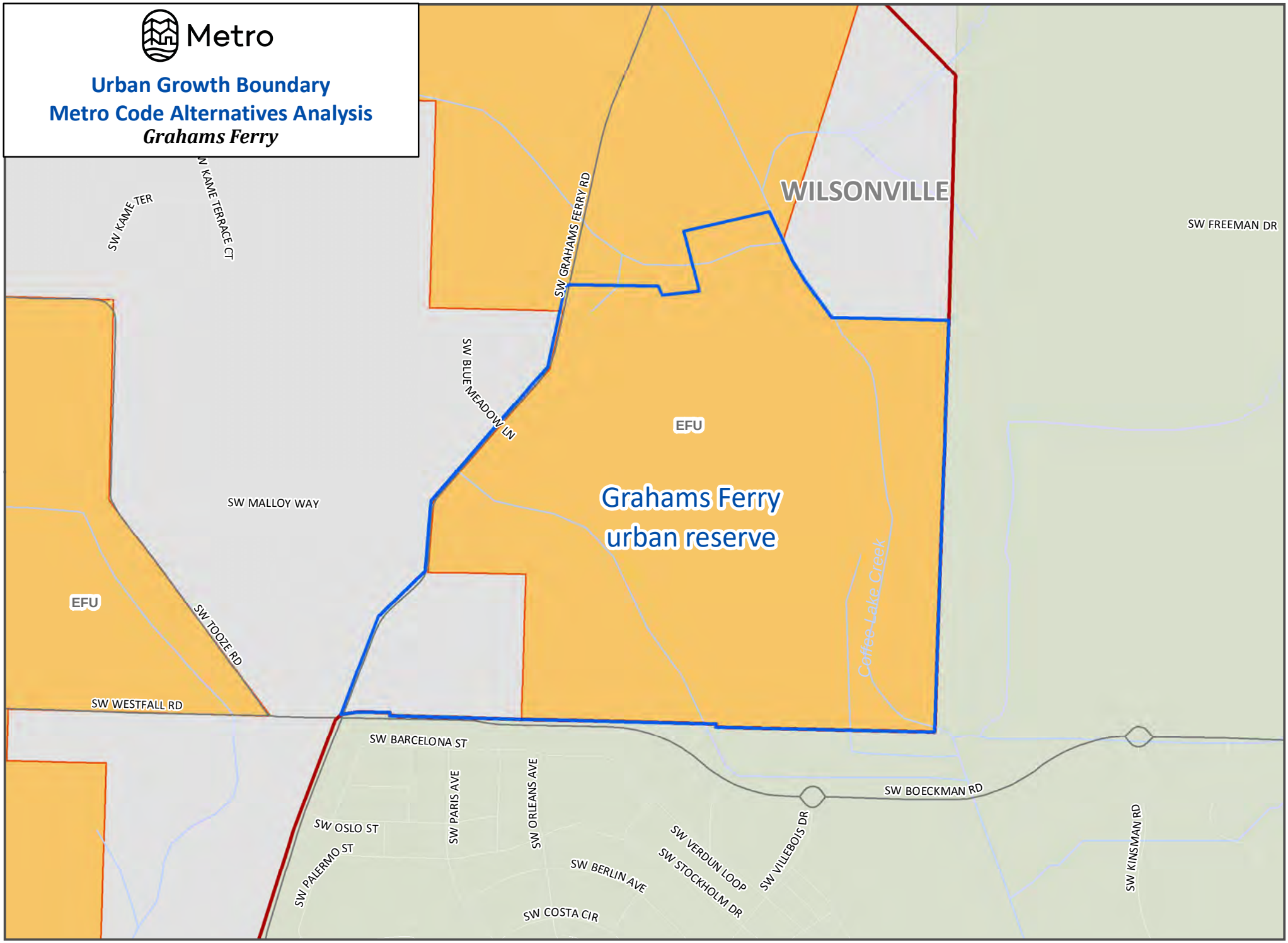
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Grahams Ferry



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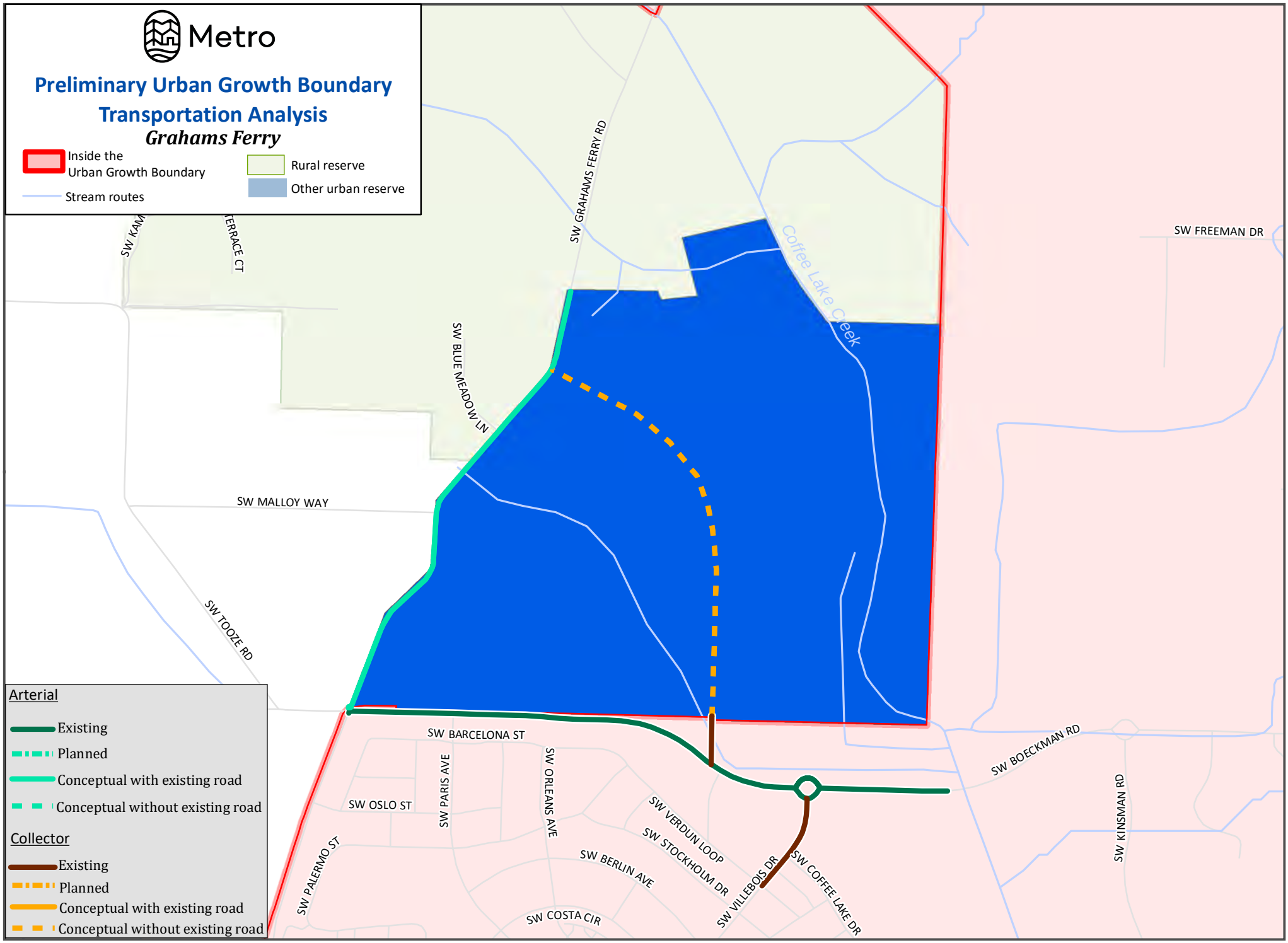

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GRESHAM EAST URBAN RESERVE AREA

Total Acres	857	Parcel Acres	802
Gross Vacant Buildable Acres	571	Net Vacant Buildable Acres	434

General Description (see attached map)

The Gresham East Urban Reserve is a boot-shaped area in Multnomah County totaling 857 acres. The area is bounded by SE Lusted Road to the north, SE 302nd Avenue to the east and Johnson Creek to the south. Metro's current UGB forms the western edge. The urban reserve area is served by SE Lusted Road in the north, SE 282nd and SE 302nd Avenues running north-south and by SE Orient Drive in the southern portion of the area. It is primarily flat, with all slopes over 25% occurring in the riparian areas of three of the four drainages that flow west through the area.

Parcelization and Development Pattern (see attached aerial photo)

The urban reserve contains 228 parcels, the vast majority of which are relatively small with 82% five acres or less. Only three parcels are greater than 20 acres with the largest being 50 acres owned by the East Multnomah County Soil and Water District. One hundred and ninety-nine of the parcels have improvements. There are two school sites within the area that contain three schools: Sam Barlow High School in the northeastern corner of the area and East Orient Elementary School and West Orient Middle School in the southeast, totaling about 62 acres. The area also contains a City of Gresham water pump station. The area is predominantly in agriculture use intermixed with some rural residential pockets and commercial land uses primarily along SE Dodge Park, SE Powell Valley Road, and SE Orient Drive. Available data does not suggest the existence of power lines or other public easements within this urban reserve.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

Four stream corridors divide this fairly large reserve area into smaller segments, some of which are mostly agricultural land and others that are mainly developed with residences and school facilities. Limited commercial or employment development may be appropriate in some areas such as in the vicinity of SE Powell Valley Road, SE Dodge Park Blvd., and SE Orient Drive, whereas more significant residential development could occur on the agricultural lands. Some of the agricultural lands could also provide employment capacity, especially those that are closer to Gresham's Springwater Corridor Industrial area. Thus, this area can efficiently accommodate residential and employment land needs.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Gresham's waste water treatment facility, pipe network and pump stations are sized to provide services to the area inside the UGB including the Springwater area which is not yet annexed to the city.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Gresham's sanitary sewer master plan only covers full build out within the current UGB and the waste water treatment plant and pump stations have not been evaluated for their ability to serve areas outside the UGB.

Impacts to existing facilities that serve nearby areas already inside the UGB

Impacts to the existing facilities are unknown at this time as the existing facilities have not been evaluated for their ability to serve areas outside the UGB.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$3.26
12 – 18" pipe (gravity)	$2.24
Force main/bore	$1.36
Pump station	$7.3
Total	**$14.16**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Portland is the primary water source for Gresham. Additionally, Gresham and the Rockwood PUD jointly own and operate a well field. Recent analysis has determined that the City will need additional supply in the future and could negotiate its contract with Portland to purchase more water or develop more wells. Additional treatment facilities will be needed depending on the source and additional storage and pump capacity will be required. The pipe network conveying water is adequately sized and will be extended as needed for development to occur.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Lusted Water District currently services most of the reserve area however the district does not have the capacity to serve at urban densities. Gresham also does not have existing capacity to serve the reserve area. Growth outside of the UGB will add to the need to expand or build new facilities.

The reserve might be servable by the existing reservoir, but it is likely that new storage would need to be developed. Pumps would also need to be constructed to supply water to the new storage facilities. Currently the City has no plans for developing these systems.

Impacts to existing facilities that serve nearby areas already inside the UGB

Additional source, treatment, storage, pump facilities and distribution lines will need to be developed and constructed to serve the reserve area as it is higher in elevation than the existing service area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$6.2
18" and larger	$3.9
Storage/pumping	$5.4
Total	**$15.5**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$9.2
Water quality/detention	$9.27
Total	**$18.47**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways in Gresham have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The following roadways are classified as high injury corridors: NE/SE Kane Drive, NE/NW Division Street, W/E Powell Boulevard, NE/NW Burnside Road, and SE Stark Street.

Transit: TriMet's MAX Light Rail Blue line serves Gresham with nine stops and ten TriMet bus routes also serve the city. Two of the routes are frequent bus routes. Route 84 Powell Valley/Orient Drive which provides weekday rush-hour service between Gresham Central Transit Center and SE 282nd and Orient Drive, briefly touches the urban reserve area at the intersection of SE 282nd and Orient Drive.

Bike: Gresham has a well-defined bike network that consists of a variety of bike facilities including 50 miles of dedicated bike lanes and 20 miles of bikeways such as the Springwater Corridor and the Gresham to Fairview Trail.

Pedestrian: Gresham has a fairly well-defined pedestrian network in its residential neighborhoods although there a few significant pockets of post-war housing where there are no sidewalks. The city's system of multi-use paths provides additional opportunities for longer pedestrian connections throughout the city. The employment and butte areas have less of a pedestrian network.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Currently TriMet Route 84 Powell Valley/Orient Drive provides weekday rush-hour service between Gresham Central Transit Center and SE 282nd and Orient Drive at the edge of the urban reserve area. There is no regular or all-day service near the reserve area.

Bike: There are no bike facilities adjacent to or within the urban reserve area. SE Chase, SE 302nd Ave and SE Short Road are considered helpful connections and SE Lusted Road, SE Dodge Park Blvd and SE Orient Drive are considered bike with caution routes. The Springwater Corridor is just under a mile away.

Pedestrian: One small residential subdivision adjacent to the reserve area has sidewalks on both sides of the street in most the development. Otherwise, there are no existing sidewalks or trails near the urban reserve. The Springwater Corridor is just under a mile away.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Roadways that serve nearby areas inside the UGB will not be impacted by the addition of the urban reserve, apart from the improvement of adjacent facilities to urban standards.

Transit: TriMet transit service will be expanded, see below for details.

Bike: There is one dedicated bike lane on SE Powell Valley Road that may see additional use when the portion of SE Lusted Road within the urban reserve is upgraded to urban standards that includes a bike facility, however there will still be a ½ mile gap between SE Powell Valley Road and the improved SE Lusted Road.

Pedestrian: No existing pedestrian facilities will be impacted by the addition of the urban reserve area. Given the development pattern of the adjacent subdivision with sidewalks there would be no increased pedestrian movement through the subdivision.

Need for new transportation facilities and costs (see attached transportation map)

The portions of SE Lusted Road and SE 282nd Ave that border the reserve area will need to be improved to urban arterial standards. SE 282nd is considered to be a 1/2 street improvement as the property on the west side that is already within the UGB would be responsible for that portion of the roadway. SE Orient Drive would also be improved to urban arterial standards and SE Chase and SE 302nd Ave would be improved to urban collector standards.

Facility Type		
Arterials	Type	Cost (in millions)
	Existing/Improved	$59.01
	Existing/Improved ½	$10.97
Collectors	Type	Cost (in millions)
	Existing/Improved	$42.88
Total		**$112.86**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 45-minute headways for weekdays peak only through a route change to Line 84 with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $208,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There are four streams that flow west through the reserve area. In the north, two tributaries to Beaver Creek have forested riparian habitat areas along most of the stream corridors with some upland habitat area identified near the stream closest to Sam Barlow High School. Similarly, Kelley Creek, which flows through the middle of the reserve area, is entirely within a forested riparian habitat corridor. The fourth small stream in the southern part of the reserve area flows into Johnson Creek which travels through Gresham and Portland to the Willamette River. This stream has less riparian habitat when compared to the other three streams due to it flowing through agricultural lands and appears to be piped in a few locations. No 100-yr floodplains are identified within the study area. There is one small National Wetland Inventory wetland of approximately ¼ acre just south of SE Orient Drive along the Johnson Creek tributary. The proximity of flat, developable land adjacent to all four streams within the urban reserve area indicates potential impact from urbanization of this area, especially if a need for north south transportation connections is identified. The required protection level for streams, wetlands, and habitat areas within the UGB is higher than rural standards and the presence of a significant existing riparian corridor along Kelley Creek and the northern tributaries may help reduce the potential impacts. Required restoration of degraded stream edges, including impacts due to adjacent agricultural activity, will increase the level of protection for the portion of the southern stream that flows through the active farmland. Overall urbanization of this urban reserve area will have a moderate to high impact on the stream corridors and habitat areas depending on needed transportation connections.

Energy, Economic & Social

Most of the parcels in this fairly large urban reserve area are less than five acres in size and 87% have improvements, reflecting the numerous rural residences and some commercial uses focused mainly along the major roadways. It is expected that urbanization of the reserve area will result in new housing or employment uses replacing the existing rural residences or commercial uses. Of the three schools located in the urban reserve, the elementary and middle schools serve the rural area while the third, Sam Barlow High School serves the urban and rural area. Urbanization may enhance the opportunity for Sam Barlow High School to become more of a community focal point, while the elementary and middle schools may be negatively impacted as they are not sized to serve an urban population. At the same time, urbanization may provide the opportunity for these two smaller school facilities to be improved. As this area contains a high number of residences and is close to downtown Gresham, urbanization would be less of an impact on the rural way of life for the current residents compared to areas that are farther away from an urban center. The increased VMT from urbanization of the area would be significantly larger than current levels, although the direct access to the Gresham Regional Center, the Springwater Industrial area, Highway 26, and the Max Light Rail line may reduce the impact compared to other areas that have limited transportation connections to centers or employment areas. There are two main pockets of nursery activity, each approximately 150 acres in size. The loss of the economic impact from these agricultural uses may be considerable; however, the potential economic impact of urbanization on these relatively flat lands will most likely outweigh this loss. There are some noteworthy existing stream buffers that traverse the area. The cost of protecting these well-established linear resources will be small in

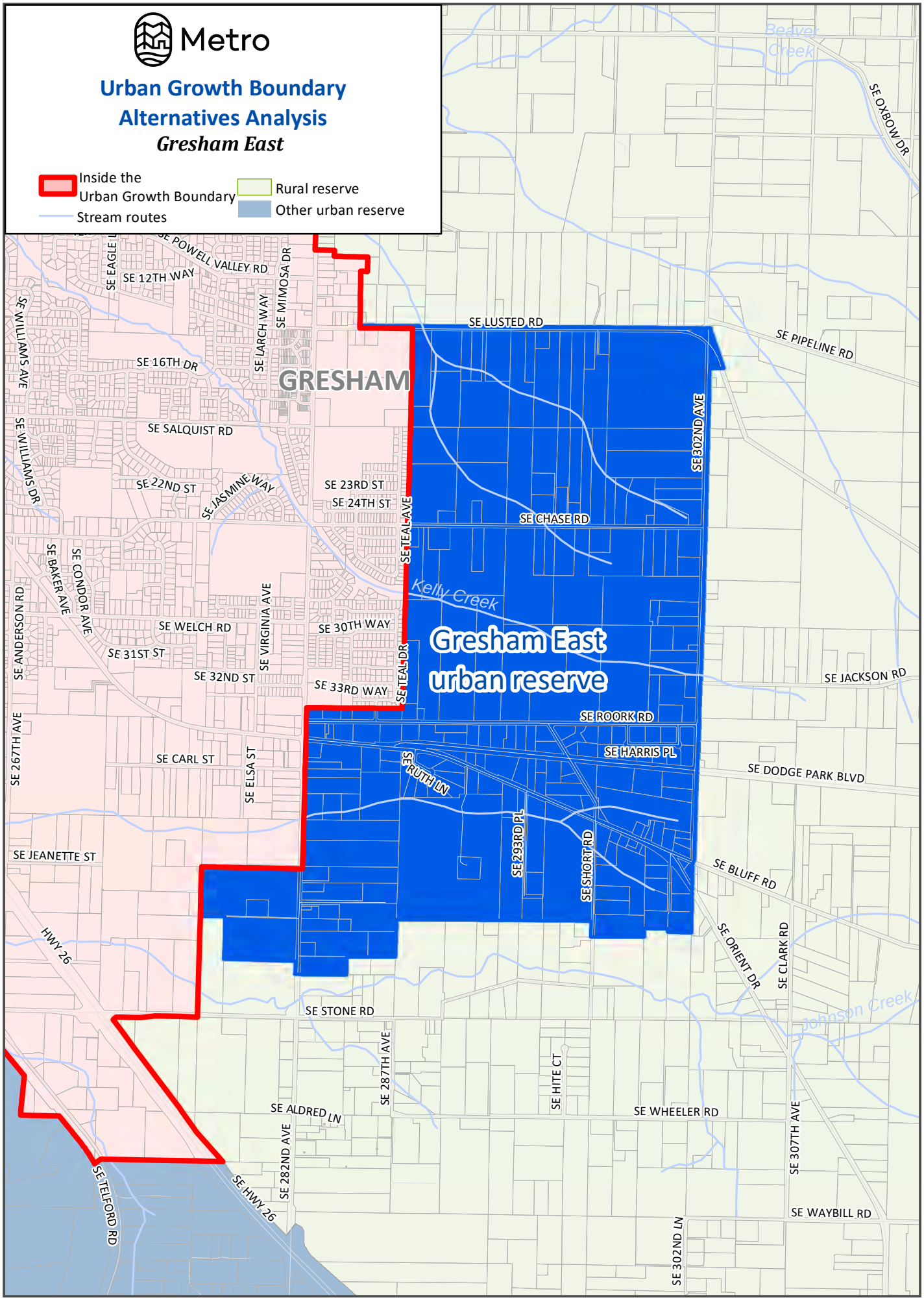
contrast to the potential economic impact of urbanizing the larger areas in between. Overall, this urban reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are three locations where farm and/or forest land is contiguous to the urban reserve area (see attached resource land map). The first location is an extensive block of Exclusive Farm Use (EFU) zoned land that fronts SE 302nd Avenue for 2,500 feet between SE Lusted Road to just north of SE Jackson Road. This pocket of resource land is in agricultural production apart from a couple of rural residences. The proposed urban uses would not be compatible with these agricultural activities as SE 302nd Ave does not provide an adequate buffer between the two uses and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. Mitigation measures could help reduce conflicts between urban uses inside the UGB and agricultural uses outside the UGB.

The second and third locations are EFU zoned land along Johnson Creek at the southern edge of the reserve area. There are two very small pockets (less than 10 acres each) of agricultural activities occurring on the land north of Johnson Creek. A portion of the western pocket is in the same ownership as agricultural land inside the reserve area that would be converted to urban uses once the land is added to the UGB. This small pocket may not be economically viable to continue in agricultural production. Most of the agricultural activity occurs south of Johnson Creek and north of Highway 26 and will not be directly impacted by urban uses in the urban reserve area. Increased traffic along SE Stone Road will probably have some adverse affect, as SE Stone Road provides access to Highway 26. Thus, the proposed urban uses are mostly compatible with the agricultural activities occurring on this farmland except for the one small pocket north of Johnson Creek that will need to be buffered from the urban uses.

Overall, the proposed urban uses have low compatibility with the nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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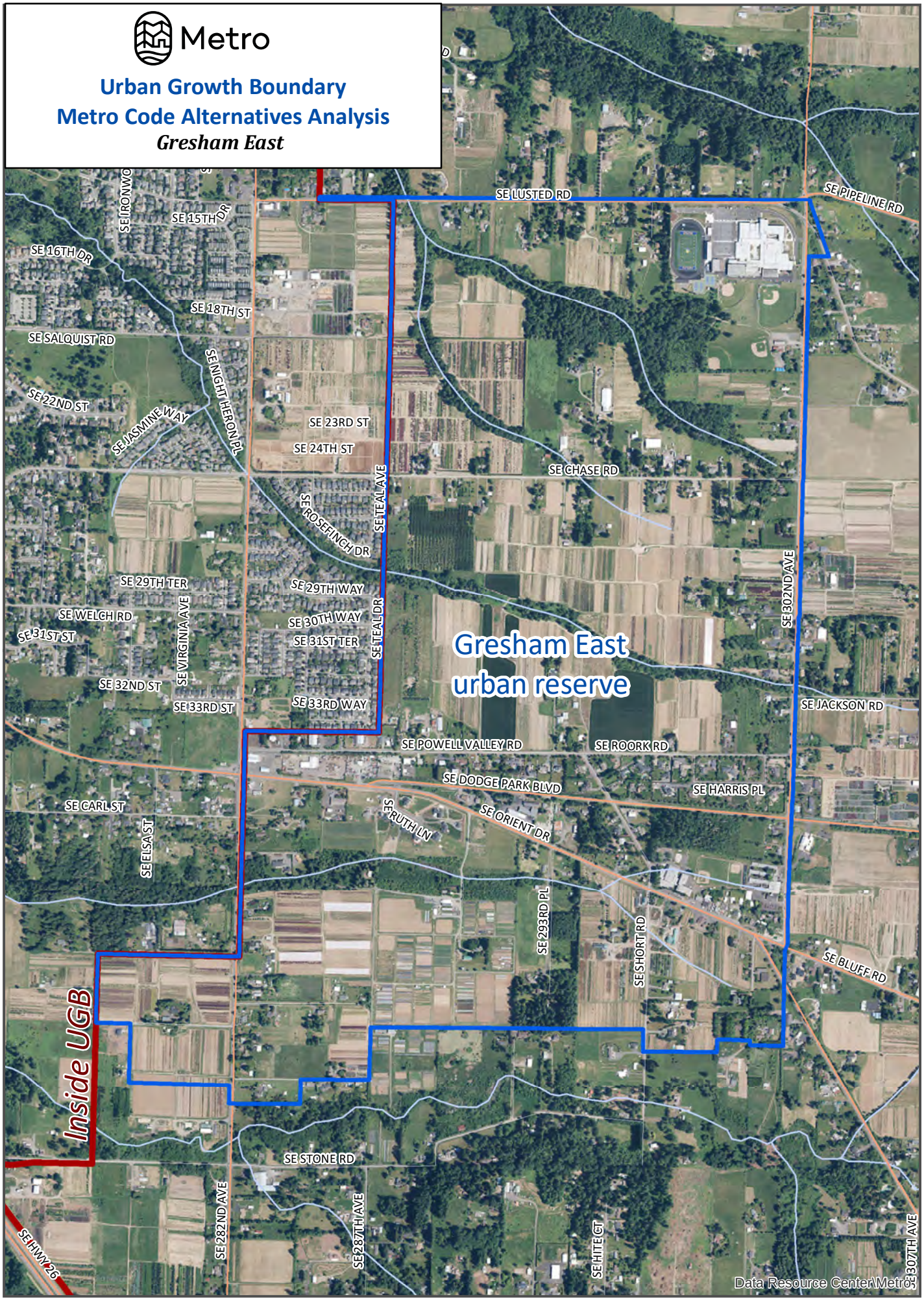
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Gresham East



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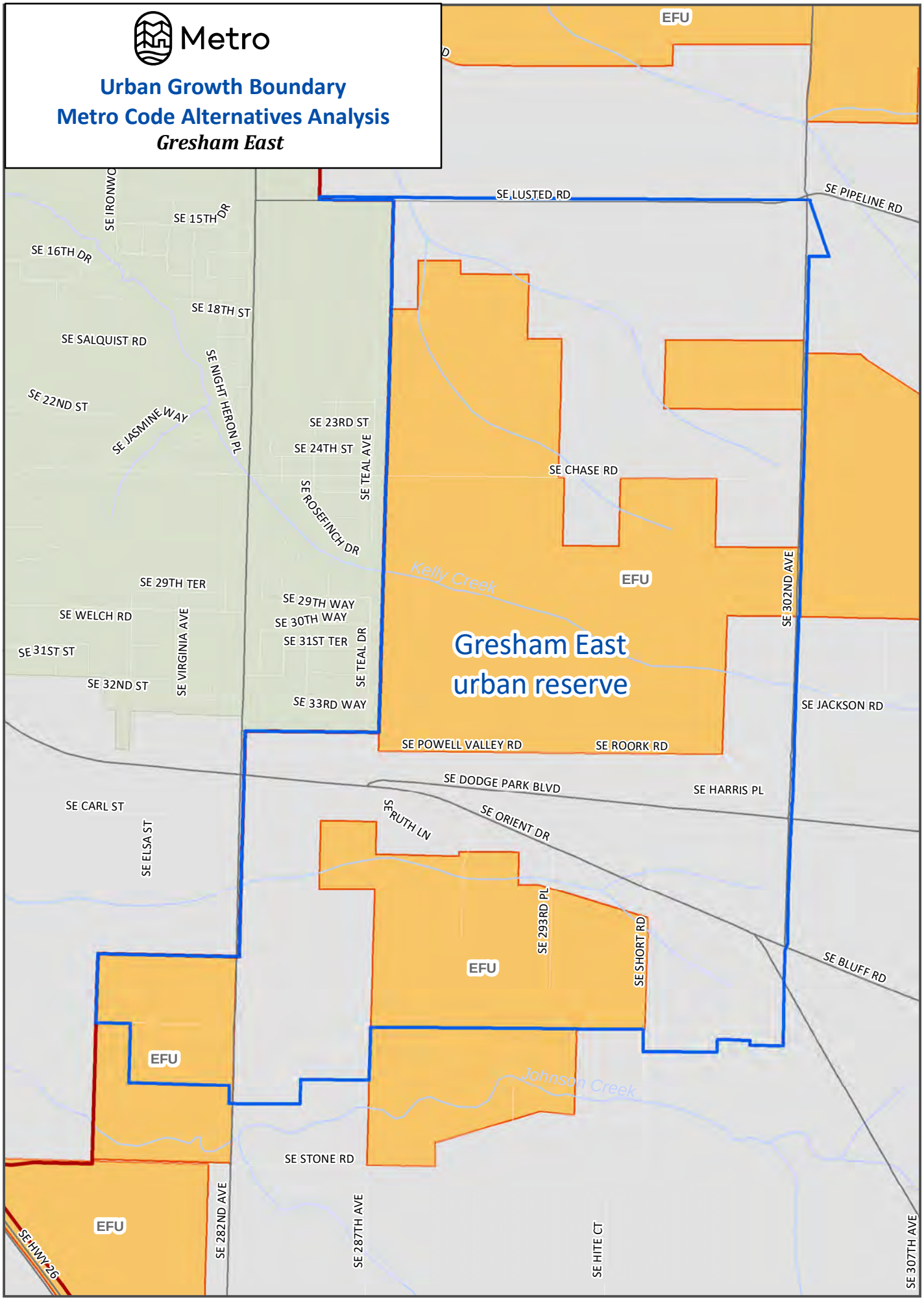

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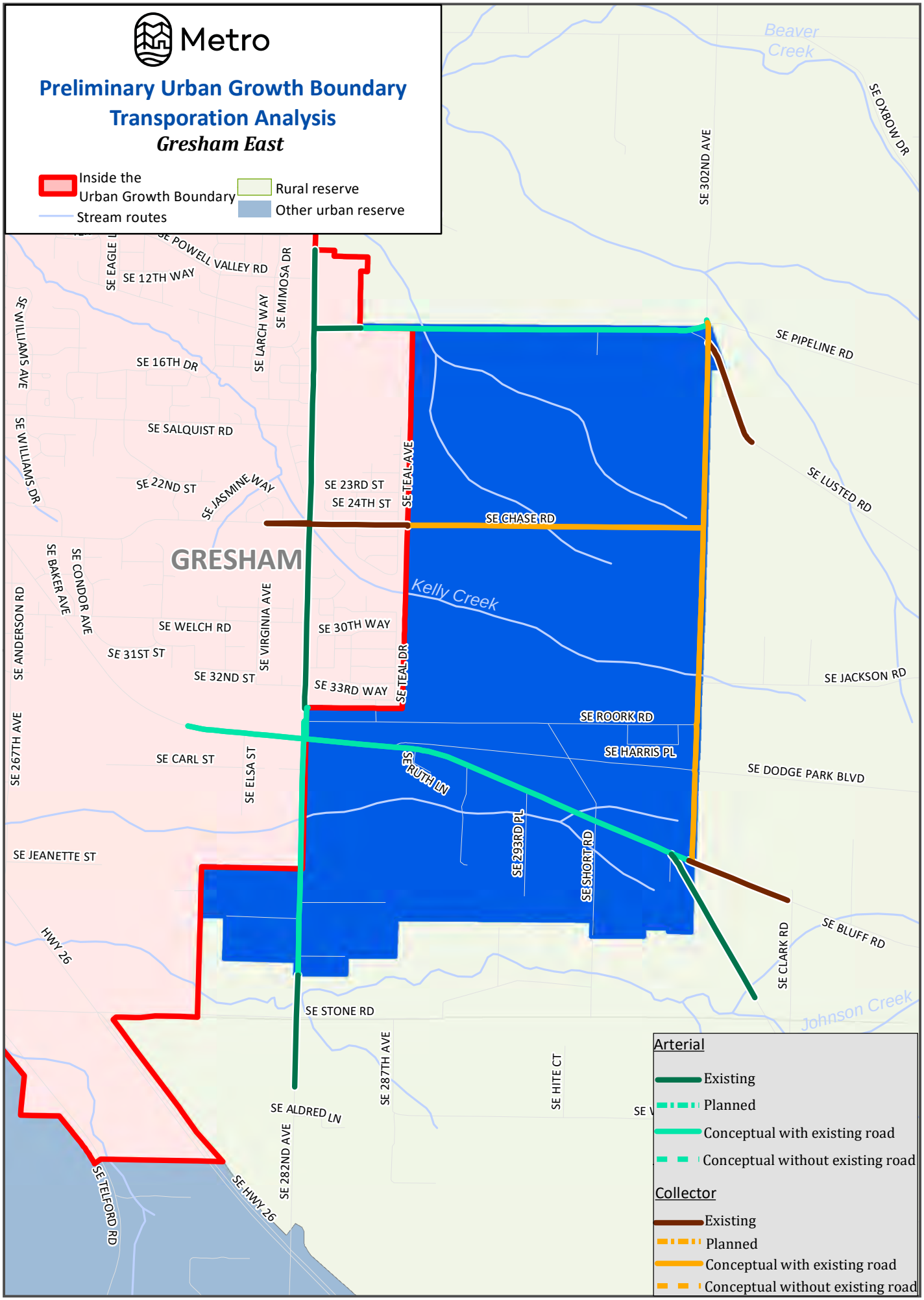

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HENRICI URBAN RESERVE AREA

Total Acres	421	Parcel Acres	395
Gross Vacant Buildable Acres	303	Net Vacant Buildable Acres	230

General Description (see attached map)

The Henrici Urban Reserve Area is a rectangular shaped area on the south side of Oregon City, north and south of S Henrici Road that totals 421 acres in size. The current UGB forms the northern boundary of the area. The area is primarily flat, with the exception of the very western edge of the area and the northeast portion that contains forested steep slopes above Thimble Creek. The area is served by S Henrici Road, S Beavercreek Road and Highway 213. There is one parcel that is separate from the rest of the area located west of Highway 213 in the vicinity of Edgemont Drive

Parcelization and Development Pattern (see attached aerial photo)

This relatively small-sized urban reserve area contains 355 parcels that range in size from less than 1,000 square feet to 17 acres in size. Seventy-five percent of the parcels are less than one acre in size, 14 are greater than five acres and three are greater than ten acres. Overall, 306 of the 355 parcels have improvements. The area is composed mainly of rural residential development, the majority of which are on parcels less than an acre in size with a few locations of very small scale agricultural activity. There are four churches located along S Henrici Road totaling 38 acres. There are two water storage facilities in the area, one owned by the City of Oregon City and the other owned by Clackamas River Water. The Oregon City School District owns three parcels totaling 16.43 acres in the vicinity of S Meadow Ave and S Old Acres Lane. There is a water retention facility owned by the State of Oregon at the corner of S Henrici Road and Highway 213. The Beavercreek Cooperative Telephone Company offices are located along S Henrici Road and the El Paso Natural Gas Co. owns a facility at the corner of Highway 213 and S Henrici Road.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The reserve area is flat with only two locations of slopes greater than 25% located at the edges of the area. While this provides the opportunity for employment possibilities from a topography perspective, the overwhelming number of small parcels and the existing residential development combined with the distance from I-205 reduce the attractiveness of the area for employment use. The existing rural residential development pattern does provide the opportunity for future residential development and the school district's property would provide a focal point for the neighborhood once a school is built. Therefore, this area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Oregon City's Infrastructure Master Plan includes planned improvements and funding necessary to support the expected growth within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities such as wastewater treatment and conveyance. Currently the City is not completing necessary infrastructure planning for growth in the urban reserve areas. Development in the reserve area will include major infrastructure changes and costs for improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Impacts to existing facilities that serve nearby areas already inside the UGB

There will be significant impacts to existing facilities and other necessary facilities will require major improvements. Most of this infrastructure would be built by the development community.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$1.65
Total	**$1.65**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary. Oregon City has recently annexed the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas. Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). CRW has adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 MGD water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. The treatment plant is 50 years old and a pending facility master plan will determine what types of upgrades will be needed in the future. As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the Beavercreek area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW is planning for the urban reserve areas and all of the Henrici reserve area is in CRW. However they will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As reserve areas are included in the UGB, the City intends to serve them. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the reserve area. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban. CRW has more than enough water to serve the reserve area and is expected to build a new storage reservoir within the next few years. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, CRW has water networks in place can serve areas adjacent to them without significant upgrades; however it is not clear that CRW will be the future water provider. There are new storage reservoirs currently planned to serve lands within the existing UGB that are also needed for servicing the Henrici reserve area. These reservoirs will be constructed regardless of the status of reserve area. Oregon City will need to provide new facilities.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
18" and larger	$3.96
Storage/pumping	$2.84
Total	**$6.80**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized. Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$5.84
Water quality/detention	$5.80
Total	**$11.64**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in Oregon City have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) as does most of I-205 in both directions through Oregon City and across the Abernathy Bridge. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0) as does short portions of I-205 through Oregon City. Highway 213 also has a small severely congested section in both directions between Meyers Road and Glen Oak Road.

Molalla Ave from Division Street to Highway 213 and McLoughlin Boulevard from the Clackamas River to I-205 are classified as high injury corridors for automobiles. The Highway 213/Redland Road intersection is classified as a top 5% high injury intersection.

Transit: Four TriMet bus lines serve Oregon City all of which focus on the downtown and central portion of the city along Molalla Ave. Service is provided to Clackamas Community College, but large portions of the city are not served by transit.

Bike: Oregon City has 29 miles of dedicated bike lanes and 3.5 miles of established bikeways with most of them located in the "up-top" section of the city. The Park Place neighborhood is also fairly well served and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as bike with caution streets and the South End neighborhood has minimal bike facilities.

Pedestrian: Downtown Oregon City is well served by sidewalks as is Molalla Ave as it extends to the "up-top" portion of the city. There are a number of pockets of older subdivisions that do not have sidewalks with more recent developments well served by sidewalks.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Beavercreek Road and Highway 213 are the main access ways to the reserve area and both roadways have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak near the

reserve area. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0). Highway 213 has a small section between Meyers Road and Glen Oak Road that has a severely congested volume/capacity ratio (>1.0) in both directions, which is less than a ½ mile from the reserve area.

Transit: TriMet bus lines 32 and 33 provide service to Clackamas Community College which is approximately one mile away. No other bus line provides service near the reserve.

Bike: Beavercreek Road and Highway 213 have dedicated bike lanes that extend to the reserve area and Glen Oak Road, just north of the reserve area, has a dedicated bike lane along most of its length between Beavercreek Road and Highway 213. These bike lanes connect to numerous other bike facilities "up-top".

Pedestrian: The newer subdivisions on the north edge of the reserve area have sidewalks although there are only three connection points to the reserve. Beavercreek Road does not have sidewalks; however the portion of Highway 213 that is closest to the reserve area does have sidewalks. There still is a significant gap along Highway 213 between Conway Drive and Meyers Road, where the trails at Clackamas Community College connect to Highway 213.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Beavercreek Road and Highway 213 are the main access ways to the reserve area. Beavercreek Road has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak and would not be impacted, beyond the need to improve the road to urban standards. The small section of Highway 213 between Meyers Road and Glen Oak Road that has a severely congested volume/capacity ratio (>1.0) in both directions, would be impacted by urbanization of the reserve area. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and would be impacted in the pm peak timeframe.

Transit: TriMet bus lines 32 and 33 would not be impacted by urbanization of the reserve area. See transit analysis below.

Bike: The bike lanes on Beavercreek Road and Highway 213 could see additional use when bike lanes are constructed on the portions of these two roadways within the reserve area. In addition the bike lane on Glen Oak Road would also be expected to see additional use, especially as connections are made to the reserve area from the local streets on the north side. These bike lanes connect to numerous other bike facilities "up-top" and the trails at Clackamas Community College.

Pedestrian: The sidewalk network within the subdivisions on the north edge of the reserve area would be expected to see additional use when the three connection points are improved with sidewalks in the reserve area. Likewise the sidewalks on Highway 213 close to the reserve area would be expected to see more use; however the gap between Conway Drive and Meyers Road, where the trails at Clackamas Community College connect to Highway 213 will reduce some of the expected impact.

Need for new transportation facilities and costs (see attached transportation map)

Highway 213, S Beavercreek Road and S Henrici Road will need to be improved to urban arterial standards. S Meadow Avenue will need to be improved to urban collector standards and four new collectors will be needed to provide necessary street connectivity.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$81.05
Collectors	Type	Cost (in millions)
	Existing/Improved	$2.70
	New	$26.66
Total		**$110.41**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30 minute headways for all day service, seven days a week, by extending line 79 with three additional buses at a capital cost of $1,200,000 (recurs every 16 years). Annual service cost is $1,825,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

A 1,100 foot section of Thimble Creek flows north through the northeast corner of the reserve area. This stream segment is located at the base of a forested slope, some 100 feet below the homes on S Danny Court, which is a built out rural subdivision on a cul-de-sac. Due to development constraints related to steep slopes and the developed nature of these narrow deep lots, this section of Thimble Creek will not be impacted by urbanization of the reserve area. Significant upland habitat has been identified on the forested hillsides that run down to Thimble Creek. The steep slopes in this area would limit the amount of the residential development that can occur, thus protecting the upland habitat.

A second stream flows west through some open land and the rural residential subdivision centered on S Wilshire Circle for approximately 2,600 feet, ultimately joining Beaver Creek outside of the reserve area. The 750 foot portion of the stream that meanders through the middle of open land

west of the rural subdivision is susceptible to impacts from future development, depending on design and roadway connections. The stream segment that is east of the rural subdivision is located on the Evangelical Lutheran Church property and is less susceptible to future impacts as the property is developed. The remaining portion of the stream flows through backyards of developed home sites and would most likely not be further impacted by urbanization of the reserve area. In addition, portions of this segment have already been channelized or possibly piped. Riparian habitat is only identified along the western open land section and required restoration of the riparian corridor would occur as the result of urbanization.

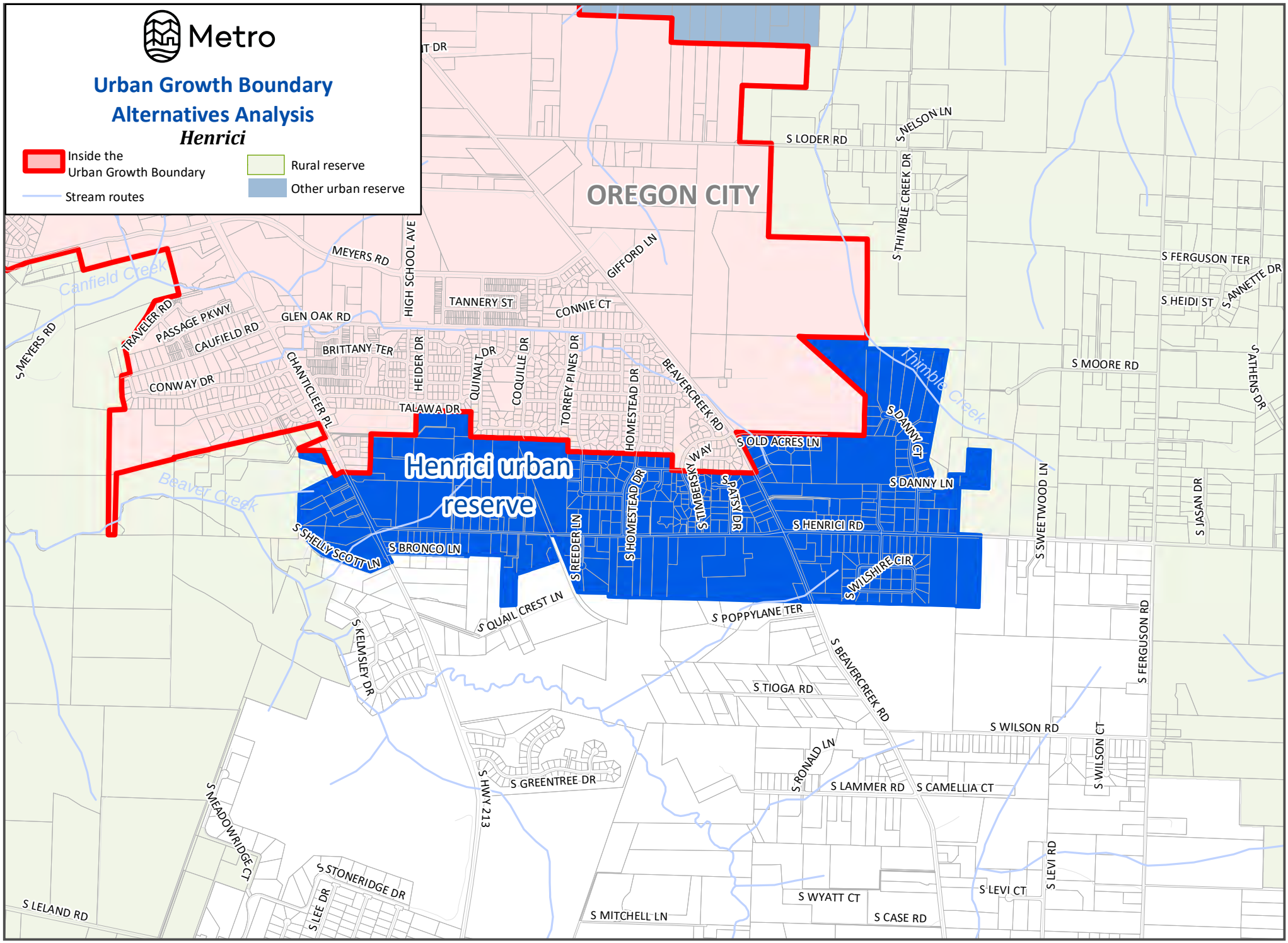
A third stream segment is located in the western portion of the reserve area, east and west of S Highway 213. The stream flows through a forested section of land on the north side of S Henrici Road for approximately 650 feet and appears to drain into the State-owned water retention facility that is located at the intersection of S Henrici Road and S Highway 213. The stream then resurfaces on the west side of S Highway 213 and flows 580 feet through open land to the end of the reserve boundary, ultimately joining Beaver Creek. Both of these stream segments have identified riparian and upland habitat and could be susceptible to limited impacts from urbanization depending on the development pattern and street connection needs. Increased natural resource protection requirements on land inside the UGB will help reduce the overall impacts. There are no inventoried wetlands within the urban reserve area. Overall urbanization of the area could occur with minimal impacts to the stream corridors and the riparian and upland habitat areas.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. As noted a significant portion of this reserve area is developed with single family homes on small rural lots, which is not much different than the pattern of development within the UGB. This existing level of development would slow the redevelopment of the land once brought into the UGB. A few of the larger parcels are owned by the school district and different churches that currently have some level of development on them. Assuming the school property develops as a school facility the amount of potential buildable area is further reduced. This combined with the existing level of development results in a future urban pattern of small neighborhoods that is similar to what is currently there now. Thus, the social impacts to the existing residents regarding a loss of the rural lifestyle would be minimal. S Highway 213 and S Beavercreek Road provide easily accessible connections between the reserve area and the commercial/employment node at the S Highway 213 and S Beavercreek Road intersection and any additional development would increase the amount of traffic that occurs on these two roadways. However, given the modest amount of development that would occur, the overall increase in traffic would not be great and would not significantly increase VMT for the area or have significant energy consequences. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would be negligeable and the potential economic impact of residential urbanization, even though it is not significant will outweigh this loss. Overall this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are two locations where farm or forest land is contiguous to the urban reserve area. The first area consists of one parcel at the northeast corner of the reserve area, north of S Danny Court that is zoned for timber use (TBR). This 27 acre parcel is located on the far side of Thimble Creek. The adjacent parcels inside the reserve area are currently built upon with little to no additional development expected due to the steep slope that runs down to Thimble Creek. Thus the proposed urban use will not impact any forest activities that occur on this adjacent forest land outside the UGB. The second location is along the western edge of the reserve area, west of S Highway 213 and is also zoned TBR. This small block of forest land includes a few rural residences and the land slopes down to Beaver Creek. Any future development of the reserve area would be at the top of the hill, away from any timber activities. The likely hood of timber harvesting is small given the residences and streamside protection requirements along Beaver Creek. Thus the proposed urban uses would be compatible with nearby forest activities in this location. Overall, the proposed urban uses have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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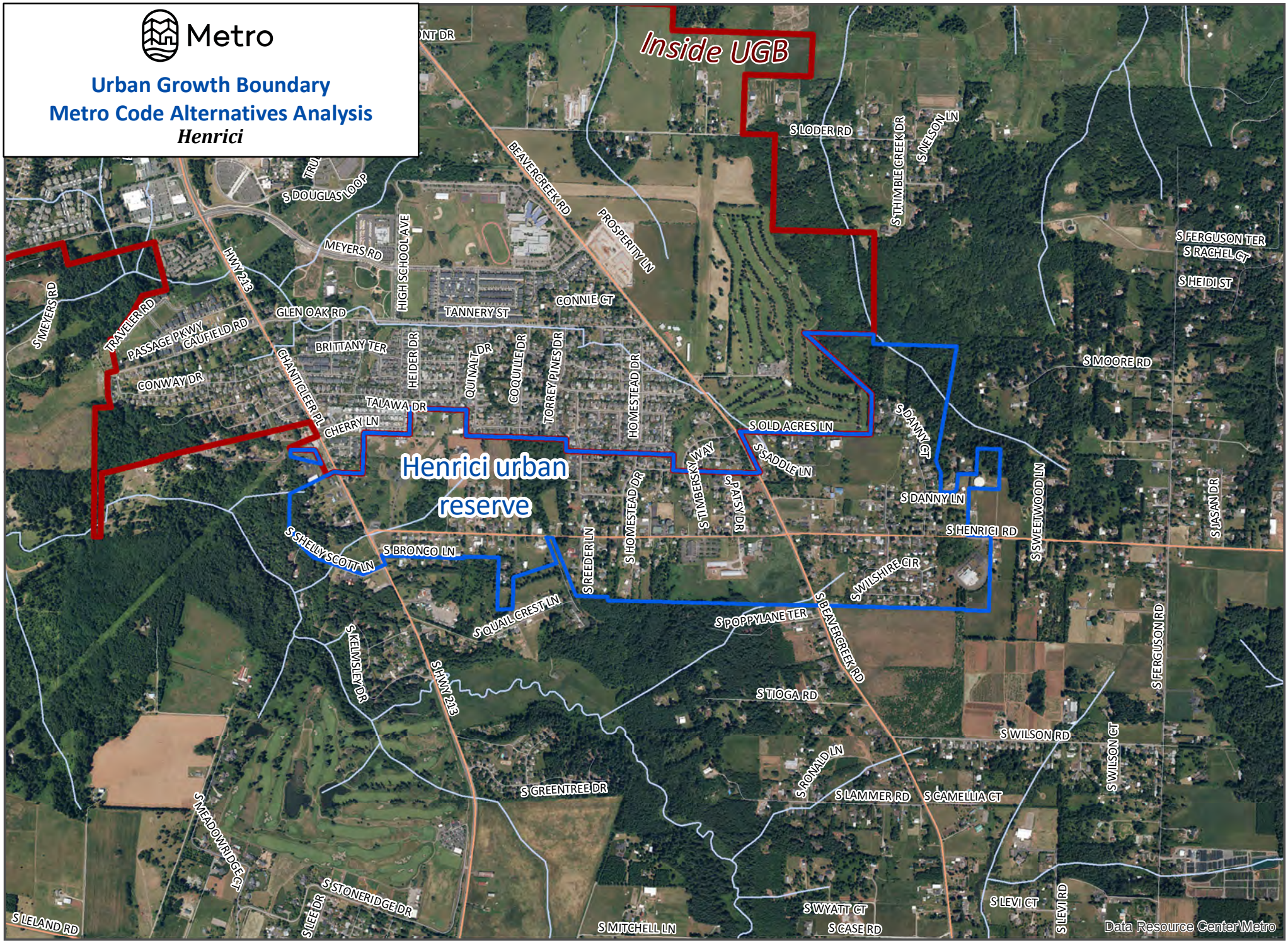
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Henrici



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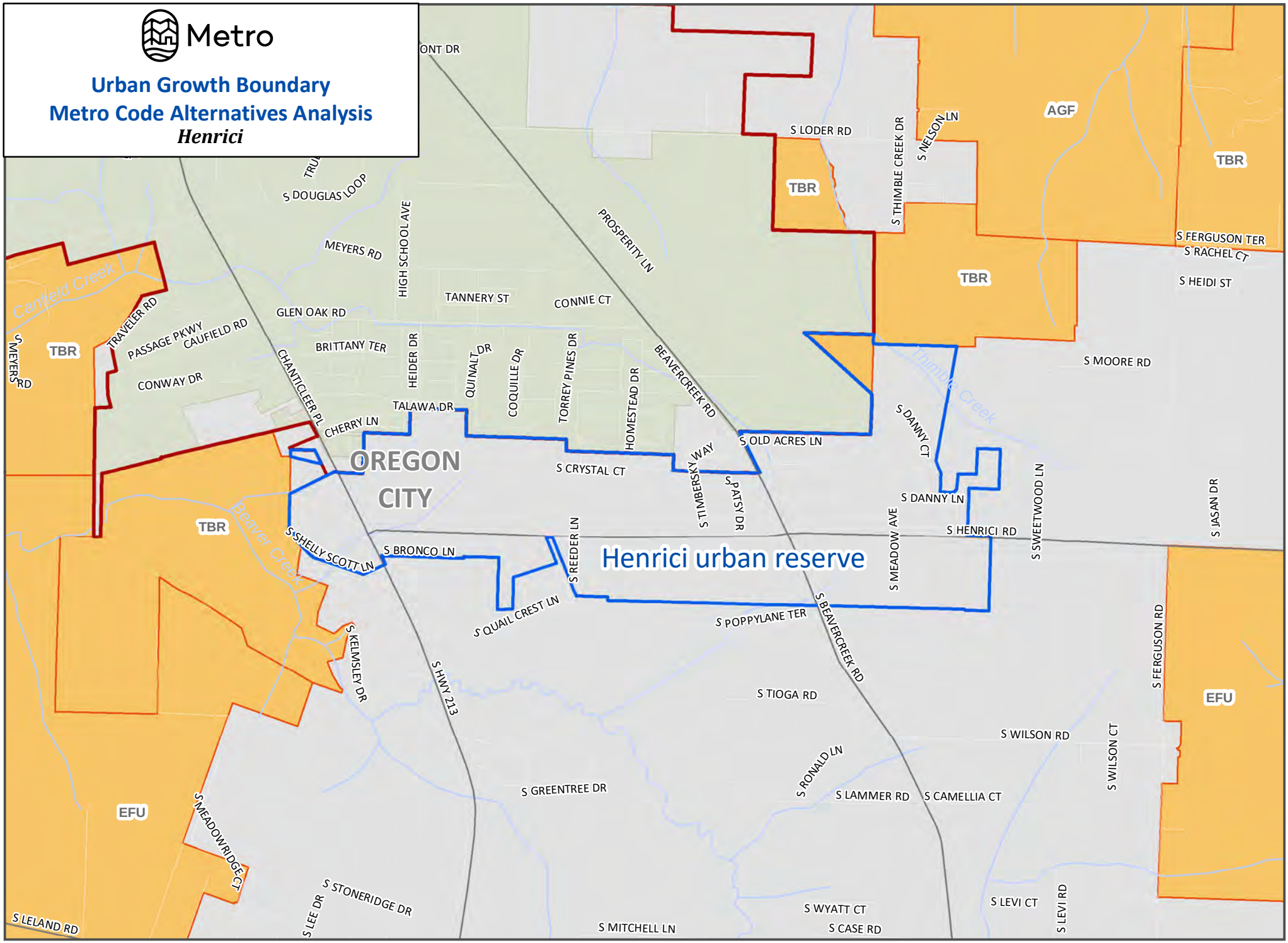

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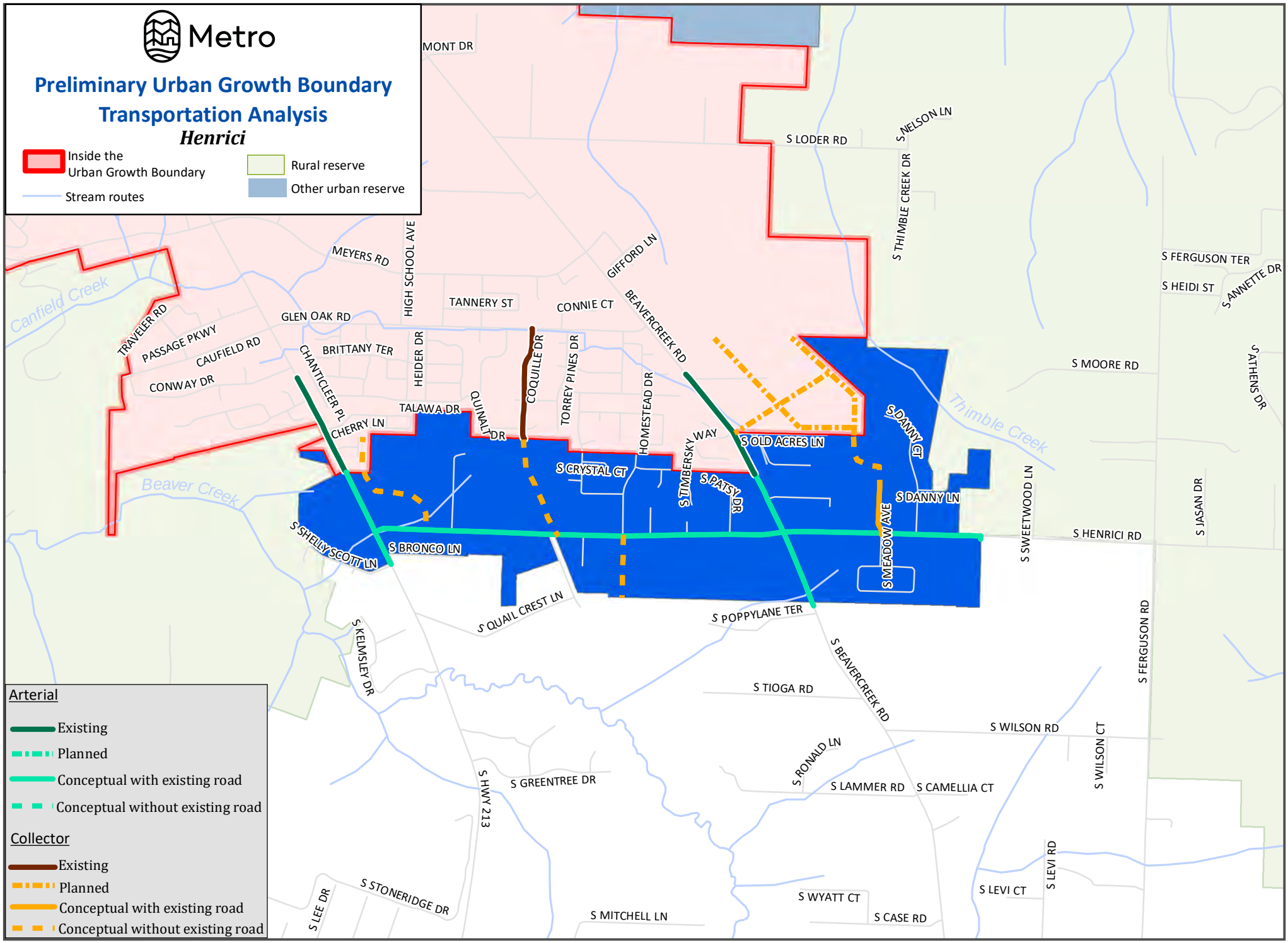

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HOLCOMB URBAN RESERVE AREA

Total Acres	318	Parcel Acres	309
Gross Vacant Buildable Acres	211	Net Vacant Buildable Acres	160

General Description (see attached map)

The Holcomb Urban Reserve Area is an irregular shaped area on the east side of Oregon City, north and south of S Holcomb Boulevard and is 318 acres in size. It is served by S Holcomb Boulevard with S Kraeft Road, S Stoltz Road and S Hilltop Road providing access to existing pockets of rural residences. The area is a mix of forested parcels and very minor agricultural activities intermixed with rural residences. The area north of S Holcomb Boulevard is generally flat and represents the high point, dropping 350 feet in elevation from S Holcomb Boulevard to the southern edge of the reserve area. A tributary of Holcomb Creek flows south through the lower portion of the reserve area, joining Holcomb Creek south of S Redland Road.

Parcelization and Development Pattern (see attached aerial photo)

This somewhat small urban reserve area contains 95 parcels that range in size from a third of an acre to 44 acres. Eighty-three percent of the parcels are five acres or less in size and only two are greater than 20 acres. Overall, 88 of the 95 parcels have improvements. The area is mainly composed of rural residential development with a very minimal amount agricultural activity. A Clackamas River Water District storage facility is located at the high point of the urban reserve, north of S Holcomb Boulevard, and Clackamas County owns one parcel (0.36 acres).

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The portion of the urban reserve north of S Holcomb Boulevard contains the most flat and unconstrained land, is the high point of the area and could accommodate both residential and employment uses from a topographic perspective. However, employment use in this portion of the area would not make sense due to the somewhat isolated nature of the area up on the hill, only one access point along S Holcomb Boulevard which is a two-lane road through an existing urban residential area and the distance from the existing employment centers of Oregon City and I-205. A significant portion of the land south of S Holcomb Boulevard has slopes greater than 10% that would limit development opportunities for employment uses. Therefore, this area can efficiently accommodate residential land needs.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Oregon City's Infrastructure Master Plan includes planned improvements and funding necessary to support the expected growth within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities such as wastewater treatment and conveyance. The area has topographic challenges which seem difficult to overcome and the infrastructure would be an expensive endeavor. Currently the City is not completing necessary infrastructure planning for growth in the urban reserve areas. Development in the reserve area will include major infrastructure changes and costs for improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Impacts to existing facilities that serve nearby areas already inside the UGB

There will be significant impacts to existing facilities and other necessary facilities will require major construction in sensitive (landslide prone) areas. Most of this infrastructure would be built by the development community.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$0.97
12 – 18 " pipe (gravity)	$1.43
Total	**$2.41**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary. Oregon City has recently annexed the Beavercreek UGB expansion are to the southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas. Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). CRW has adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 MGD water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. The treatment plant is 50 years old, and a pending facility master plan will determine what types of upgrades will be needed in the future. As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2- or 2.5-million-gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the Beavercreek area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW is planning for the urban reserve areas and all the Holcomb reserve area is in CRW. However, they will not likely be the service provider in the future. Oregon City has the general policy that they will serve all the lands within the UGB. As reserve areas are included in the UGB, the city intends to serve them. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the reserve area. There would be an exception for facilities that are needed to go beyond the area in question such as large-scale transmission lines. Accordingly, CRW, like many service providers must be cautious about investing in improvements for the rural areas that may become urban. CRW has more than enough water to serve the urban reserve area and is expected to build a new storage reservoir within the next few years. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, CRW has water networks in place that can serve the reserve area without significant upgrades; however, it is not clear that CRW will be the future water provider. There are new storage reservoirs currently planned to serve lands within the existing UGB that are also needed for servicing the Holcomb reserve area. These reservoirs will be constructed regardless of the status of reserve area. Oregon City will need to provide new facilities.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$1.58
18" and larger	$2.92
Storage/pumping	$2.07
Total	**$6.57**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized. Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$2.71
Water quality/detention	$2.63
Total	**$5.34**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in Oregon City have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) as does most of I-205 in both directions through Oregon City and across the Abernathy Bridge. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0) as does short portions of I-205 through Oregon City. Highway 213 also has a small severely congested section in both directions between Meyers Road and Glen Oak Road

Molalla Ave from Division Street to Highway 213 and McLoughlin Boulevard from the Clackamas River to I-205 are classified as high injury corridors for automobiles. The Highway 213/Redland Road intersection is classified as a top 5% high injury intersection.

Transit: Four TriMet bus lines serve Oregon City all of which focus on the downtown and central portion of the city along Molalla Ave. Service is provided to Clackamas Community College, but large portions of the city are not served by transit.

Bike: Oregon City has 29 miles of dedicated bike lanes and 3.5 miles of established bikeways with most of them located in the "up-top" section of the city. The Park Place neighborhood is also fairly well served, and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as bike with caution streets and the South End neighborhood has minimal bike facilities.

Pedestrian: Downtown Oregon City is well served by sidewalks as is Molalla Ave as it extends to the "up-top" portion of the city. There are several pockets of older subdivisions that do not have sidewalks with more recent developments well served by sidewalks.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: S Holcomb Blvd, the main access way to the reserve area has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and a short section of

southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0).

Transit: TriMet bus line 154 provides service on S Holcomb Blvd to within ¾ of a mile of the reserve area. No other bus line provides service near the reserve.

Bike: Holcomb Blvd has a dedicated bike lane that ends just shy of ¾ of a mile from the reserve area. The remainder of Holcomb Blvd is classified as a bike with caution street. No other bike facilities are located near the reserve area.

Pedestrian: The adjacent residential subdivisions within the city that are north of Holcomb Blvd have sidewalks that extend to the reserve boundary. Portions of Holcomb Blvd. also has sidewalks. There are no trails that serve or connect to the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Holcomb Blvd, the main access way to the reserve area has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0). Both roadways would be impacted by urbanization of the reserve area. Those portions of Holcomb Blvd currently in the UGB that are not up to urban standards should be improved prior to urbanization of the reserve area.

Transit: TriMet bus line 154 should be extended on S Holcomb Blvd to the reserve area. See transit analysis below.

Bike: The dedicated bike lane on Holcomb Blvd would see additional use if it were extended to the reserve area. No other bike facilities are located near the reserve area.

Pedestrian: The sidewalks in the adjacent residential neighborhoods would most likely see additional use if the reserve area were urbanized. The portions of S Holcomb Blvd that currently do have sidewalks would most likely see additional use, especially if the sidewalk gaps were completed.

Need for new transportation facilities and costs (see attached transportation map)

S Holcomb Blvd would need to be improved to urban arterial standards. S Edenwild Lane and S Kraefft Road which currently are private streets would need to be public streets and improved to urban collector standards. S Hilltop Road would need to be improved to urban collector standards and three new collectors would be needed to provide necessary street connectivity.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$13.80
Collectors	Type	Cost (in millions)
	Private/Improved	$15.68
	Existing/Improved	$6.90
	New	$32.87
Total		**$69.25**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 60-minute headways for weekdays only by extending line 154 with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $416,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

A tributary to Holcomb Creek flows south through the lower portion of the reserve area for just shy of a half mile, mostly through an intact riparian habitat corridor. The stream is in a fairly steep portion of the reserve area where most of the slopes are greater than 25%, limiting potential development near the stream. There are some significant locations of riparian and upland habitat identified in the lower portion of the area, although most of it is also located on slopes greater than 25% which would limit the amount of urbanization that could occur. Overall urbanization of the area could occur with minimal impacts to the stream corridor and most of the upland habitat areas due to topography that limits development opportunities. Future east-west transportation connections in this lower area could impact the natural resources if extended across the stream corridor.

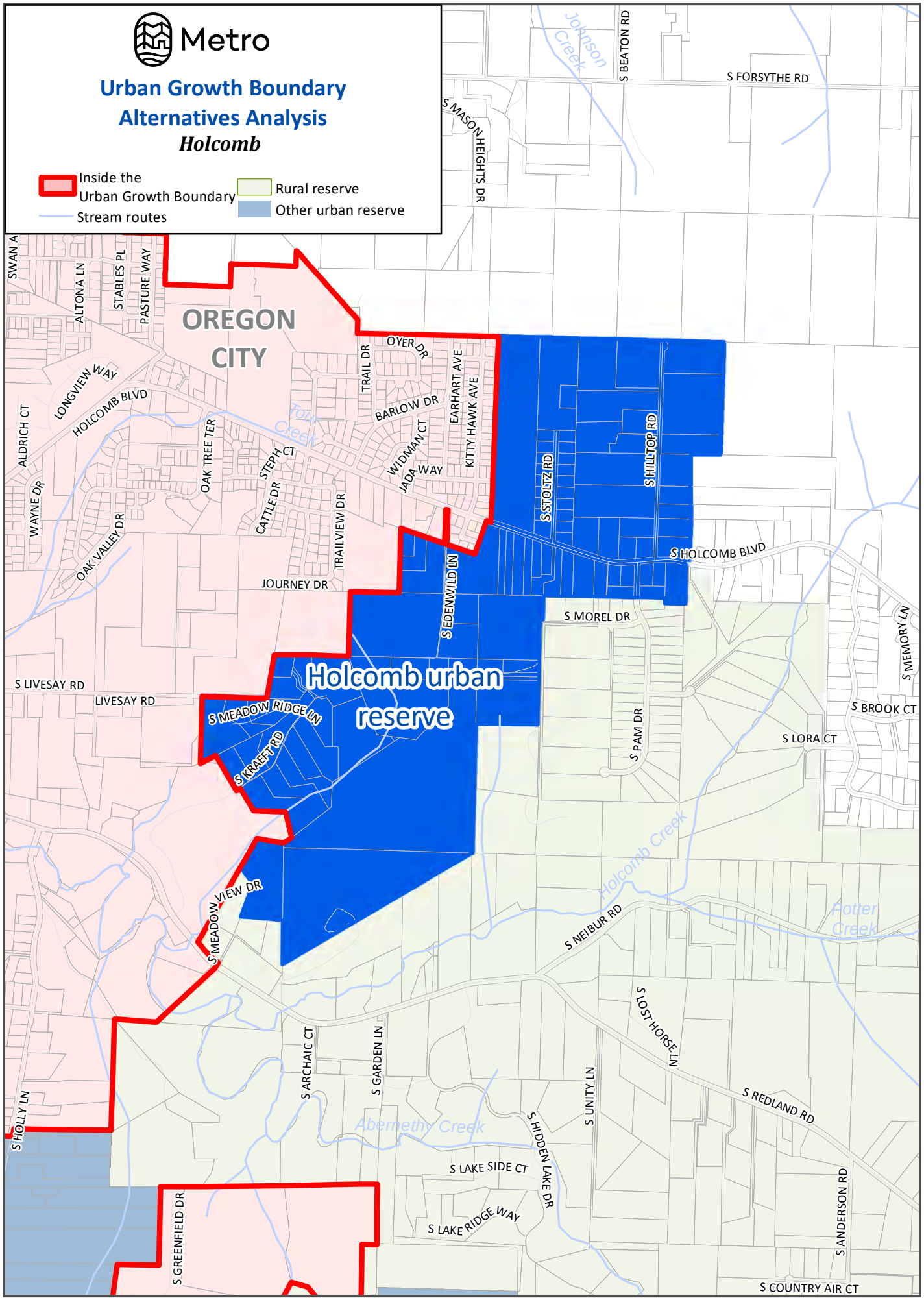
Energy, Economic & Social

This urban reserve area is mostly in rural residential development with very minor agricultural activities. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. The steep slopes that divide the area south of S Holcomb Road are forested and provide separation between residential areas and agricultural activities. The existing rural residences along S Kraeft Road are all high value homes; this combined with topographic constraints and limited transportation connections may result in a slow transformation to new

development. Thus, the social impacts of losing the rural lifestyle for these residents would be minor. Urbanization of the agricultural area in the southern portion of the reserve could result in some significant residential development. This development would be separated from the remainder of the area by the steep slopes that divide the area. This portion of the urban reserve does not extend to S Redland Road and any future connection would travel through a rural reserve, thereby limiting the potential capacity of the transportation connection. Urbanization of this area would not greatly impact the existing residences based on the limited number of new housing units. The area around S Holcomb Boulevard is currently developed with close to 50 residences, including homes on 20,000 square foot lots along S Stoltz Road. Even though additional development will occur in this location if the reserve urbanizes, the social impact to exiting residences will be less due to the current development pattern that is like a suburban development pattern. The agricultural activity within the reserve area is minimal and generally isolated from the developed portions of the reserve. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential urbanization, even though it is not significant will outweigh this loss. Access to the area would remain the same and the increased VMT from urbanization of the area would be greater than current levels, but not overwhelming given the constraints for high levels of future development. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are two locations where farm and/or forest land is contiguous to the urban reserve area. The first location is a small block of exclusive farm use (EFU) land at the northern edge of the reserve area at the end of S Hilltop Road. There are very minor agricultural activities occurring on one parcel, consisting of pastureland and an orchard, associated with a large rural residence. This parcel is accessed by S Hilltop Road which could see additional traffic if the area urbanized, although the movement of farm equipment from these limited agricultural activities would be minor and not impacted by additional traffic. The second location is a small block of timber (TBR) zoned land along the northeast corner of the reserve area that consists of three adjacent parcels. Two of the parcels contain fairly large homes surrounded by forest. Due to the location of the homes, the prospect of forest activities occurring is small. The third parcel is 30 acres in size and slopes away from the reserve area. It does not contain any structures, is divided by a power line, and appears to have been harvested recently. Urbanization of the reserve area would be compatible with any future forest activities occurring on this parcel due to the change in elevation. Access to this parcel is by S Hilltop Road and urbanization of the area may make future access to the forest lands for machinery and trucks slightly more difficult. Overall, the nearby agricultural and forest activities occurring on farm and forest land would not be impacted by urbanization of the reserve area. Thus, the proposed urban uses have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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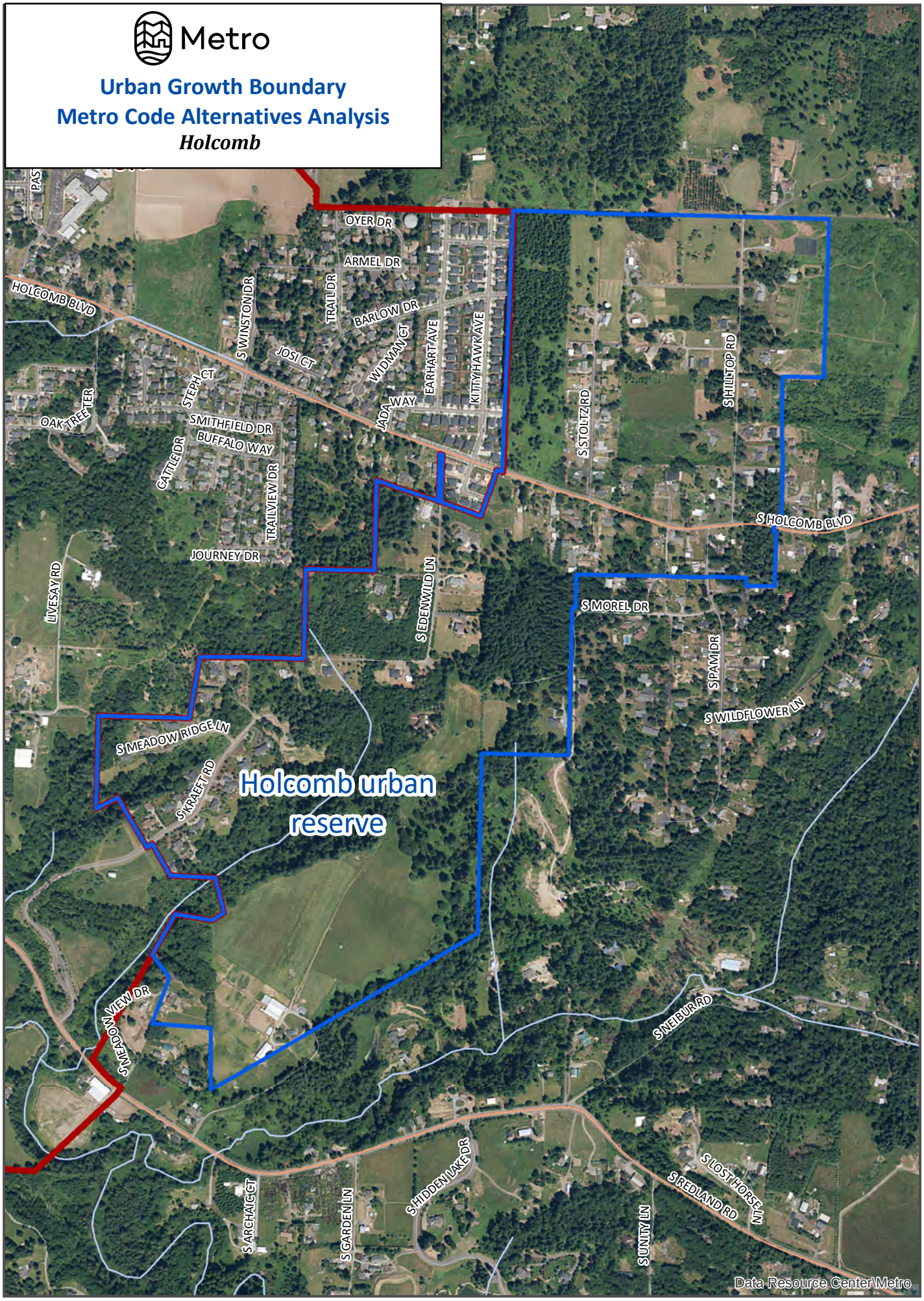
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Holcomb



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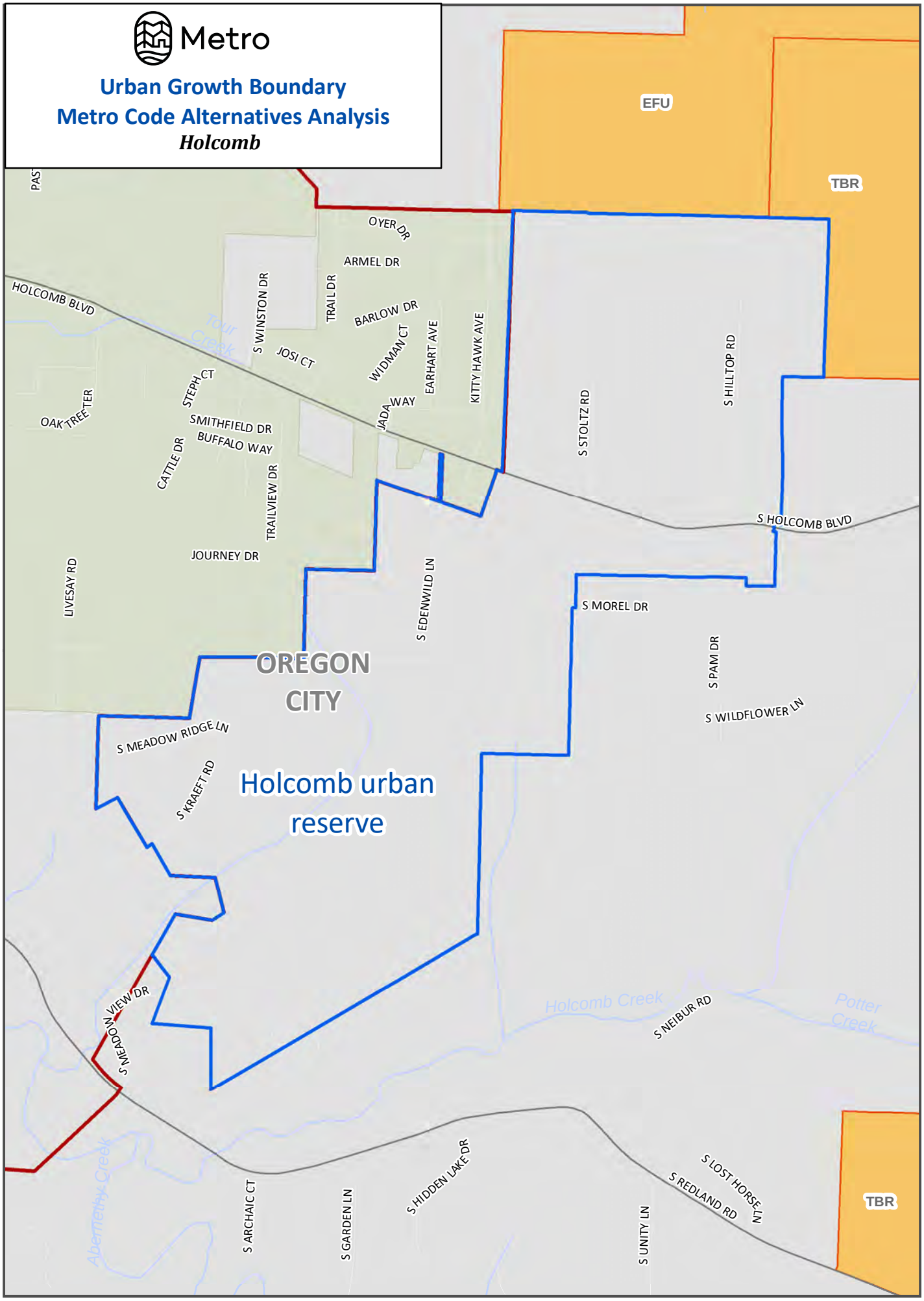

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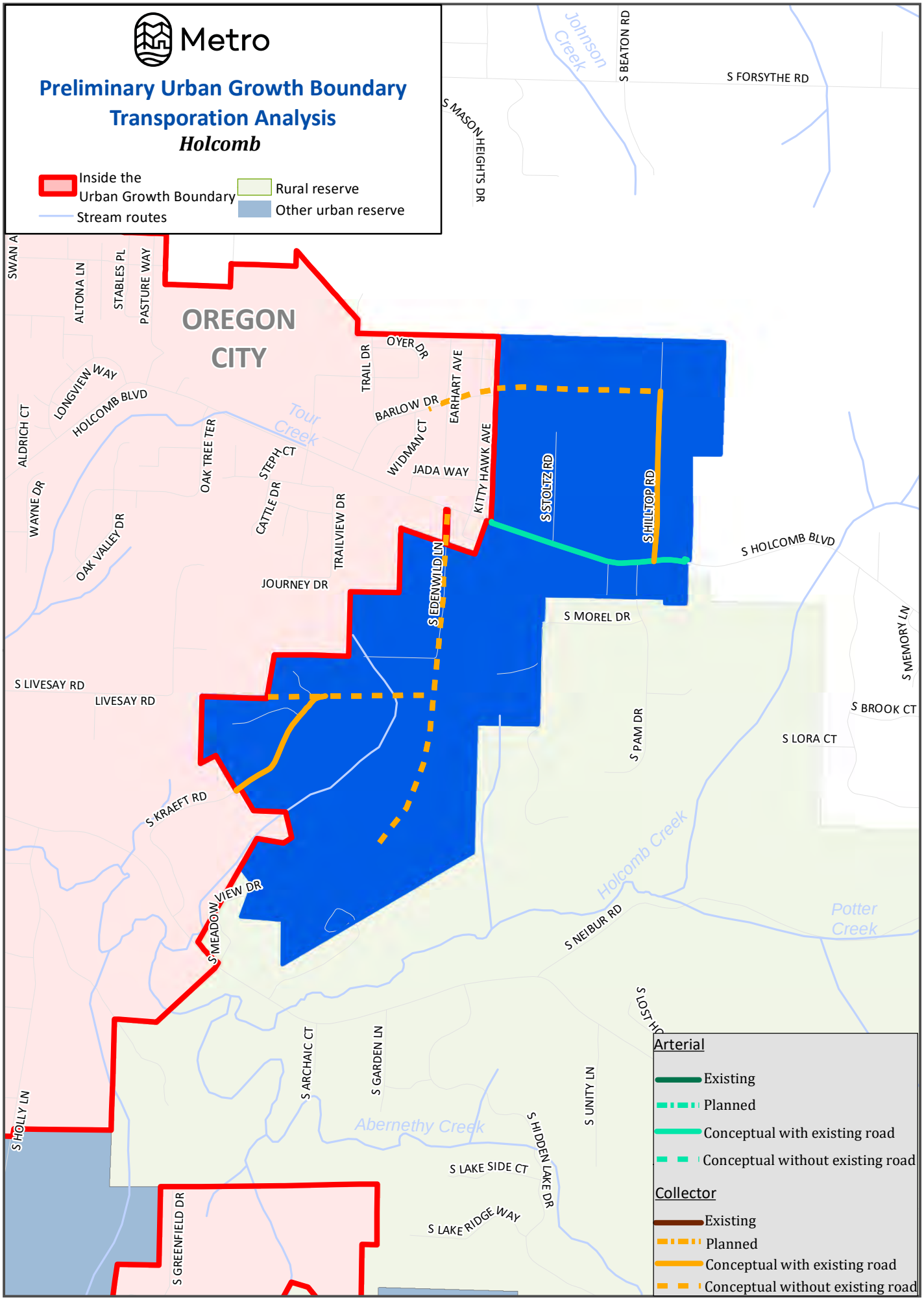

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HOLLY LANE/NEWELL CREEK CANYON URBAN RESERVE AREA

Total Acres	696	Parcel Acres	591
Gross Vacant Buildable Acres	180	Net Vacant Buildable Acres	137

General Description (see attached map)

The Holly Lane/Newell Creek Urban Reserve Area is an irregular shaped area on the east side of Oregon City that straddles Highway 213 between S Redland Road and Beavercreek Road. The area is steeply sloped on both sides of the highway and is 696 acres in size. The east side of the area is served by S Holly Lane and the west side is served by Division Street and local roads such as Davis Road, 18th Street and Morton Road. This urban reserve area is unique in that it is almost surrounded by land inside the UGB and only shares a 370-yard border with a rural reserve in the northeast corner. The area is a mix of forested parcels on both sides of Highway 213 that are mostly in public ownership and rural residences along S Holly Lane. Newell Creek flows north through the middle of the reserve area, joining Abernethy Creek at the northern edge of the area.

Parcelization and Development Pattern (see attached aerial photo)

This mid-sized urban reserve area contains 155 parcels that range in size from a tenth of an acre to over 61 acres in size. Seventy-eight percent of the parcels are five acres or less with half of those being less than one acre. Only eight parcels are greater than ten acres. Overall, 100 of the 155 parcels have improvements. A significant portion of the area, 203 acres, is land owned by Metro that is part of the larger 236-acre Newell Creek Canyon Nature Park that opened in 2021. The remainder of the area is composed of rural residential development with a few locations of very small-scale agricultural activity and one 61-acre parcel of forested land. Three power lines cross through the southern portion of the urban reserve.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

One-third of the land area of the reserve is in public ownership and off limits for urban development. In essence the entire area is covered by slopes greater than 10% except for portions of some parcels that front onto S Holy Lane, essentially removing employment possibilities. Slopes greater than 25% also cover large swathes of land east of S Holly Lane and in the vicinity of S Alden Street on the west side of the reserve area, reducing residential development opportunities. Generally, development opportunities are limited to the land adjacent to S Holly Lane and some small pockets near Davis Road/18th Street and S Alden Street. Therefore, this area is able to accommodate a small residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Oregon City's Infrastructure Master Plan includes planned improvements and funding necessary to support the expected growth within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities such as wastewater treatment and conveyance. The area has topographic challenges which seem difficult to overcome and the infrastructure would be an expensive endeavor. Currently the City is not completing necessary infrastructure planning for growth in the urban reserve areas. Development in the reserve area will include major infrastructure changes and costs for improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Impacts to existing facilities that serve nearby areas already inside the UGB

There will be significant impacts to existing facilities and other necessary facilities will require major construction in sensitive (landslide prone) areas. Most of this infrastructure would be built by the development community.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$0.31
12 – 18" pipe (gravity)	$2.12
Total	**$2.43**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary. Oregon City has recently annexed the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas. Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). CRW has adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 MGD water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. The treatment plant is 50 years old, and a pending facility master plan will determine what types of upgrades will be needed in the future. As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2-

or 2.5-million-gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the Beavercreek area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW is planning for the urban reserve areas and most of the Holly Lane reserve area is in CRW. However, they will not likely be the service provider in the future. Oregon City has the general policy that they will serve all the lands within the UGB. As reserve areas are included in the UGB, the city intends to serve them. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the reserve area. There would be an exception for facilities that are needed to go beyond the area in question such as large-scale transmission lines. Accordingly, CRW, like many service providers must be cautious about investing in improvements for the rural areas that may become urban. CRW has more than enough water to serve the urban reserve area and is expected to build a new storage reservoir within the next few years. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, there are water networks in place that can serve the reserve area without significant upgrades. There are new storage reservoirs currently planned to serve lands within the existing UGB that are also needed for servicing the Holly Lane reserve area. These reservoirs will be constructed regardless of the status of reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12” and smaller	$4.71
Storage/pumping	$1.82
Total	**$6.53**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized. Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$3.25
Water quality/detention	$3.41
Total	**$6.66**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in Oregon City have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) as does most of I-205 in both directions through Oregon City and across the Abernathy Bridge. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0) as does short portions of I-205 through Oregon City. Highway 213 also has a small severely congested section in both directions between Meyers Road and Glen Oak Road.

Molalla Ave from Division Street to Highway 213 and McLoughlin Boulevard from the Clackamas River to I-205 are classified as high injury corridors for automobiles. The Highway 213/Redland Road intersection is classified as a top 5% high injury intersection.

Transit: Four TriMet bus lines serve Oregon City all of which focus on the downtown and central portion of the city along Molalla Ave. Service is provided to Clackamas Community College, but large portions of the city are not served by transit.

Bike: Oregon City has 29 miles of dedicated bike lanes and 3.5 miles of established bikeways with most of them located in the "up-top" section of the city. The Park Place neighborhood is also fairly well served and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as bike with caution streets and the South End neighborhood has minimal bike facilities.

Pedestrian: Downtown Oregon City is well served by sidewalks as is Molalla Ave as it extends to the "up-top" portion of the city. There are several pockets of older subdivisions that do not have sidewalks with more recent developments well served by sidewalks.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: S Holly Lane, the only north-south route in the reserve area that is the main access way has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak as do the two nearby east - west routes of S Maplelane Road and S Redland Road. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and a short section of

southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0).

Transit: TriMet route 32 skirts a corner of the reserve area along Division Street. Route 32 along with route 33 provide service to Clackamas Community College which is over a mile from the reserve area. The route 32 transit stop at Highway 213 and Beavercreek Road is just over a half mile away from the reserve area. No other bus line provides service near the reserve.

Bike: Highway 213 has dedicated bike lanes however the highway runs through a very steep canyon and a significant portion of the adjacent land is publicly owned by Metro. Near the north end of the reserve area S Redland Road has a dedicated bike lane as does a portion of S Maplelane Road near the south end of the reserve area. S Holly Lane, which connects these two roads, is classified as a bike with caution street. Beavercreek Road also contains a dedicated bike lane which connects to numerous other bike facilities "up-top".

Pedestrian: There are a few nearby subdivision streets that have sidewalks, however none of the streets that serve the reserve area have sidewalks and there are no trails that serve or extend to the reserve area beyond the trails that are within Newell Creek Canyon Nature Park.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: S Holly Lane, which runs north-south route through the reserve area to land within the UGB has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak as do the two nearby east -west routes of S Maplelane Road and S Redland Road. These roads would not be impacted beyond on the need to improve the roadways to urban standards. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and a short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0). Both sections of Highway 213 would be impacted in the pm peak timeframe.

Transit: TriMet bus line 32 and 33 would not be impacted by urbanization of the reserve area. See transit analysis below.

Bike: The nearby bike lanes on S Redland Road, S Maplelane Road and Beavercreek Road could see additional use if a connecting bike lane on S Holly Lane is built. The bike lane on Highway 213 will not be impacted as the routes on S Redland Road and S Maplelane Road would provide a better alternative for biking to the reserve area. The bike lane on S Maplelane Road would also need to be extended to the intersection with S Holly Lane.

Pedestrian: There is no impact to the sidewalks or trails that serve nearby areas inside the UGB. Sidewalk gaps need to be completed on the roadways already inside the UGB to connect with the reserve area.

Need for new transportation facilities and costs (see attached transportation map)

S Holly Lane will need to be improved to urban arterial standards.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$46.07
Total		**$46.07**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, seven days a week, by extending line 79 with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $608,333 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Newell Creek flows north through the middle of the reserve area for approximately 1.9 miles, all of which is either on Metro or Oregon Department of Transportation owned land. In addition, three tributaries of Newell Creek also flow through Metro owned land for approximately 0.7 miles. Two of these tributaries first flow through undeveloped private land that contains numerous areas of steep slopes for approximately 0.6 miles. Urbanization of the area will not impact these stream corridors due to the steep slopes of the privately owned land and public ownership of the other lands.

A tributary to Abernethy Creek flows north in a ravine along the eastern edge of the area for approximately one-half mile. The stream is about 100 – 200 feet below the main developable portions of the parcels along S Holly Lane and would not be impacted by any future development occurring on the flatter portions of the area. A half-acre wetland identified on the National Wetland Inventory is in the southern portion of the area within the power line easement. Limitations for residential development in power line easements will essentially protect the wetland.

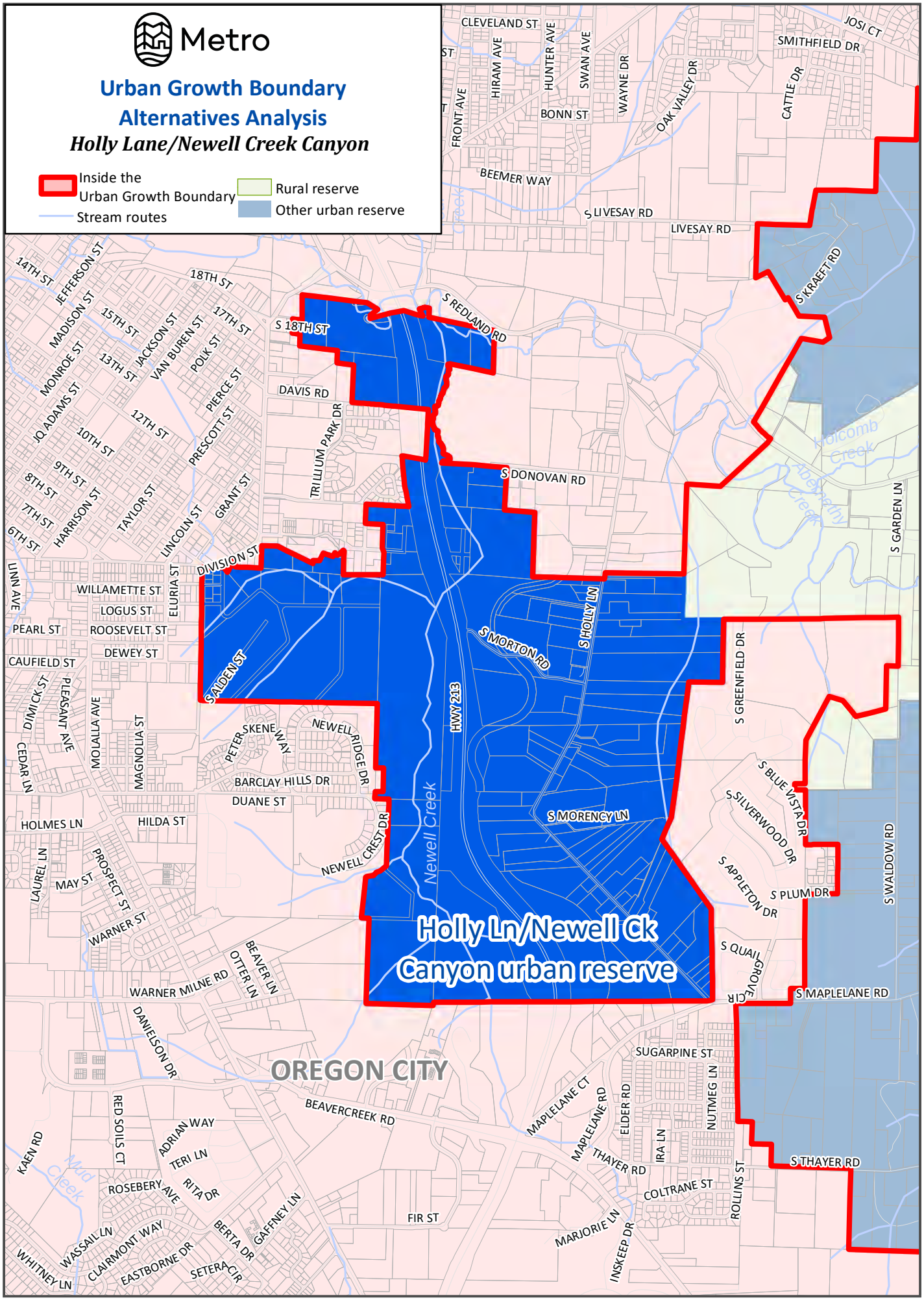
There are some significant locations of upland habitat adjacent to both stream corridors and the tributaries. Again, due to the public ownership pattern and slopes greater than 25% that limit the amount of the residential development that can occur, urbanization of the area will have minimal impacts on the identified upland habitat. Overall urbanization of the area could occur with minimal impacts to the stream corridors, wetland, and the upland habitat areas due to topography and public ownership.

Energy, Economic & Social

In general, there is not a lot of developable land in this urban reserve area. Almost the entire area west of Highway 213 is off limits to development due to Metro's ownership of park and open space land. In addition, steep slopes and the presence of natural resources limit future urban development to the area along S Holly Lane and a few small locations on the west side near Division Street. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. However, any new development that did occur in these small areas would not be substantial and in many locations would be consistent with the existing residential pattern. Thus, any social impacts related to the loss of the rural lifestyle would be minimal in this reserve area that is essentially surrounded by the UGB. The additional traffic generated through urbanization would be minimal so the overall energy consequences would be small. S Holly Lane would see the most impact as it provides the only connection between S Redland Road and S Maplelane Road, and any additional development would increase the amount of traffic that occurs on this north-south connector. Improving S Holly Lane to urban standards would alleviate some of the additional traffic concerns. Existing residents are already near a commercial area and urbanization would provide the opportunity for the development of other modes of transportation besides the automobile that could reduce some local trips, such as the planned Newell Creek Trail and bike lanes consistent with urban roadway standards. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential urbanization, even though it is not significant will outweigh this loss. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are no locations where farm or forest land is contiguous to the urban reserve area. Thus, the proposed urban uses have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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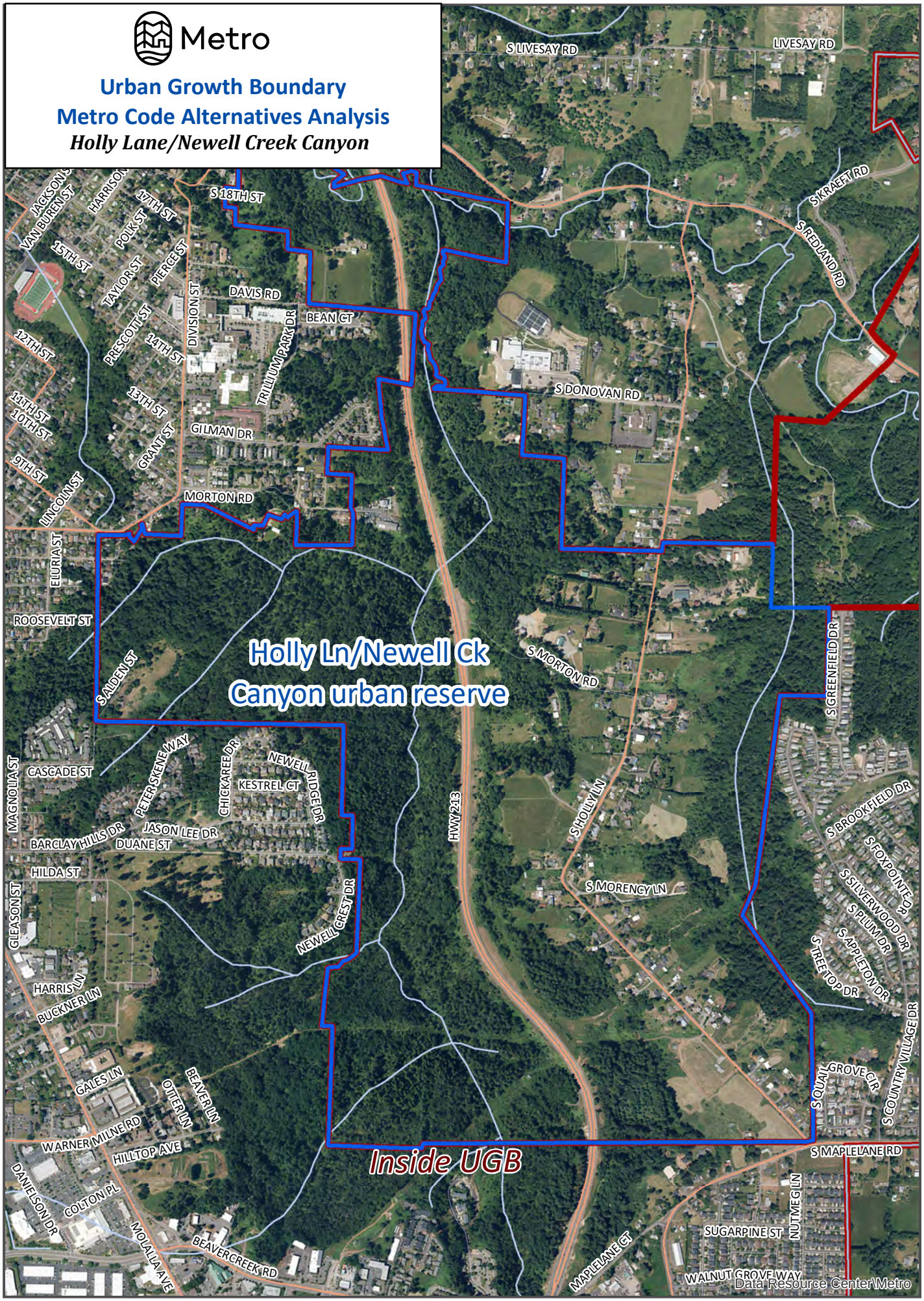
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Holly Lane/Newell Creek Canyon



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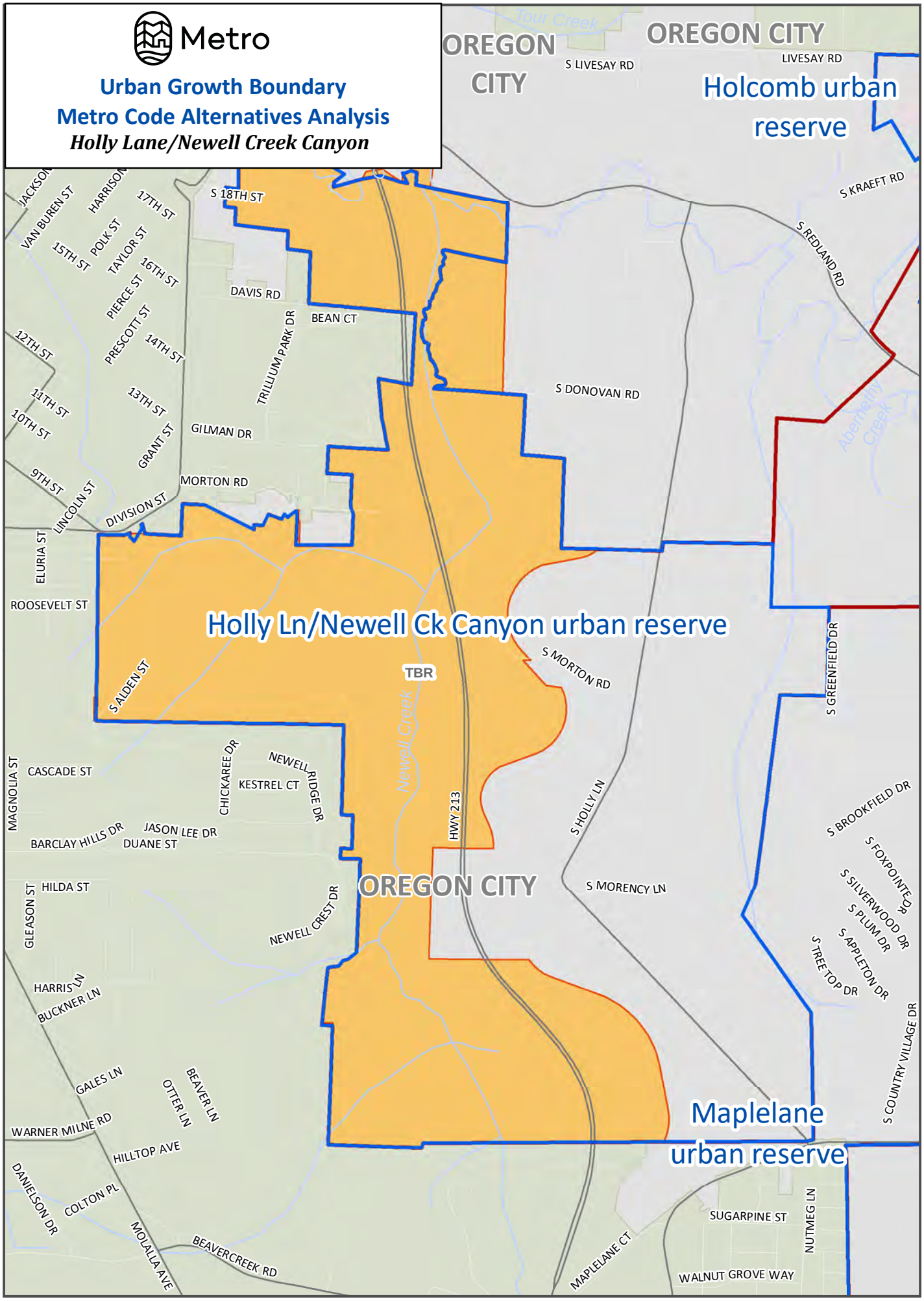
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Holly Lane/Newell Creek Canyon



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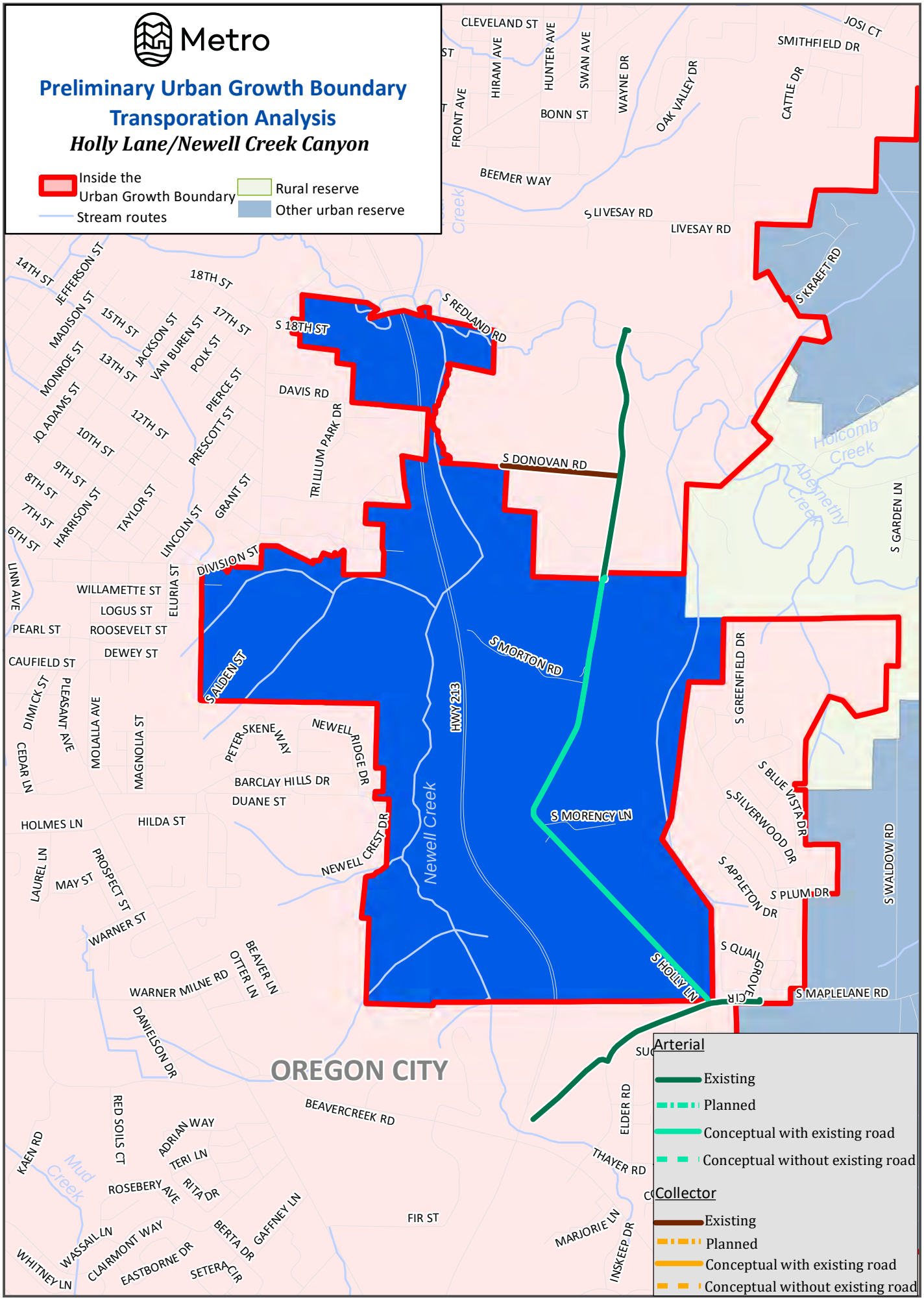

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I-5 EAST URBAN RESERVE AREA

Total Acres	848	Parcel Acres	746
Gross Vacant Buildable Acres	503	Net Vacant Buildable Acres	382

General Description (see attached map)

The I-5 East Urban Reserve Area is a large somewhat rectangular shaped area on the east side of I-5, north of SW Frobase Road and west of SW 65th Ave and totals 848 acres in size. The UGB forms the western and northern boundaries as defined by I-5 and I-205 with urban reserve land to the east and south. Saum Creek flows north through the center of the reserve area with numerous tributaries joining prior to the creek crossing under I-205. The reserve area slopes from south to north with a change in elevation of 270 feet and there are some significant areas of slopes greater than 10% throughout the middle of the reserve. Access to the area is provided by SW 65th Ave and SW Frobase Road.

Parcelization and Development Pattern (see attached aerial photo)

This reserve area contains 160 parcels that range in size from less than 1,000 square feet to 79 acres. Seventy-six percent of the parcels are less than five acres, and five parcels are greater than 20 acres, which accounts for 28% of the parcel acreage. One hundred and forty-two of the 160 parcels have improvements. Most of the reserve area is composed of rural residences with some agricultural activities occurring in the southern portion north of SW Frobase Road, along SW 65th Ave in the middle of the area and in the northern end near SW Robbins Road.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

Over 76% of the parcels in this reserve area are less than five acres in size and most of them contain single family homes. There are slopes greater than 10% dispersed throughout the middle of the area, mainly along the numerous stream corridors that divide the area into small sections. Given the considerable number of small parcels with residences and the natural features that divide the area into small sections, this area is not appropriate for employment land needs and therefore is able to accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin provides the wastewater collection system for nearby land inside the UGB and wastewater treatment is provided by Clean Water Services (CWS) Durham Wastewater Treatment Plant which appears to have capacity to serve the areas already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional improvements may be needed to the Durham treatment plant to serve this large reserve area. It appears that the likely location to connect to the existing sewer is at the CWS Saum Creek Pump Station (located north of 1-205 on SW 65th Avenue). The Saum Creek Pump Station pumps flow north to an existing 8-inch gravity line in SW 65th Avenue, which connects to an 18-inch trunk line that gravity flows through the City of Tualatin. The 18-inch trunk line connects to a large diameter CWS interceptor which conveys flows to the Durham treatment plant. Available capacity for the Saum Creek Pump Station and the downstream piping is unknown. The pump station and gravity lines will likely need upgrades for full development of the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Although the available capacity of the Saum Creek Pump Station and the downstream lines are unknown, it is likely that upsizing of the pump station and some pipes may be required to accommodate the flows from the reserve area. In addition, a new sewer line would need to cross I-205 at SW 65th Ave to provide service to the reserve area. Any other impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of the area and the laterals off the mains are provided by the development community. CWS' Durham treatment plant is a large facility with a broad service area. The cumulative addition of multiple urban reserves could result in a need for some expansion to handle additional load.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$0.32
12 – 18" pipe (gravity)	$0.50
Greater than 18" pipe (gravity)	$2.54
Total	**$3.36**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin serves the adjacent areas inside the UGB and it appears to have enough capacity to meet UGB needs based on its Water Master Plan. However, water storage improvements are needed to serve future development within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water for the reserve area would be provided by Tualatin and supply appears to be adequate, or they will be able to generate the supply as this area is developed.

Impacts to existing facilities that serve nearby areas already inside the UGB

New water mains must be provided to allow development of the reserve area and would need to cross I-5 and I-205. Elevations within the reserve area range from approximately 200 feet near 1-205 to 470 feet in the southeast corner. Elevations in the southeast corner of the site are above the City's highest-pressure zone (currently serving to elevation 360 feet). Additional storage or pumping may be required. The laterals off the mains are expected to be provided by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$1.5
18" and larger	$2.34
Storage/pumping	$4.87
Total	**$8.71**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$7.29
Water quality/detention	$7.27
Total	**$14.56**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Tualatin, which borders the reserve area to the north across I-205 and to the west across I-5, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Boones Ferry Road at the Tualatin River has a severely congested volume/capacity ratio (>1.0) for the southbound lane and a congested volume/capacity ratio (<1.0) for the northbound lane. Highway 99W at SW Tualatin Road and I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions.

SW Tualatin-Sherwood Road, from SW Nyberg Road to Sherwood is classified as a high injury corridor. The intersections of SW Tualatin-Sherwood Road/SW Boones Ferry Road and SW Martinazzi Ave/SW Boones Ferry Road are classified as top 5% high injury intersections.

Transit: Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SW Tualatin-Sherwood Road and SW Boones Ferry Road providing service to the Town Center and employment areas.

Bike: Tualatin has a fairly well-established bike route system of dedicated bike lanes (25 miles), established bikeways (7 miles) and local trails that connect the employment areas and Town Center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city.

Pedestrian: Most of the residential areas of Tualatin have sidewalks with less pedestrian connections in the employment areas. The Town Center has a well-established pedestrian network that also includes access to some trails. The Tualatin River Greenway Trail connects the Town Center to parks in Durham and Tigard to the north as well as to Browns Ferry Park along the Tualatin River on the east side of I-5.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: SW 65th Ave provides a direct arterial connection from Tualatin to the northern portion of the reserve area and has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Norwood Road also provides a connection from Tualatin to the southern portion of the reserve area and has an acceptable volume/capacity ratio for the 2015 pm peak. Even though I-5 and I-205 form the boundary of the reserve area on two sides there is no interchange that provides access to the area.

Transit: TriMet bus route 76, which provides access to the Beaverton Transit Center, is approximately ⅓ of a mile from the reserve area via SW 65th Ave. TriMet bus route 96 which provides access to downtown Portland and Wilsonville is approximately ⅔ of a mile from the reserve area via SW Norwood Road.

Bike: There is a dedicated bike lane on SW 65th Ave that is approximately one-tenth of a mile north of the reserve area. This bike lane connects to a bike lane on SW Sagert Street which provides a connection to the west side of I-5, the Town Center, and employment areas. The small gap on SW 65th Ave needs to be completed to serve the reserve area. There is an established bikeway and dedicated bike lane on SW Norwood Road that connects to the reserve area and provides access to Horizon Christian School. The bikeway connects to a bikeway on SW Boones Ferry Road that extends south to the bike facility network in Wilsonville. It also connects to a bike lane that extends north on SW Boones Ferry Road to the bike facility network in Tualatin and Tualatin High School.

Pedestrian: The Saum Creek Greenway Trail is approximately 800 feet north of the reserve area via SW 65th Ave and connects to sidewalks on SW 65th Ave and SW Sagert Street. The sidewalks do not connect across I-5 and therefore provide limited access to other parts of the city. The 800-foot gap needs to be completed to serve the reserve area. The Norwood Trail is approximately 500 feet from the reserve area along SW Norwood Road. The trail connects to sidewalks in the residential area located just west of I-5 and extends quite some distance to the north through the residential neighborhoods and to Tualatin High School. The presence of sidewalks on SW Boones Ferry Road is sporadic and does not provide a consistent pedestrian opportunity. The 500-foot gap needs to be completed to serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Currently SW 65th Ave and SW Norwood Road are the only direct connections to the reserve area from Tualatin and both have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. As both roads provide connections from a nearby area already inside the UGB that also leads to I-5, it is expected that SW 65th Ave and SW Norwood Road would be impacted by urbanization of the reserve area.

Transit: TriMet bus routes 76 and 96 are approximately ⅓ and ⅔ of a mile respectively from the reserve area and could see additional ridership if improved pedestrian connections were made. See transit analysis below.

Bike: The dedicated bike lane on SW Sagert Street could see additional use if the gap in the bike lanes were addressed. The bike lane and bikeway on SW Norwood Road would be expected to see additional use as it connects to bike facilities in both Tualatin and Wilsonville.

Pedestrian: The Saum Creek Greenway Trail that is approximately 800 feet north of the reserve area via SW 65th Ave could see additional use if improved pedestrian connections were made inside the UGB. As the sidewalks near the trail do not connect across I-5 and provide limited access to other parts of the city, they would not see much additional use. The Norwood Trail would be expected to see additional use if improved pedestrian connections were made on the SW Norwood Road overcrossing of I-5.

Need for new transportation facilities and costs (see attached transportation map)

SW 65th Ave would need to be improved to urban arterial standards. This is considered a ½ street improvement as the Norwood urban reserve would be responsible for the east half of the roadway.

SW Frobase Road, SW 82nd Ave and SW Norwood Road would need to be improved to urban collector standards. SW Frobase Road is considered a ½ street improvement as the North Elligsen urban reserve would be responsible for the south half of the roadway.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$31.31
Collectors	Type	Cost (in millions)
	Existing/Improved	$33.67
	Existing/Improved ½	$9.37
Total		**$74.35**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined service is unlikely to occur.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

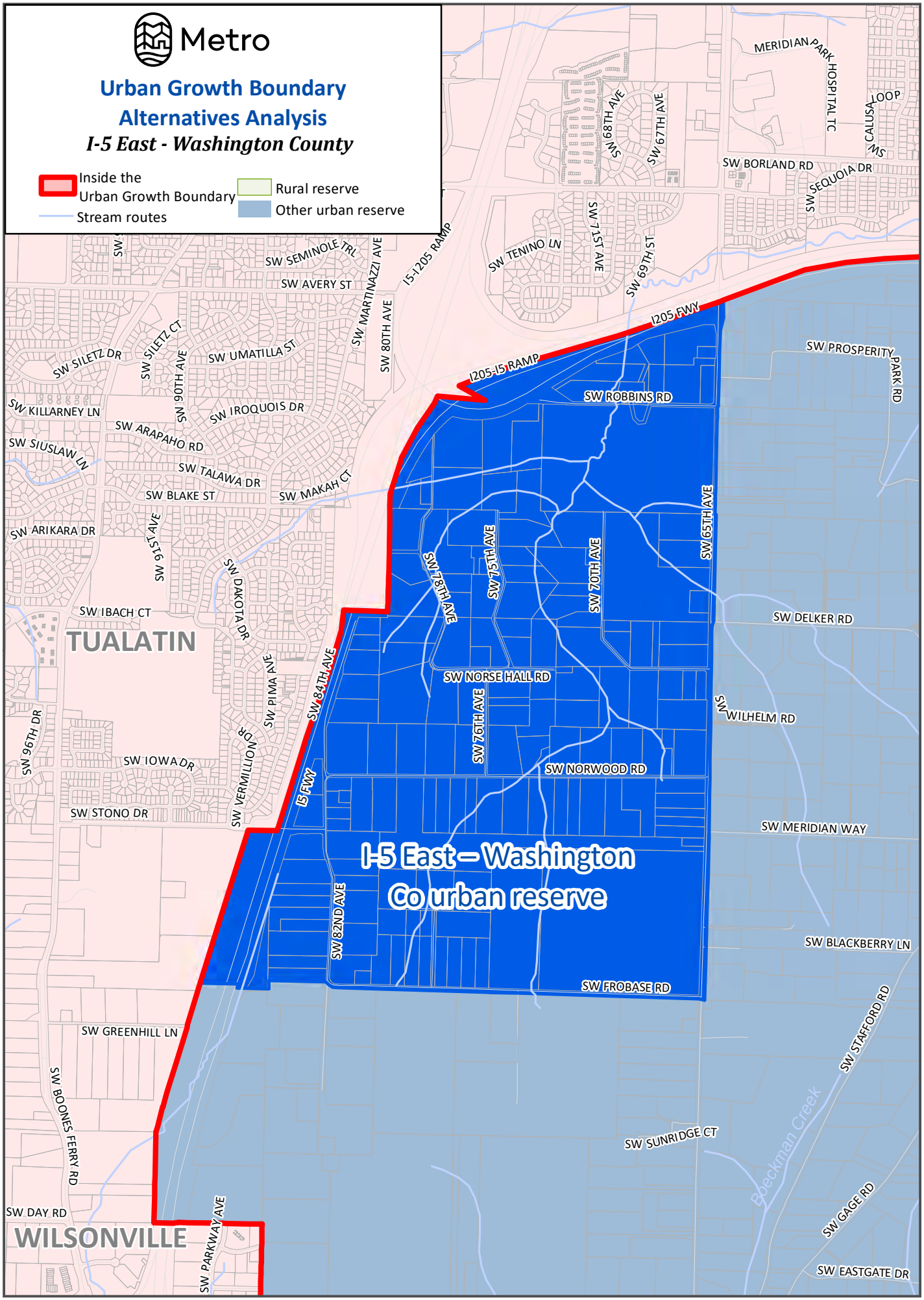
Saum Creek flows north through the middle of the reserve area for just under two miles and seven tributaries, totaling approximately three miles join the stream. The vast majority of all the streams are within established riparian buffers, some with adjacent steep slopes that would limit future development. Five wetlands on the National Wetland Inventory (NWI) are located along the tributaries, ranging in size from 0.4 – 1.4 acres, and total 4.7 acres. Seven additional ponds not identified as wetlands on the inventory are located along the tributary stream corridors. There are significant areas of riparian and upland habitat identified along all the stream corridors. As noted previously the stream corridors and habitat areas divide the reserve area into numerous small sections of developable land. As a result, some of the land areas are isolated from one another, which imply needed transportation connections that could potentially impact the stream corridors and habitat areas. The increased protection levels for streams, wetlands, and habitat areas within the UGB will lessen the potential impacts. Overall urbanization of the area could occur with moderate to significant impacts to the natural resources depending on the level of transportation connectivity and general urban design factors.

Energy, Economic & Social

The natural resources in the reserve area divide it into small sections of land, most of which contain rural residences on smaller lots. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences over time, resulting in clusters or relatively small new developments with nearby green spaces. This type of development pattern is somewhat like the existing pattern, which lessens any social impacts for existing residents related to loss of sense of place and rural lifestyle. The southern portion of the reserve area provides the most potential for urban level development, and urbanization would impact the existing residents in this location in terms of loss of a rural lifestyle. The additional traffic generated through urbanization, while not great, will ultimately funnel on to SW Stafford Road and SW Elligsen Road due to limited access points to I-5 and I-205 which could provide negative energy impacts related to increased VMT. SW 65th Ave and SW Norwood Road do provide access across the interstates for local travel which may lessen the energy impacts. Urbanization provides the opportunity for the development of active transportation options such as bike lanes and trails that could connect across SW Norwood Road to the existing Norwood Road Trail and the conceptual Shaniko Greenway Trail, thereby reducing VMT for local trips. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential development should outweigh this loss. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Exclusive Farm Use (EFU) zoned land borders the reserve area on the south. The 120-acre block of farm land adjacent to SW Frobase Road is in agricultural production with field crops, a tree farm and pasture land, and is adjacent to the most developable portion of the reserve area. SW Frobase Road provides a buffer for the reserve area, although the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. In addition, the improvement of SW Frobase Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would increase traffic on SW Frobase Road and SW 65th Ave which could impact the movement of both farm equipment and goods. The proposed urban uses have low compatibility with nearby agricultural activities occurring on this one pocket of farm and forest land outside the UGB to the south.



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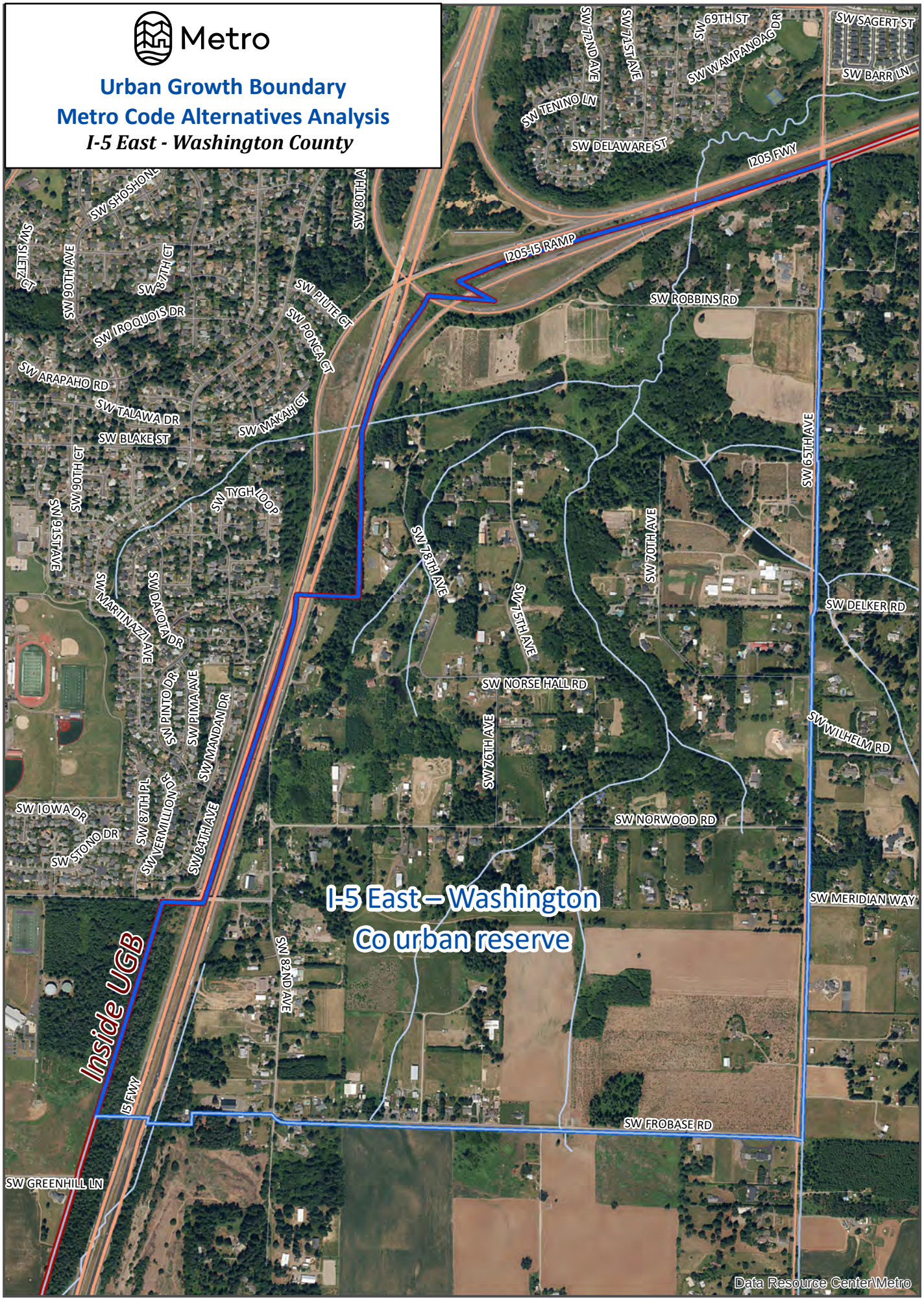
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
I-5 East - Washington County



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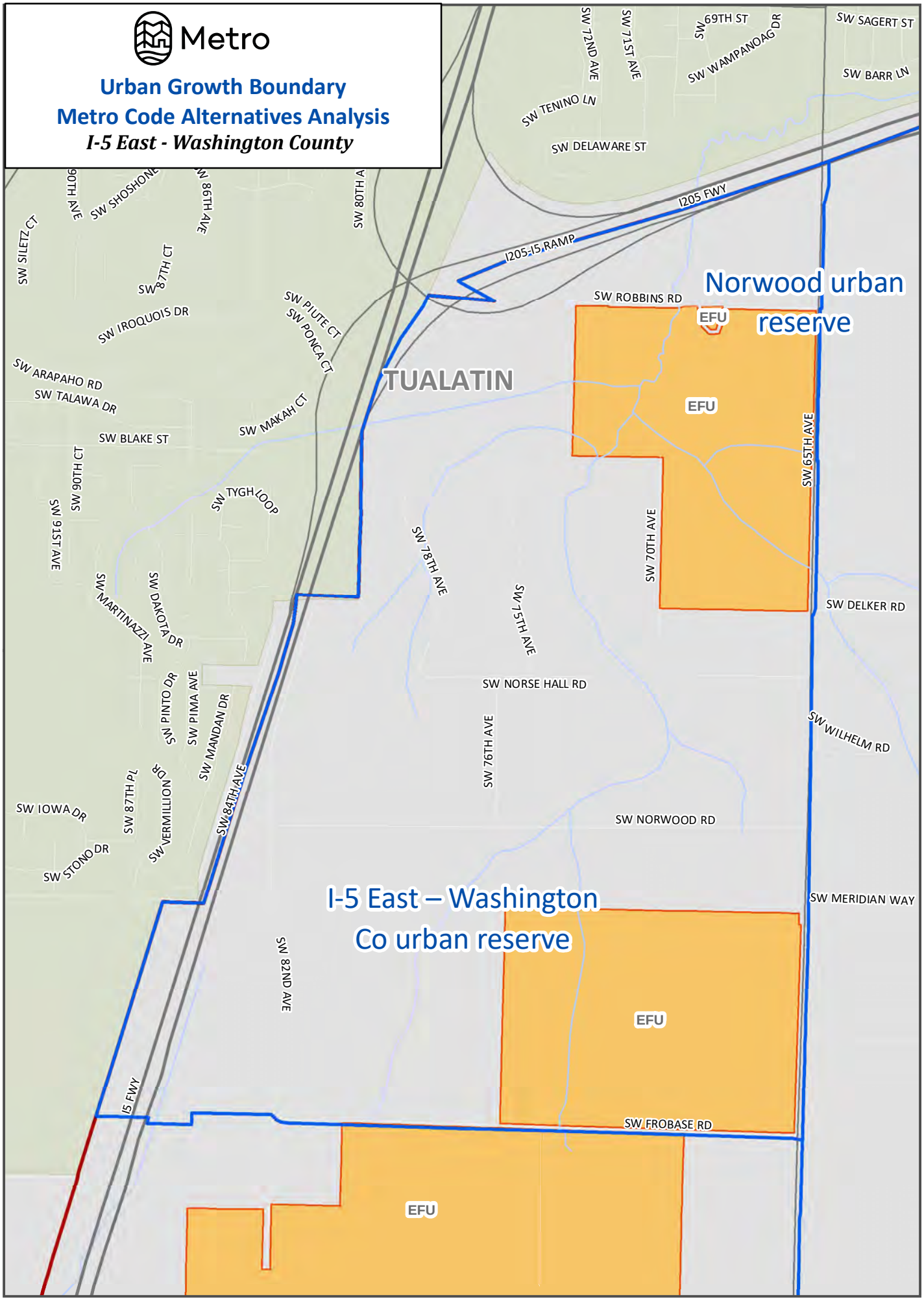
Urban Growth Boundary
Metro Code Alternatives Analysis
I-5 East - Washington County



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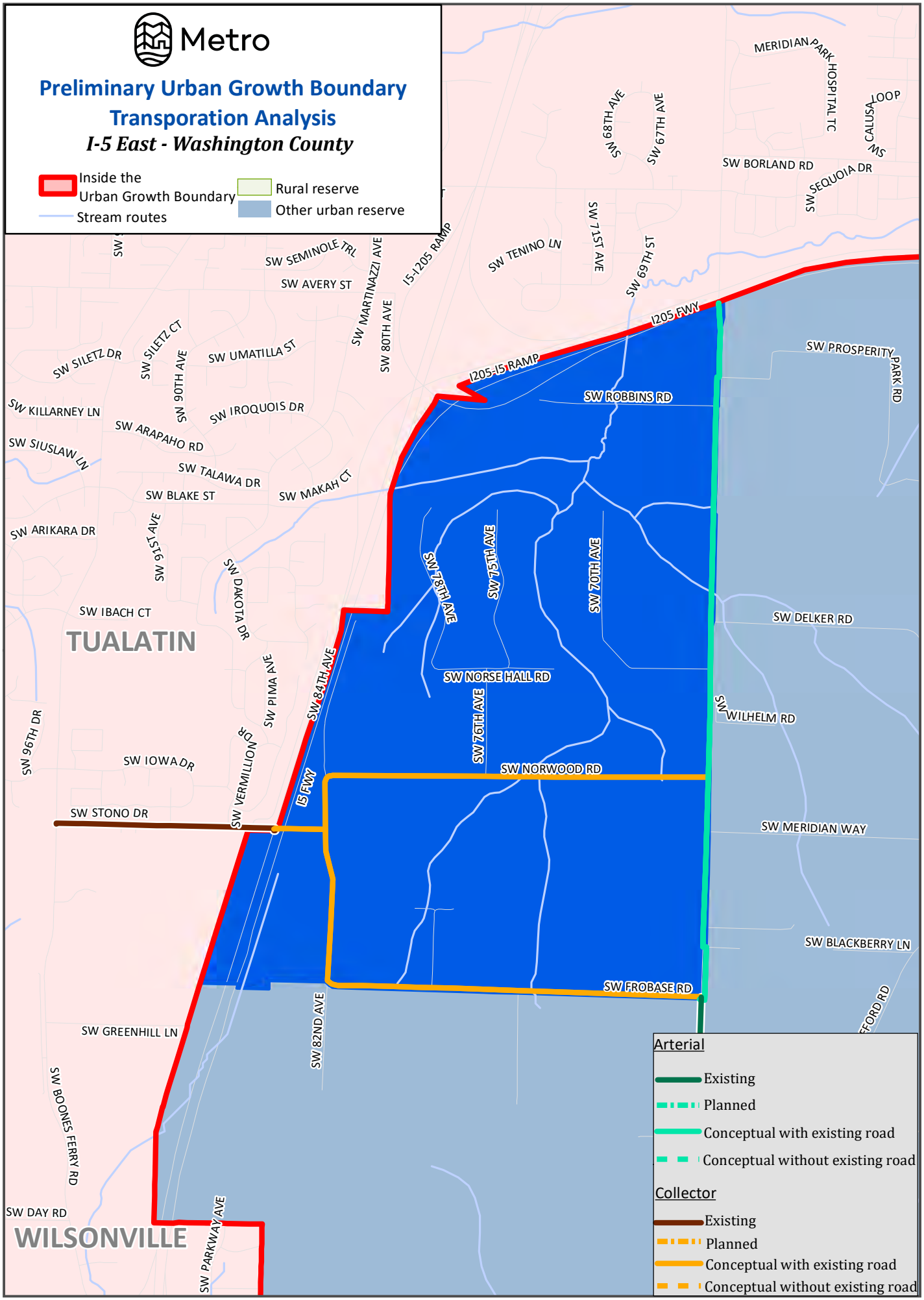

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MAPLELANE URBAN RESERVE AREA

Total Acres	573	Parcel Acres	555
Gross Vacant Buildable Acres	270	Net Vacant Buildable Acres	205

General Description (see attached map)

The Maplelane Urban Reserve Area is an irregular shaped area on the east side of Oregon City, north and south of S Maplelane Road that totals 574 acres in size. The current UGB forms the eastern and southern boundary of the area. A tributary to Abernathy Creek flows east through the central portion of the reserve and three tributaries to Thimble Creek flow east through the southern portion. The area is primarily flat, except for some small areas of steep slopes along the stream corridors and within the forested northeastern corner of the reserve area. The area is served by S Maplelane Road, S Waldow Road and S Thayer Road. Abernethy Creek flows north, just outside of the reserve area to the east.

Parcelization and Development Pattern (see attached aerial photo)

This mid-sized urban reserve area contains 166 parcels that range in size from less than 1,000 square feet to over 57 acres in size. Ninety-five percent of the parcels are less than ten acres in size and only four are greater than 20 acres. One hundred and forty-six of the 166 parcels have improvements. The area is generally composed of rural residential development focused on S Maplelane and S Thayer Roads with a few locations of very small-scale agricultural activity. Five of the parcels are in public ownership, including the largest parcel that is owned by the Oregon City School District (57 acres). Portland General Electric has a 35-acre substation at the corner of S Waldow Road and S Maplelane Road. Ten power lines radiate from the substation, three to the west, two to the north and five to the south, two of which are partially located on three contiguous parcels owned by the United States government.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The reserve area is generally flat with only a few locations of slopes greater than 10%, mainly located at the edges of the area and along stream corridors. While this provides the opportunity for employment possibilities from a land topography perspective, the number of small parcels and the somewhat isolated nature of the land some distance from I-205 reduce the attractiveness of the area for employment use. In addition, there is an existing employment and commercial node at Highway 213 and Beavercreek Road and additional vacant industrial zoned land inside the UGB nearby, further reducing the need for additional employment land. The existing rural residential

development pattern does provide the opportunity for future residential development and the school district's property would provide a focal point for the neighborhood once a school was built. Therefore, this area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

Oregon City's Infrastructure Master Plan includes planned improvements and funding necessary to support the expected growth within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities such as wastewater treatment and conveyance. Currently the City is not completing necessary infrastructure planning for growth in the urban reserve areas. Development in the reserve area will include major infrastructure changes and costs for improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Impacts to existing facilities that serve nearby areas already inside the UGB

There will be significant impacts to existing facilities and other necessary facilities will require major construction in sensitive (landslide prone) areas. Most of this infrastructure would be built by the development community. All flows for this area are pumped.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$2.18
Force main	$2.60
Pump station	$2.45
Total	**$7.23**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary. Oregon City has recently annexed the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas. Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). CRW has adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 MGD water treatment plant. Volumes available for their service area

are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. The treatment plant is 50 years old and a pending facility master plan will determine what types of upgrades will be needed in the future. As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2- or 2.5-million-gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the Beavercreek area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW is planning for the urban reserve areas and most the Maplelane reserve area is in CRW. However, they will not likely be the service provider in the future. Oregon City has the general policy that they will serve all the lands within the UGB. As reserve areas are included in the UGB, the city intends to serve them. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the reserve area. There would be an exception for facilities that are needed to go beyond the area in question such as large-scale transmission lines. Accordingly, CRW, like many service providers must be cautious about investing in improvements for the rural areas that may become urban. CRW has more than enough water to serve the urban reserve area and is expected to build a new storage reservoir within the next few years. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, CRW has water networks in place that can serve the reserve area without significant upgrades; however, it is not clear that CRW will be the future water provider. There are new storage reservoirs currently planned to serve lands within the existing UGB that are also needed for servicing the Maplelane reserve area. These reservoirs will be constructed regardless of the status of reserve area. Oregon City will need to provide new facilities.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12” and smaller	$5.84
Storage/pumping	$2.7
Total	**$8.54**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized. Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$6.71
Water quality/detention	$6.38
Total	**$13.09**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in Oregon City have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) as does most of I-205 in both directions through Oregon City and across the Abernathy Bridge. A short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0) as does short portions of I-205 through Oregon City. Highway 213 also has a small severely congested section in both directions between Meyers Road and Glen Oak Road.

Molalla Ave from Division Street to Highway 213 and McLoughlin Boulevard from the Clackamas River to I-205 are classified as high injury corridors for automobiles. The Highway 213/Redland Road intersection is classified as a top 5% high injury intersection.

Transit: Four TriMet bus lines serve Oregon City all of which focus on the downtown and central portion of the city along Molalla Ave. Service is provided to Clackamas Community College, but large portions of the city are not served by transit.

Bike: Oregon City has 29 miles of dedicated bike lanes and 3.5 miles of established bikeways with most of them located in the "up-top" section of the city. The Park Place neighborhood is also fairly well served and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as bike with caution streets and the South End neighborhood has minimal bike facilities.

Pedestrian: Downtown Oregon City is well served by sidewalks as is Molalla Ave as it extends to the "up-top" portion of the city. There are several pockets of older subdivisions that do not have sidewalks with more recent developments well served by sidewalks.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: S Maplelane Road and S Thayer Road are the main access ways to the reserve area, and both have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak as does the nearby section of Beavercreek Road. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and a short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0).

Transit: TriMet bus lines 32, 33 and 99 provide service to Clackamas Community College which is approximately 1¼ miles away with the closest stop on route 32 at S Maplelane Road and S Beavercreek Road just under one-half mile away from the reserve area. No other bus line provides service near the reserve area.

Bike: The dedicated bike lane on S Maplelane Road ends approximately one-third of a mile from the reserve area. A 650-foot portion of S Thayer Road that is close to the urban reserve area also contains a dedicated bike lane on one side of the road, adjacent to a newer subdivision. There is a 1,100-foot gap between this bike lane and the bike lane on S Maplelane Road, which connects to the bike lane on Beavercreek Road and numerous other bike facilities "up-top".

Pedestrian: One nearby subdivision at Thayer Road and Maplelane Road has streets that have sidewalks, however none of the streets that serve the reserve area have sidewalks and there are no trails that serve or extend to the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: S Maplelane Road and S Thayer Road are the main access ways to the reserve area, and both have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. These roads would not be impacted beyond the need to improve the roads to urban standards. Southbound Highway 213, from Holcomb Blvd to Beavercreek Road, has a congested volume/capacity ratio (<1.0) and a short section of southbound Highway 213, between I-205 and Holcomb Blvd has a severely congested volume/capacity ratio (>1.0). Both sections would be impacted in the pm peak timeframe.

Transit: TriMet bus lines 32, 33 and 99 would not be impacted by urbanization of the reserve area. See transit analysis below.

Bike: The nearby bike lanes on S Maplelane Road and S Thayer Road could see additional use when the gaps in the bike lanes are completed, and bike lanes are constructed on the portions of these two roadways within the reserve area. The bike lanes on Beavercreek Road could also see additional use as it leads to numerous other bike facilities "up-top" and the Highway 213 Trail that leads to Clackamas Community College.

Pedestrian: The sidewalks in the adjacent neighborhood to the west could see additional use as the local streets are extended into the reserve area. Otherwise, there is no impact to sidewalks or trails that serve nearby areas inside the UGB. Sidewalk gaps need to be completed on the roadways already inside the UGB to connect with the reserve area.

Need for new transportation facilities and costs (see attached transportation map)

S Maplelane Road would need to be improved to urban arterial standards and S Waldow Road and S Thayer Road would need to be improved to urban collector standards. Three new collectors are needed to provide necessary street connectivity.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$48.29
Collectors	Type	Cost (in millions)
	Existing/Improved	$40.27
	New	$26.04
Total		**$114.60**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, seven days a week, by extending line 79 with two additional buses at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $1,216,666 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

A tributary of Abernethy Creek flows east through the reserve area for approximately six-tenths of a mile on the north side of S Maplelane Road, east of S Waldow Road. Just over half of the stream flows through open land and includes two National Wetland Inventory (NWI) wetlands (0.92 & 0.76 acres) and identified riparian habitat. The remaining portion flows through a forested area that contains significant sections of slopes greater than 25%. The open landscape stream section would allow for the protection of the stream corridor, wetlands and habitat areas consistent with urban protection levels while allowing for future development opportunities on the remaining portion of the parcels. The forested section would also be impacted minimally from urbanization due to development constraints related to steep slopes. In addition, a significant portion of the upland habitat adjacent to the stream is located on the school district property, which would not be impacted by the development of future school facilities given steep slope constraints.

Three tributaries to Thimble Creek flow generally east through the southern portion of the area on the south side of S Thayer Road. The main tributary flows in an arcing pattern from the southern

edge of the reserve area and then east for 0.6 miles before joining Thimble Creek just outside the reserve boundary, ultimately draining into Abernathy Creek. About a half of this stream flows through semi-forested or forested land that provides a fairly good riparian corridor. The remaining portion of the stream is located adjacent to S Thayer Road, away from the developable portions of these parcels. While this allows for development of the parcels without impacting the stream corridor, road improvements to bring S Thayer Road up to urban standards would impact the stream's riparian habitat in this location. There are some significant locations of upland habitat adjacent to the stream corridor that could be impacted as access to this portion of the urban reserve would need to come from S Thayer Road, unless access came from S Loder Road to the south that is already inside the UGB. The steep slopes along the stream corridors would limit the amount of the residential development that can occur, thus protecting significant portions of the upland habitat. Natural resource protection requirements on land inside the UGB will help reduce the overall impacts, although significant impacts would be expected given the stream's location near S Thayer Road, the need to access the parcels to the south and other potential transportation connection needs.

A minor tributary (600 feet) joins the main tributary in the southwest corner of the reserve area. About half of this stream is located on land owned by the U.S. government and would be off limits to development due of the presence of power lines. The remaining section flows through an intact riparian corridor that is identified as habitat. Impacts to the habitat areas could occur depending on the design of the future development and transportation connection needs.

The third tributary appears to originate from a pond (not included in NWI) on the north side of S Thayer Road and flows for about a third of a mile before joining the main tributary south the roadway. This stream flows mostly through forested areas and a second pond, also not identified as a wetland on the NWI, is located along the stream route. There is both riparian and upland habitat identified along this stream segment. Impacts to the habitat areas could occur depending on the design of the future development and transportation connection needs.

Overall urbanization of the area could occur with moderate to high impacts to the stream corridors, wetland, and the upland habitat areas.

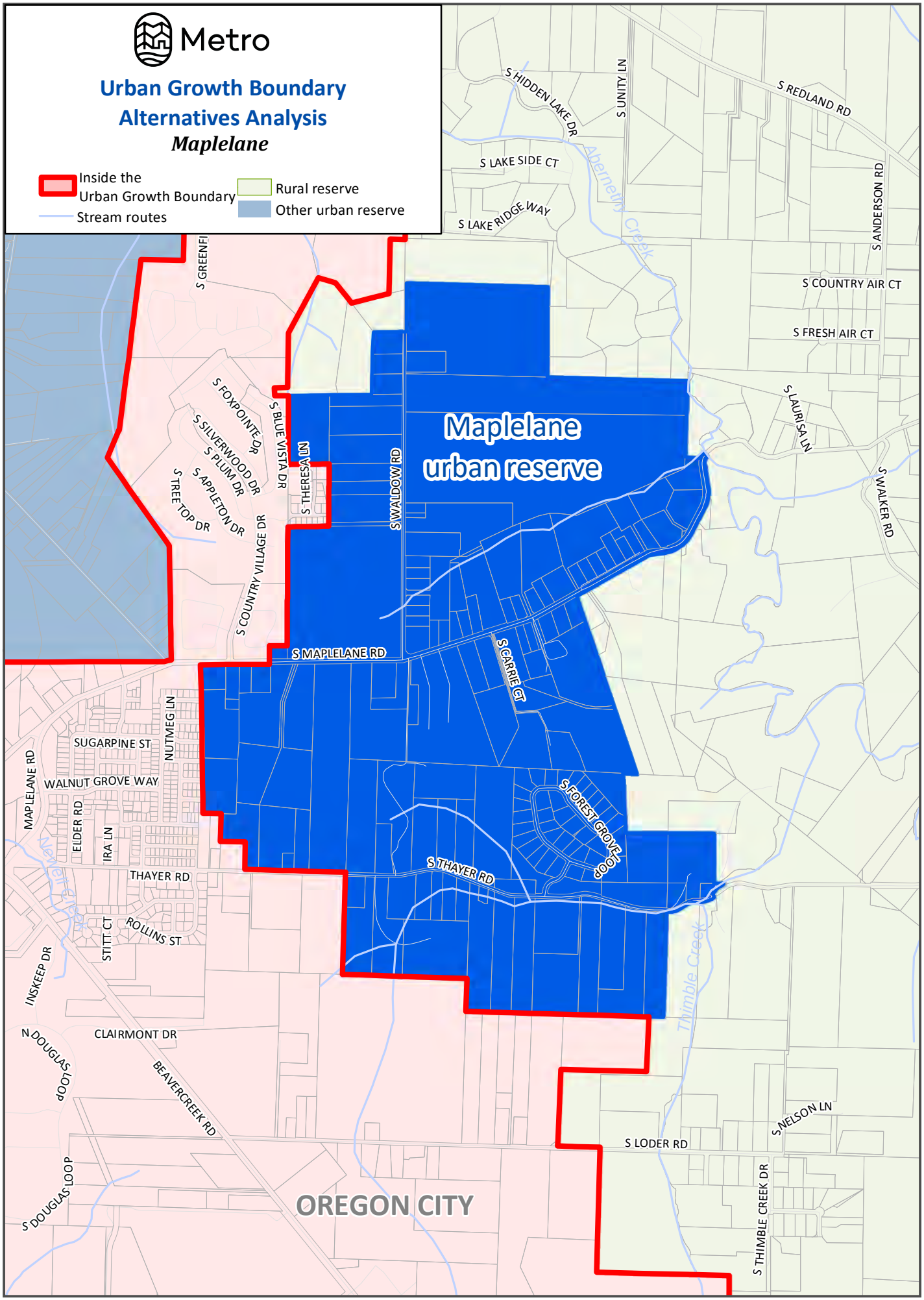
Energy, Economic & Social

The power lines, steep slopes and natural resources divide up the reserve area into small sections of developable land. Development of the school property as a school facility further reduces the amount of potential residential development in the area. It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences over time, resulting in clusters or relatively small new developments with nearby green spaces like what is currently there now. Any development that did occur in these small areas would not be substantial, thus the social impacts to the existing residents would be minimal. S Maplelane Road and S Thayer Road provide the only connections between the reserve area and the commercial/employment node along Highway 213 and S Beavercreek Road and any additional development would increase the amount of traffic that occurs on these two roadways. However, given the modest amount of development that would occur, the increase in traffic would not be great and there is potential for

new connections through the land to the south that is in the UGB but not yet urbanized. Existing residents are already near a commercial area and urbanization would provide the opportunity for other modes of transportation besides the automobile that could reduce some local trips, thus the energy impact is not substantial. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential development, even though it is not significant will outweigh this loss. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are three locations where farm or forest land is contiguous to the urban reserve area. The first area consists of one parcel at the north end of S Waldow Road that is zoned for timber use (TBR). This 15-acre parcel contains a single-family residence and is adjacent to a rural residential development that contains very large homes on one to three acre parcels. Due to the current residential use of the property and the adjacent uses, the likely hood of timber activities on this property is small, thus the proposed urban uses would be compatible with nearby forest activities in this location. The second location is a single eight-acre parcel zoned TBR that shares a 170-foot edge with the northeast corner of the reserve area. This parcel contains Abernethy Creek and is in the same ownership as the adjacent parcel that is part of the rural residential subdivision with very large homes. Since the parcel contains Abernethy Creek and is under the same ownership as a parcel within the rural residential subdivision, the likely hood of timber activities on this property is small, thus the proposed urban uses would be compatible with forest activities in this location. The third location is near S Thayer Road adjacent to the southeast corner of the area and consists of three parcels zoned TBR that are mainly in rural residential use and have very minimal amounts of forest on the land. Therefore, it is unlikely that timber activities would occur on this land and the proposed urban uses would be compatible with the forest activities occurring on the timber zoned land. Overall, the proposed urban uses have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.



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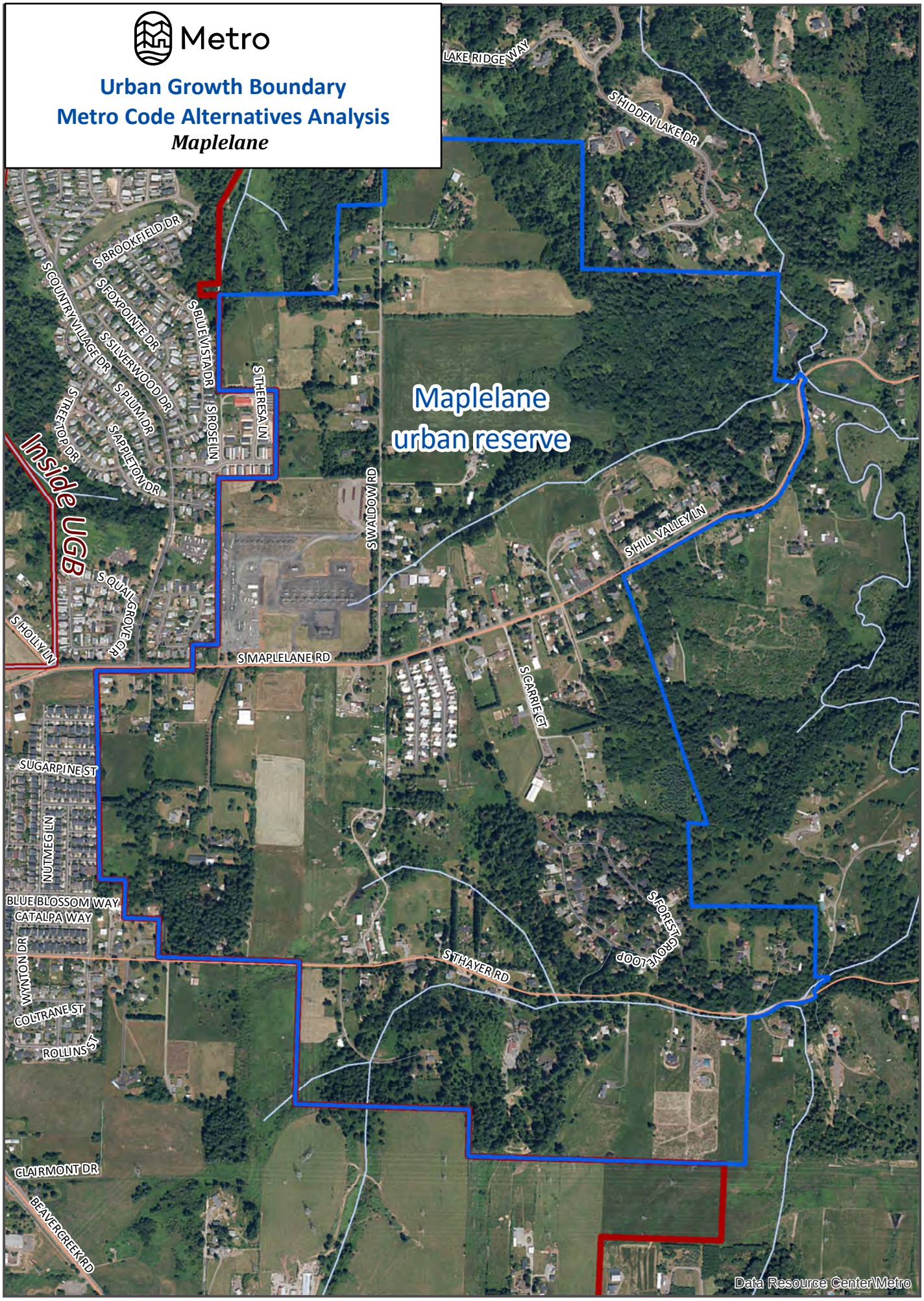
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Maplelane



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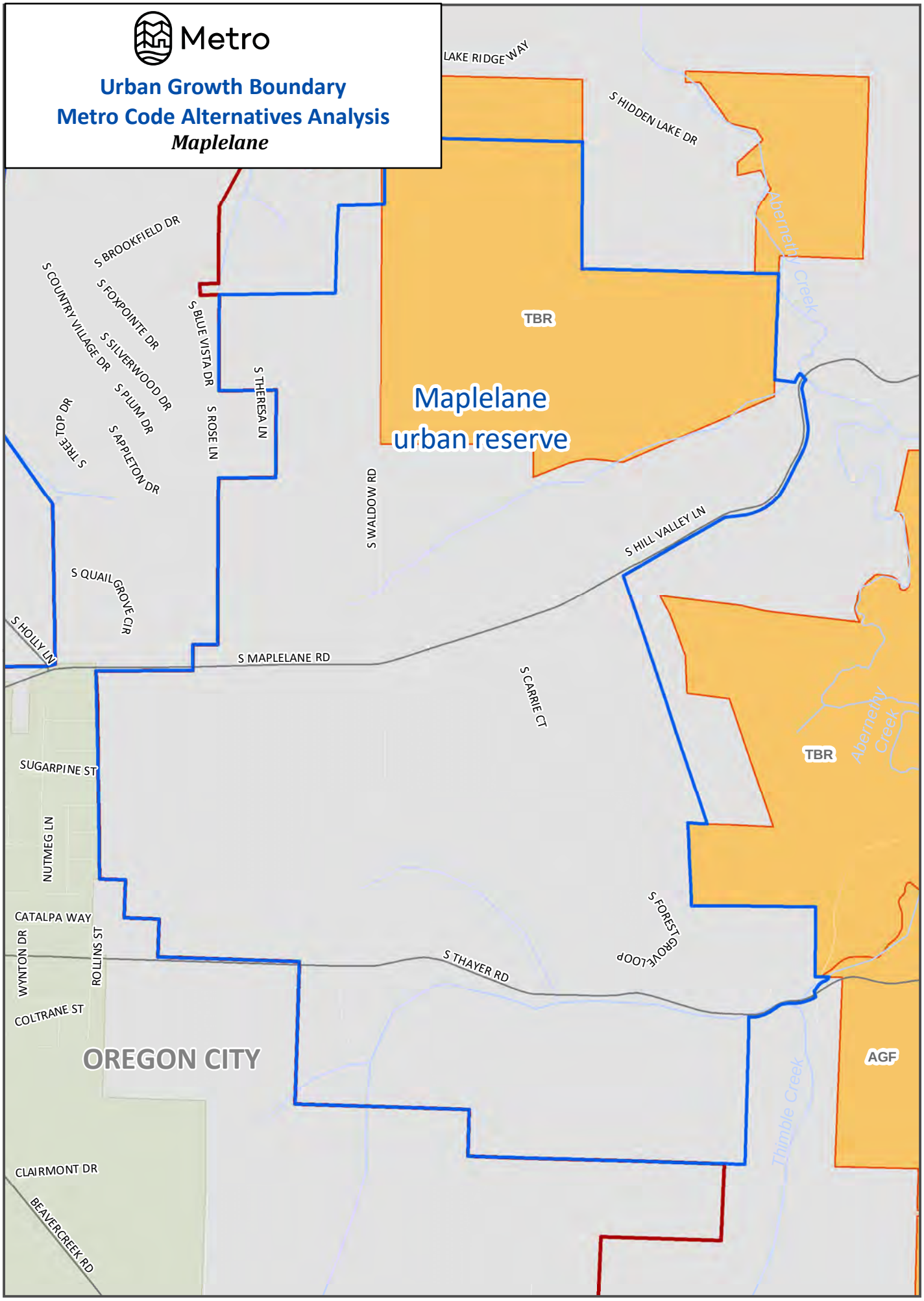

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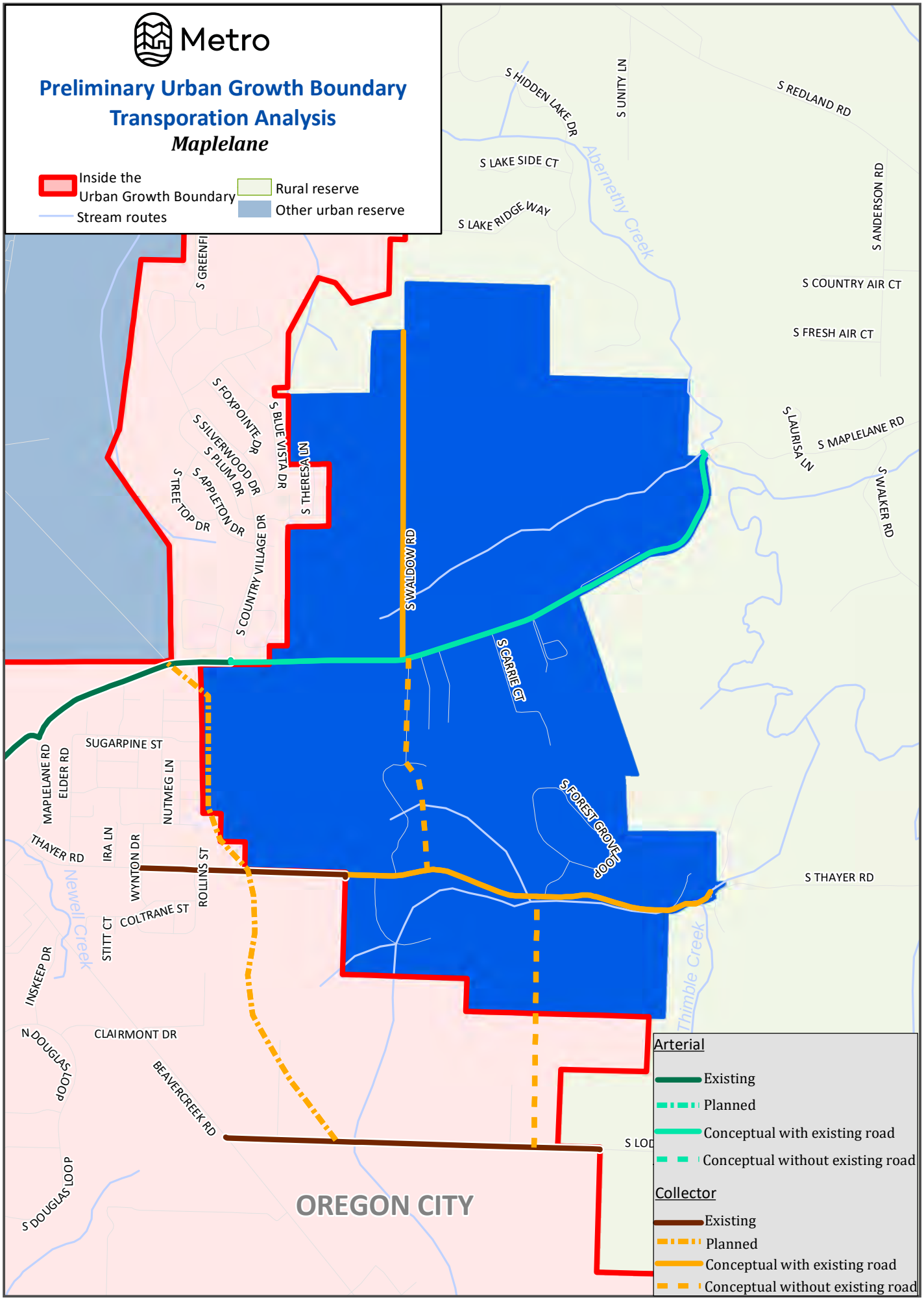

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NORWOOD URBAN RESERVE AREA

Total Acres	1,533	Parcel Acres	1,452
Gross Vacant Buildable Acres	1,011	Net Vacant Buildable Acres	768

General Description (see attached map)

The Norwood Urban Reserve Area is a large irregular shaped area east of SW 65th Ave, south of I-205 and generally west of SW Stafford Road that is 1,533 acres in size. The UGB forms a portion of the northern boundary with urban reserve land to the west and partially to the north and south. The remaining land to the south is undesignated and the land to the east is either rural reserve or undesignated. A high point near SW Blackberry Lane divides the reserve area; Boeckman Creek and a small portion of a tributary to Newland Creek flow south and tributaries to Saum Creek flow north through the center of the area. Athey Creek also flows north through the northeastern corner of the reserve area. There are significant areas of slopes greater than 10% in the northern and southern portions of the reserve. Access to the area is provided by SW 65th Ave and SW Stafford Road.

Parcelization and Development Pattern (see attached aerial photo)

This reserve area contains 364 parcels that range in size from just over 2,000 square feet to 36 acres. Thirty-five of the parcels are less than one acre and 237 are between one and five acres. Only nine parcels are greater than 10 acres. Three hundred and twenty-five of the 364 parcels have improvements. Most of the reserve area is composed of rural residences with some very minor agricultural activities or hobby farms spread throughout. The State of Oregon owns four parcels totaling 11 acres and Verizon Northwest has a facility in the reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

Over 75% of the parcels in this reserve area are five acres or less in size and most of them contain single family homes. There are slopes greater than 10% dispersed throughout the area, mainly along the numerous stream corridors. Given the considerable number of parcels and residences and the significant amount of steep sloped land, this area is not appropriate for an employment land need and therefore is able to accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin provides the wastewater collection system for nearby land inside the UGB, and wastewater treatment is provided by Clean Water Services (CWS) Durham Wastewater Treatment Plant which appears to have capacity to serve the areas already inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on the varying topography throughout the reserve area, it appears that this area is best served by several different jurisdictions including Clean Water Services (CWS), the City of West Linn, and the City of Wilsonville. The western portion of the site would be routed into the CWS system. While the capacity may be available, wastewater treatment for this large reserve area is significant and may require additional plant improvements at the Durham treatment plant. The nearest connection point is north of 1-205 at the Saum Creek Pump Station and/or the Sequoia Ridge Pump Station. Downstream 8-inch gravity pipes convey flows to a City of Tualatin 18-inch trunk line, which connects to a large diameter CWS interceptor to the Durham treatment plant. In addition, the capacity of the existing pump stations and sewer lines are unknown. The eastern portion of the site will connect to an existing City of West Linn sewer located in Willamette Falls Drive. The city has indicated that the treatment plant would likely need some upgrades to accommodate additional flow. The available capacities of pump stations and pipes are unknown. The southern portion of the site would most readily be served by Wilsonville. To serve this portion of the reserve area, the Elligsen North urban reserve would need to be urbanized first.

Impacts to existing facilities that serve nearby areas already inside the UGB

CWS' Durham treatment plant is a large facility with a broad service area. The cumulative addition of multiple urban reserves could result in a need for some expansion to handle additional load. The upgrades and financial impacts are beyond the scope of this report. To connect to the CWS system, a new sewer line crossing I-205 would be required. New wastewater mains must be provided to allow development of this Urban Reserve area. The laterals off the mains are provided by the development community. For the cost analysis, it is assumed that the sewer to Willamette Falls Drive would connect to the sewer proposed to be developed within the Borland urban reserve. Therefore, for the east portion of the Norwood reserve area to be served, the Borland urban reserve area would need to be urbanized first. As noted above the southern portion of the site would most readily be served by Wilsonville, which requires the Elligsen North urban reserve to be urbanized first.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
12 – 18" pipe (gravity)	$7.93
Force main/bore	$0.91
Pump station	$0.65
Total	**$9.49**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tualatin serves the adjacent areas inside the UGB, and it appears to have enough capacity to meet the needs of land inside the UGB based on its Water Master Plan. However, water storage improvements are needed to serve future development within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water for the reserve area would be provided by Tualatin and supply appears to be adequate, or they will be able to generate the supply as this area is developed.

Impacts to existing facilities that serve nearby areas already inside the UGB

New water mains across I-205 must be provided to allow development of this reserve area. Elevations within the reserve area range from approximately 200 to 460 feet in the southeast corner. The City's service area B provides water to elevations from 192 to 306 feet but elevations in much of the reserve area exceed 306 feet. The City's service area C provides water up to 360 feet; however, connection to this service area would first require the development of the I-5 East urban reserve. Additional storage or pumping may be required to serve this reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.77
18" and larger	$16.37
Storage/pumping	$9.8
Total	**$31.94**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$15.07
Water quality/detention	$15.1
Total	**$30.17**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Tualatin, which borders a portion of the reserve area to the north across I-205, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Boones Ferry Road at the Tualatin River has a severely congested volume/capacity ration (>1.0) for the southbound lane and a congested volume/capacity ratio (<1.0) for the northbound lane. Highway 99W at SW Tualatin Road and I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions.

Transit: Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SE Tualatin-Sherwood Road and SW Boones Ferry Road providing service to the Town Center and employment areas.

Bike: Tualatin has a fairly well-established bike route system of dedicated bike lanes (25 miles), established bikeways (7 miles) and local trails that connect the employment areas and Town Center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city.

Pedestrian: Most of the residential areas of Tualatin have sidewalks with less pedestrian connections in the employment areas. The Town Center has a fairly well-established pedestrian network that also includes access to some trails. The Tualatin River Greenway Trail connects the Town Center to parks in Durham and Tigard to the north as well as to Browns Ferry Park along the Tualatin River on the east side of I-5.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: SW 65th Ave, which is the only direct arterial connection to the reserve area from Tualatin, has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Prosperity Park Road connects to SW Borland Road at the city limits; however, it was not assessed as it is a local road.

Transit: TriMet bus route 76, which provides access to the Beaverton Transit Center, is approximately ⅓ of a mile from the reserve area via SW 65th Ave. No other bus lines are close to the reserve area.

Bike: There is a dedicated bike lane on SW 65th Ave that is approximately one-tenth of a mile north of the reserve area. This bike lane connects to a bike lane on SW Sagert Street which provides a connection to the west side of I-5, the Town Center, and employment areas. The small gap on SW 65th Ave needs to be completed to serve the reserve area.

Pedestrian: The Saum Creek Greenway Trail is approximately 800 feet north of the reserve area via SW 65th Ave and connects to sidewalks on SW 65th Ave and SW Sagert Street. The sidewalks do not connect across I-5 and therefore provide limited access to other parts of the city. The 800-foot gap needs to be completed to serve the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Currently SW 65th Ave is the only direct arterial connection to the reserve area from Tualatin and it has an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. As it is the only major connection from a nearby area already inside the UGB that also leads to I-5, it is expected that SW 65th Ave would be drastically impacted by urbanization of the reserve area.

Transit: TriMet bus route 76 is approximately⅓ of a mile from the reserve area via SW 65th Ave and could see additional ridership if improved pedestrian connections were made. See transit analysis below.

Bike: The dedicated bike lane on SW Sagert Street could see additional use if the gap in the bike lanes were addressed.

Pedestrian: The Saum Creek Greenway Trail that is approximately 800 feet north of the reserve area via SW 65th Ave could see additional use if improved pedestrian connections were made inside the UGB. As the sidewalks near the trail do not connect across I-5 and provide limited access to other parts of the city, they would not see much additional use.

Need for new transportation facilities and costs (see attached transportation map)

SW Stafford Road and SW 65th Ave will need to be improved to urban arterial standards. SW 65th Ave is considered a ½ street improvement as the I-5 East-Washington County urban reserve would be responsible for the other half of the roadway. SW Prosperity Park Road, SW Delker Road, SW 55th Ave, SW meridian Way and SW Trail Road will need to be improved to urban collector standards. Six new collectors are needed to provide connectivity throughout the reserve area.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$141.42
	Existing/Improved ½	$46.44
Collectors	Type	Cost (in millions)
	Existing/Improved	$80.20
	New	$69.29
Total		**$337.35**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined service is unlikely to occur.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Boeckman Creek and a small tributary flow south through the southwestern portion of the reserve area for just over eight-tenths of a mile. The streams flow through a mixture of open fields and forested areas mostly adjacent to rural residences and riparian habitat is identified along the stream corridors. It appears Boeckman Creek has been altered in certain locations as it flows through the residential area. There is one small wetland on the National Wetland Inventory (NWI) located near the tributary that is 5,523 square feet in size. The location of Boeckman Creek between SW Stafford Road and SW 65th Ave could lead to impacts related to future local street connections. The increased protection levels for streams, wetlands, and habitat areas within the UGB will help lessen any potential impacts.

A very short segment of a tributary to Newland Creek flows south through the southeastern corner of the reserve area for 1,150 feet. This stream flows along the border of a wooded area that forms the eastern edge of the urban reserve and there is riparian habitat identified along the stream corridor, which would be protected once the land was added to the UGB. Based on the increased protection levels for streams and habitat areas inside the UGB and due to the land to the east being in a rural reserve this stream segment would not be impacted by future urbanization.

Athey Creek and a small tributary flow north through the northeastern corner of the reserve area for approximately 2,900 feet. Athey Creek flows through private open space that is either wooded or a mixture of open field with scattered tree canopy. This portion of the stream would be protected from future urbanization. The tributary also flows through private open space with a very small section in open field and wooded portions of residential lots. Riparian habitat is identified along both stream segments. Increased protection levels for habitat areas inside the UGB will provide additional protection to the stream section that is not on the designated open space land, thus urbanization would have minimal impact on these two streams.

There are two sets of tributaries to Saum Creek that flow north through the central and western portions of the reserve area. The western set, which is composed of two stream corridors, flow mainly through rural residences with a small section located on open fields that appear to be tiled. There is one 14,609 square foot wetland identified on the NWI located along one of the stream corridors. In numerous locations the stream has been altered with man-made ponds. Riparian habitat has been identified along both stream corridors. The vast majority of the two stream

segments flow along edges of developed rural residential properties and could be impacted by urbanization depending on the density and design of the development.

The central tributary is also composed of a main stem (1.5 miles) and a small second stream (2,820 feet) that flow mainly through forested portions of rural residential lots, some open fields, and a forested private open space. There is one 6,289 square foot wetland identified on the NWI located along the main stream corridor and another pond not identified on the inventory. There are several significant sections of steep slopes in the forested areas along both streams. Riparian habitat is identified along the two stream corridors with upland habitat identified in the forested areas. There are a couple of locations where the streams could be impacted by future urbanization, however the vast majority of the two stream segments flow along edges of parcels within canyons or gullies and the level of impact by urbanization of the area would depend on the design of the development and necessary road connections. For instance, an east-west connection between SW Prosperity Park Road and SW Trail Road would impact a significant amount of habitat.

Overall, given the location of the stream corridors adjacent to steep slopes, the increased protection levels for streams, wetlands, and habitat areas on land inside the UGB, and the existing pattern of the rural residential development, urbanization of the area could occur with minimal to moderate impact to the streams, wetlands and habitat areas, depending on road connections and urban form.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences over time. However, given that eighty-nine percent of the parcels have improvements, and over 70% of the parcels are less than five acres in size, redevelopment of the area will be slow. This combined with the stream and habitat corridors that divide the area up, results in the potential for a modest increase in development in the area. Thus, any social impacts related to loss of sense of place and rural lifestyle for current residents will be nominal. The additional traffic generated through urbanization, even though it will not be great, will impact SW Stafford Road as it provides access to both I-5 and I-205 which could provide negative energy impacts. SW 65th Ave provides access across I-205 for local travel which may lessen the energy impacts, although this road could see additional traffic as well as it leads to I-5. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential development of these lands, even though it is not great, should outweigh this loss. Overall, this reserve area has low to medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

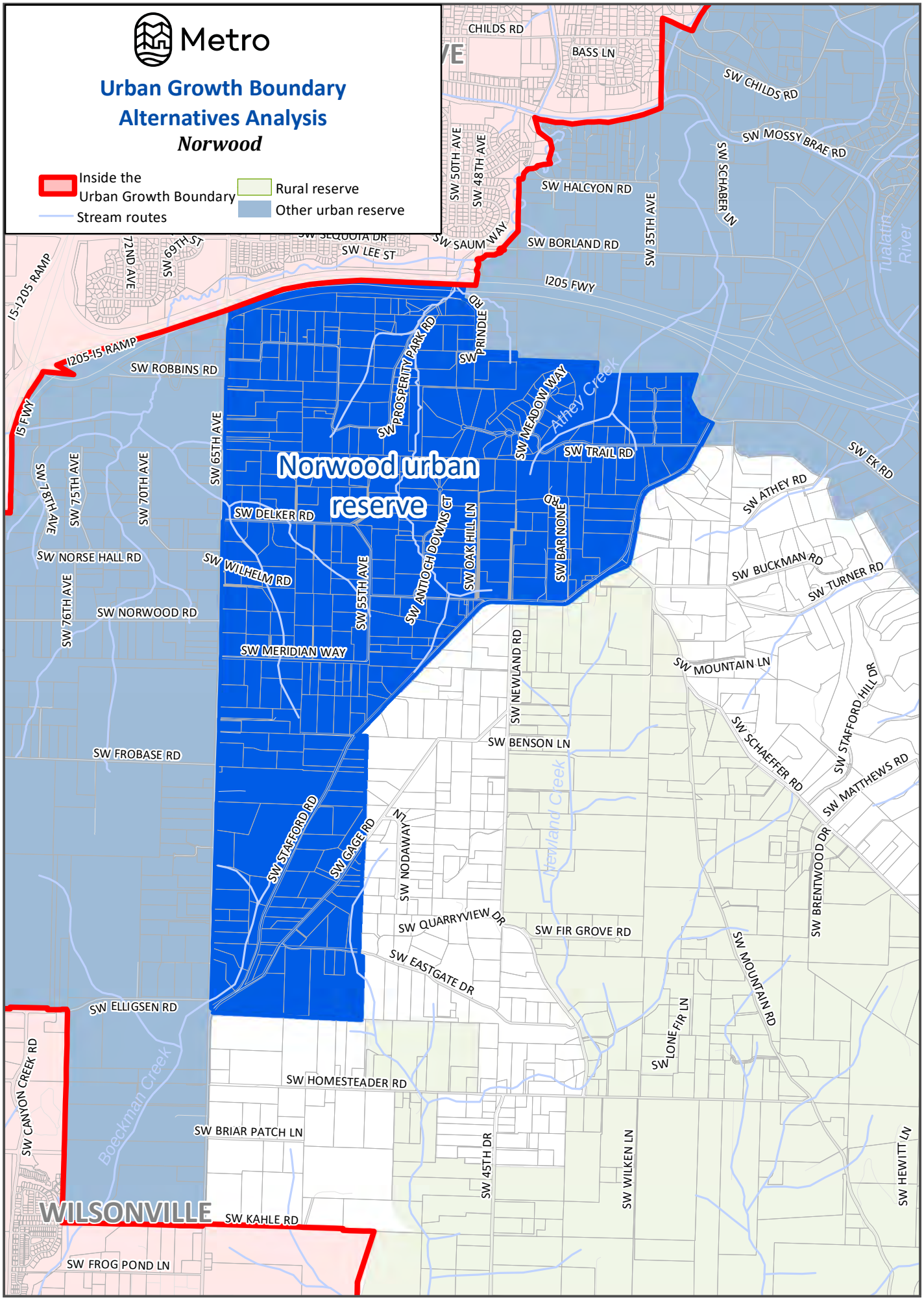
Farmland borders the reserve area to the west, south and southeast. There are two pockets of Exclusive Farm Use (EFU) zoned land to the west. The first is a 112-acre block on the north side of SW Frobase Road at SW 65th Ave that includes pasture land and Christmas trees. While SW 65th Ave would provide a buffer for the two agricultural areas, the road itself would not make the uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor,

dust and the use of pesticides and fertilizer could still occur. However as noted above, the pace of urbanization will be slow, lessening any incompatibilities that arise.

The second location is a 98-acre block of EFU land south of SW Robbins Road adjacent to SW 65th Ave. This is the location of Lee Farms, which is a family-owned business that includes Christmas trees, a pumpkin patch, berries and a county store. There are field crops in the northern section of the farmland, presumably not associated with Lee Farms. Similarly, while SW 65th Ave would provide a buffer for this small agricultural area the road itself would not make the two uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. The activities of Lee Farms may be less incompatible from the noise, odor, dust and the use of pesticides and fertilizer perspective. However as noted above, the pace of urbanization will be slow, lessening any incompatibilities that arise. Urbanization would increase traffic on SW 65th Ave which could impact the movement of both farm equipment and goods as it provides the most direct route to I-5 and I-205 for these two areas. The proposed urban uses are not compatible with agricultural activities occurring on the two small farm land areas outside the UGB to the west. It should be noted that both of these farm land areas are within the I-5 East Urban Reserve and would most likely be added to the UGB prior to or at the same time as this area.

The farm land to the south is part of a sizeable block of EFU land that extends to the Willamette River. The farm land directly adjacent to the reserve area is in agricultural production including field crops, pasture land and nursery and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could occur. Even though the border between the reserve area and the farm land is only ½ mile long, the absence of any buffer would make the proposed urban uses not compatible with nearby agricultural activities occurring on the farm land to the south.

The farm land to the southeast, in the vicinity of SW Mountain Road, is part of a large block of EFU land that extends over a mile to the south. Most of the farm land directly adjacent to the reserve area is in agricultural production including field crops and pasture land although the West Linn-Wilsonville School District Administrative office is also located on this farm land. SW Stafford Road provides a buffer for the agricultural lands, although the road itself would not make the uses compatible and issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer could still occur. Urbanization would increase traffic on SW Stafford Road which could impact the movement of both farm equipment and goods as it provides the most direct route to I-5 and I-205 for this farm land. Overall, the proposed urban uses have low compatibility with nearby agricultural activities occurring on farm land outside the UGB and additional buffering would be required.



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Metro

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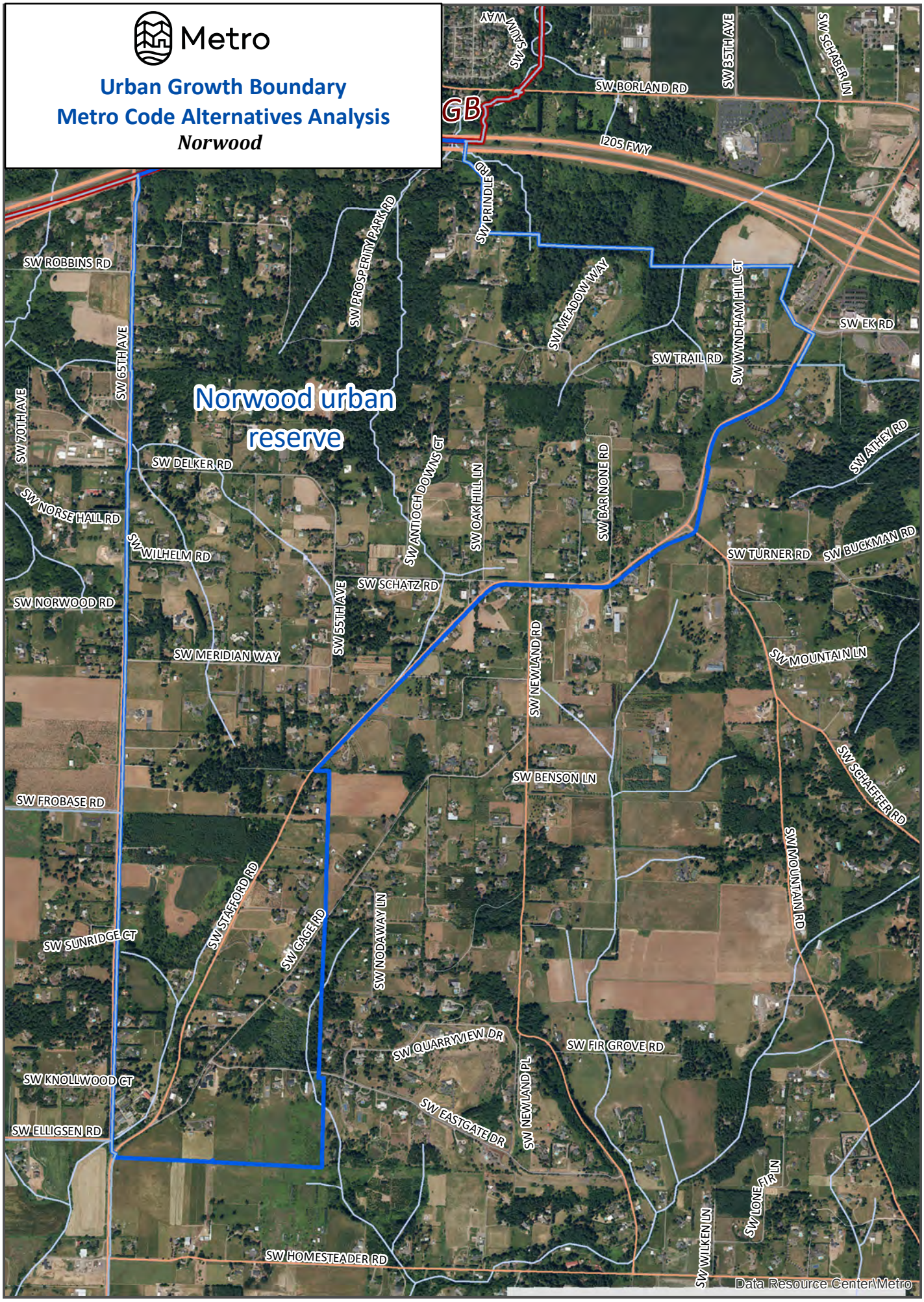
Metro Code Alternatives Analysis
Norwood



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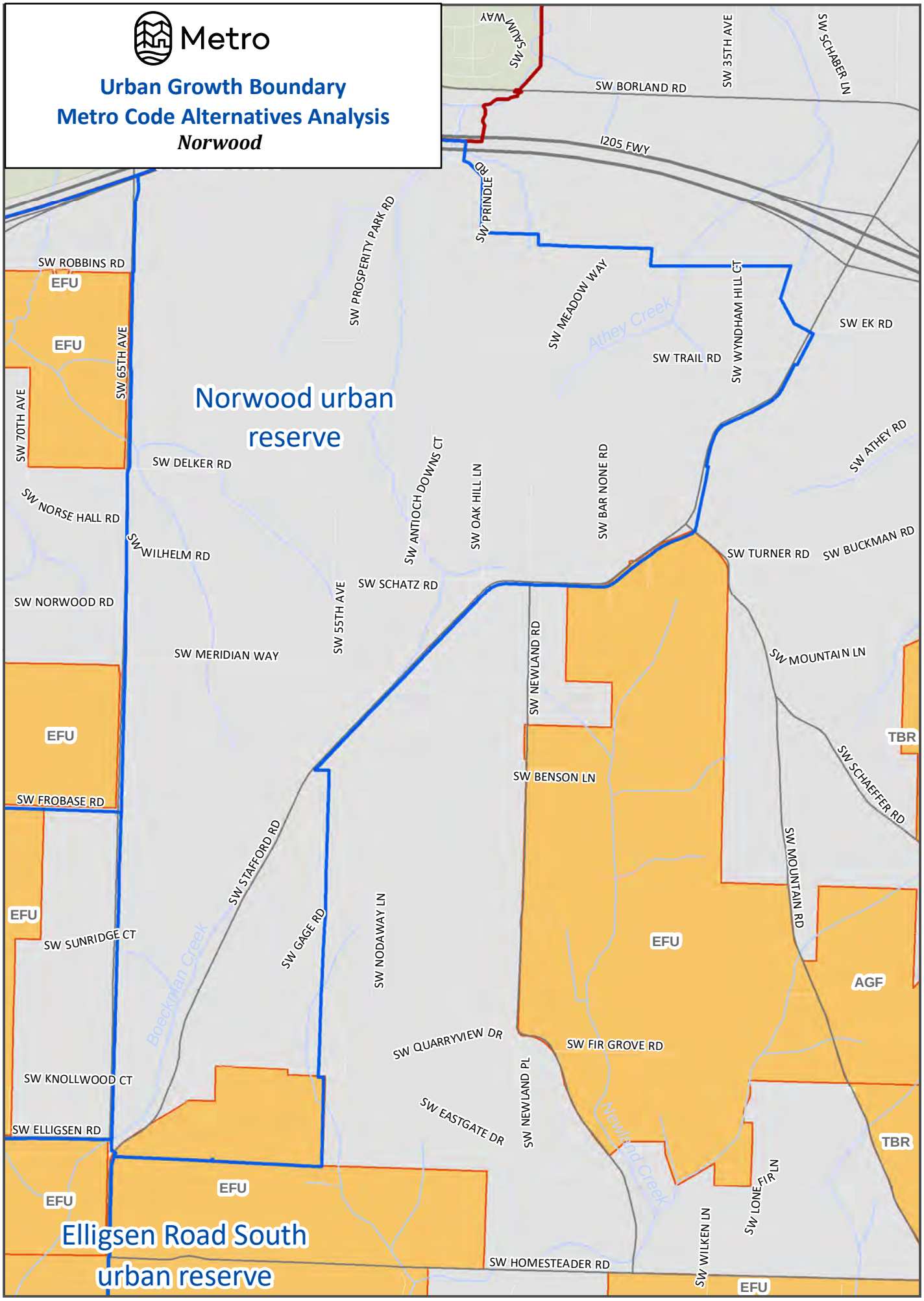
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Norwood



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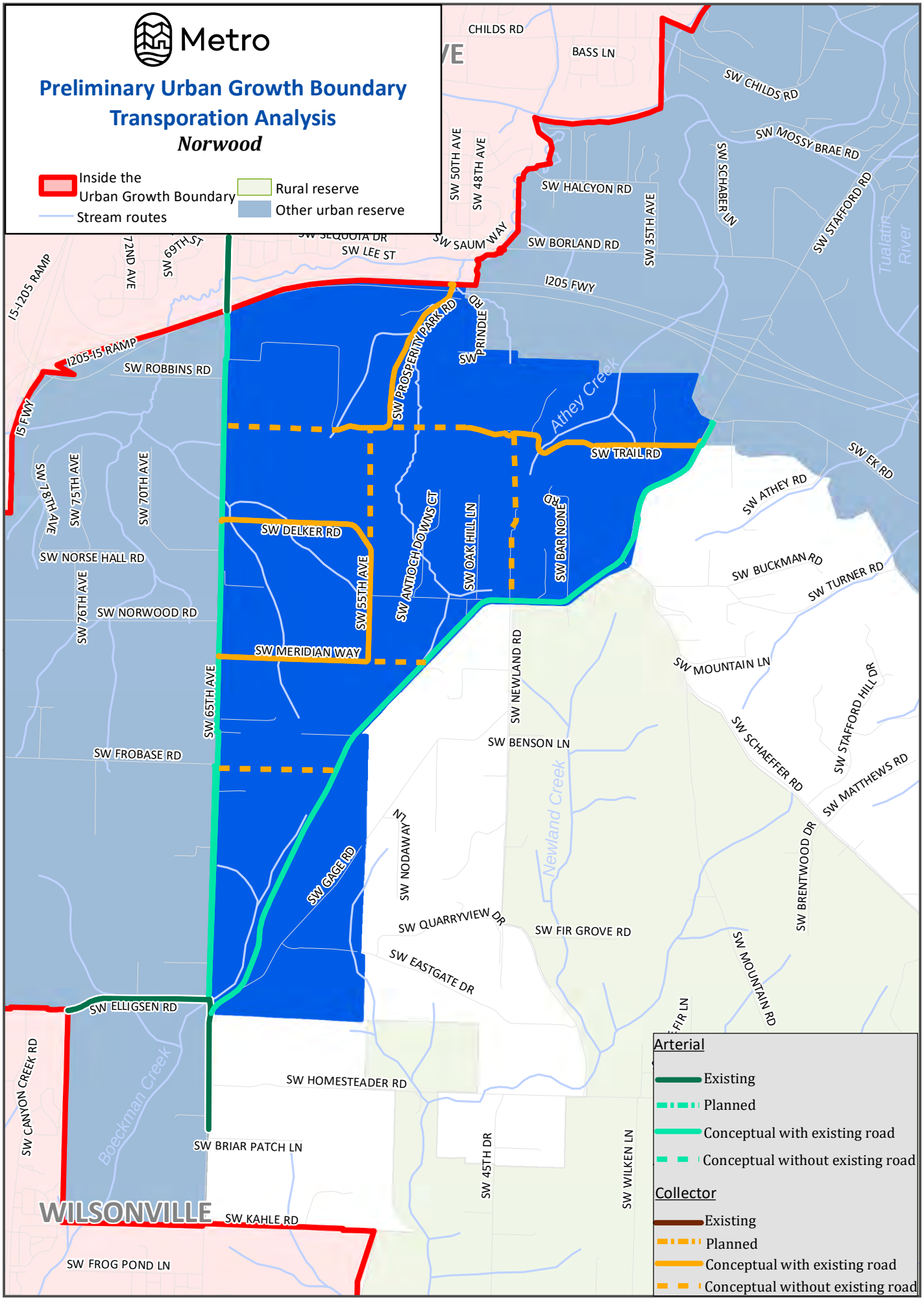

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RIVER TERRACE SOUTH URBAN RESERVE AREA

Total Acres	205	Parcel Acres	190
Gross Vacant Buildable Acres	157	Net Vacant Buildable Acres	119

General Description (see attached map)

The River Terrace South Urban Reserve Area is a small sized area on the south side of Tigard that is north of SW Beef Bend Road between SW Roy Rogers Road and SW 150th Avenue. SW Beef Bend Road and SW Roy Rogers Road form the southern and western edges and the UGB forms the northern and eastern edges of the reserve area. The land gently slopes upward as you go north from SW Beef Bend Road. One stream flows south through the center of the area, a second flows south in the eastern portion of the area and a third flows west through the very northwest tip of the area. Access is provided by SW Beef Bend Road, SW Taylor Lane, SW April Lane, SW 150th Avenue and SW Roy Rogers Road.

Parcelization and Development Pattern (see attached aerial photo)

This small reserve area contains 16 parcels and a small portion of a parcel that is already in the UGB. The parcels range from 6,100 square feet to 22 acres in size. Nine of the parcels are greater than ten acres in size and only one parcel is less than one acre. These nine parcels account for 162 acres or 85% of the parcel land area. The area contains rural residences, agricultural lands, and partially forested parcels. Fourteen of the 16 parcels have improvements.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This small reserve area is relatively flat with only a few locations of slopes greater than 10% and virtually no areas with slopes greater than 25%. Nine of the 17 parcels are greater than ten acres in size which provides the opportunity to consolidate parcels into larger blocks of land for residential or employment development. The two stream corridors divide the area into sections that still provide fairly large blocks of land for development. SW Beef Bend Road and SW Roy Rogers Road provide ease of access. While an employment use may be possible from a topographic standpoint, Tigard has a considerable amount of employment land with better access to highways that reduces the need for any additional employment land for the city. Thus, this reserve area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Tigard completed concept planning for River Terrace South in 2021. The updated infrastructure costs from that effort were not factored into the 2018 infrastructure cost estimates below.

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tigard provides sanitary sewer services that feed into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS provides wastewater treatment through the Durham Waste Water Treatment Plant which has capacity to serve lands inside the UGB. CWS recently completed significant capital improvements relating to their conveyance piping that are necessary to serve the land currently within the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Topography of the reserve area indicates that sewer flows will be directed towards the southwest to a pump station proposed within the Kingston Terrace expansion area. The flows will be conveyed through this new urban area to the connection at SW Fischer Road in King City and on to the Durham treatment plant. Available capacities within the existing lines are unknown currently.

Impacts to existing facilities that serve nearby areas already inside the UGB

CWS has indicated some interceptor and/or trunk lines that are at or near capacity are being upgraded to serve the lands within the Cooper Mountain and River Terrace 1.0 areas. These new facilities may have capacity for additional expansions, but the amount of excess capacity is not known at this time. Other impacts are local in nature, occurring as facilities are developed. New wastewater mains must be provided and the laterals off the mains are provided by the development community. The sanitary sewer cost analysis for this reserve area assumes that the Kingston Terrace expansion area will be developed prior to the River Terrace South urban reserve.

Tigard completed a concept plan for the area that updated the sanitary sewer needs taking into consideration the residential development that has occurred to the north in the River Terrace 1.0 area since 2018. Tigard continues to coordinate with King City as they finalize the sanitary sewer infrastructure needs for the Kingston Terrace master plan area on the south side of SW Beef Bend Road. Finally, CWS is completing a stormwater and sanitary sewer study in the River Terrace area to develop recommendations for regional stormwater management and sanitary system design to meet future growth needs. The study will integrate local sanitary system planning concepts with existing infrastructure to recommend the best design for an effective system to serve the area. A cohesive regional system will provide guidance to Tigard and King City as they plan for future projects. The study will be complete in early 2023.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
12 – 18" pipe (gravity)	$2.79
Total	**$2.79**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The Tigard Water District, along with the Cities of Durham, King City and Tigard has an Intergovernmental Agreement, (IGA) with the City of Tigard to serve the nearby areas already inside the UGB. This is known as the Tigard Water Service Area (TWSA). Information provided by the City of Tigard indicates that the water supply, storage, and piping are sufficient to serve the existing UGB. Minor deficiencies were identified with the Water Treatment Plant; however, there are plans to correct the deficiencies in the near future.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water supply appears to be adequate, or the City of Tigard will be able to provide water as this area is urbanized. The City of Tigard is currently in the process of updating its water master plan. The master plan update will include this reserve area as well as the River Terrace West urban reserve and the Kingston Terrace expansion area. The master plan will identify excess capacity within the system and determine if it can be used within the reserve areas. In addition, the City plans to acquire property in the adjacent River Terrace 1.0 area that can be used for the construction of additional storage to serve the reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City of Tigard is currently updating the water master plan which includes planning for the reserve area. Water capacity appears to be adequate, and most impacts are local in nature, occurring as facilities are developed. New water mains must be provided to allow development of this reserve area and the laterals off the mains are provided by the development community. The amount of any upsizing that would be needed is not known at this time but will likely be identified in the master plan update. Tigard continues to coordinate with King City as they finalize the water infrastructure needs for the Kingston Terrace master plan area on the south side of SW Beef Bend Road.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
18" and larger	$2.28
Storage/pumping	$1.51
Total	**$3.79**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

CWS is completing a stormwater and sanitary sewer study in the River Terrace area to develop recommendations for regional stormwater management and sanitary system design to meet future growth needs. A regional stormwater strategy will be developed to provide a comprehensive approach to stormwater management and will provide guidance to Tigard and King City as they plan for future projects. The study will be complete in early 2023.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$3.53
Water quality/detention	$3.65
Total	**$7.18**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Many of the roads in Tigard have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak, however there are numerous roads with higher levels of congestion. The following road sections have a congested volume/capacity ratio (<1.0): SW Scholls Ferry Road at SW 121st Ave in both directions; Highway 99W at SW Bull Mt. Road in both directions; SW MacDonald Street at SW Hall Blvd. in both directions; I-5 southbound at SW Carmen Drive; Highway 217 from SW Greenburg Road to SW 72nd Ave in both directions (a portion of the northbound lane at Highway 99W is severely congested); Highway 99W at Highway 217 in both directions; and Highway 99W at I-5 south bound. The following road sections have a severely congested volume/capacity ratio (>1.0): Highway 99W at I-5 northbound; Highway 217 at I-5 southbound; SW Durham Road west of SW Hall Blvd. in both directions; SW Durham Road east of SW Hall Blvd. in the westbound direction; SW Durham Road from SW 79th Ave to SW Upper Boones Ferry Road in both directions (a small

segment at SW Upper Boones Ferry Road westbound is congested) and SW Tiedeman Ave at SW Tigard Street southbound. Highway 99W is classified as a high injury corridor and the intersection of SW Hall Blvd. and Highway 99W is classified as a top 5% high injury intersection.

Transit: Eight TriMet bus routes provide service to Tigard, mainly along the arterial streets in the northern portion of the city near Highways 217 and Highway 99W. WES Commuter Rail stops at the Tigard Transit Center. Most of the city west of Highway 99W does not have transit service.

Bike: Tigard has over 28 miles of dedicated bike lanes, 16 miles of established bikeways and numerous streets considered bike friendly that together create a well-connected system that is dispersed throughout the residential areas. Most of the employment areas and the Town Center are served by bike facilities.

Pedestrian: Most of the residential neighborhoods in Tigard have sidewalks although there are some significant sections of the city that do not, including some near schools. The Town Center and employment areas are also fairly well served by sidewalks, however internal circulation in some business parks is lacking. The Fanno Creek Trail, Pathfinder-Genesis Trail and Tigard Street Trail provide other pedestrian options, mainly near the Town Center south of Highway 217.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: The roads in Tigard near the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 99W at SW Bull Mt. Road, which is located just north of SW Beef Bend Road, has a congested volume/capacity ratio (<1.0) in both directions. Highway 99W at SW Tualatin Road in Tualatin, which is just south of SW Beef Bend Road, also has a congested volume/capacity ratio in both directions. SW Roy Rogers Road which is outside the UGB also has a congested volume/capacity ratio in both directions between SW Beef Bend Road and SW Bull Mt. Road.

Transit: No TriMet bus routes travel close to the reserve area. The closest transit stop for route 94 is two miles from the reserve area via SW Beef Bend Road.

Bike: The closest bike facility inside the UGB is a dedicated bike lane on one side of the road on SW Roy Rogers Road at the western edge of the reserve area that extends north toward SW Scholls Ferry Road. There is a dedicated bike lane on SW Bull Mt. Road which is ¾ mile from the eastern edge of the reserve area up SW 150th Ave. The portion of SW Roy Rogers Road that is adjacent to the reserve area but outside the UGB also has a bike lane on one side of the road.

Pedestrian: The adjacent residential neighborhoods in unincorporated Washington County have sidewalks although none of the sidewalks connect to the reserve area. The residential development that is occurring to the north in River Terrace 1.0 does have sidewalks. As the undeveloped land between the reserve area and the already developed portion of River Terrace 1.0 is built out in the near term as expected, sidewalks will then be directly adjacent to the reserve area providing pedestrian connections to the north.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: It is expected that SW Beef Bend Road will see increased traffic as a result of urbanization of the reserve area. This could lead to increased traffic on Highway 99W that may increase congestion issues at SW Tualatin Road in Tualatin and at SW Beef Bend Road in Tigard where currently the highway has a congested volume/capacity ratio in both directions. SW Roy Rogers Road will also see increased traffic as a result of urbanization of the reserve area and may increase congestion issues on the road to the north and south, although the portion of SW Roy Rogers Road adjacent to the reserve area will be improved to urban arterial standards.

Transit: There is no impact to current TriMet bus routes. See transit analysis below.

Bike: The bike lane on SW Roy Rogers Road that is both inside and outside the UGB may see additional use, especially as the River Terrace 1.0 area to the north builds out. The roadway is not the most comfortable environment for most bicyclists due to automobile speed which may reduce use. The bike lane on SW Bull Mt. Road would be expected to see additional use as this facility provides connections to other new facilities in the River Terrace 1.0 area.

Pedestrian: The sidewalks in the adjacent unincorporated residential neighborhoods will not be impacted as they provide internal circulation only. The sidewalks in River Terrace 1.0 that are expected to be built in the near term would be expected to see additional use as they will provide connections to a larger pedestrian network.

Need for new transportation facilities and costs (see attached transportation map)

SW Beef Bend Road, SW Roy Rogers Road, and SW 150th Ave will be improved to urban arterial standards. SW Beef Bend Road is considered a ½ street improvement as the south side of the road is the responsibility of the Beef Bend South urban reserve area. SW 150th Ave is also considered a ½ street improvement as the east side of the road is inside the UGB. One new collector is needed to connect SW Beef Bend Road with the new collector in River Terrace.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$16.12
	Existing/Improved ½	$26.58
Collectors	Type	Cost (in millions)
	New	$10.55
Total		**$53.25**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, five days a week with two additional buses

at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $832,000 and grows 2% per year.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There is a small 600-foot segment of a stream that crosses the very northwest tip of the reserve area on its way to the Tualatin River. This stream flows within a forested canopy and has some associated riparian habitat. Given the location of the stream at the very top corner of the reserve area and the increased protection levels for streams and habitat areas within the UGB, urbanization of the area can occur without impacting this stream corridor.

A second stream flows south through the middle portion of the reserve area for approximately 1,980 feet, ultimately meeting the Tualatin River. This stream flows mainly through a forested canopy on rural residential lots and there are two ponds along the stream corridor that are not identified as wetlands. Riparian and upland habitat has been identified along the stream corridor. Any east-west roadway connections would impact the stream corridor and given the narrow shape of the reserve area; one would expect that local connections would be needed as it would be undesirable to direct all traffic to SW Beef Bend Road. The increased protection levels for streams and habitat areas within the UGB will help reduce roadway impacts to the stream corridor; however, some impacts would be expected.

A third stream flows south through the eastern portion of the area for approximately 900 feet. This stream is partially in a wooded area and partially within agriculture fields and there is riparian habitat identified along the stream corridor. Any east-west roadway connection would impact the stream corridor, although the relatively small area between the stream and SW 150th Ave may not warrant such a connection, depending on the future roadway pattern of the land to the north inside the UGB. Overall urbanization of the area could occur with low to moderate impacts to the stream corridors and habitat areas depending on the needed road connections.

Energy, Economic & Social

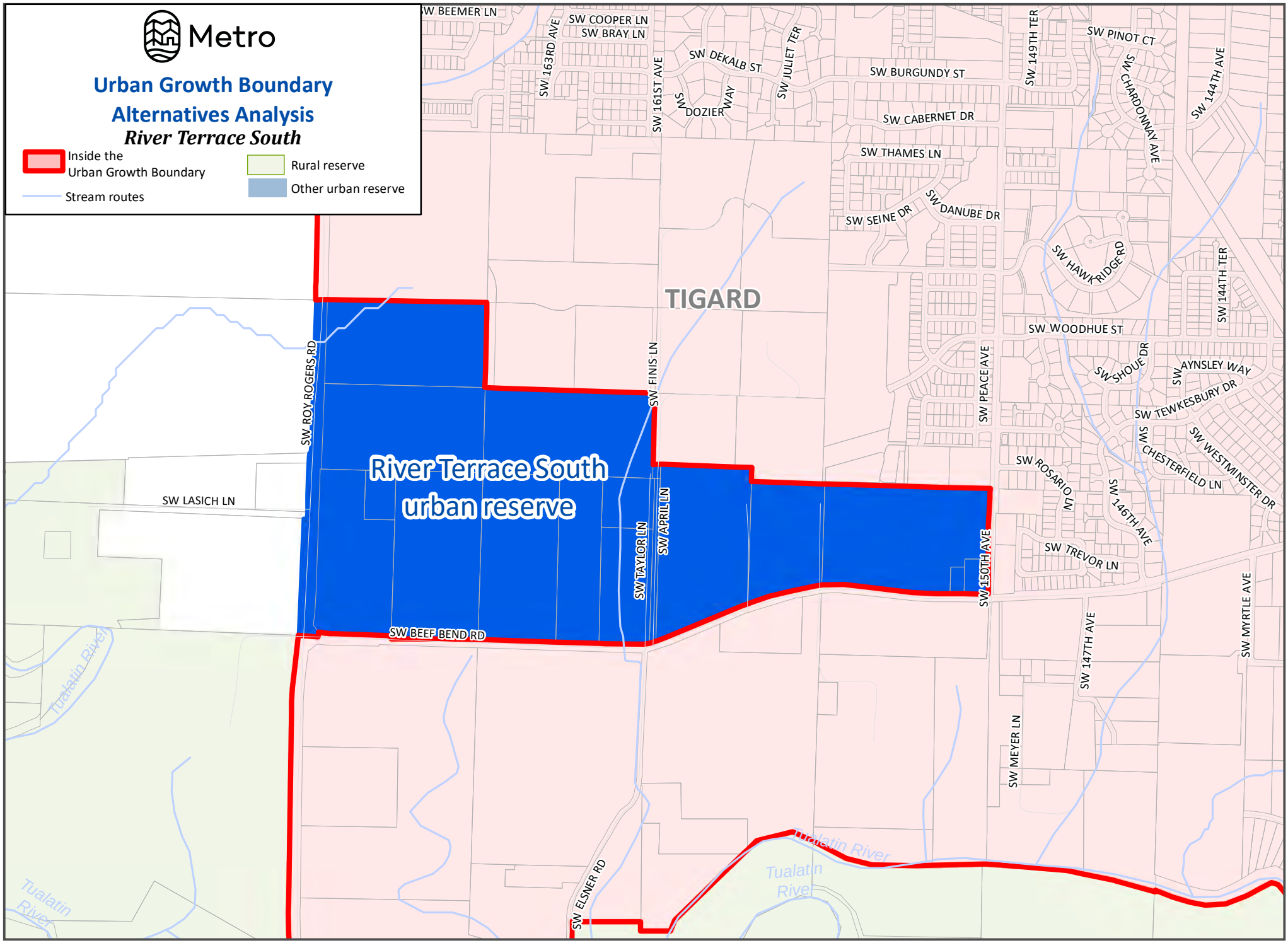
It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. There are two significant blocks of land and one smaller location that could be developed to urban densities. This significant amount of development would generate social impacts on the existing residents of the area in terms of loss of sense of place and rural lifestyle. Directly to the north is the River Terrace 1.0 area that was brought into the UGB in 2002 and is currently being developed to urban standards. In addition, to the south across SW Beef Bend Road is the Kingston Terrace area of King City that was included in the UGB in 2018 and is currently undergoing a comprehensive planning process by the city. The development activity to the north and the potential for urban development to the south in near term lessens the loss of the rural lifestyle for the current residents. There is potential to combine this reserve area with River Terrace 1.0 and Kingston Terrace to create one urban community with a higher level of amenities such as parks and trails and develop efficiencies in infrastructure financing and delivery of services.

There are a few significant locations of agricultural activities dispersed within the rural residences. The potential economic impact of urbanizing this area will outweigh the loss of the economic impact from these agricultural uses. The additional traffic generated through urbanization will impact SW Beef Bend Road, SW Roy Rogers Road and ultimately SW Scholls Ferry Road and Highway 99W which could provide negative energy impacts as currently these roadways are highly traveled. This is especially true when the River Terrace 1.0 and Kingston Terrace builds out. The planned River Terrace Trail would run along the northern boundary of the area and the planned Roy Rogers Road trail along the western edge, providing trail connection points that could reduce some local automobile trips, thereby reducing VMT. Overall, this reserve area has moderate economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

To the west of SW Roy Rogers Road is a significant block of EFU zoned land that extends both north and west, well beyond the Tualatin River, which provides a buffer for the farm land further west. The 155-acre block of EFU land between the Tualatin River and SW Roy Rogers Road that is directly adjacent to the reserve area contains some significant agricultural activities as well as the Baggenstos Farm Store. A portion of the EFU land is owned by the City of Tigard and does not contain agricultural activities. The significant right-of-way width of SW Roy Rogers Road would provide a buffer between the agricultural activities occurring in this location and a new urban area; however, the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of pesticides and fertilizer. In addition, the improvement of SW Roy Rogers Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses. Urbanization of the reserve area may significantly increase traffic on SW Beef Bend Road and SW Roy Rogers Road which could impact the movement of both farm equipment and goods. Thus, the proposed urban uses are not compatible with the nearby agricultural activities occurring on this block of farm and forest land. Mitigation measures on the urban side, together with the large road right-of-way could reduce conflicts between the urban uses inside the UGB and agricultural activities occurring on farm land outside the UGB.

Overall, the proposed urban uses have moderate compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the west based on future mitigation measures and the large road right-of-way.



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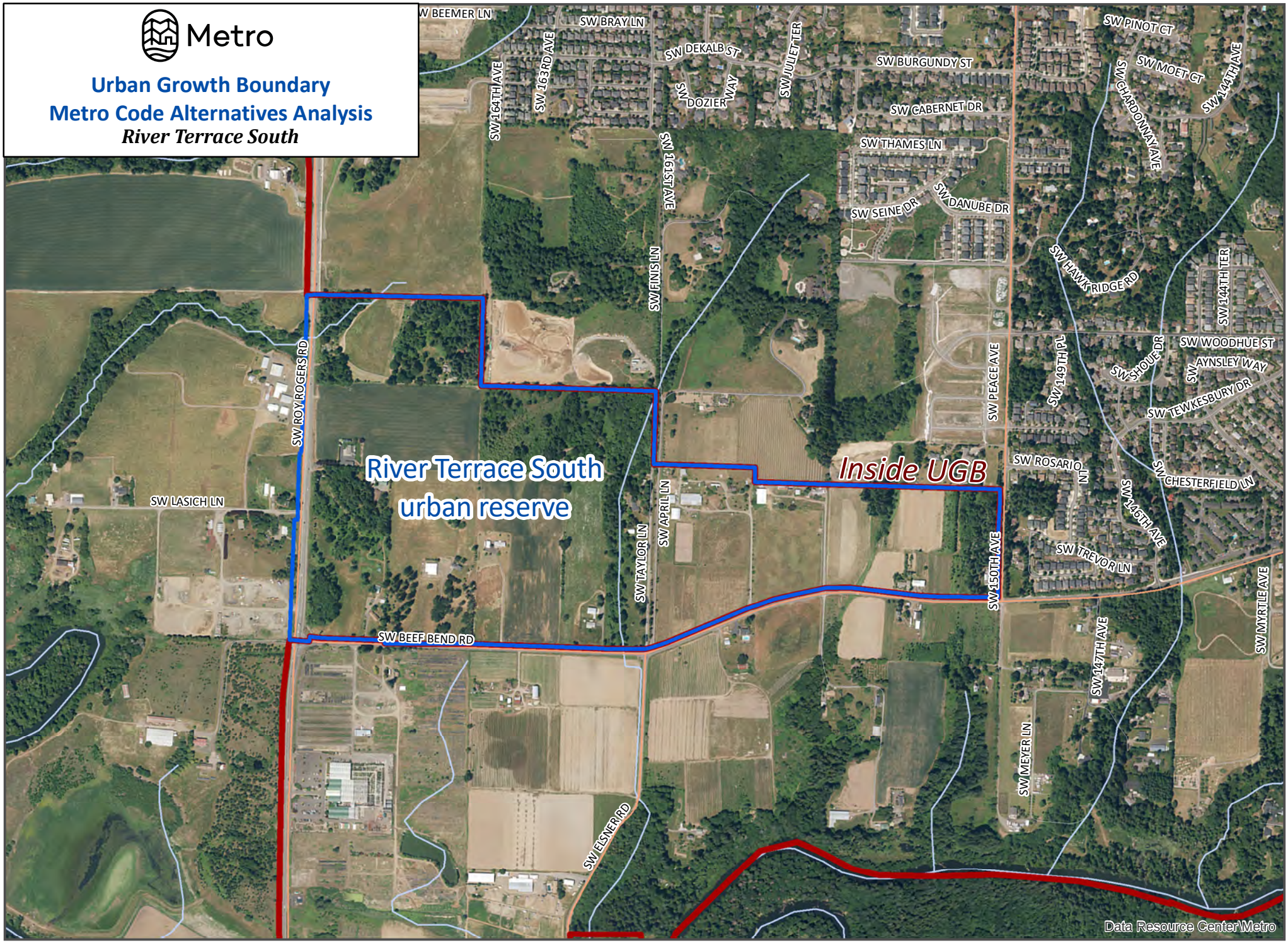
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
River Terrace South



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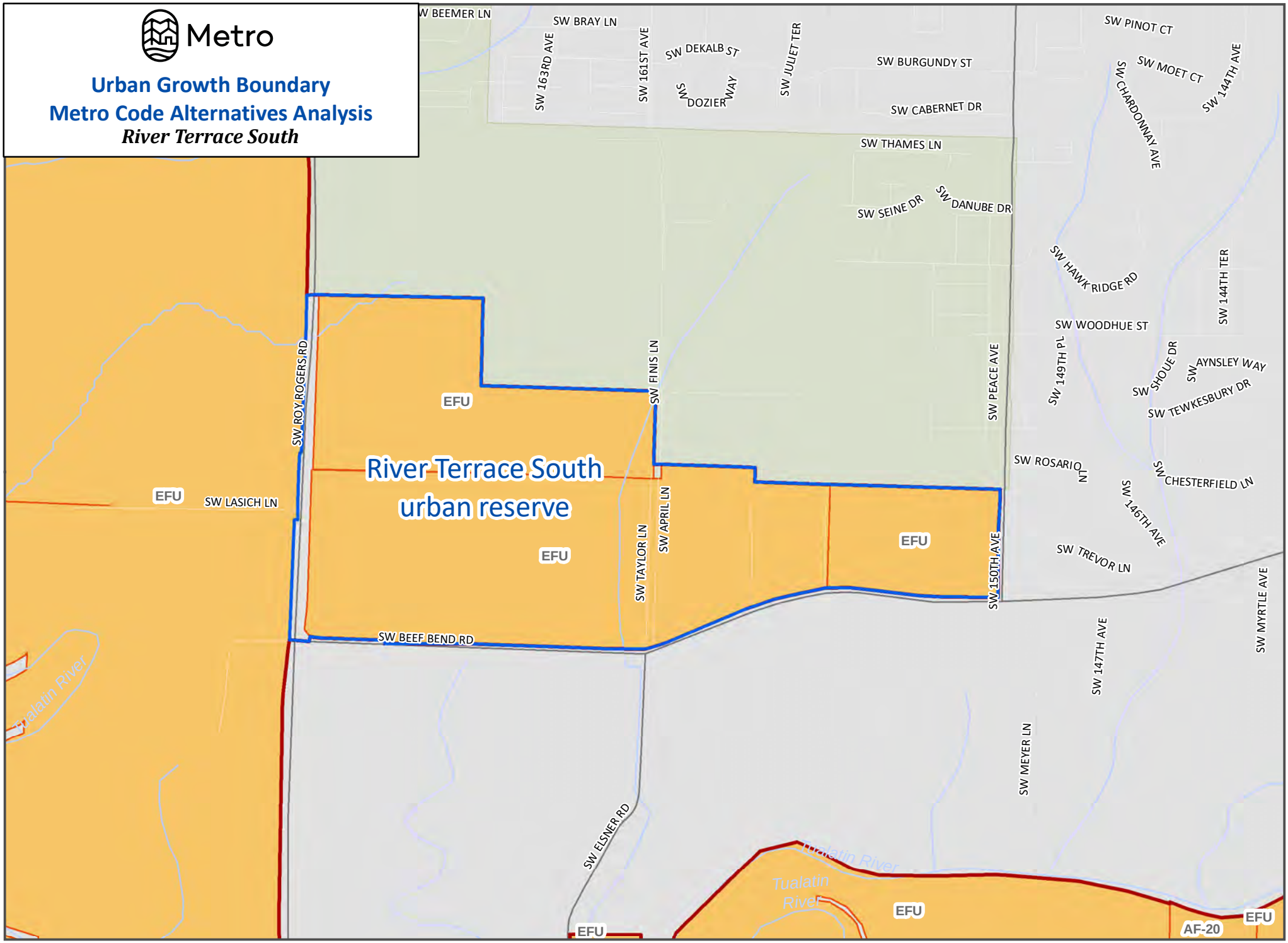
Urban Growth Boundary
Metro Code Alternatives Analysis
River Terrace South



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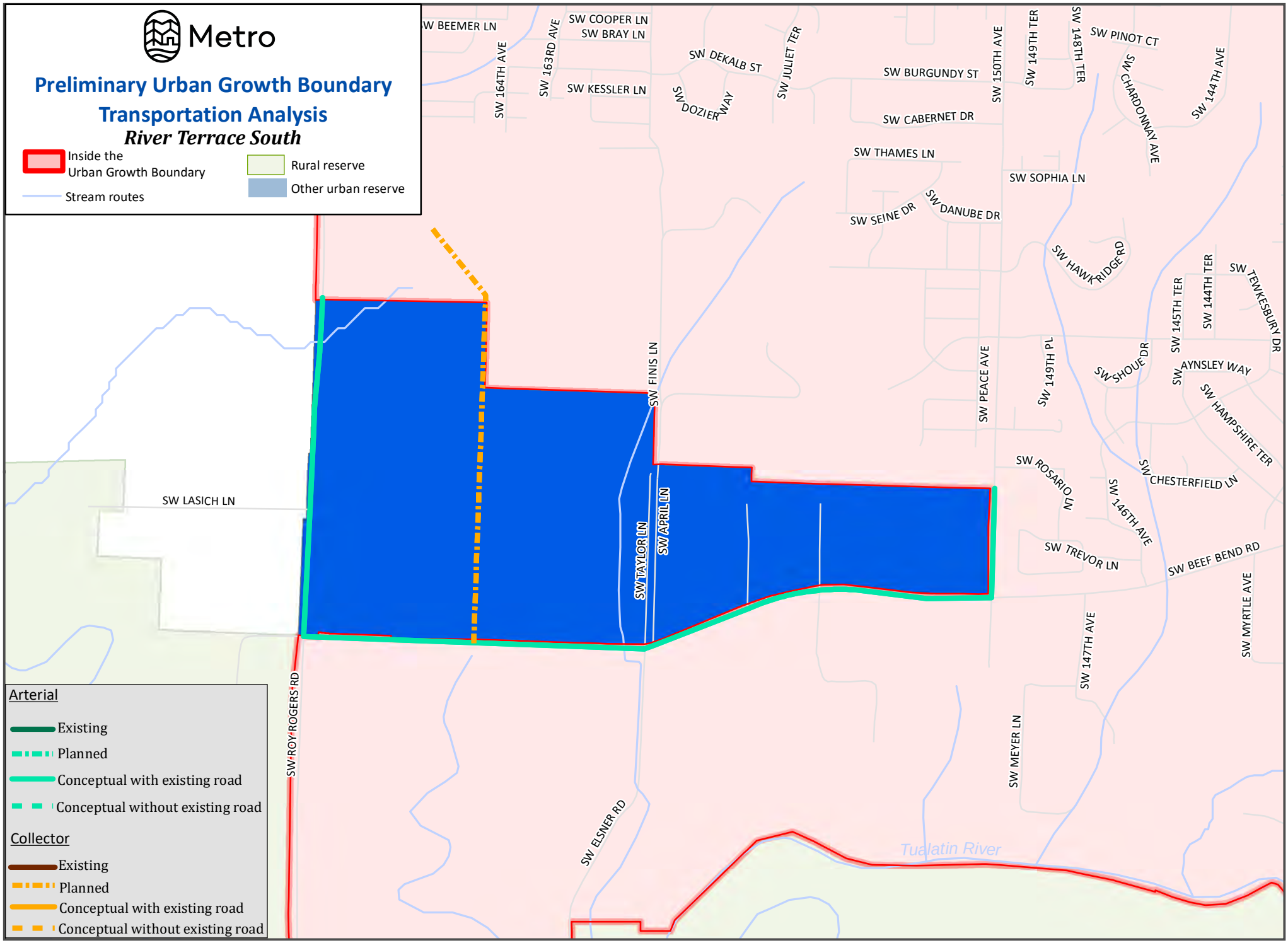

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RIVER TERRACE WEST URBAN RESERVE AREA

Total Acres	303	Parcel Acres	301
Gross Vacant Buildable Acres	189	Net Vacant Buildable Acres	144

General Description (see attached map)

The River Terrace West Urban Reserve Area is a small area west of Tigard that is west of SW Roy Rogers Road and south of SW Scholls Ferry Road. The UGB forms the eastern and northern boundaries; rural reserve land is to the west and undesignated rural land to the south. The land is generally flat and gently slopes to the south/southwest. Access to the area is provided by SW Roy Rogers Road, SW Scholls Ferry Road, SW Bull Mountain Road, and SW Vandermost Road.

Parcelization and Development Pattern (see attached aerial photo)

This small reserve area contains 22 parcels that range in size from 37,000 square feet to 87 acres. Sixteen of the parcels are greater than five acres in size and only one parcel is less than one acre. Four parcels are greater than 20 acres and account for 168 acres or 55% of the parcel land area. The area contains rural residences, agricultural lands, and partially forested parcels. Eighteen of the 22 parcels have improvements, and the Sikh Center of Oregon is in the reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This small reserve area is relatively flat with locations of slopes greater than 10% and 25% near the stream corridors that cross the reserve area. These stream corridors divide up the area into several blocks of land that contain mid-sized parcels that could be consolidated into blocks of land for development, especially in the southern portion of the reserve area. SW Scholls Ferry Road and SW Roy Rogers Road provide ease of access and utilities. Tigard has a considerable amount of employment land with better access to highways that reduces the need for any additional employment land for the city. However, the land adjacent to SW Scholls Ferry Road may be an appropriate location for small scale employment, especially given the Cooper Mt. development and Mountainside High School to the north. Thus, this reserve area can accommodate a residential and possibly a small-scale employment land need.

Orderly and economic provision of public facilities and services

Tigard completed concept planning for River Terrace West in 2021. The updated infrastructure costs from that effort were not factored into the 2018 infrastructure cost estimates below.

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Tigard provides sanitary sewer services that feed into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS provides wastewater treatment through the Durham Waste Water Treatment Plant which has capacity to serve lands inside the UGB. CWS recently completed significant capital improvements relating to their conveyance piping that are necessary to serve the land currently within the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Sanitary sewer flows from the northern portion of the reserve area will be conveyed in an existing 24-inch CWS trunk line which flows through the north end of the site and connects to the existing River Terrace North Pump Station. From the pump station, sewer flows through large diameter CWS sewer interceptor lines to the Durham treatment plant. Flows from the southern portion of the reserve area will connect to sewer infrastructure proposed for the River Terrace 1.0 area. They will connect to a future gravity sewer line near SW Roy Rogers Road and SW Bull Mountain Road. These flows will be conveyed to the future River Terrace South Pump Station, and from there to the Durham treatment plant. CWS has indicated that the Durham WWTP has capacity; however, significant additional flows may require plant improvements. In addition, the available capacity of the existing pump stations and sewer lines are unknown.

Impacts to existing facilities that serve nearby areas already inside the UGB

CWS indicated that some interceptor and/or trunk lines that are at or near capacity today are being upgraded to serve the lands within the Cooper Mountain and River Terrace 1.0 areas. These new facilities may have capacity for additional expansions, but the amount of excess capacity is not known at this time. Other impacts to the wastewater system are local in nature, occurring as facilities are developed. New wastewater mains must be provided to allow development and the laterals off the mains are provided by the development community.

Tigard completed a concept plan for the area that updated the sanitary sewer needs taking into consideration the residential development that has occurred to the east in the River Terrace 1.0 area since 2018. CWS is completing a stormwater and sanitary sewer study in the River Terrace area to develop recommendations for regional stormwater management and sanitary system design to meet future growth needs. The study will integrate local sanitary system planning concepts with existing infrastructure to recommend the best design for an effective system to serve the area. A cohesive regional system will provide guidance to Tigard and Beaverton in the Cooper Mt. area as they plan for future projects. The study will be complete in early 2023.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
12 – 18" pipe (gravity)	$1.58
Force main	$0.56
Pump station	$0.50
Total	**$2.64**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The Tigard Water District, along with the Cities of Durham, King City and Tigard has an Intergovernmental Agreement, (IGA) with the City of Tigard to serve the nearby areas already inside the UGB. This is known as the Tigard Water Service Area (TWSA). Information provided by the City of Tigard indicates that the water supply, storage, and piping are sufficient to serve the existing UGB. Minor deficiencies were identified with the Water Treatment Plant; however, there are plans to correct the deficiencies in the near future.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water supply appears to be adequate, or the City of Tigard will be able to provide water as this area is urbanized. The City of Tigard is currently in the process of updating its water master plan. The master plan update will include this reserve area as well as the River Terrace South urban reserve and the Kingston Terrace expansion area. The master plan will identify excess capacity within the system and determine if it can be used within the reserve areas. In addition, the City plans to acquire property in the adjacent River Terrace area that can be used for the construction of additional storage to serve the reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City of Tigard is currently updating the water master plan which includes planning for the reserve area. Water capacity appears to be adequate, and the majority of impacts are local in nature, occurring as facilities are developed. New water mains must be provided to allow development of this reserve area and the laterals off the mains are provided by the development community. The amount of any upsizing that would be needed is not known at this time, but will likely be identified in the master plan update

Tigard completed a concept plan for the area that updated the sanitary sewer needs taking into consideration the residential development that has occurred to the east in the River Terrace 1.0 area that is now complete, except for a small section of land that is currently under development.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$0.32
18" and larger	$5.41
Storage/pumping	$1.93
Total	**$7.66**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$10.69
Water quality/detention	$10.51
Total	**$21.20**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Many of the roads in Tigard have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak, however there are numerous roads with higher levels of congestion. The following road sections have a congested volume/capacity ratio (<1.0): SW Scholls Ferry Road at SW 121st Ave in both directions; Highway 99W at SW Bull Mt. Road in both directions; SW MacDonald Street at SW Hall Blvd. in both directions; I-5 southbound at SW Carmen Drive; Highway 217 from SW Greenburg Road to SW 72nd Ave in both directions (a portion of the northbound lane at Highway 99W is severely congested); Highway 99W at Highway 217 in both directions; and Highway 99W at I-5 south bound. SW Scholls Ferry Road at SW Tile Flat Road in Beaverton also has a congested

volume/capacity ratio in both directions. The following road sections have a severely congested volume/capacity ratio (>1.0): Highway 99W at I-5 northbound; Highway 217 at I-5 southbound; SW Durham Road west of SW Hall Blvd. in both directions; SW Durham Road east of SW Hall Blvd. in the westbound direction; SW Durham Road from SW 79th Ave to SW Upper Boones Ferry Road in both directions (a small segment at SW Upper Boones Ferry Road westbound is congested) and SW Tiedeman Ave at SW Tigard Street southbound. Highway 99W is classified as a high injury corridor and the intersection of SW Hall Blvd. and Highway 99W is classified as a top 5% high injury intersection.

Transit: Eight TriMet bus routes provide service to Tigard, mainly along the arterial streets in the northern portion of the city near Highways 217 and 99W. WES Commuter Rail stops at the Tigard Transit Center. Most of the city west of Highway 99W does not have transit service. Two TriMet bus routes provide service near the Murray Scholls Town Center in Beaverton that is a little over a mile east of the reserve area.

Bike: Tigard has over 28 miles of dedicated bike lanes, 16 miles of established bikeways and numerous streets considered bike friendly that together create a well-connected system that is dispersed throughout the residential areas. Most of the employment areas and the Town Center are served by bike facilities. A small portion of Beaverton's large network of dedicated bike lanes (50 miles) established bikeways (32 miles) and bike friendly streets are located near the reserve area including bike lanes on SW Scholls Ferry Road and SW 175th Ave. Additional bike facilities are planned for the Cooper Mt. area.

Pedestrian: Most of the residential neighborhoods in Tigard have sidewalks although there are some significant sections of the city that do not, including some near schools. The Town Center and employment areas are also fairly well served by sidewalks, however internal circulation in some business parks is lacking. The Fanno Creek Trail, Pathfinder-Genesis Trail and Tigard Street Trail provide other pedestrian options, mainly near the Town Center. Most of the nearby residential neighborhoods in Beaverton have sidewalks that provide internal circulation with limited connections to other parts of the city.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: The roads in Tigard near the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Most of the roads in Beaverton near the reserve area also have an acceptable volume/capacity ratio for the pm peak except for SW Scholls Ferry Road at SW Tile Flat Road which has a congested volume/capacity ratio in both directions. SW Roy Rogers Road which is outside the UGB also has a congested volume/capacity ratio in both directions between SW Beef Bend Road and SW Bull Mt. Road.

Transit: No TriMet bus routes travel close to the reserve area. The closest transit stops are a little over one mile from the reserve area near the Murray Scholls Town Center via SW Scholls Ferry Road.

Bike: There is a dedicated bike lane on SW Scholls Ferry Road adjacent to the reserve area that extends west to the rural area as well as east connecting with a bikeway to the Murray Scholls Town Center. There is an established bikeway on SW Roy Rogers Road that extends north of SW Scholls Ferry Road past the new Mountainside High School as well as south to the new development in River Terrace 1.0.

Pedestrian: The new residential neighborhoods in the adjacent River Terrace 1.0 development have sidewalks that connect to the reserve area. Currently they do not connect across SW Roy Rogers Road to other parts of Tigard. There are sidewalks on the north side of SW Scholls Ferry Road, west of SW Roy Rogers Road to the intersection with SW Strobel Road, which provides access to the Cooper Mt. development in Beaverton. There are new pedestrian connections at the intersection of SW Strobel Road and SW Vandermost Road. Sidewalks also extend on both sides of SW Scholls Ferry east of SW Roy Rogers Road towards the Murray Scholls Town Center. These sidewalks connect with the Westside Trail that extends quite some distance to the north.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW Scholls Ferry Road will see increased traffic as a result of urbanization and may increase congestion issues both east and west of the area, including the SW Tile Flat Road congestion location, although SW Scholls Ferry Road will be improved up to SW Tile Flat Road as development of South Cooper Mt. continues. SW Roy Rogers Road will see increased traffic as well and may increase the congestion issues between SW Beef Bend Road and SW Bull Mt. Road as well as further south to Sherwood. SW Bull Mt. Road may also see increased traffic as drivers look for an alternative east-west connection to Highway 99W, which could negatively impact the current congestion issue at that intersection.

Transit: There would be no impact on existing TriMet bus routes. See transit analysis below.

Bike: The dedicated bike lane on SW Scholls Ferry Road would be expected to see additional use, especially to the east where it connects to the bikeway that extends to the Murray Scholls Town Center. The established bikeway on SW Roy Rogers Road to the north and south may also see additional use with the continued development of River Terrace 1.0 and Cooper Mt. New bike lanes on SW Bull Mt. Road provide access to River Terrace 1.0 and ultimately to the River Terrace South urban reserve area.

Pedestrian: The sidewalks in the new residential neighborhoods of River Terrace 1.0 would be expected to see additional use. The level of use would increase if a connection across SW Roy Rogers Road is made. Sidewalks that connect to Mountainside High School could see additional use depending on the future school district boundary as only a portion of the reserve area is in the Beaverton School District. The sidewalk connections to the Cooper Mt. area at SW Strobel Road would be expected to see additional use as it provides a controlled crossing to the neighborhoods to the north and ultimately the Cooper Mt. Nature Park. The sidewalks that extend east to the Murray Scholls Town Center could also see additional use, although the town center is over one mile away.

Need for new transportation facilities and costs (see attached transportation map)

SW Roy Rogers Road will need to be improved to urban arterial standards and a new arterial is needed to extend SW Bull Mt. Road through the middle of the reserve area, ultimately connecting with SW Scholls Ferry Road at SW Tile Flat Road. SW Roy Rogers Road is considered a ½ street improvement as the other side of the road is the responsibility of the land already inside the UGB. A new collector is needed to connect the new arterial with SW Scholls Ferry Road near Mountainside High School.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$11.21
	New	$66.21
Collectors	Type	Cost (in millions)
	New	$6.56
Total		**$83.98**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, five days a week with three additional buses at a capital cost of $1,200,000 (recurs every 16 years). Annual service cost is $1,248,000 and grows 2% per year.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Four streams flow through the reserve area, varying in lengths from 300 feet to 3,100 feet, on their way to the Tualatin River. The first stream flows south through the northwest portion of the reserve area for approximately 2,200 feet, isolating a small section of the reserve area. This stream originates in the South Cooper Mt. area to the north and flows mainly through a forested ravine with some adjacent steep slopes. There is a significant amount of riparian and upland habitat associated with the stream, especially along the southernmost section of the stream corridor. Given the streams location at the very top corner of the reserve area and the increased protection levels for steep slopes, streams, and habitat areas within the UGB, urbanization of the area can occur with minimal impact to this stream corridor, especially if a street connection is not made across the stream and habitat area. If a street connection is made, then impacts would occur to the stream and habitat areas.

A second stream flows west through the upper-middle portion of the reserve area for approximately 1,100 feet, joining the first stream just outside the reserve area boundary. This stream also flows through a forested ravine that is mostly composed of steep slopes and riparian

and upland habitat has been identified along the stream corridor. Given the increased protection levels for steep slopes, streams, and habitat areas within the UGB, urbanization of the area can occur without impacting this stream corridor, like how the stream is protected in River Terrace 1.0 to the east. If road connections are needed from the land inside the UGB to the east or from the western portion of the area, impacts would occur to the stream and habitat areas.

The third stream flows west through the lower-middle portion of the reserve area for approximately 3,100 feet before joining the first stream outside the reserve boundary. This stream flows mainly through a forested canopy although a portion of it is within open pasture land and it appears about 200 feet of the stream is piped. A significant portion of the forested section also contains slopes greater than 25% and there is a pond along the stream corridor that is not identified as a wetland. As expected, riparian and upland habitat has been identified along the stream corridor. The forested section of the stream corridor would have the least impacts given the steep slopes and the habitat areas that would be protected from development. The area that flows through the pastureland, where a north-south roadway connection would be more likely, may be impacted depending on the transportations connections that occur. Day lighting the piped portion of the stream allows for restoration of this segment.

Finally, a 300-foot section of stream flows within a forested ravine through the very southeast corner of the reserve area. Given the location of the stream and the adjacent steep slopes, urbanization could occur without impacting this short stream segment. Overall, urbanization of the area could occur with low to medium impacts to the stream corridors and habitat areas, depending on the number of stream crossings and urban form. If numerous crossings occur, then impacts to the natural resource areas could be significant.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing or employment uses replacing the existing rural residences. The existing stream corridors and habitat areas divide up the reserve area into discreet blocks of land that could be developed to urban densities. New urban development would generate social impacts on the existing residents of the area in terms of loss of sense of place and rural lifestyle, however some of the blocks of developable land are small and the urban development pattern would be less intense. Directly to the east is the River Terrace 1.0 area that was included in the UGB in 2002 and is currently being developed. This development activity lessens the loss of the rural lifestyle for the current residents. In addition, the 2011 South Cooper Mt. UGB expansion area is directly to the north across SW Scholls Ferry Road and the new Mountainside High School is open. There is potential to combine this reserve area with the River Terrace 1.0 and South Cooper Mt. to create one urban community with a higher level of amenities such as parks and trails and develop efficiencies in infrastructure financing and delivery of services. There are two main pockets of agricultural activities, one in the north and the other in the south. The potential economic impact of urbanizing this area will outweigh the loss of the economic impact from these agricultural uses. The additional traffic generated through urbanization will impact SW Beef Bend Road, SW Roy Rogers Road, SW Scholls Ferry Road and ultimately Highway 99W which could provide negative energy impacts as these roadways currently are highly traveled.

This is especially true when the River Terrace 1.0 and South Cooper Mt. areas build out. The planned River Terrace Trail is located to the east and the planned South Cooper Mt. Trail is to the north, which provides the opportunity for trail connection points that could reduce some local automobile trips, thereby reducing VMT. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

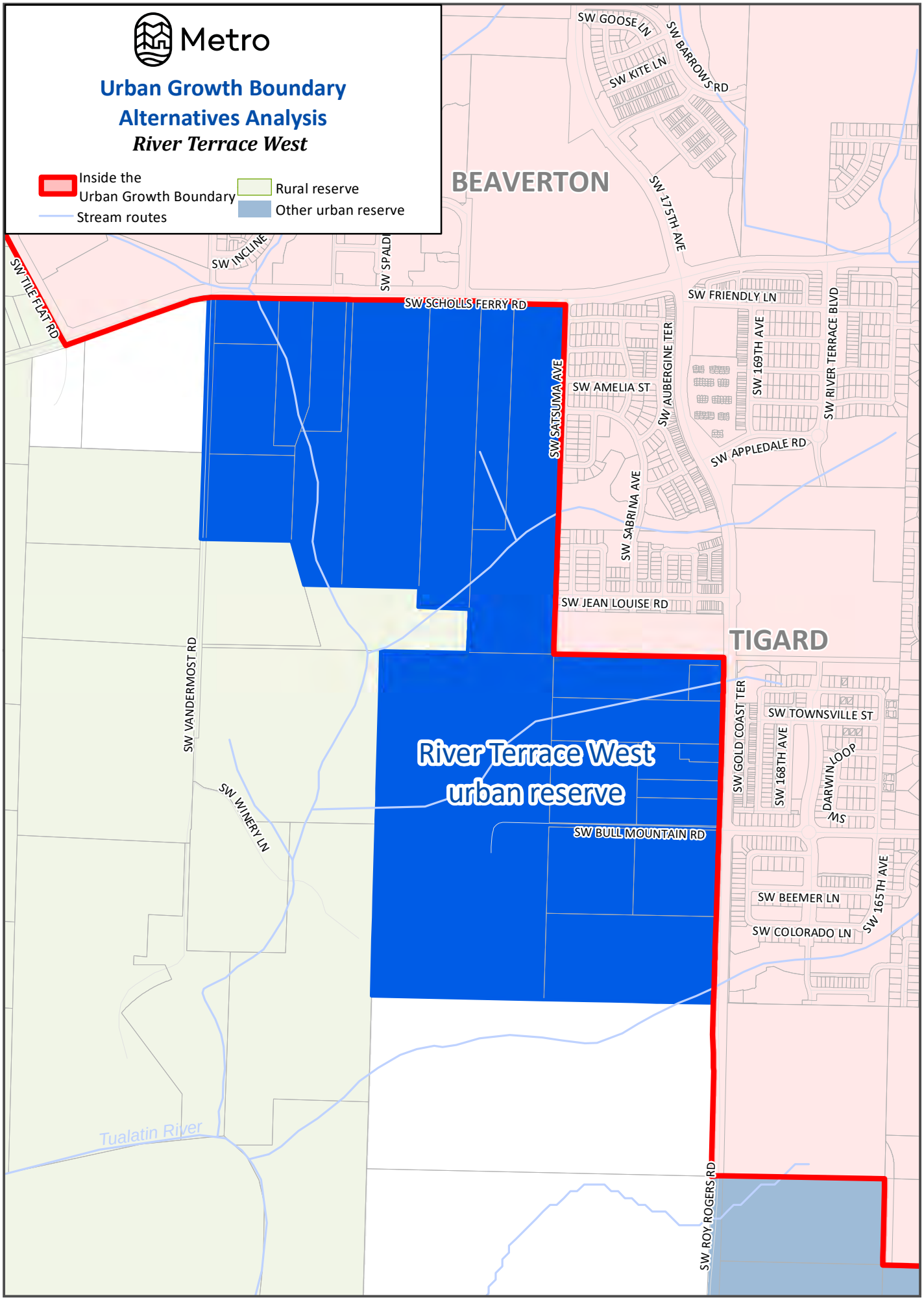
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

To the south is a large block of exclusive farm use (EFU) zoned land that extends beyond the Tualatin River. However, the land directly adjacent to the reserve area is forested and contains a stream corridor that effectively buffers the agricultural activities that are occurring to the south. Urbanization of the reserve area could significantly increase traffic on SW Roy Rogers Road which could impact the movement of both farm equipment and goods, although traffic on SW Roy Rogers Road is currently at a high level. Thus, the proposed urban uses are generally compatible with the nearby agricultural activities occurring on the farm land to the south.

West of the lower portion of the reserve area is EFU zoned land that includes a forested ravine that provides a buffer for the agricultural lands further west. It appears these agricultural lands gain access through SW Vandermost Road and SW Pleasant Valley Road which would see limited additional traffic as most of the traffic generated from reserve area will funnel towards SW Scholls Ferry Road and SW Roy Rogers Road. There is a very small amount of agricultural land directly adjacent to the reserve area that contains field crops and would be impacted by urbanization of the reserve area. Thus, the proposed urban uses are not compatible with the agricultural activities occurring on this very small amount of farm land directly adjacent to the reserve area. Mitigation measures on the urban side could be used to reduce the conflicts between the urban uses and agricultural activities. The proposed urban uses are compatible with the agricultural activities occurring on the farm land further to the west of the lower portion of the reserve area.

West of the upper portion of the reserve area is a block of Agriculture & Forest (AF-20) zoned land that is mostly in agricultural production except for one area that extends into the notch of the reserve area that is forested. SW Vandermost Road would provide a buffer between the agricultural activities occurring in this location and a new urban area; however the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of pesticides and fertilizer. SW Vandermost Road would see an increase in traffic due to urbanization, but it will be limited as this section of the reserve area is isolated by a stream corridor and the overall development pattern will be small. Future road connections could increase the amount of traffic. Thus, the proposed urban uses are not compatible with the nearby agricultural activities occurring on this block of farm and forest land. Mitigation measures on the urban side could be used to reduce conflicts between the urban uses and farm and forest activities occurring on farm and forest land outside the UGB.

Overall, the proposed urban uses have medium compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB; however, mitigation measures will be needed to reduce some impacts.



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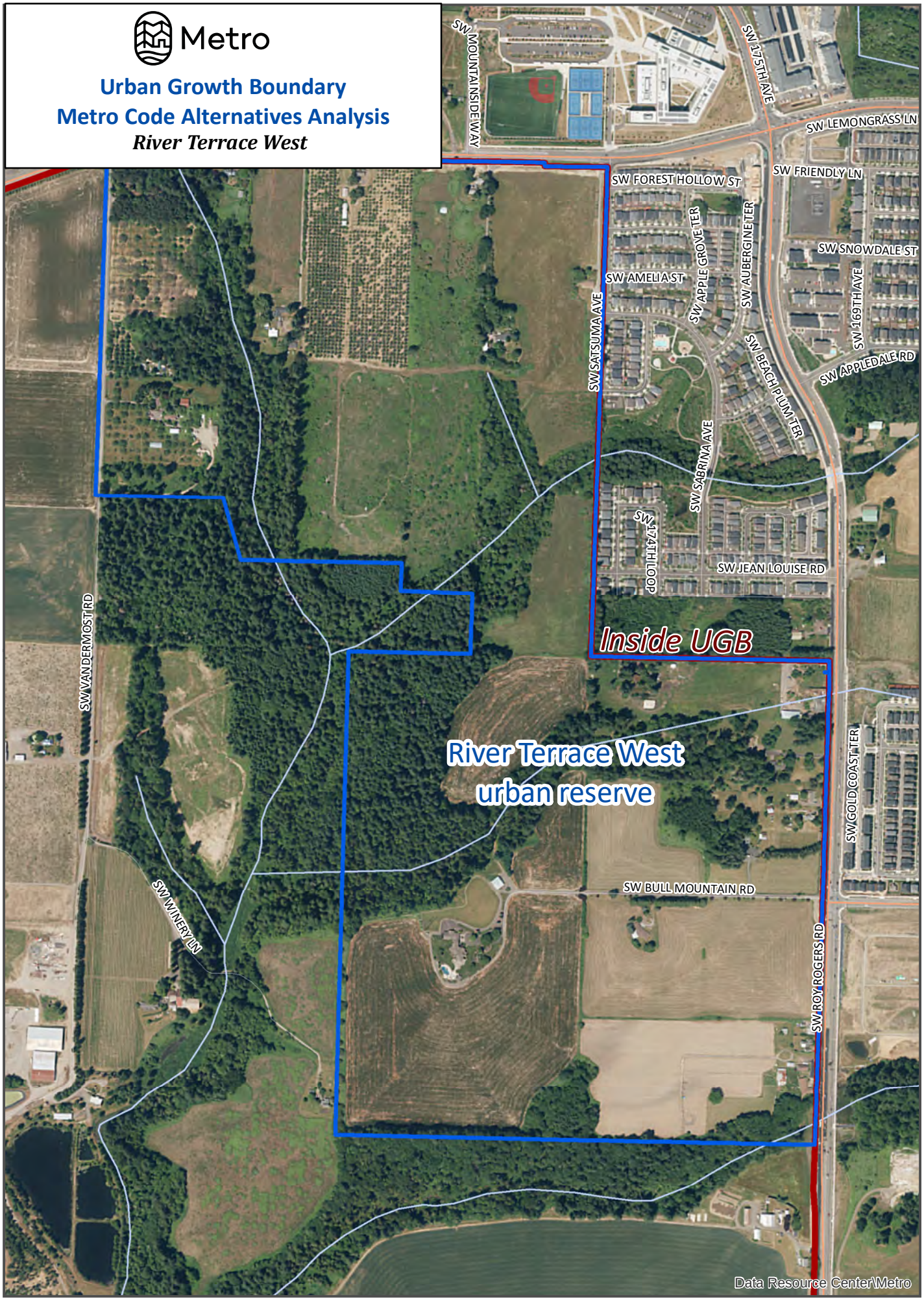
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
River Terrace West



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Urban Growth Boundary
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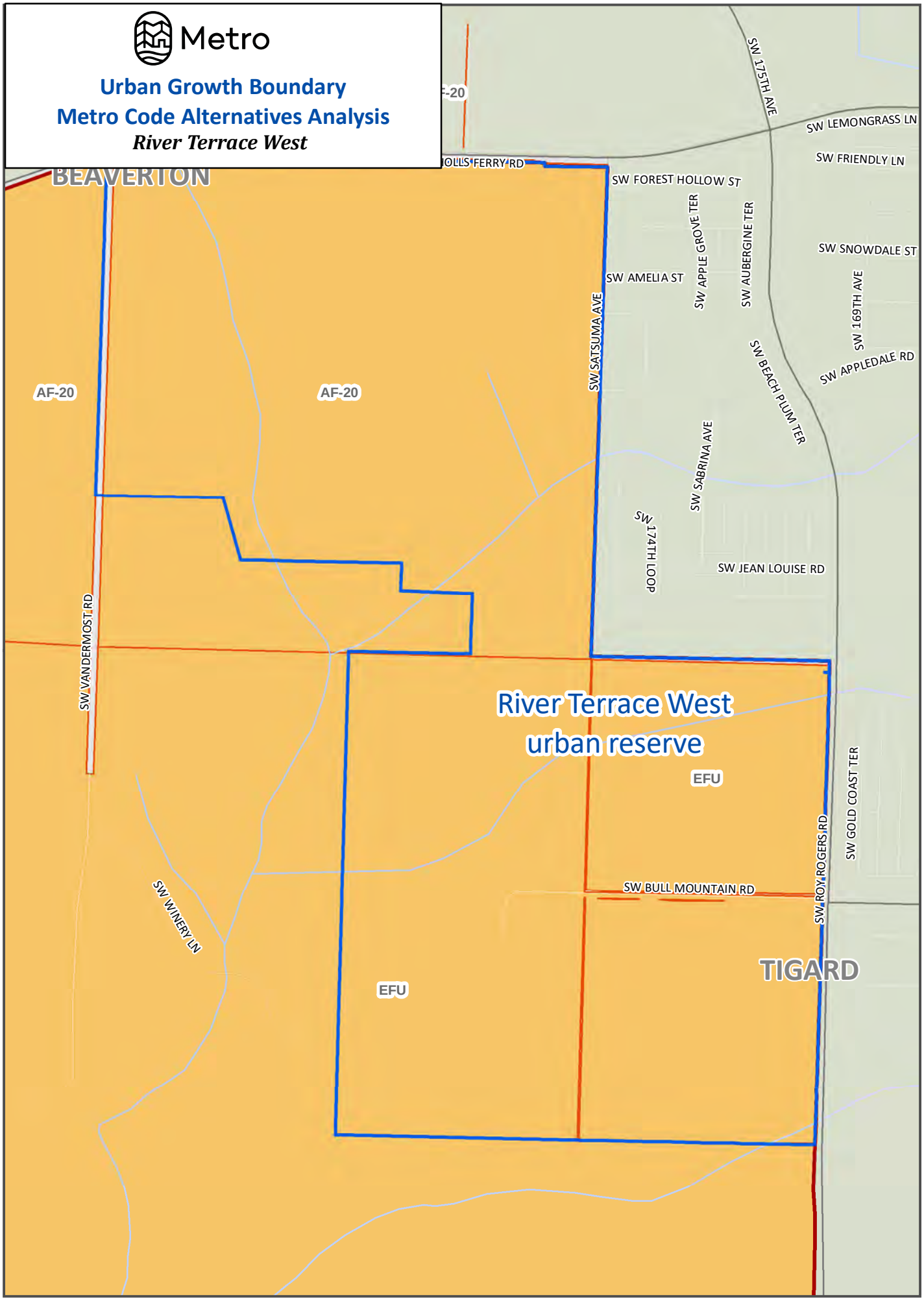
River Terrace West



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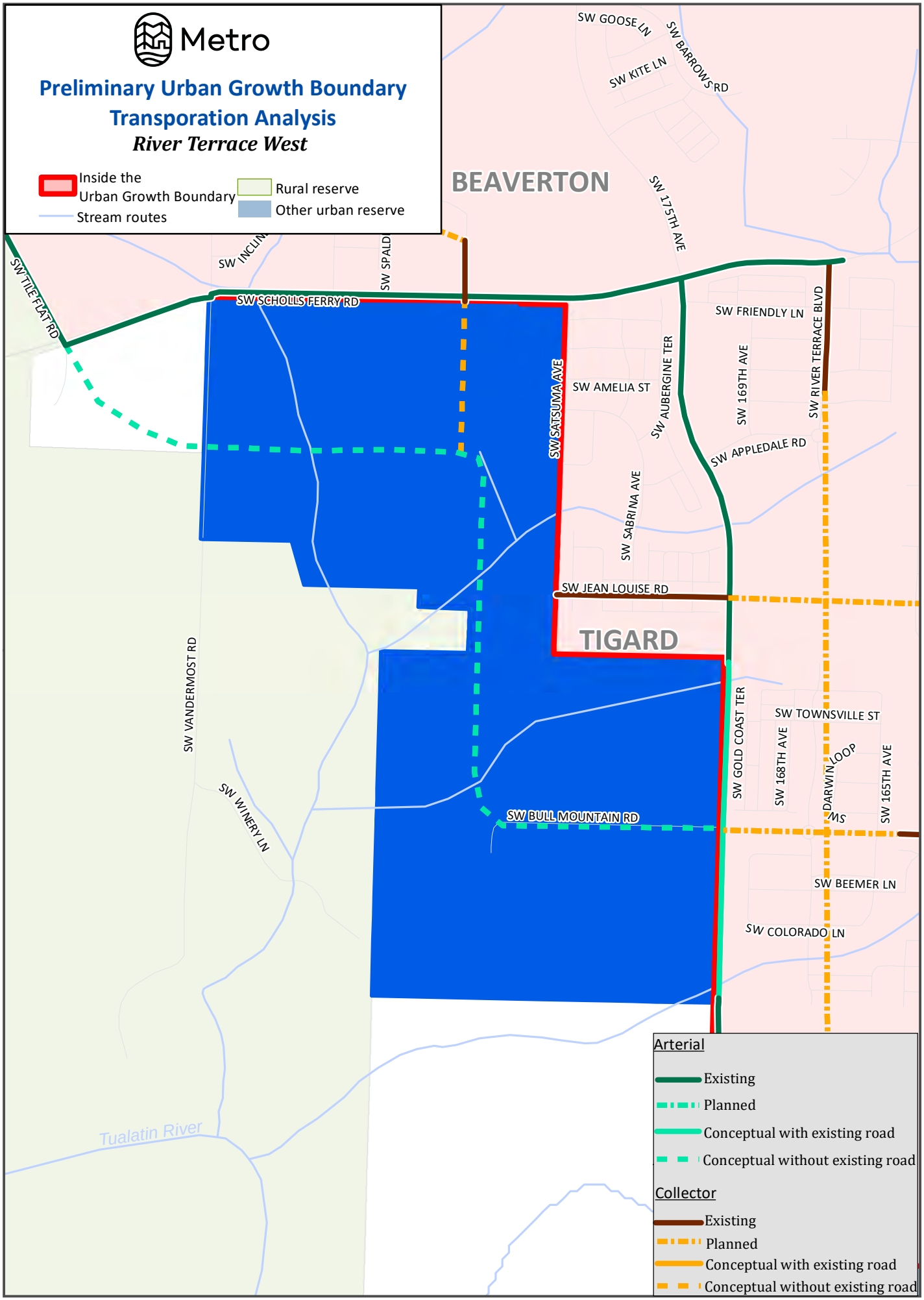

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ROSA URBAN RESERVE AREA

Total Acres	790	Parcel Acres	775
Gross Vacant Buildable Acres	282	Net Vacant Buildable Acres	213

General Description (see attached map)

The Rosa Urban Reserve Area is a medium sized area on the south edge of Hillsboro, located north of SW Rosedale Road between SW River Road and SW 229th Avenue. The UGB forms the boundary on the east, north and a portion of the west side and rural reserve land is to the south and west. The land is relatively flat with some minor slopes near the stream corridors. Access to the area is provided by SW Rosedale Road, SW River Road, and SW 229th Avenue. SW Rosa Road bisects the southern portion of the reserve area in an east west direction.

Parcelization and Development Pattern (see attached aerial photo)

This large reserve area contains 85 parcels that range in size from 16,000 square feet to 221 acres in size. Fifty-three parcels are less than five acres in size and 79 parcels are less than ten acres. The 15 parcels greater than ten acres account for 543 acres or 70% of the parcel land area. Seventeen of the parcels along SW River Road are split by the urban reserve boundary due to the 100-year floodplain location. The area contains rural residences, agricultural lands, forested parcels, and the Reserve Vineyards and Golf Course, which comprises 310 acres. Sixty-four of the 85 parcels have improvements. Witch Hazel Elementary School and South Meadows Middle School are located adjacent to the reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This reserve area is generally flat with some minor slopes along the stream corridors that divide the area into significant blocks of land. Golf courses are considered developed land in Metro's buildable land inventory; therefore the 310 acres of the Reserve Vineyards and Golf Course property is removed from the supply of potential buildable land. Even so, there is a significant block of land that has slopes less than 10% in the southern portion of the area that could accommodate employment uses from a topography standpoint. However, this reserve area is a significant distance from Hillsboro's main employment center located in the north part of the city as well as Highway 26, reducing the efficiency for employment use. This area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

The infrastructure cost estimates below are from the 2018 Goal 14 Analysis of the then identified South Urban Reserve Area and do not reflect the 2018 inclusion of the Witch Hazel Village South portion of the South Urban Reserve Area in the UGB. Hillsboro completed comprehensive planning for Witch Hazel Village South in December 2022 and the infrastructure costs from that effort were not factored into the 2018 infrastructure cost estimates.

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Hillsboro provides sanitary sewer services that feed into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS provides wastewater treatment through the Rock Creek Waste Water Treatment Plant and there is adequate capacity to meet current UGB needs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Sanitary sewer from the reserve area will flow to the Rock Creek treatment plant via the River Road Pump Station. CWS indicated that the Rock Creek treatment plant has enough capacity to handle additional flows from the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

The Rock Creek treatment plant is large facility, serving a broad area and small upgrades may be required to serve this reserve area. The upgrades and financial impacts are beyond the scope of this narrative. According to CWS, the existing River Road Pump Station was designed for expansion, and with a pump replacement, should be able to handle additional flows from this reserve area. Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of the reserve area. The laterals off the mains are provided by the development community. The amount of any upsizing that would be needed is not known at this time.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12” pipe (gravity)	$4.63
Force main	$1.37
Pump station	$0.75
Total	**$6.75**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Water is provided to areas already inside the UGB by the City of Hillsboro a member of the Joint Water Commission (JWC). With regards to water supply, treatment, storage, and piping, it appears that Hillsboro has capacity for areas inside the current UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City of Hillsboro will be able to generate the water supply needed as this reserve area develops. Hillsboro is a partner of the Willamette Water Supply Project which will provide additional capacity to serve the reserve area. The city currently has three ground level reservoirs that provide water storage. The city is currently completing planning studies for this reserve area and it is possible that an existing water line in SE River Road will need to be upsized.

Impacts to existing facilities that serve nearby areas already inside the UGB

The city indicated that there would not be impacts to the existing water system that serves nearby areas already inside the UGB. Hillsboro is working with the Portland Water Bureau on an Inter-governmental Agreement to have the ability to get additional water in times of emergency via an inter-tie with the Tualatin Valley Water District. New water mains must be provided for development to occur and the laterals off the mains are provided by the development community. The amount of any upsizing that would be needed is unknown at this time.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12” and smaller	$3.62
18” and larger	$5.58
Storage/pumping	$3.26
Total	**$12.46**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$10.37
Water quality/detention	$9.77
Total	**$20.14**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Hillsboro have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Three road sections have a congested volume/capacity ratio (<1.0): E Main Street east of NW Brookwood Parkway in both directions and Highway 26 east bound at NW Cornelius Pass Road and NW 185th Ave. A few road sections in nearby unincorporated Washington County also have a congested volume/capacity ratio (<1.0): SW Farmington Road between 198th Ave and SW Kinnaman Road in both directions, SW Tualatin Valley Highway (TV Highway) east of SW 198th Ave westbound, SW TV Highway east of SW 185th Ave in both directions, and SW TV Highway west of SW 170th Ave in both directions. The following road sections have a severely congested volume/capacity ratio (>1.0): W Baseline at SW 197th Ave westbound, NE Evergreen Road east of NW Jackson School Road westbound and SW TV Highway east of SW 170th Ave in both directions.

High injury corridors for include: SW/SE Baseline Road, SW Oak Street, SW Walnut Street, E Main Street, NE Cornell Road, SW TV Highway, SE River Road, SE/NE Brookwood Parkway, NE Evergreen Parkway, NE/SE Cornelius Pass Road and NE Jackson School Road.

Transit: Six TriMet bus routes provide service to Hillsboro or nearby unincorporated Washington County, mainly along the arterial streets in the central portion of the city, focusing on the Hillsboro and Tanasbourne-Amber Glen Regional Centers, the Orenco Town Center and employment areas. The MAX Light Rail Blue Line stops at nine stations within Hillsboro. There is no transit service to the southern and northern portions of the city.

Bike: Hillsboro has over 54 miles of dedicated bike lanes, 24 miles of established bikeways and numerous streets considered bike friendly that together create a fairly well-connected system that is focused mostly on the central portion of the city and the regional centers. In addition, there are some local trails that provide key connections to the greater bike network.

Pedestrian: A large proportion of the residential neighborhoods in Hillsboro have sidewalks although there are significant pockets that do not. The Hillsboro Regional Center is mostly served by sidewalks except for the industrial area south of TV Highway. The other employment areas are

fairly well served by sidewalks and trails such as the Rock Creek Trail that provides additional pedestrian opportunities.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: The roads in Hillsboro near the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Two nearby roadways in Washington County have a congested volume/capacity ratio (<1.0): SW Farmington Road and SW TV Highway as noted above.

Transit: TriMet bus route 57, which travels on SW TV Highway between Forest Grove and the Beaverton Transit Center, is just shy of a mile from the eastern edge of the reserve area along SE 67th Ave and just over a ½ mile from the middle of the reserve area along SE Brookwood Ave.

Bike: There is a dedicated bike lane on north of the reserve area on SE/SW River Road that connects to a bike lane on SE Davis Road 1,000 feet to the north that provides access to nearby South Meadows Middle School and Witch Hazel Elementary School. It appears the bike lane on SE Davis Road will be extended to the east as the area develops given the fact that there are bike lanes on those portions of SE Davis with new homes. The bike lane on SE/SW River Road also extends south into the reserve area to SW Rosedale Road. There are bike lanes and bikeways in South Hillsboro, and it is expected that these facilities will continue to be built as development progresses.

Pedestrian: There is one directly adjacent residential development that has sidewalks. However, this development is next to the golf course portion of the reserve area and currently the sidewalks do not connect to the reserve area. It is unclear as to whether they will in the future.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW River Road and SW 229th Ave would see additional traffic that would funnel to TV Highway, thereby possibly adding to the congestion issues further to the east, especially as South Hillsboro continues to develop. SW Rosedale Road would also see additional traffic that may funnel to SW Farmington Road, which could lead to additional congestion issues on SW Farmington between 198th Ave and SW Kinnaman Road.

Transit: TriMet bus route 57 could see additional use especially as sidewalks are constructed with new development along SE Brookwood Ave and SE 67th Ave inside the UGB, although the ½ mile plus walking distances would most likely preclude a large amount of additional ridership. See transit analysis below.

Bike: The dedicated bike lane on SE/SW River Road would most likely see additional use. Although if bike lanes are constructed on SE Brookwood Ave through the 2018 Witch Hazel Village South UGB expansion area, a more direct route to South Meadows Middle School and Witch Hazel Elementary School would be available, which would impact bike travel on SE/SW River Road as it is classified as an arterial. The bike lanes on SE Davis Road would also be expected to see additional use as it connects with bike lanes on SE Century Boulevard which may be extended north to TV Highway in the future.

Pedestrian: The sidewalks in the adjacent residential development near the golf course would not see additional use as they do not currently connect to the reserve area.

Need for new transportation facilities and costs (see attached transportation map)

SE River Road will need to be improved to urban arterial standards. The northern portion of the road is considered a ½ street improvement as the west side of the road is the responsibility of the land already inside the UGB. SW Rosa Road, SW Rosedale Road and SE Century Boulevard will need to be improved to urban collector standards. SW Rosedale Road is considered a ½ street improvement as the land on the south side of the road is rural and SE Century Boulevard is also considered a ½ street improvement as the east side of the road is the responsibility of the land already inside the UGB. Two new collectors will be needed one between SE Brookwood Ave and SE River Road and another from SE Century Boulevard to SE River Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$75.48
	Existing/Improved ½	$4.95
Collectors	Type	Cost (in millions)
	Existing/Improved	$21.19
	Existing/Improved ½	$24.31
	New	$35.73
Total		**$161.66**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 15/30-minute headways for all day service, six days a week by extending the future line that will serve the South Hillsboro area with two additional buses at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $936,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Gordon Creek flows west through the golf course in the northern portion of the reserve area for approximately 1,830 feet. Wetlands identified on the National Wetland Inventory (NWI) are associated with the entire stream length and total 5.8 acres. Riparian habitat is identified along the stream and wetlands. The golf course is considered developed land so no urbanization is expected,

thus the stream, wetland and habitat areas on the golf course would not be impacted by future urbanization of the reserve area.

A small unnamed tributary to the Tualatin River flows west through the northern portion of the west side of the area for approximately 1,500 feet. This stream flows through a forested area with a few locations of slopes greater than 25%. There is a significant amount of riparian and upland habitat associated with the stream. The increased protection levels for streams and habitat areas within the UGB will help protect a significant portion of the stream, but if a north-south road connection is needed in this location there could be significant impacts to the natural resources.

Butternut Creek flows diagonally through the southern portion of the reserve area for approximately 1.4 miles. The entire stream is within the floodplain and 26.5 acres of NWI wetlands are identified along the entire length. There are a few small locations of slopes greater than 25% near the western edge of the reserve area. Two small tributaries flow into Butternut Creek near the eastern edge of the reserve area and combined total 2,400 feet. All three of the streams flow through forested riparian corridors. As you would expect there is a significant amount of riparian and upland habitat identified along the stream corridor. Butternut Creek bisects the southern portion of the reserve area, and any north-south connection would impact habitat areas, floodplain, and wetlands. Given the increased protection levels for, streams, wetlands, steep slopes and habitat areas within the UGB urbanization of the area can occur without impacting this stream corridor and habitat areas, especially if a north-south road connection is not made. Overall urbanization of the area could occur with minimal to moderate or significant impacts to the stream corridors and habitat areas, depending on north-south roadway connections and urban form.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing or employment uses replacing the existing rural residences. This reserve area is composed of three different land uses: the Reserve Vineyards and Golf Course, rural residences on forested parcels, and agricultural activities mostly occurring in the southern portion of the area. Butternut Creek and the tributary to the Tualatin River and their associated habitat and floodplain areas tend to break up the area into smaller blocks of land that would result in a less dense development pattern. This combined with the golf course reduces the overall urbanization impact on the existing residents of the area in terms of loss of sense of place and rural lifestyle. Directly to the east is the South Hillsboro area that was brought into the UGB in 2011 and is currently being developed. In addition, directly to the north is the Witch Hazel Village South area that was brought into the UGB in 2018 and the city has recently adopted a plan for the area. As these two areas build out in the neat future, the feeling of a rural lifestyle for the current residents of the reserve area will be less, as they will be closer to urban areas. The combination of this area with the South Hillsboro and Witch Hazel Village South areas provides the opportunity to create one urban community and develop efficiencies in infrastructure financing and delivery of services, as well as new educational, recreational, and civic opportunities. Most of the agricultural activities are in the southern portion of the area and the potential economic impact of urbanizing this area will outweigh the loss of the economic impact from these agricultural uses. The additional traffic generated through urbanization will impact SW

River Road, SW Rosedale Road, and SW 229th Ave and ultimately SW Tualatin Valley Highway, which could provide negative energy impacts. This is especially true as the South Hillsboro and Witch Hazel Village South areas build out. Numerous trails are planned for the South Hillsboro area including the Butternut Creek Trail, which will extend to the reserve area, and the Reedville Trail. These trails will lead to the future Neighborhood Center and Town Center in South Hillsboro, providing the opportunity for a reduction in some local automobile trips, thereby reducing VMT. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

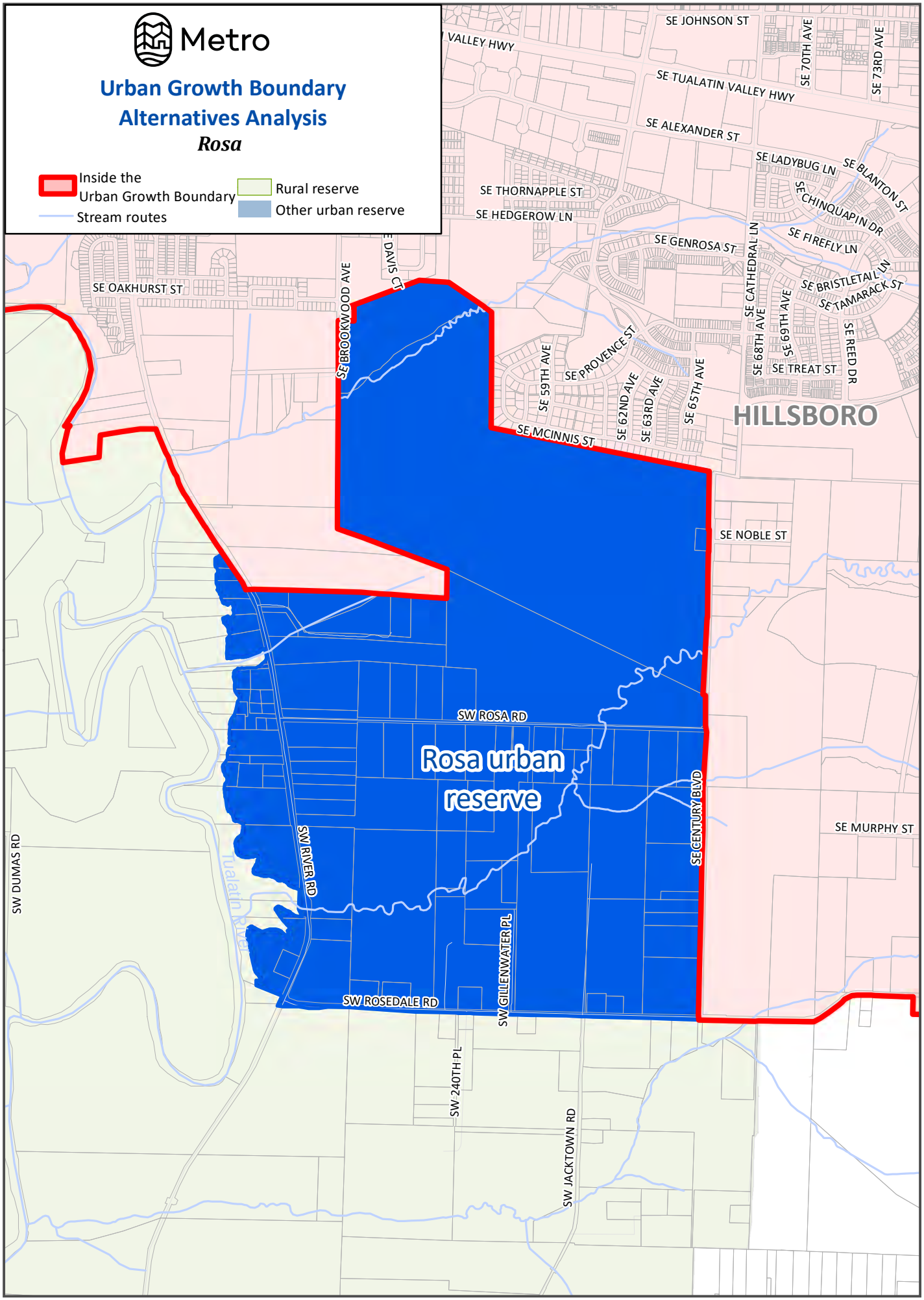
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

To the south is a large block of Exclusive Farm Use (EFU) zoned land that extends for several miles. All the land directly adjacent to the reserve area on the south side of SW Rosedale Road is in agricultural production, including field crops, row crops and orchards. SW Rosedale Road would provide a buffer between the agricultural activities occurring in this location and a new urban area; however, the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of pesticides and fertilizer. In addition, the improvement of SW Rosedale Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization of the reserve area would increase traffic on SW Rosedale Road which could impact the movement of both farm equipment and goods, although the amount of traffic may be reduced as Butternut Creek isolates the southern portion of the reserve area and SW 229th Ave and SW River Road provide more direct routes to the existing urban area. Thus, the proposed urban uses are not compatible with the extensive nearby agricultural activities occurring on the farm land to the south and mitigation measures on the urban land will be necessary.

The Tualatin River and its associated forested riparian corridor provide a buffer for the vast majority of the EFU land to the west. The land between the river and the reserve boundary along the northern western edge is not zoned for farm use. In addition, the farm land west of the river in this location is composed of the Meriwether National Golf Course. The parcels in the southwest corner of the reserve area are divided by the reserve area boundary and the portions of these parcels outside the reserve area are EFU land. A very minor portion of this land, approximately two and a half acres, is currently in agricultural production along with the portion of the parcel that is within the reserve area. Given the location of this very small area between the Tualatin River and the reserve boundary and the lack of an easy access point for farm equipment when urbanization occurs, the expectation is that if the area urbanized the agricultural activities on these remnants of land would not continue. Thus, the proposed urban uses would be compatible with nearby agricultural activities in this small location.

In summary, the proposed urban uses are generally compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the west and not compatible with the agricultural activities occurring on the farm land to the south where mitigation measures on the

urban land will be necessary. Overall, the proposed urban uses have medium compatibility with the nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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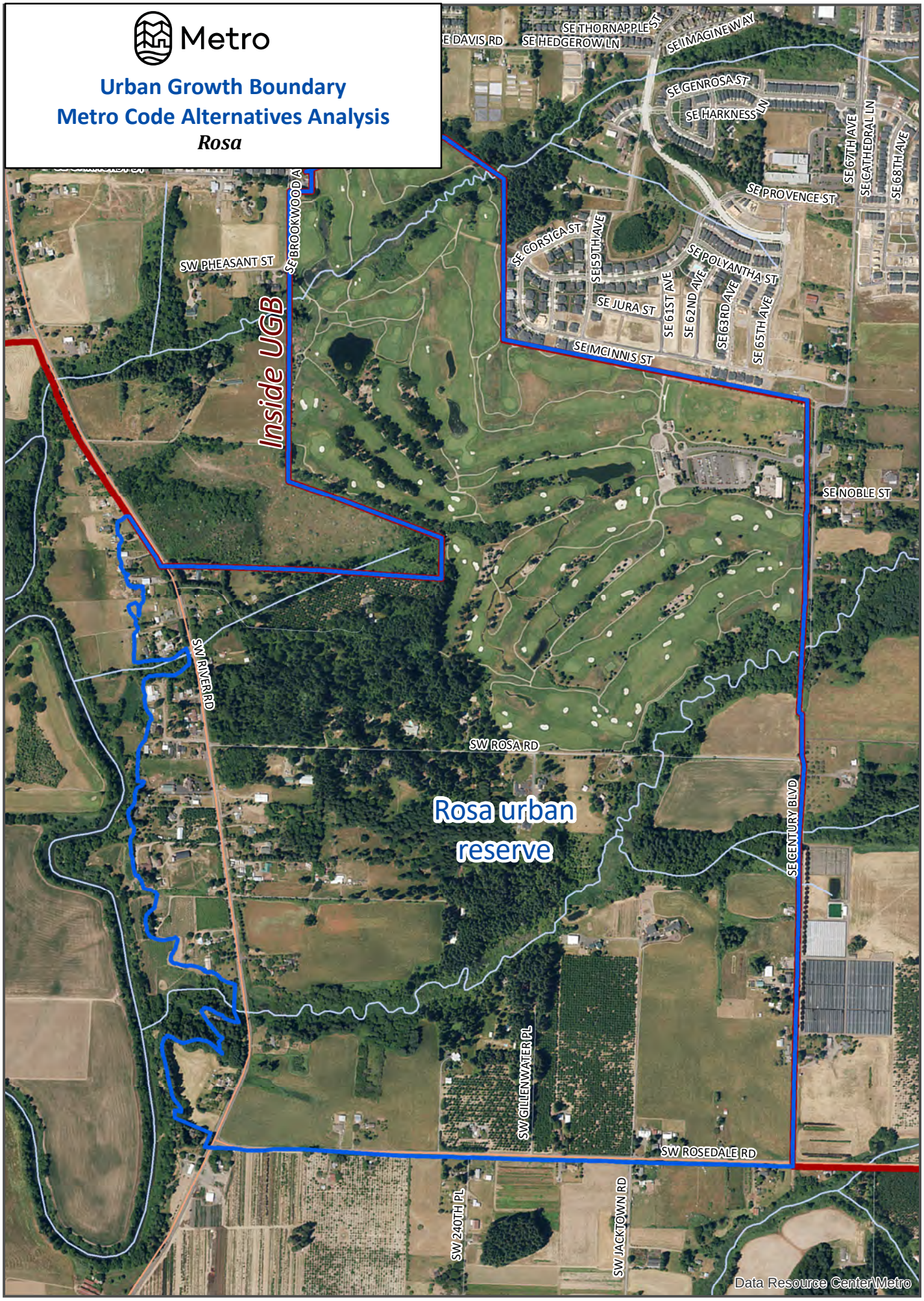
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Rosa



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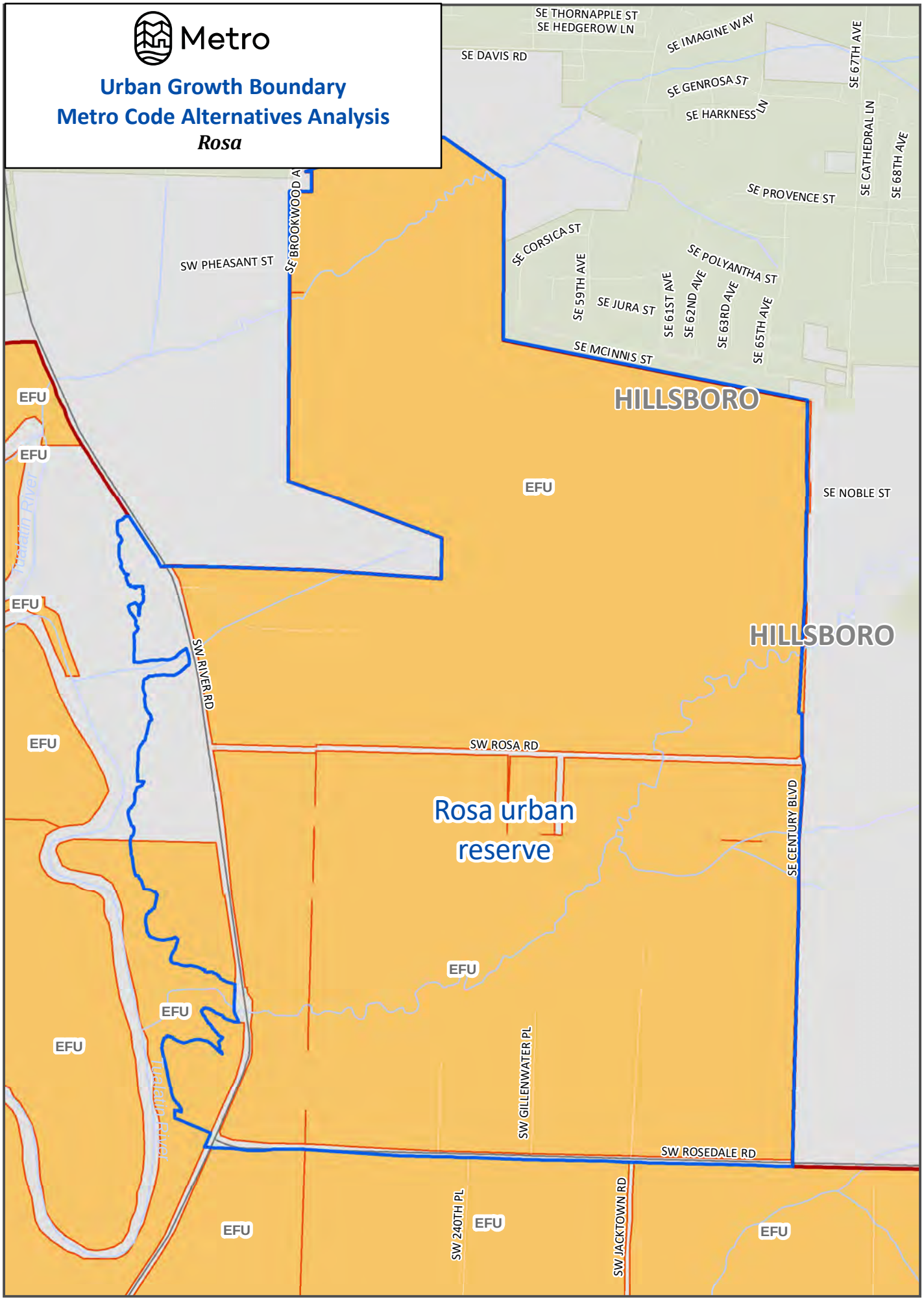

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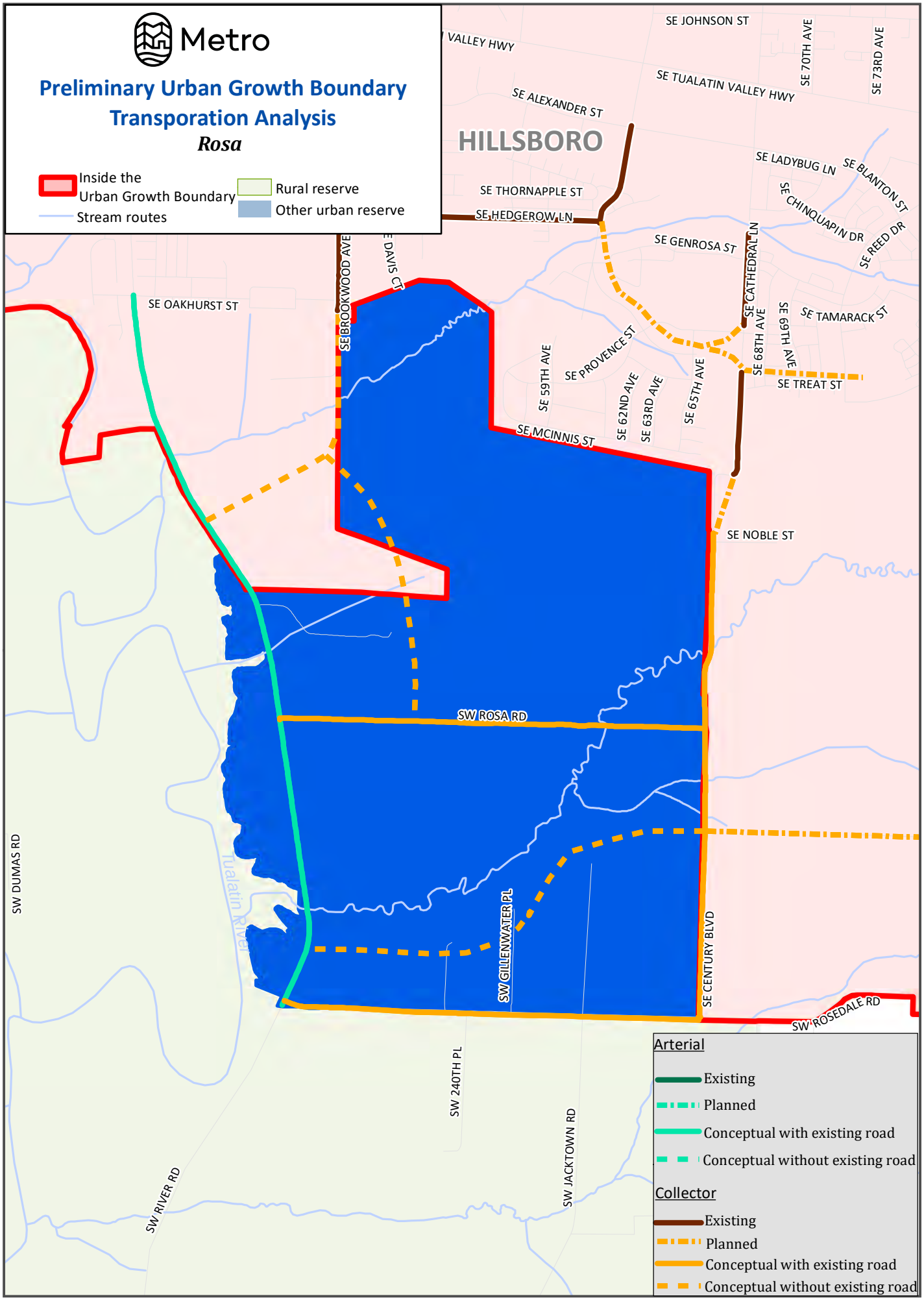

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ROSEMONT URBAN RESERVE AREA

Total Acres	131	Parcel Acres	127
Gross Vacant Buildable Acres	112	Net Vacant Buildable Acres	85

General Description (see attached map)

The Rosemont Urban Reserve Area is a small irregular shaped area that is adjacent to Rosemont Road and is 131 acres in size. The UGB and the City of West Linn form the eastern boundary and S Wisteria Road forms a portion of the western boundary. Urban reserve land is adjacent to the north, west and south. The area is generally flat with a bench along Rosemont Road that gently slopes to the south and west. There are some slopes greater than 10% mainly along the edges and in the center of the reserve area. Access to the area is provided by Rosemont Road and S Wisteria Road.

Parcelization and Development Pattern (see attached aerial photo)

This small reserve area contains 18 parcels that range in size from 4,800 square feet to 39 acres. Eleven of the parcels are greater than 5 acres and three are greater than ten acres. Thirteen of the 18 parcels have rural residences, several which are high value homes. There are some very small-scale agricultural activities including field crops and pastureland associated with some of the residences. Rosemont Ridge Middle School and the West Linn Adult Community Center are directly adjacent to the reserve area and Trillium Creek Primary School is across S Rosemont Road from the area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

All but five of the parcels in this small urban reserve area contain single family homes, many of them high value homes. There are slopes greater than 10% along the edges and through the middle of the area which reduces the ability to accommodate employment uses, although there are a couple of small sites adjacent to Rosemont Road. The two adjacent schools and the adult community center provide a focal point for residential neighborhoods. Thus, this area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn provides the wastewater collection system for nearby land inside the UGB and wastewater treatment is provided by the Tri-City Service District treatment plant. The Tri-City Service District is made up of West Linn, Oregon City and Gladstone and is managed by Clackamas County Water Environment Services (WES). Improvements are currently happening at the treatment plant, which will provide sufficient capacity to meet current UGB needs.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The treatment plant is currently being upgraded. It is unknown at this time how much additional capacity will be available beyond their current needs. In addition, existing pump stations would require upgrades. Existing pipe capacities are unknown and further analysis would be required to determine the extent of trunk line upgrades. The sewer from the reserve area would generally flow toward the Stafford urban reserve area, and to convey sewer to the treatment plant, sewer lines are needed through the Stafford reserve area. For the sanitary sewer analysis, it is assumed that this reserve area would not urbanize until after sewer facilities are in place within the Stafford urban reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Wastewater services (digesters) in the WES system are expected to need some upgrades to provide service for growth beyond that in the current UGB. The upgrades and financial impacts are beyond the scope of this report. The significant impacts to the wastewater system are primarily from the financial contributions required to build the mains within the reserve area. New wastewater mains must be provided to allow development of the reserve area and the laterals off the mains are provided by the development community. As noted above, at minimum a skeleton wastewater system must first be constructed for the Stafford urban reserve before service can be provided to this reserve area.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
12 – 18” pipe (gravity)	$0.26
Total	**$0.26**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn serves the adjacent areas inside the UGB. The West Linn Water System is part of the Lake Oswego – Tigard Water Partnership. Potable water comes from the South Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWB operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division St. in Oregon City. The water treatment plant was upgraded in October 2016.

According to the City of West Linn, there are no issues serving the area currently within the UGB regarding pumping, storage, and piping.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City of West Linn indicated there are no issues with water supply to serve the reserve area. However, the treatment plant will likely require additions and upgrades to convey the additional potable supply. There is a 16-inch waterline in Rosemont Road that could be used to serve the reserve area and there should be enough storage capacity in their existing system.

Impacts to existing facilities that serve nearby areas already inside the UGB

Although the City has enough water rights to supply the reserve area, upgrades to the water treatment plant will be necessary prior to distribution. New water mains must be provided to allow development of this reserve area. The laterals off the mains are provided by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
Storage/pumping	$1.05
Total	**$1.05**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$2.21
Water quality/detention	$2.29
Total	**$4.5**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in West Linn have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Willamette Drive at I-205 has a congested volume/capacity ratio (<1.0) in both directions as does I-205 between Willamette Drive and Salamo Road. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio.

Transit: Two TriMet bus lines serve West Linn. Route 35 runs along Willamette Drive and Route 154 runs along Willamette Falls Drive providing transit service to the Town Centers and a small portion of the city.

Bike: There are nine miles of dedicated bike lanes and four and a half miles of established bikeways in West Linn that generally run in a north south alignment due to topography limitations, thereby limiting east-west bike travel. Several residential areas and neighborhoods, such as Willamette and Barrington Heights have few bike facilities that connect to other parts of the system.

Pedestrian: Large portions of the city are well served by sidewalks, mostly in areas that have been developed more recently. Older neighborhoods such as Willamette and Sunset have very few sidewalks. The Willamette Falls Drive Streetscape Project improved pedestrian accessibility in the historic Willamette neighborhood. The Rosemont and Salamo Trails provides a pedestrian connection route along Rosemont and Salamo Roads that ties the lower and upper portions of the city together on the west side.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Rosemont Road and S Wisteria Road, the two main access points for the reserve area, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. All other roads in the general vicinity also have an acceptable volume/capacity ratio.

Transit: There are no transit services near the reserve area. The closest bus stop on Willamette Drive is about 1.5 miles away via Santa Anita Drive and Pimlico Drive.

Bike: There is a dedicated bike lane and an established bikeway along Rosemont Road adjacent to the reserve area. In addition, there is a dedicated bike lane on Salamo Road that is adjacent to a small section of the reserve area. S Wisteria Road is considered a bike friendly street.

Pedestrian: Almost all the nearby neighborhood streets have sidewalks, and the Rosemont Trail along Rosemont Road provides access to the reserve area. However, once you get past the nearby neighborhoods there are gaps in sidewalks or pedestrian facilities along the major streets that limits pedestrian movement.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Rosemont Road and S Wisteria Road would see additional traffic as they are the two main access points for the reserve area. Currently they both have an acceptable volume/capacity ratio for the 2015 pm peak and the small amount of traffic generated from this small area most likely would not severely impact the traffic level.

Transit: There are no transit services near the reserve area. See transit analysis below.

Bike: The bike lane and bikeway along Rosemont Road and the bike lane on Salamo Road would be expected to see additional use from urbanization of the reserve area.

Pedestrian: The Rosemont Trail along Rosemont Road would be expected to see additional use as a result of urbanization of the reserve area. However, the gaps in sidewalks or pedestrian facilities along the major streets that connect to Rosemont Road will still limit pedestrian movement.

Need for new transportation facilities and costs (see attached transportation map)

The portion of Rosemont Road adjacent to the reserve area will need to be improved to urban arterial standards. The portion of S Wilsteria Road will need to be improved to urban collector standards. Both road improvements are considered ½ street improvements as half of Rosemont Road is already inside the UGB and the property on the other side of S Wisteria Lane in the Stafford urban reserve area would be responsible for that half of the roadway.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$10.95
Collectors	Type	Cost (in millions)
	Existing/Improved ½	$6.24
Total		**$17.19**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, five days a week, with one additional bus at a capital cost of $400,000 (recurs every 16 years). Annual service cost is $364,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

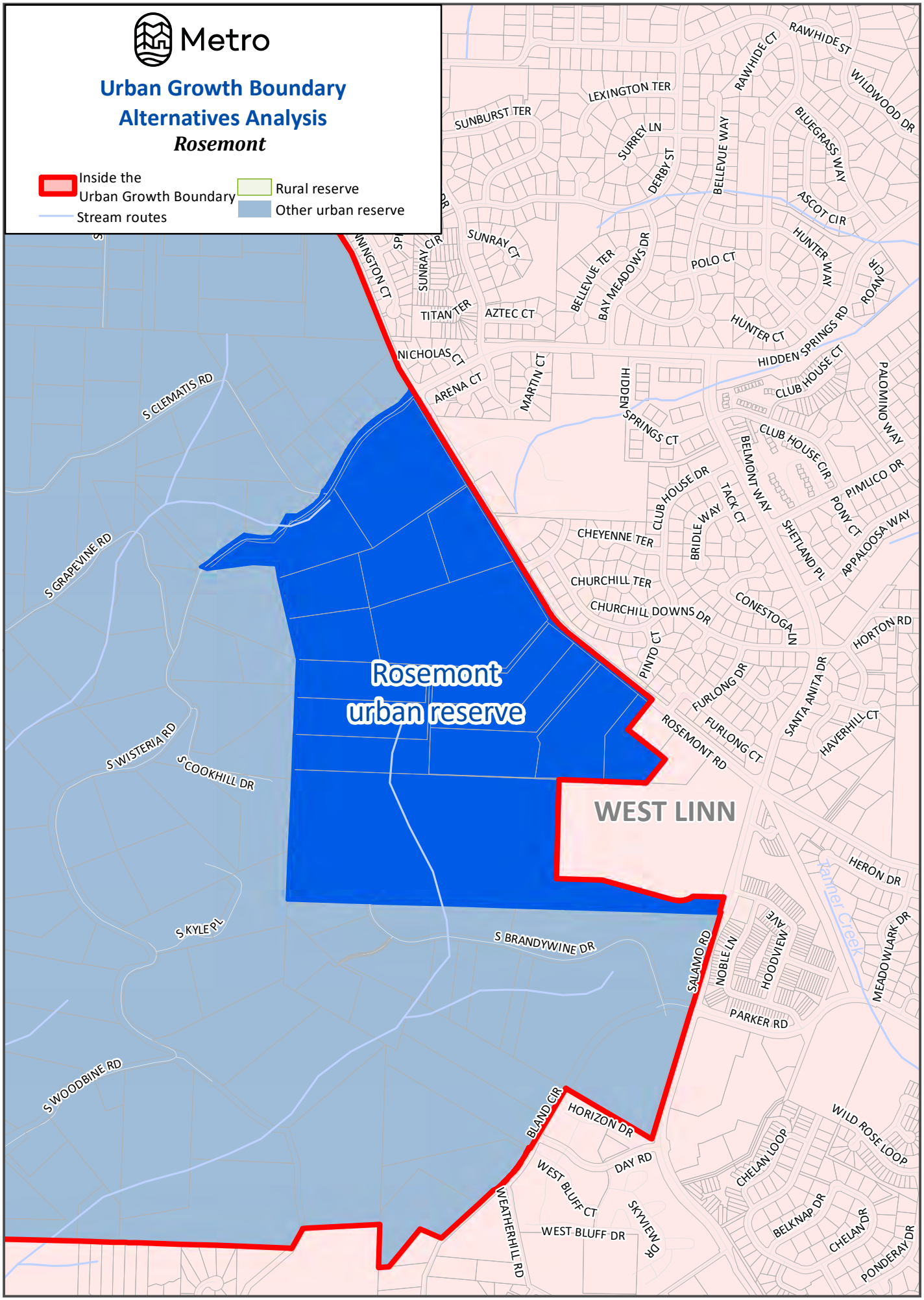
Three hundred and fifty feet of an unnamed stream that ultimately flows into the Tualatin River is located adjacent to S Wisteria Road near the intersection with S Clematis Road. The stream flows through an open field and riparian habitat is identified along the stream corridor. The stream would not necessarily be impacted by development of the parcel due to its location at the edge; however, any required improvements to S Wisteria Road to upgrade it to urban standards would have an impact on the stream. Thus, urbanization of the reserve area would result in low to moderate environmental consequences depending on the impact from the road improvements.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences over time. As noted previously, 13 of the 18 parcels contain rural residences and most of them are high value homes. As a result, redevelopment of the area will be slow, thus reducing any social impacts related to the loss of sense of place and rural lifestyle for the current residents. In addition, the close proximity of the schools and commercial retail area currently reduces any sense of a rural lifestyle. There is one generally vacant 39-acre parcel at the southern edge of the reserve area that could be developed to urban densities at a quicker rate than the other portions of the area. S Brandywine Drive dead ends at the southern edge of the parcel, thus providing an access point. Development of this parcel to urban densities would create a loss of sense of place and rural lifestyle for those adjacent rural residents, although as noted before the nearby urban influence of West Linn already reduces the rural feel. The additional traffic generated through urbanization, even though it will not be significant, will impact Rosemont Road which could provide minimal negative energy impacts. The adjacent Rosemont Trail, which parallels Rosemont Road all the way to the city of Lake Oswego as well as provides access to nearby commercial areas, may lessen local vehicular trips, thereby reducing any negative energy impacts from expected additional traffic. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential development of these lands, even though it is not great, should outweigh this loss. Overall, this reserve area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There is no farm or forest land adjacent to the reserve area. Thus, the proposed urban uses have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Rosemont

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Urban Growth Boundary
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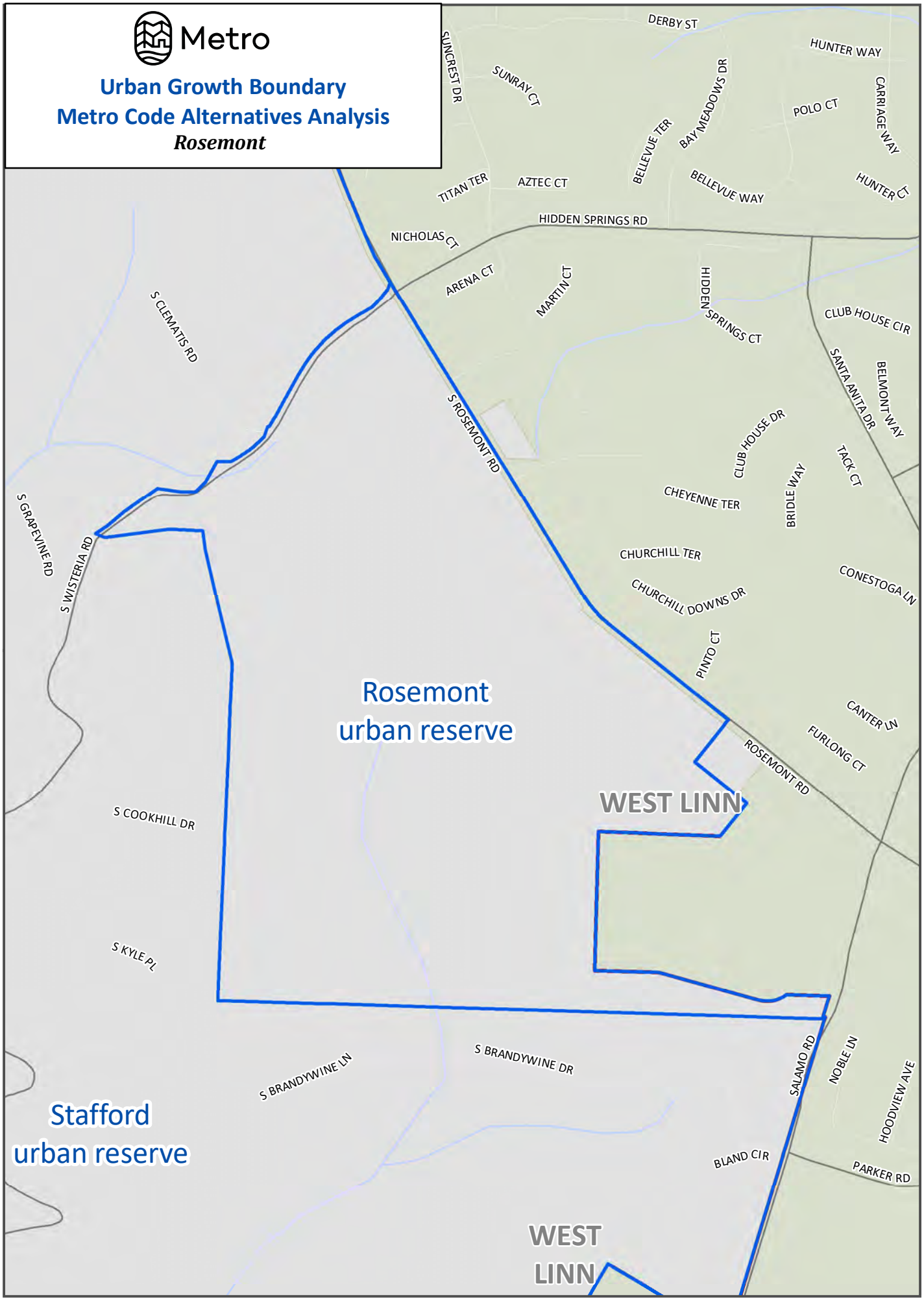
Rosemont



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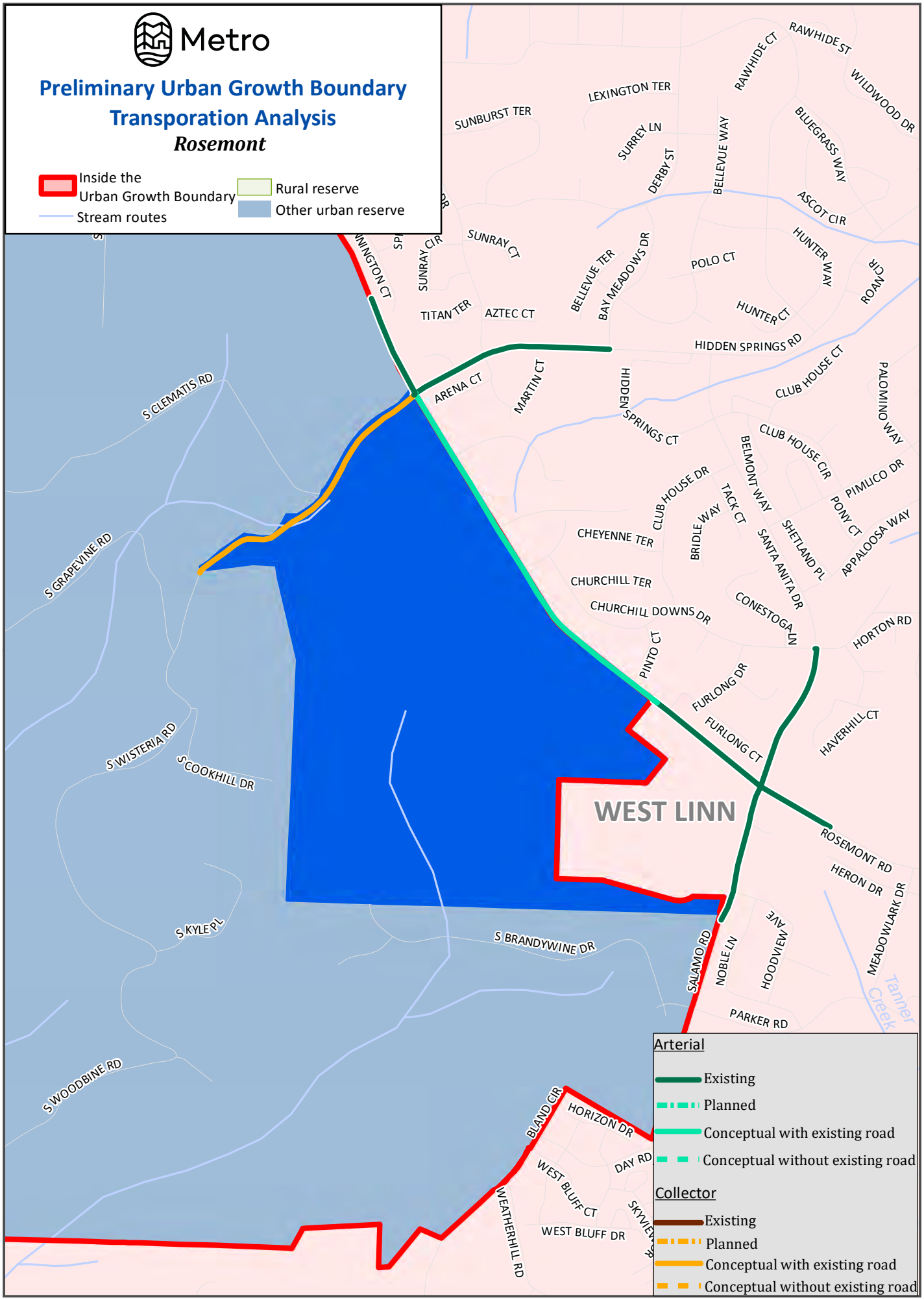

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SHERWOOD NORTH URBAN RESERVE AREA

Total Acres	123	Parcel Acres	111
Gross Vacant Buildable Acres	61	Net Vacant Buildable Acres	46

General Description (see attached map)

The Sherwood North Urban Reserve Area is a set of three very small sub-areas on the north side of Sherwood in the general vicinity of Highway 99W. The floodplain forms the northern boundary of all three sub-areas. The eastern sub-area is located north of SW Galbreath Drive and is approximately 35 acres in size. The middle sub-area straddles SW Pacific Highway and is approximately 57 acres in size. The western sub-area is north of SW Seely Lane and is approximately 31 acres in size. Access to the western sub-area is not straightforward whereas the middle sub-area has potential access to SW Pacific Highway and the eastern sub-area can be accessed by SW Gerda Lane and SW Cipole Road.

Parcelization and Development Pattern (see attached aerial photo)

The eastern sub-area contains eight partial parcels and one complete parcel that range from ¼ acre to 12 acres in size. Two of the partial parcels contain structures related to agricultural uses, including one residence and two of the other partial parcels are owned by the federal government, one being associated with the Tualatin River National Wildlife Refuge and the other being owned by the Bonneville Power Administration (BPA). Power lines run both north-south and east-west through the sub-area. In addition, a very small portion of the sub-area is BPA right-of way.

The middle sub-area contains one complete parcel and five partial parcels that range from 3 to 12 acres in size. Portland General Electric owns ten acres and the federal government owns 3 acres. There are two residences within the sub-area. The Portland General Electric parcel contains power lines that run to the adjacent sub-station that is within the UGB. Nine acres of the sub-area is the back portion of the Home Depot parcel.

The western sub-area contains eleven partial partials that range from ⅓ acre to 11 acres in size. Three of the partial parcels are less than one acre and ten of the partial parcels are less than five acres. The U.S Fish and Wildlife Service own approximately two acres and Washington County owns approximately three acres. Three of the partial parcels contain residences. Two power lines run through the sub-area, mostly along the UGB line but impact eight of the eleven parcels.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The three flat sub-areas contain small amounts of buildable land due to the numerous power line easements that run through the areas. In addition, most of the land is made up of partial parcels which complicate the ability to consolidate the land into larger parcels for development. The irregular shape of the three sub-areas reduces the ability to provide a well-connected residential development pattern and the western sub-area protrudes into the rural reserve which limits a secondary access from the north. The middle and eastern sub-areas are adjacent to existing industrially zoned land and provide the opportunity for extensions of these existing uses. This area can accommodate a very small portion of a residential or employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood owns, operates, and maintains the wastewater collection system within City limits, and Clean Water Services (CWS) provides wastewater treatment at the Durham Wastewater Treatment Plant which has capacity to serve lands inside the UGB. Sewer is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the city. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham treatment plant. The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The master plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station and treatment plant). However, at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Urbanization of this very small reserve area should not require upgrades to the Durham treatment plant. There are several existing 8-inch sewer lines that extend from the adjacent developments near the reserve areas southern boundary. The western sub-area would likely be served by the Sherwood Trunk Line, while the eastern sub-area will be served by the Rock Creek Trunk Line.

Impacts to existing facilities that serve nearby areas already inside the UGB

There are no impacts to the existing facilities that serve nearby areas already inside the UGB and all the pipe will be installed by the development community.

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood draws most of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville. The City owns 5 million gallons per day (MGD) of production capacity at the WRWTP. Sherwood also maintains four groundwater wells for back-up supply and maintains an emergency connection and transmission piping through the City of Tualatin's water system. The City of Sherwood Water Master Plan was updated in 2015. According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping. The Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within a 20-year planning horizon. To support the 20-year planning horizon, the city will need an additional 1 mgd of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Currently there is adequate water supply for the reserve area or depending on when the reserve area is added to the UGB the City will be able to generate the supply to serve the new development. The master plan did not include the Sherwood North urban reserve in its analysis. However, the Sherwood West and a portion of the Tonquin urban reserves were included. For this report, it is assumed that only one reserve area will be developed at a time. The City of Sherwood Master Plan assumed a portion of the Sherwood West reserve area would be developed in the 20-year planning horizon. Therefore, presumably, if the Sherwood North reserve area were to develop instead of Sherwood West, there would be available capacity in the existing system with regards to storage, pumping, and piping, especially given the very small size of the reserve area. As mentioned above, the city will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

There are no impacts to the existing facilities that serve nearby areas already inside the UGB and all the pipe will be installed by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
Storage/pumping	$0.63
Total	**$0.63**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Sherwood have an acceptable volume/capacity ratio for the 2015 pm peak. SW Tualatin-Sherwood Road at SW Oregon Street and SW Elwert Road at SW Edy Road have a congested volume/capacity ratio (<1.0) in both directions. SW Tualatin Sherwood Road is classified as a high injury corridor.

Transit: Two TriMet bus lines serve the Sherwood Town Center. Route 94 on Highway 99W and Route 97 on SW Tualatin-Sherwood Road.

Bike: Sherwood has eight miles of dedicated bike lanes and three miles of established bikeways along the major roadways that connect with some local trails and bike friendly streets, including a connection to Old Town. There are numerous gaps to some of the residential areas south of the railroad.

Pedestrian: Most of the residential neighborhoods in Sherwood have sidewalks with a number of local trails that connect the different neighborhoods together. The Town Center is well connected with sidewalks as is most of Old Town.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Highway 99W and SW Tualatin Sherwood Road are the closest major roadways for the three small sub-areas, and both have an acceptable volume/capacity ratio for the 2015 pm peak in these locations. SW Tualatin-Sherwood Road at SW Oregon Street, which is about ½ mile from the eastern sub-area has a congested volume/capacity ratio (<1.0) in both directions.

Transit: TriMet bus route 94 travels through the middle sub-area along Highway 99W and there is a transit stop a little over a ⅓ of a mile from the western sub-area. Route 97 has a transit stop about 800 feet from the eastern sub-area along SW Tualatin Sherwood Road.

Bike: Highway 99W and most of SW Roy Rogers Road have dedicated bike lanes providing access to the western and middle sub-areas. There is a 1,000-foot segment of SW Roy Rogers Road between Highway 99W and SW Borchers Drive that does not have a bike lane. There is an established bikeway along SW Tualatin-Sherwood Road that is about 800 feet from the eastern sub-area. These facilities provide connections to the Town Center and Old Town.

Pedestrian: Sidewalks connect to the western sub-area along SW Borchers Drive and SW Seely Lane. Sidewalks connect to the middle sub-area along Highway 99W. There is a short 600-foot sidewalk gap on the north side of the highway just east of SW Roy Rogers Road. There are sidewalks on SW Tualatin-Sherwood Road and SW Gerda Lane that stop approximately 600 feet short of the eastern sub-area. These facilities provide connections to the Town Center and Old Town.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Highway 99W and SW Tualatin Sherwood Road are the closest major roadways for the three small reserve areas, and both have an acceptable volume/capacity ratio for the 2015 pm peak in these locations. SW Tualatin-Sherwood Road at SW Oregon Street, which is about ½ mile from the eastern sub-area has a congested volume/capacity ratio (<1.0) in both directions. Given the extremely small amount of acreage in the reserve areas there would not be a negative impact to these roadways from urbanization of the reserve areas.

Transit: TriMet bus routes 94 and 97 could see additional use from urbanization of the reserve areas especially given the pedestrian connections between the areas and the closest transit stops. See transit analysis below.

Bike: The bike facilities on Highway 99W, SW Roy Rogers Road and SW Tualatin-Sherwood Road would be expected to see an increase in use given the existing connections and the opportunity to travel to the Town Center and Old Town by bike.

Pedestrian: The sidewalks that connect to the sub-areas along SW Borchers Drive, SW Seely Lane, and Highway 99W would be expected to see additional use. The sidewalks on SW Tualatin-Sherwood Road and SW Gerda Lane would also be expected to see additional use once the 600 feet gap is completed as these facilities provide connections to the Town Center and Old Town.

Need for new transportation facilities and costs (see attached transportation map)

No new arterial or collector facilities are needed for urbanization to occur.

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined that no additional service is necessary for these small reserve areas.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

No streams or wetlands are located within the three sub-areas, but as mentioned above the 100-year floodplain forms the northern edge of all three sub-areas. There are significant areas of riparian or upland habitat identified in the eastern and western sub areas due to the location of the floodplain and the nearby Tualatin River National Wildlife Refuge. Some of the identified habitat is in locations that are currently in agricultural production so a refined analysis will need to be completed at the local government level. In addition, some of the identified habitat in the western sub-area is located within the power line easements, which would provide some level of protection due to the inability to urbanize at a high level. Most of the middle sub-area is free of habitat areas. Finally, some of the habitat area is located on land owned by the federal government or Washington County and would most likely not be subject to urbanization pressures. Overall urbanization of the area could occur with minimal or moderate impacts to the habitat areas depending on the urban form and use.

Energy, Economic & Social

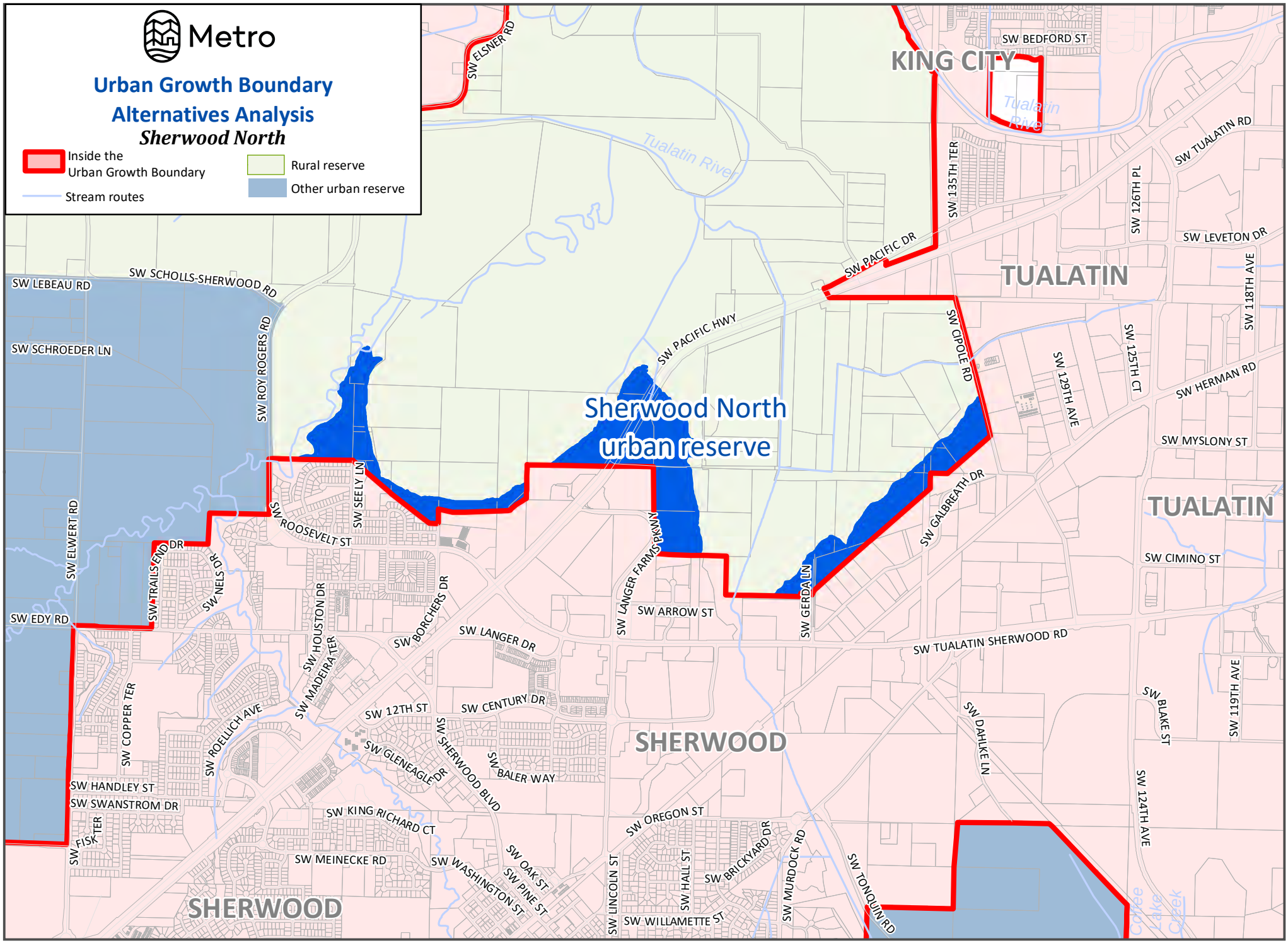
There are only six residences within the three small sub-areas and much of the land is in public ownership or impacted by power line right of way that reduces the opportunity for urban development, thus urbanization of the areas would not have significant social impacts on current residents. A significant portion of the land is vacant therefore any future development, especially for employment use will provide a positive economic impact. The loss of the economic impact from the small agricultural uses would not be considerable and the potential economic impact of employment development in these locations, even though it is not significant will outweigh this loss. The eastern and middle sub-areas would logically be extensions of the industrial areas near SW Tualatin Sherwood Road, providing additional employment opportunities for local residents and could help reduce the increase in VMT from urbanization of the area. However, given the modest amount of development that would occur, the increase in traffic would not be great and would not have significant energy consequences. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

All the land adjacent to the three sub-areas is designated for farm use by Washington County. The land adjacent to the western sub-area is zoned exclusive farm use (EFU); however no agricultural activity is occurring directly adjacent to the reserve area. The Chicken Creek riparian area provides a buffer on the west side of this sub-area and the land on the east and north side contains forest or scrub shrubs. As there is no agricultural activity directly adjacent to this sub-area, the proposed urban uses are generally compatible with the nearby agricultural and forest activities occurring on this farm and forest land.

The land adjacent to the middle sub-area is zoned EFU as well. The EFU land on the north side of SW Pacific Highway is not being farmed and appears to contain areas of standing water for significant portions of the year as part of the wildlife refuge operations. The EFU land to the south of SW Pacific Highway contains some limited agricultural activities including field crops, orchards, and pastureland. Urbanization of this portion of the sub-area may impact these agricultural activities, however since the amount of development that could occur is relatively small and would most likely be an employment use with access occurring away from the farming areas the impact would not be great. Thus, the proposed urban uses are generally compatible with the nearby agricultural activities occurring on this farm and forest land.

Most of the land adjacent to the eastern sub-area is zoned EFU and there is a block agriculture forest (AF20) zoned land adjacent to the portion of the sub-area near SW Cipole Road. Most of this resource land contains some level of agricultural activity, including field crops and pastureland. Urbanization of this portion of the sub-area may impact these agricultural activities, however since the amount of development that could occur is relatively small and would most likely be an employment use with access occurring away from the farming areas the impact would not be great. Overall, proposed urban uses in the Sherwood North analysis area has high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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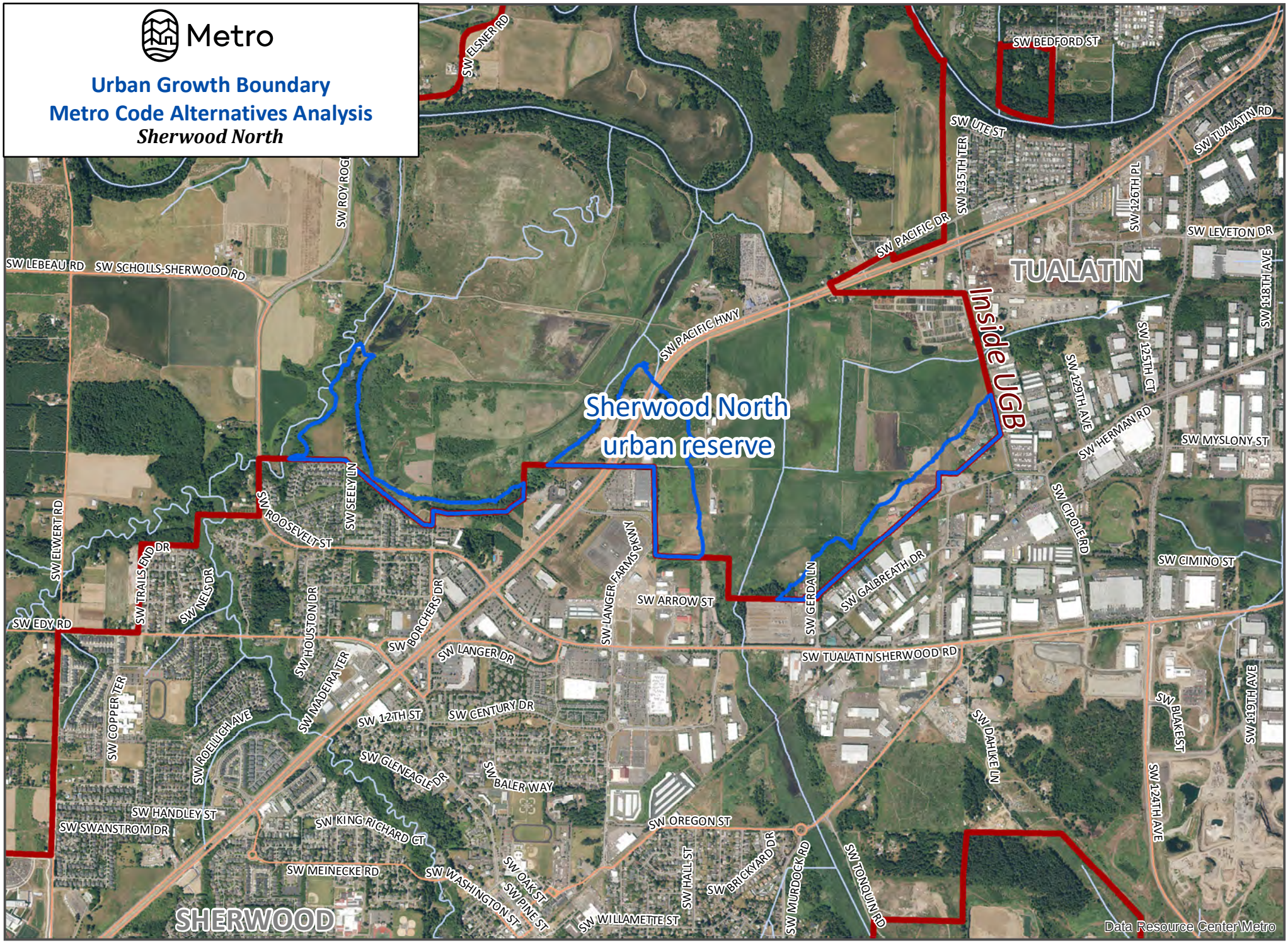
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood North



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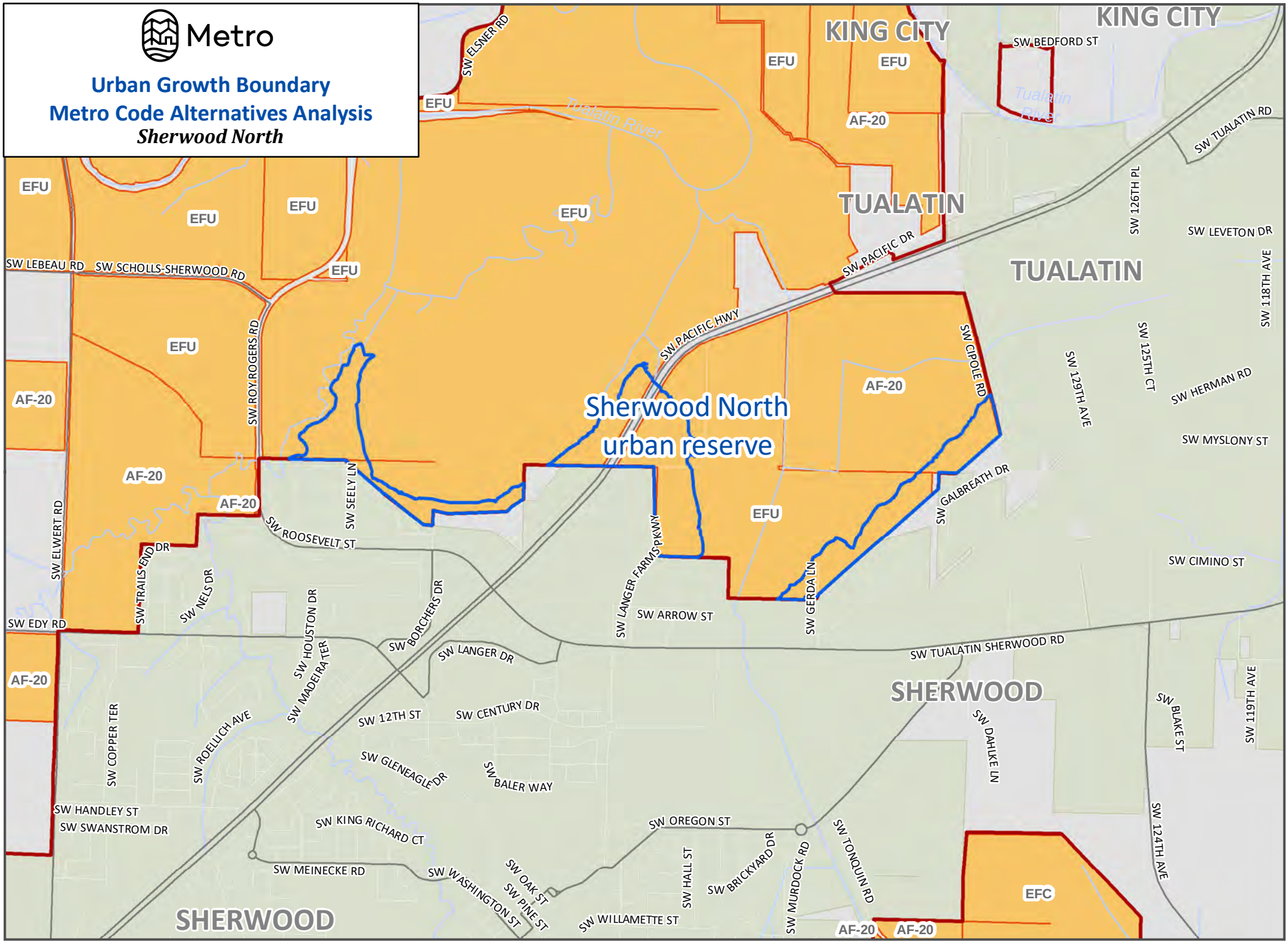

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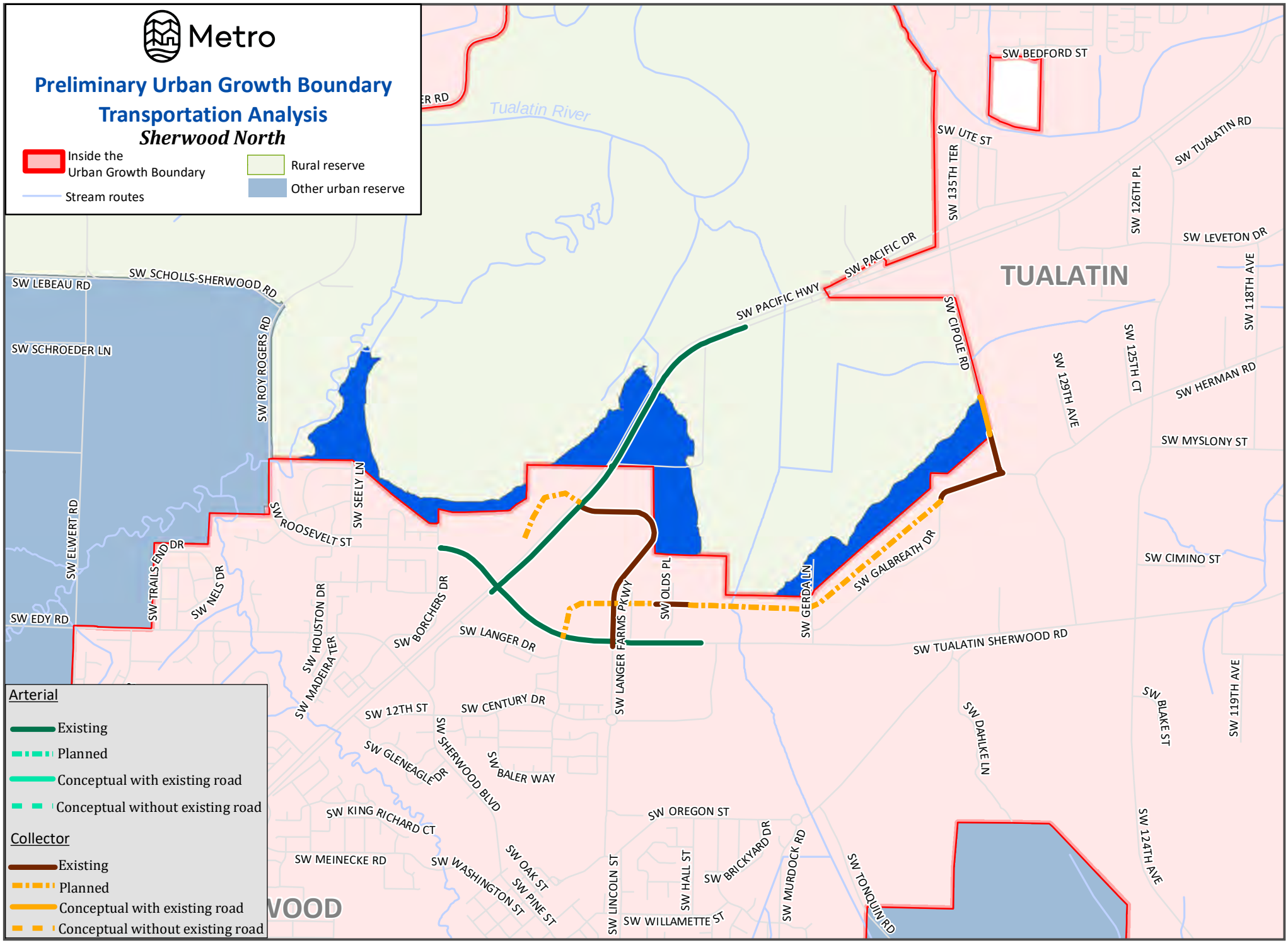

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SHERWOOD SOUTH URBAN RESERVE AREA

Total Acres	447	Parcel Acres	421
Gross Vacant Buildable Acres	221	Net Vacant Buildable Acres	168

General Description (see attached map)

The Sherwood South Urban Reserve Area is a rectangular shaped area on the south side of Sherwood, south of SW Brookman Road and east of Highway 99W that totals 447 acres in size. The UGB forms the northern boundary and the Clackamas-Washington County line forms the eastern boundary. The area is served by SW Brookman Road, SW Middleton Road and SW Oberst Road. The area contains five streams including the confluence of Goose and Cedar Creeks. The land north of SW Brookman Road was added to the UGB in 2002 and is currently being developed for residential use.

Parcelization and Development Pattern (see attached aerial photo)

This moderately sized urban reserve area contains 70 parcels that range in size from 12,200 square feet to 55 acres. Eighty-nine percent of the parcels are less than ten acres and over half the parcels are less than five acres in size. A 65 acre parcel is split by the reserve boundary with 28 acres inside the urban reserve and the remaining 37 acres in a rural reserve. The area includes rural residential development, forested parcels and limited agricultural activity, mostly in pasture land, Christmas trees and orchards. The Timber Line Baptist Church is located on SW Old Highway 99W and a Northwest Natural Gas Facility is located at the corner of SW Old Highway 99W and SW Brookman Road. Sixty of the 71 parcels have improvements. Available data does not suggest the existence of power lines or public easements, however approximately one-half mile of Portland and Western Railroad track runs through the western portion of the area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The reserve area is a mixture of flat areas with some small hills and steeper sloped areas, mostly near the streams that flow north towards Sherwood. Most of the flatter areas are near SW Old Highway 99W and SW Middleton Road and are made up of smaller parcels that would need to be combined to provide opportunities for employment uses. The limited number of small flat sites that are quite some distance from Sherwood's existing employment lands eliminates the area as an employment hub. The existing rural residential development pattern and the agricultural lands provide the opportunity for future residential development. Thus, the area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood owns, operates and maintains the wastewater collection system within City limits, and Clean Water Services (CWS) provides wastewater treatment at the Durham Wastewater Treatment Plant which has capacity to serve lands inside the UGB. Sewer is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the city. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham treatment plant. The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The master plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station and treatment plant). However, at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Capacity appears to be available at the Durham treatment plant although upgrades may be required. Assuming areas within the existing UGB develop prior to the reserve area; the system would not have capacity to serve the area. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Sewer from the reserve area will be served by the Sherwood Trunk Line. Currently, no existing sewer extends south through the 2002 Brookman Addition area to the reserve area boundary. For the purpose of this report, it is assumed that the Brookman Addition will develop prior to the reserve area. Sewer lines in the Brookman Addition would presumably extend to the northern boundary of the reserve area and new lines will be extended throughout the reserve area. The laterals off the mains will be provided by the development community. CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple urban reserves could result in a need for some expansion in order to handle additional load.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$0.13
12 – 18" pipe (gravity)	$2.37
Total	**$2.5**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood draws the majority of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville. The City owns 5 million gallons per day (MGD) of production capacity at the WRWTP. Sherwood also maintains four groundwater wells for back-up supply and maintains an emergency connection and transmission piping through the City of Tualatin's water system. The City of Sherwood Water Master Plan was updated in 2015. According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping. The Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within a 20-year planning horizon. To support the 20-year planning horizon, the City will need an additional 1 mgd of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Currently there is adequate water supply for the reserve area or depending on when the reserve area is added to the UGB the City will be able to generate the supply to serve the new development. The master plan did not include the Sherwood South urban reserve in its analysis. However, the Sherwood West and a portion of the Tonquin urban reserves were included. For the purpose of this report, it is assumed that only one reserve area will be developed at a time. The City of Sherwood Master Plan assumed a portion of the Sherwood West reserve area would be developed in the 20-year planning horizon. Therefore, presumably, if the Sherwood South reserve area were to develop instead of Sherwood West, there would be available capacity in the existing system with regards to storage, pumping, and piping. As mentioned above, the City will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

Because water capacity appears to be adequate, future impacts to the water system are primarily financial. New water mains must be provided to allow development of the reserve area and the laterals off the mains are provided by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$3.9
Storage/pumping	$2.24
Total	**$6.14**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$5.39
Water quality/detention	$5.26
Total	**$10.65**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Sherwood have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Tualatin-Sherwood Road at SW Oregon Street and SW Elwert Road at SW Edy Road have a congested volume/capacity ratio (<1.0) in both directions. SW Tualatin Sherwood Road is classified as a high injury corridor.

Transit: Two TriMet bus lines serve the Sherwood Town Center. Routes 94 on Highway 99W and Route 97 on SW Tualatin-Sherwood Road.

Bike: Sherwood has eight miles of dedicated bike lanes and three miles of established bikeways along the major roadways that connect with some local trails and bike friendly streets, including a

connection to Old Town. There are numerous gaps to some of the residential areas south of the railroad.

Pedestrian: The vast majority of the residential neighborhoods in Sherwood have sidewalks with a number of local trails that connect the different neighborhoods together. The Town Center is well connected with sidewalks as is most of Old Town.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: SW Brookman Road, the main access point for the reserve area has an acceptable volume/capacity ratio for the 2015 pm peak. SW Ladd Hill Road and Highway 99W also have an acceptable volume/capacity ratio.

Transit: There are no TriMet bus lines near the reserve area. The closest transit stop for route 94 is over one mile away in Old Town.

Bike: There are dedicated bike lanes on Highway 99W at the SW Brookman Road intersection. There is a small 650 foot bike lane section on SW Ladd Hill Road between SW Sunset Boulevard and SW Willow Drive, however this bike lane does not connect to any other bike facilities and is over ½ mile from the reserve area.

Pedestrian: SW Sunset Boulevard has sidewalks as do the residential neighborhoods south of the road; however these sidewalks only provide connections internal to the subdivisions. SW Ladd Hill Road has as sidewalk on one side that extends to SW Brookman Road, which is just shy of a ½ mile from the reserve area. Sidewalks will be provided with the residential development that is occurring on the north side of SW Brookman Road. Once this development is complete there will be sidewalks adjacent to the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Currently SW Brookman Road is a two-lane rural road that is slowly being improved as a half-street urban arterial as the land to the north is developed. The improvement of this roadway will provide some additional capacity to also serve the reserve area. Additional traffic could occur on SW Ladd Hill Road/SW Main Street as that is the most direct route to Old Town. Highway 99W adjacent to the reserve area should not be impacted from the relatively small number of new homes expected.

Transit: Some impact to the current TriMet bus routes may occur. See transit analysis below.

Bike: The dedicated bike lanes on Highway 99W could see additional use although the highway is not the most comfortable environment for most bicyclists. The small bike lane section on SW Ladd Hill Road would most likely not see any additional use as it does not connect to any other bike facilities.

Pedestrian: The sidewalk on SW Ladd Hill Road and the sidewalks on SW Sunset Boulevard could see additional use once the gap from SW Brookman Road is completed as that would provide a connection north of SW Sunset Boulevard along SW Main Street to Old Town. The sidewalks in the

new residential areas to the north would be expected to see some additional use, although the railroad tracks provide a barrier to connecting to the remainder of the city.

Need for new transportation facilities and costs (see attached transportation map)

SW Brookman Road will need to be improved to urban arterial standards. This is considered a ½ street improvement as the Brookman Addition expansion area from 2002 will be responsible for the northern half of the roadway. SW Middleton Road, SW Labrousse Road and SW Oberst Road will need to be improved to urban collector standards. Two new collectors will be needed to extend east from SW Labrousse Road and then north to SW Brookman Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved ½	$26.10
Collectors	Type	Cost (in millions)
	Existing/Improved	$43.86
	New	$32.69
Total		**$102.65**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined they could reroute an existing line along Highway 99W to serve the reserve area with no additional cost.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Five streams flow through the reserve area including Goose Creek, Cedar Creek and unnamed tributaries to Cedar Creek. Goose Creek flows south through a predominately wooded area for approximately 1,400 feet to join Cedar Creek in the middle of the reserve area. Cedar Creek enters the reserve area in the southwest corner and flows northeast for approximately 3,930 feet to its confluence with Goose Creek. This section of Cedar Creek flows mainly through a wooded riparian area that is well established and located away from existing development and also contains an associated 3.1 acre wetland identified on the National Wetland Inventory (NWI). Cedar Creek continues flowing northeast for approximately 2,100 feet, once again through a mostly wooded riparian corridor. This section of the creek also has an adjacent ½ acre NWI wetland. There is a considerable amount of floodplain associated with these two streams that would help protect the riparian corridors due to floodplain development limitations.

Three tributaries to Cedar Creek flow north through the eastern portion of the reserve area. The two most eastern streams flow through wooded areas and total approximately 4,650 feet. A ½ acre NWI wetland has been identified along the easternmost stream and a small pond not identified as a wetland is along the other stream. The third stream flows through a mostly open landscape of pasture land and farm structures before flowing through a wooded area with rural residences. The total length of this stream is 2,180 feet and also includes a fairly large irrigation pond.

Both riparian and upland wildlife habitat has been identified along all of the stream corridors. The five streams and associated wildlife habitat essentially break up the reserve area into small segments of unconstrained land. In order to urbanize the area in a well connected manner that provides transportation options numerous stream crossings would be required which most likely would negatively impact the stream corridors. If urbanization occurs with less roadway connectivity, then impacts to the natural resources can be reduced. It should be noted that the City of Sherwood has preserved the Cedar Creek riparian area that currently is within the city limits by integrating the stream corridor into the urban fabric, resulting in an amenity for its citizens. Overall urbanization of the area could occur with moderate to significant impacts to the stream corridors and habitat areas depending on the urban form and road connections.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. The significant natural resources in the area reduces the amount of development that can occur and forces a segmented development pattern which results in a significant amount of land that will stay in a natural state, thus reducing the social impacts of future urbanization relative to the loss of a rural lifestyle and sense of place on the existing residents of the area. SW Middleton Road and SW Brookman Road provide access to Highway 99W which connects to employment areas along SW Tualatin Sherwood Road which could help reduce the increase in VMT from urbanization of the area. However, given the modest amount of development that would occur, the increase in traffic would not be great and would not have significant energy consequences. Preservation of the stream corridors provides the opportunity for connections to existing trails within Sherwood that could reduce some local automobile trips, thereby reducing VMT. The agricultural activity within the reserve area is minimal. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential development, even though it is not significant will outweigh this loss. Overall this analysis area has low economic, social and energy consequences from urbanization.

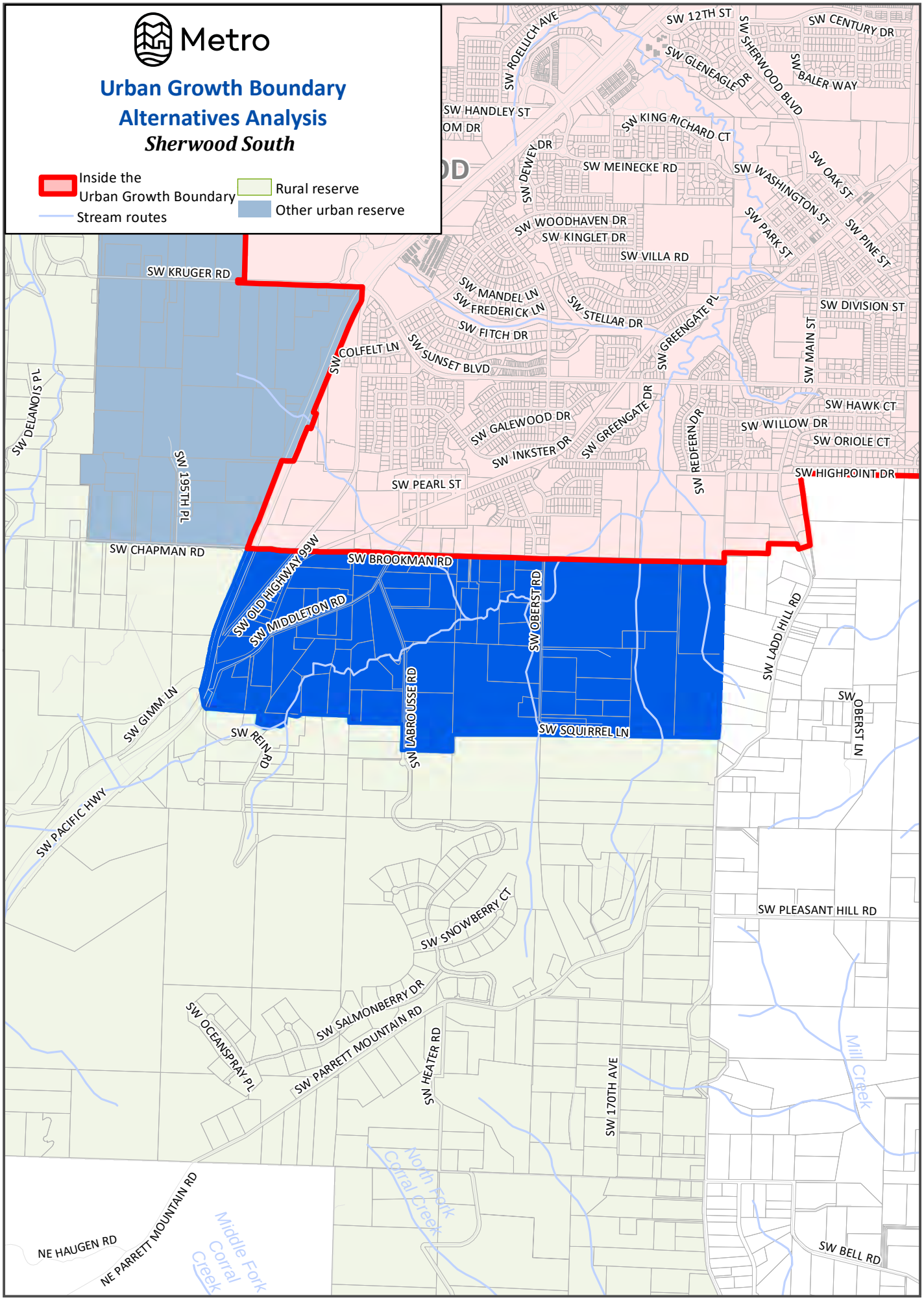
Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There is a 127 acre block of resource land zoned agriculture forest 20 (AF-20) directly south of the analysis area between SW Ladd Hill Road and SW Labrousee Road. The majority of the resource land is forested with one rural residence and a very limited amount of agricultural activities occurring. Two unnamed tributaries to Cedar Creek flow north through the forested portion of the resource land area in ravines up to 200-feet deep. As there is a very limited amount of agricultural activities and no indication of forest activities occurring on this resource land area, the proposed

urban uses are compatible with the nearby agricultural and forest activities occurring on this farm and forest land.

A second block of resource land zoned AF-20 is located west of the reserve area, on the west side of Highway 99W between SW Chapman Road and SW Gimm Lane, and extends approximately 1½ miles to the Washington County line. Agricultural activities near Highway 99W include a small amount of orchard and field crops and a 44-acre equestrian center. The Highway 99W right-of-way, which is approximately 150-feet in width, provides a good edge to the reserve area in this location. In addition, the equestrian center is essentially a developed use that supplements the buffer of the highway for the majority of the agricultural activities that occur to the west. Due to the fairly wide highway right-of-way and the location of the equestrian center, the proposed urban uses are compatible with the nearby agricultural activities occurring on this farm and forest land.

A third 438 acre block of resource land zoned AF-20 is located approximately ¼ mile south of the reserve area along SW Rein Road. This resource land area is approximately 100-feet higher in elevation with several rural residences in between. As this block of resource land is not directly adjacent to the reserve area, and there are a number of rural residences located on the slope between the two areas, the proposed urban uses would be compatible with nearby agricultural or forest activities occurring on this farm or forest land. Overall, proposed urban uses in the reserve area have a high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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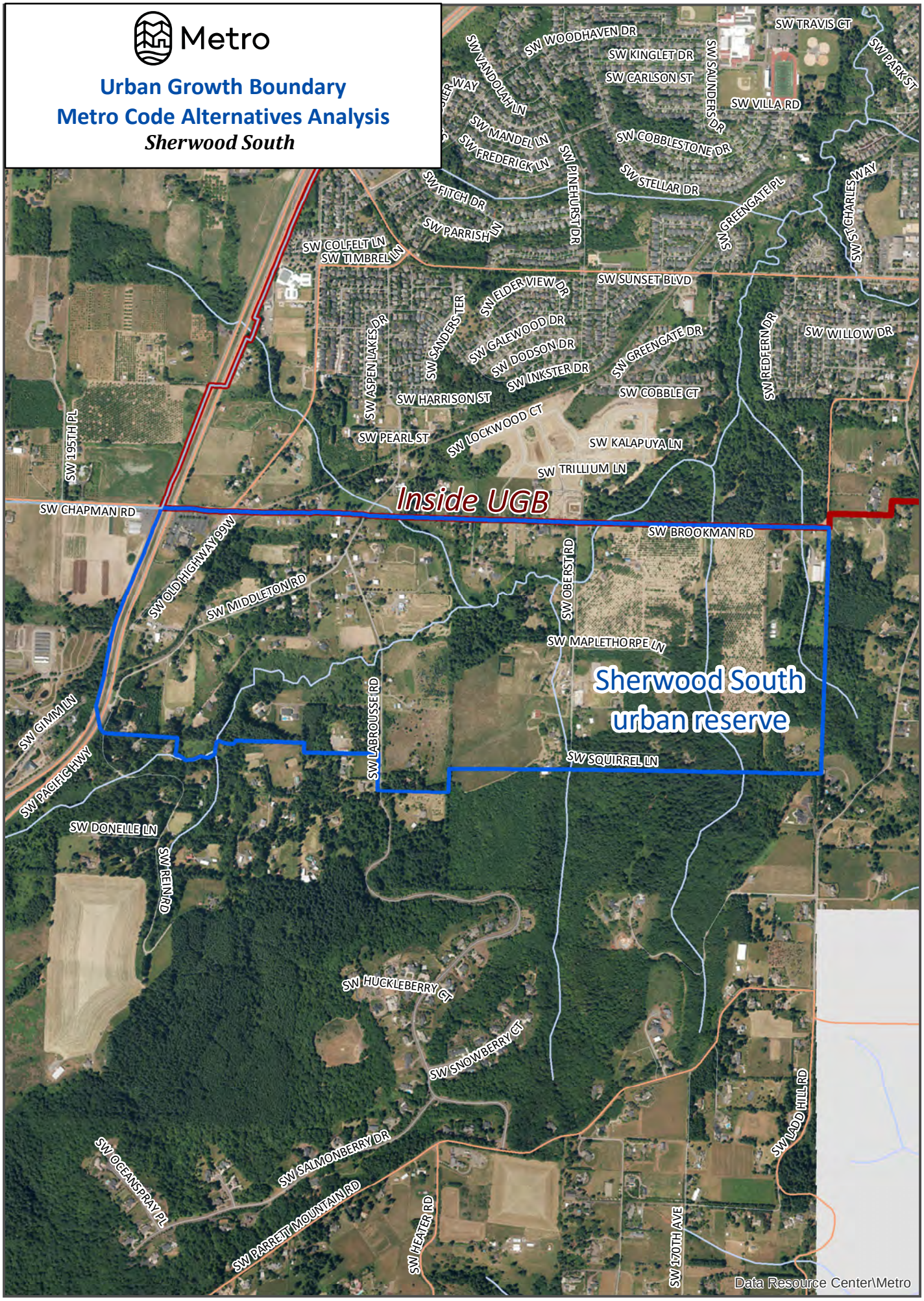
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood South



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Urban Growth Boundary
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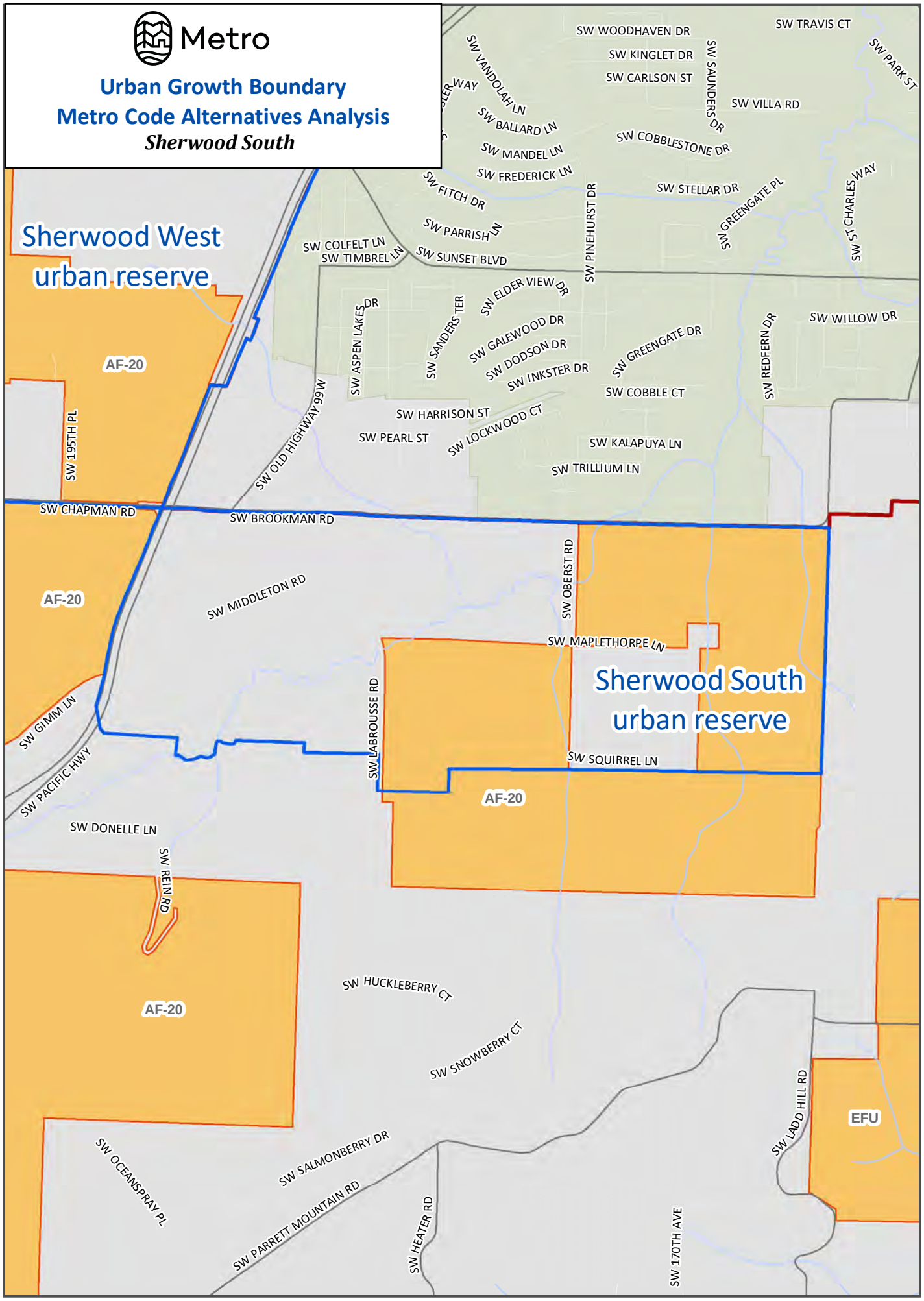

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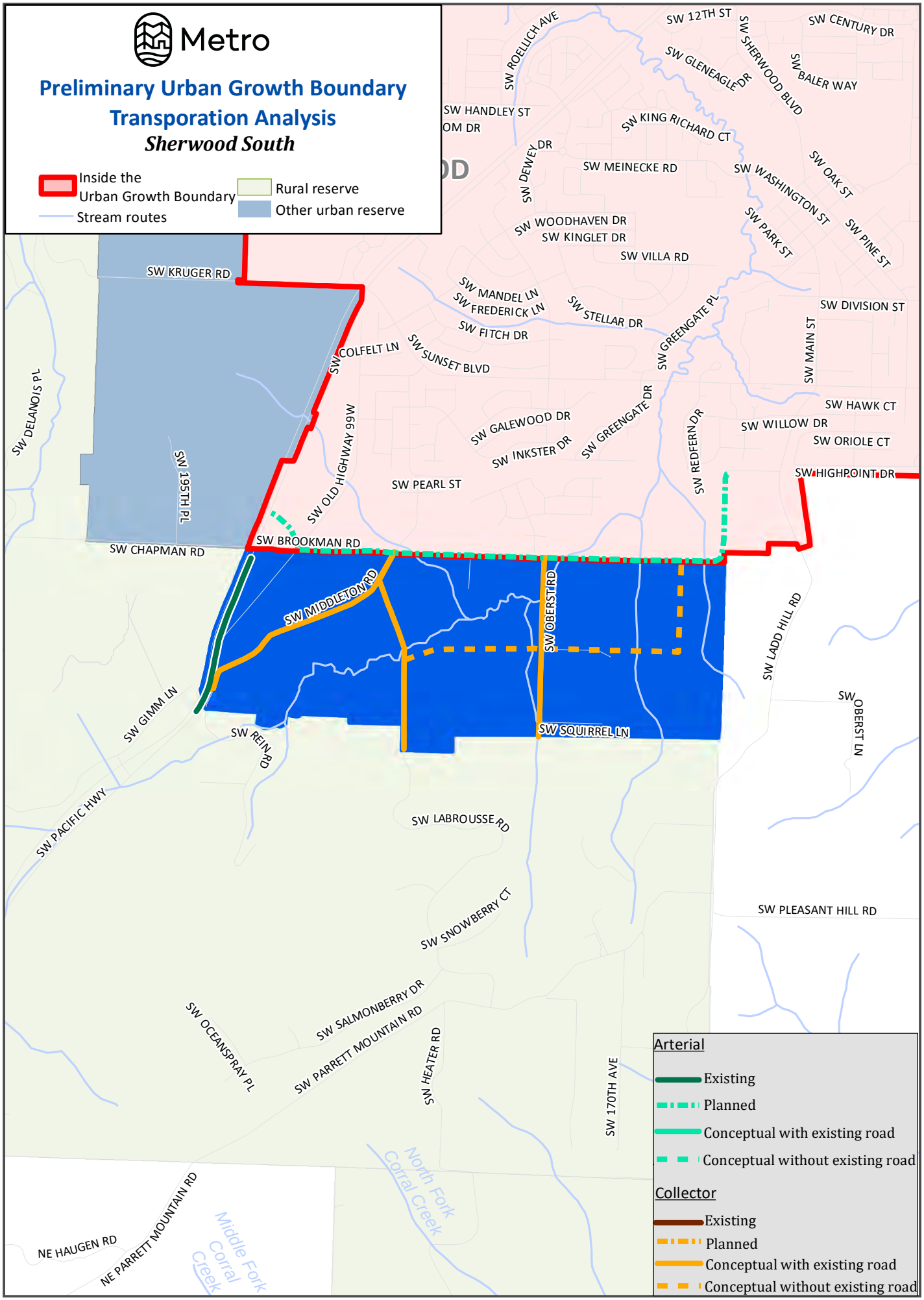

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SHERWOOD WEST URBAN RESERVE AREA

Total Acres	1,205	Parcel Acres	1,159
Gross Vacant Buildable Acres	811	Net Vacant Buildable Acres	628

General Description (see attached map)

The Sherwood West Urban Reserve Area is a large area on the west side of Sherwood that stretches from SW Scholls Sherwood Road in the north to SW Chapman Road in the south and totals 1,205 acres in size. The UGB forms the eastern boundary except for the very northern portion and rural reserve land borders the remaining three sides. The land generally slopes up from east to west and Chicken Creek flows north diagonally through the middle portion of the area. Access to the area north of Chicken Creek is provided by SW Roy Rogers Road, SW Scholls Sherwood Road, and SW Elwert Road. Access to the area south of Chicken Creek is provided by SW Elwert Road, SW Edy Road, SW Kruger Road, and SW Chapman Road.

Parcelization and Development Pattern (see attached aerial photo)

This large reserve area contains 126 parcels that range in size from one-third of an acre to 57 acres in size. Most of the parcels are between one and ten acres in size although there are 31 parcels greater than ten acres with 12 parcels greater than 20 acres. The area contains rural residences, numerous pockets of agricultural lands and forested parcels and two churches, the Countryside Community Church on SW Kruger Road, and the Free Methodist Church on SW Edy Road. There is a water storage facility owned by the City of Sherwood on SW Kruger Road. Ninety-four of the 126 parcels have improvements. Two power lines run through the area; the first one cuts diagonally across the very northern section of the reserve area and the second one generally parallels Chicken Creek.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This reserve area is a mixture of relatively flat land along the eastern edge of the area with moderately sloped hills to the west. There are areas with slopes greater than 10% that would limit employment opportunities however, there are some fairly large blocks of flat land that could accommodate employment needs. There are minor pockets of slopes greater than 25% associated with Chicken Creek and its tributaries. Over 60% of the parcels are greater than five acres in size which provides the opportunity to consolidate parcels into significant blocks of land for development. The recently built Sherwood High School is adjacent to the reserve area and could

provide a focal point for a new neighborhood. This area can accommodate both a residential and employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood owns, operates, and maintains the wastewater collection system within City limits, and Clean Water Services (CWS) provides wastewater treatment at the Durham Wastewater Treatment Plant which has capacity to serve the lands inside the UGB. Sewer is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the city. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham treatment plant. The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The master plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station and treatment plant). However, at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Capacity appears to be available at the Durham treatment plant although upgrades may be required. Assuming areas within the existing UGB develop prior to the reserve area; the system would not have capacity to serve the area. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Sewer from the reserve area will be served by the Sherwood Trunk Line and as noted above the trunk line will need improvements. New lines will be needed to extend throughout the site. Based on topography, the northern portion of the reserve area should be served by gravity lines, whereas the southern portion may require a pump station and force main to convey flows to the Sherwood Trunk Line. The laterals off the mains will be provided by the development community. Wastewater services at the Durham treatment plant may require upgrades for the large amount of urban development that would be expected from this significant reserve area.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$5.52
12 – 18" pipe (gravity)	$1.57
Force main	$0.88
Pump station	$0.40
Total	**$8.37**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood draws most of its water supply from the Willamette River Water Treatment Plant (WRWTP) in Wilsonville. The City owns 5 million gallons per day (MGD) of production capacity at the WRWTP. Sherwood also maintains four groundwater wells for back-up supply and maintains an emergency connection and transmission piping through the City of Tualatin's water system. The City of Sherwood Water Master Plan was updated in 2015. According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping. The Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within a 20-year planning horizon. To support the 20-year planning horizon, the city will need an additional 1 mgd of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water supply for this reserve area appears to be adequate or the city will be able to generate the supply as this area is urbanized. Sherwood West was included in the Water Master Plan and according to the Master Plan, there would be available capacity in the existing system with regards to storage, pumping, and piping to serve a portion of the site (through the 20-year planning horizon). As mentioned above, the city will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional land added from the reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City's Master Plan indicates several improvements to the existing water system would be needed to serve the reserve area at full build-out. According to the master plan, an additional 4 MG of water would need to be obtained from the WRWTP to supply the area. The master plan indicates that full development of the area may result in minor storage and pumping deficiencies that should be evaluated in the future. The Master Plan suggests that existing piping would be sufficient; however, new waterlines would need to be extended throughout the reserve area. Connections to existing water lines are available along the eastern edge of the reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.42
18" and larger	$6.46
Storage/pumping	$7.88
Total	**$19.76**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$11.73
Water quality/detention	$11.67
Total	**$23.4**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Sherwood have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Tualatin-Sherwood Road at SW Oregon Street and SW Elwert Road at SW Edy Road have a congested volume/capacity ratio (<1.0) in both directions. SW Tualatin Sherwood Road is classified as high injury corridor.

Transit: Two TriMet bus lines serve the Sherwood Town Center. Route 94 on Highway 99W and Route 97 on SW Tualatin-Sherwood Road.

Bike: Sherwood has eight miles of dedicated bike lanes and three miles of established bikeways along the major roadways that connect with some local trails and bike friendly streets, including a connection to Old Town. There are numerous gaps to some of the residential areas south of the railroad.

Pedestrian: Most of the residential neighborhoods in Sherwood have sidewalks with several local trails that connect the different neighborhoods together. The Town Center is well connected with sidewalks as is most of Old Town.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: SW Scholls-Sherwood Road, SW Kruger Road, and Highway 99W, three of the main access roads for the reserve area have an acceptable volume/capacity ratio for the 2015 pm peak. SW Elwert Road, one of the other main access roads, has a congested volume/capacity ratio (<1.0) in both directions at SW Edy Road.

Transit: There are no TriMet bus lines near the reserve area. The closest transit stops for route 94 are approximately 1½ miles away in Old Town as well as the Town Center.

Bike: There are dedicated bike lanes on Highway 99W at the SW Kruger Road intersection. The bike lanes connect to bike lanes on SW Meinecke Parkway which provides access to the middle school, Old Town, and the Town Center. There is a dedicated bike lane on SW Sunset Boulevard that runs for approximately ½ mile before connecting to the Sherwood Open Space Trail, which extends for another four-tenths of a mile but ends before connecting to any other bike facility. There are bike lanes on SW Roy Rogers Road that extend north into rural lands and south into the city, but the bike lanes stop short of connecting to the bike lanes on Highway 99W.

Pedestrian: There are sidewalks on SW Sunset Boulevard, across Highway 99W from SW Kruger Road that connect with numerous residential areas and Old Town via SW Main Street. There are sidewalks on SW Handley Street and SW Swanstrom Drive that connect to the sidewalks on SW Meinecke Parkway which provides access to the current high school, middle and elementary schools, Old Town, and the Town Center. Sidewalks on SW Edy Road provide access to Edy Ridge Elementary School and sidewalks on SW Roy Rogers Road connect to the northern portion of the city. Sidewalks connect to Sherwood High School at the SW Sunset Blvd. intersection with Highway 99W. The southern and northern portions of this large reserve area do not have nearby pedestrian connections.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: SW Kruger Road, SW Haide Road, SW Elwert Road, SW Edy Road, and Highway 99W would all be expected to see additional traffic as a result of urbanizing this large reserve area. SW Elwert Road at SW Edy Road currently has a congested volume/capacity ratio (<1.0) in both directions. The portions of SW Kruger Road, SW Haide Road and SW Elwert Road that border the new high school have been improved to urban standards. There are portions of SW Edy Road that are inside the UGB but not yet improved to urban standards that will need to be improved as development occurs on the adjacent parcels.

Transit: Some impact to current TriMet bus routes may occur. See transit analysis below.

Bike: The dedicated bike lanes on Highway 99W at the SW Kruger Road intersection would be expected to see increased use although the highway is not the most comfortable environment for most bicyclists. The bike lanes on SW Meinecke Parkway would also be expected to see additional use as they provide access to schools, Old Town, and the Town Center. This requires a ¾ mile ride along the highway which may limit or reduce the number of people using this route. The bike lane on SW Sunset Boulevard that runs for approximately ½ mile before connecting to the Sherwood Open Space Trail would probably not see further use until additional connections were made. The bike lane on SW Roy Rogers Road would also be expected to see additional use.

Pedestrian: The sidewalks on SW Sunset Boulevard, across Highway 99W from SW Kruger Road would be expected to see additional use as they connect to numerous residential areas and Old Town via SW Main Street and there are signalized crosswalks at the intersection. The sidewalks on SW Handley Street and SW Swanstrom Drive that connect to the sidewalks on SW Meinecke Parkway would likely see additional use as they provide access to schools, Old Town, and the Town Center. Likewise, the sidewalks on SW Edy Road that provide access to Edy Ridge Elementary School and the sidewalks on SW Roy Rogers Road would be expected to see additional use.

Need for new transportation facilities and costs (see attached transportation map)

SW Elwert Road, SW Roy Rogers Road, SW Scholls Sherwood Road and SW Lebeau Road will need to be improved to urban arterial standards. Portions of SW Elwert Road and SW Roy Rogers Road are considered ½ street improvements as the east side of the road is the responsibility of the land already inside the UGB. SW Conzelmann Road, SW Edy Road, SW Kruger Road, and SW Chapman Road will need to be improved to urban collector standards. Two new collectors are needed to provide access to the center of the area between SW Chapman Road and SW Edy Road and to extend SW Conzelmann Road east from SW Elwert Road to SW Roy Rogers Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$96.77
	Existing/Improved ½	$16.59
Collectors	Type	Cost (in millions)
	Existing/Improved	$47.53
	New	$73.75
Total		**$234.64**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined they could reroute an existing line along Highway 99W to serve the reserve area with no additional cost.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Chicken Creek meanders through the reserve area for approximately 2.8 miles, eventually flowing through the Tualatin River National Wildlife Refuge to the Tualatin River. There are four linear wetlands, identified on the National Wetland Inventory (NWI), associated with Chicken Creek that total 28 acres and encompass a significant portion of the riparian area. Much of the wetlands are forested as is most of the remaining stream corridor that is outside of the wetlands. In addition, there are a few locations of 100-year floodplain along the stream corridor outside of the wetland areas. As you would expect there are significant areas of riparian and upland habitat associated with Chicken Creek and the wetlands, much of which is also within the power line easement that runs through this portion of the reserve area. Given the increased protection levels for floodplains, wetlands, streams, and habitat areas within the UGB and the location of the power line easement that also provides a level of protection due to the inability to urbanize at a high level, urbanization could occur without significant impacts to the Chicken Creek riparian corridor. In addition, the size of the habitat areas would make new road crossings very expensive, thereby reducing the number of potential impacts related to street connectivity. If new road crossings were built, then the impacts could be significant.

There are two unnamed tributaries to Chicken Creek that flow into the stream from the south. The first tributary is approximately 1,800 feet long, flows along the forested edge of pastureland and has a small 0.2-acre NWI wetland associated to it. The second tributary is a short 480-foot stream section near the corner of SW Edy and SW Elwert Roads that also is within a 1.7-acre NWI wetland and the 100-year floodplain. A 1,570-foot section of the West Fork Chicken Creek also flows through the area and joins Chicken Creek near SW Elwert Road. This stream also flows within the 100-year floodplain. There is a 1,600-foot tributary to the West Fork Chicken Creek north of the intersection of SW Edy Road and SW Eastview Road. The stream flows through a forested ravine with slopes greater than 25% which will provide an additional level of protection for this stream corridor. Like the main stem of Chicken Creek, there are areas of riparian and upland habitat associated with these stream corridors and wetland. Given the increased protection levels for floodplains, wetlands, streams, and habitat areas within the UGB, urbanization could occur without significant impacts to these tributaries to Chicken Creek.

Finally, a 1,380-foot headwater section of Goose Creek flows south through the southeastern portion of the reserve area into the City of Sherwood. This stream also has a 0.4-acre NWI wetland

associated with it and flows mainly through forested land, which has been identified as riparian and upland habitat. As this stream corridor and habitat areas somewhat intrude into the reserve area, it may be more susceptible to impacts of urbanization due to street connectivity needs. It should be noted that the City of Sherwood has successfully preserved riparian areas within the city limits by integrating the stream corridors into the urban fabric and providing trails, resulting in amenities for its citizens. Overall urbanization of the area could occur with minimal or moderate impacts to the natural resources. If numerous road crossings were constructed, then the impacts to natural resources could be significant.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences. There is a significant amount of land within the reserve area that could be developed to urban densities that would generate social impacts on the existing residents of the area in terms of loss of sense of place and rural lifestyle. Development of the area in a compact urban form, combined with the amenities of Sherwood High School, would provide new social, educational, and recreational opportunities for existing residents. The Chicken Creek and West Fork Chicken Creek stream corridors serve to isolate a portion of the reserve area which may be less impacted socially due to the preservation of these significant natural resource areas. While there are numerous access points to the reserve area most of the additional traffic will ultimately funnel on to Highway 99W which could provide negative energy impacts. Preservation of the stream corridors provides the opportunity for development of trails that could connect into the planned extension of the Cedar Creek Trail, thereby reducing some local automobile trips and VMT. The agricultural activity within the reserve area is concentrated in certain areas and the loss of the economic impact from these agricultural uses would be moderate, however the potential economic impact of significant residential development, with the potential for some employment uses will outweigh this loss. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There are four locations where farm and forest land is adjacent to the reserve area. The first location is an extensive block of exclusive farm use (EFU) zoned land adjacent to the north side of the reserve area. This land is completely in agricultural use except for the land directly adjacent to the Tualatin River. Agricultural activities include field and row crops, pastureland, and orchards. SW Scholls Sherwood Road provides a buffer between the agricultural activities occurring in this location and the new urban area; however, the road alone would not make the two uses compatible and there could still be complaints due to noise, odor, dust and the use of pesticides and fertilizer. The limited agricultural uses that are directly adjacent and the forested parcel should assist with urban compatibility. In addition, the improvement of SW Scholls Sherwood Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization would significantly increase traffic on SW Scholls

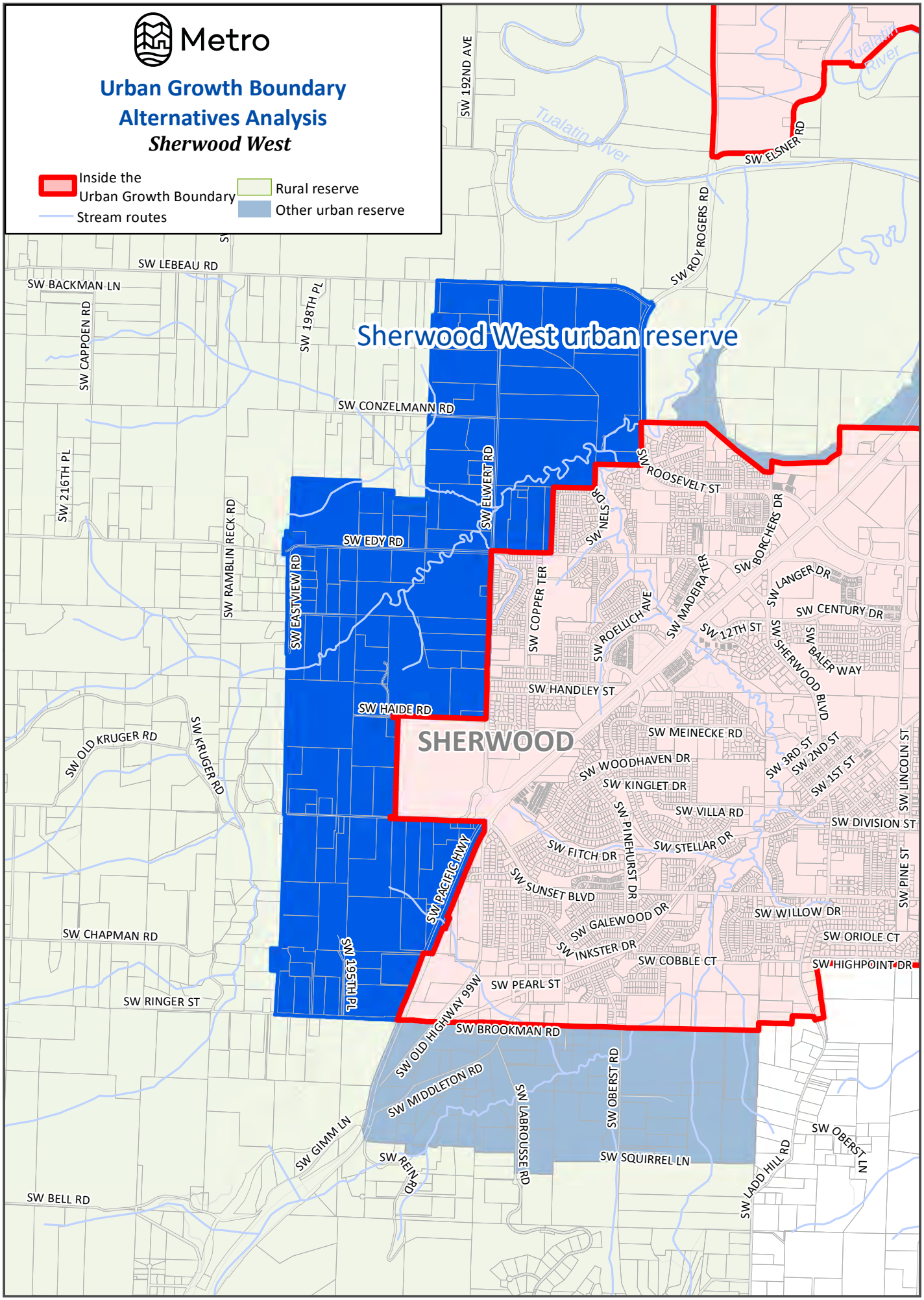
Sherwood Road and SW Roy Rogers Road which could impact the movement of both farm equipment and goods. The proposed urban uses are not compatible with the nearby agricultural activities occurring on this block of farm land.

The second location is a 335-acre block of agriculture and forest (AF20) zoned land located north of SW Edy Road in the vicinity of SW Conzelmann Road. This area is a mixture of agricultural activities, forested parcels, and rural residences. The forested portion of this block of resource land provides a buffer for some of the agricultural activities as does the stream corridor located north of the intersection of SW Edy Road and SW Eastview Road. Thus, the proposed urban uses are generally compatible with the nearby agricultural activities occurring on this block of farm and forest land.

The third location is a large block of AF20 zoned land between SW Kruger and SW Chapman Roads that extends west for some distance. This area is a mixture of agricultural activity, rural residences, and forested parcels. The land adjacent to the reserve area contains rural residences and a large open space parcel owned by Metro that provides a buffer for the agricultural activities occurring further to the west. In addition, Chicken Creek flows north through these parcels in a ravine that is 120 feet lower in elevation than the western edge of the reserve area, thereby providing a long-term buffer for the agricultural lands. Thus, the proposed urban uses are compatible with the nearby agricultural activities occurring on this block of farm and forest land.

The fourth location is a different portion of the same block of AF20 zoned land noted above that is adjacent to the southern edge of the reserve area. There are three AF20 parcels that abut the area, two of which are in agricultural activity and the third contains a residence. Directly south of these parcels is a large equestrian center that is essentially a developed use. Urbanization of this portion of the reserve area would result in new development adjacent to a small amount of actively farmed land which could result in issues related to safety, liability and vandalism and complaints due to noise, odor, dust and the use of pesticides and fertilizer in this area. SW Chapman Road would not provide an adequate buffer for the agricultural activities and the improvement of SW Chapman Road to urban standards includes its own set of compatibility issues related to street light illumination, weeds and pedestrian movements that can reduce compatibility between the two uses, some of which may be addressed through road design. Urbanization of this portion of the area may impact these limited agricultural activities.

In summary, the proposed urban uses in the northern portion of the reserve area and to a lesser extent in the southern portion would not be compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. Urbanization of the middle portion of the reserve area would be compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. Overall, the proposed urban uses have a medium compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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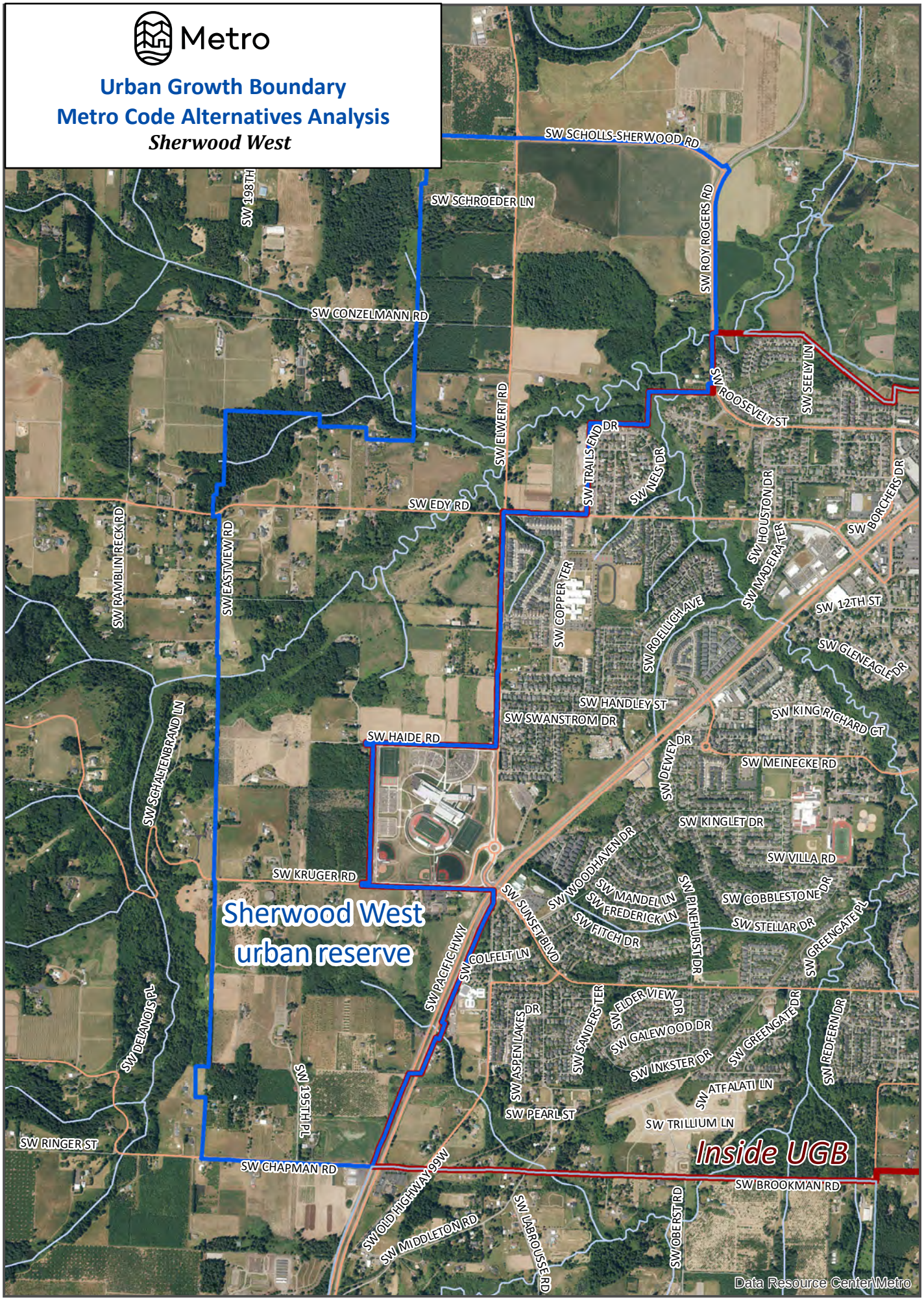
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood West



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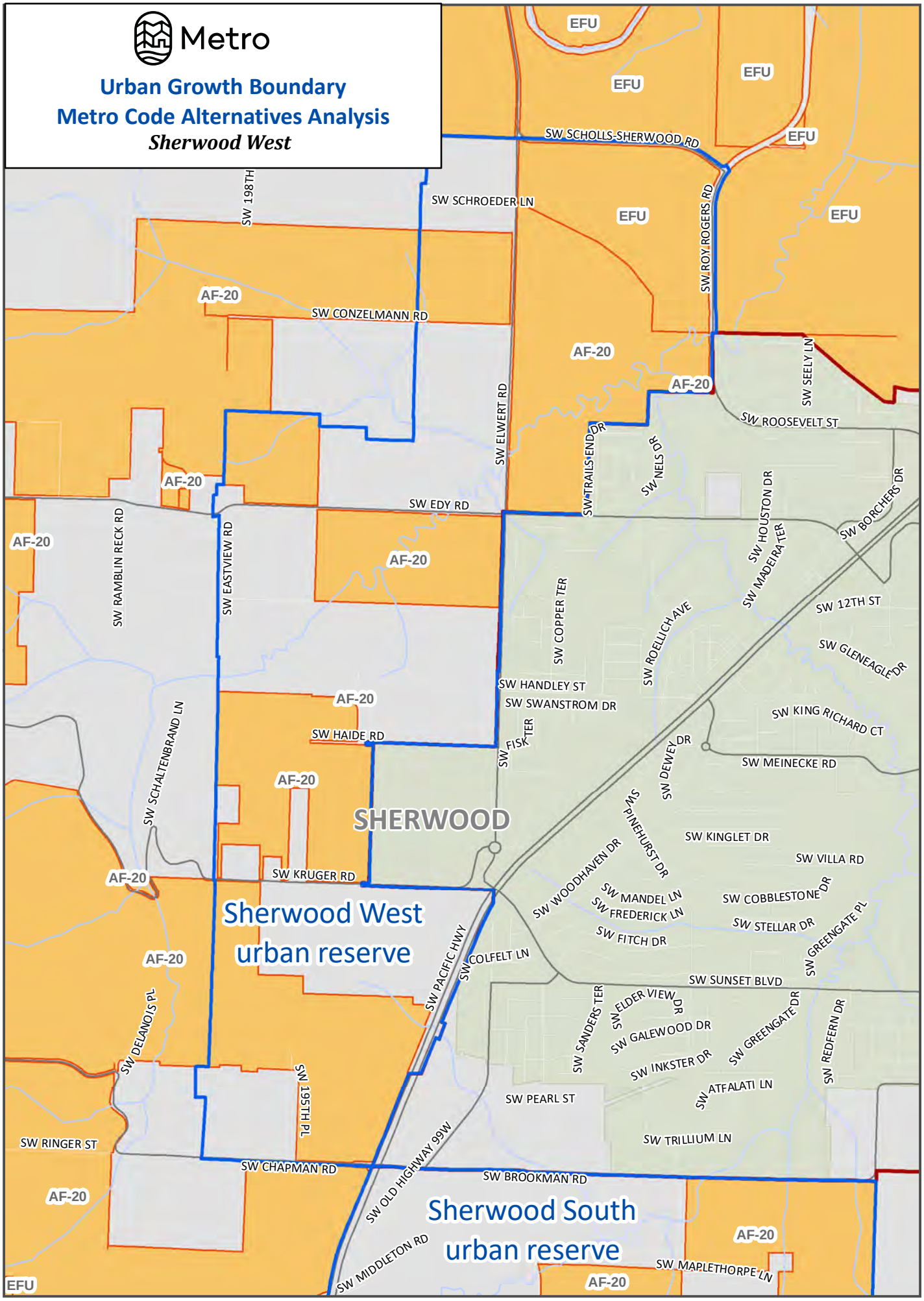

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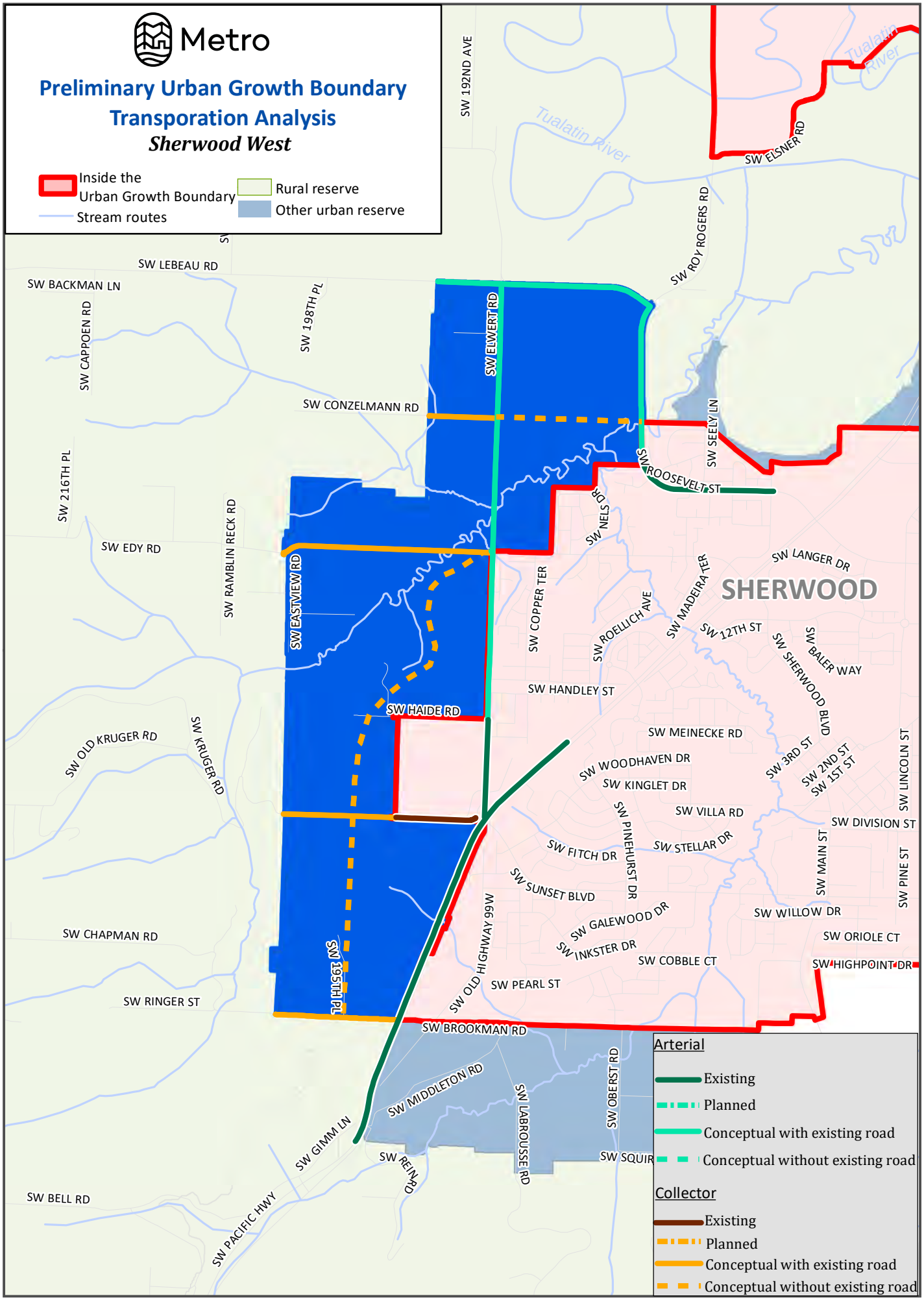

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STAFFORD URBAN RESERVE AREA

Total Acres	3,198	Parcel Acres	2,875
Gross Vacant Buildable Acres	928	Net Vacant Buildable Acres	705

General Description (see attached map)

The Stafford Urban Reserve Area is a large irregular shaped area that is located north of the Tualatin River between the cities of Lake Oswego and West Linn and is 3,198 acres in size. The UGB forms the western, northern, and eastern boundaries along with the Rosemont Urban Reserve that is adjacent to the east. The Tualatin River forms the southern edge, and the land south of the river is urban reserve. There are numerous streams that flow south through the reserve area to the Tualatin River including Pecan Creek and Wilson Creek. The area slopes down from north to south, loosing over 500 feet from S Bergis Road to the Tualatin River. A significant amount of the area contains slopes greater than 10% with slopes greater than 25% along many of the stream corridors. Access to the area is provided by S Rosemont Road, SW Johnson Road, SW Childs Road, and SW Stafford Road.

Parcelization and Development Pattern (see attached aerial photo)

This large reserve area contains 796 parcels that range in size from 419 square feet to 166 acres. One hundred and sixty-seven of the parcels are less than ½ acre, 247 are less than one acre, and 644 are less than five acres in size. Only 50 parcels are greater than ten acres and 18 are greater than 20 acres in size. Five hundred and eighty-four of the 796 parcels have improvements. The reserve area is dominated by rural residences, especially in the southern portion of the area with small pockets of agricultural land mainly occurring in the middle and northern portion of the reserve area. Portland General Electric has a substation off S Rosemont Road, two water providers (Mossy Brae Water District and Highland Water Corporation) have facilities in the reserve area. There is one church, Willamette Christian that is located on S Brandywine Drive that encompasses 31 acres. Finally, the State of Oregon owns six parcels (3.5 acres), Metro owns nine open space parcels (99 acres), Clackamas County owns 18 parcels (39 acres) and the City of Lake Oswego owns 15 parcels (149 acres) including Luscher Farm.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

One third of the parcels in this reserve area are less than one acre in size and over 50% are less than two acres in size, many of which contain single family homes. The numerous stream corridors, associated habitat areas, and park and open space land, combined with the numerous rural

residences further reduce the buildable area to a few select locations. All these locations contain slopes greater than 10% which reduces their ability to accommodate an employment land need. Overall, this area can accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn serves the adjacent areas inside the UGB to the east and the City of Lake Oswego serves the adjacent areas inside the UGB to the north and west. Lake Oswego and West Linn send their sewer in different directions. Lake Oswego sends sewer to the City of Portland's facility at the Tryon Creek Waste Water Treatment Plant. Portland is currently engaged in a $26 million capital improvements plan to address issues related to aging pipe infrastructure, trunk upsizing and pump station capacity. Trunk upsizing is directed specifically to the Canal and Southwood basins. The wastewater system serving West Linn is provided by the Tri-City Service District made up of West Linn, Oregon City and Gladstone and is managed by Clackamas County Water Environment Services (WES). Improvements are currently happening at the treatment plant, which will provide sufficient capacity to meet current UGB needs. West Linn has also indicated that there is adequate capacity within the existing pipe networks and pump stations.

Capacity of existing facilities to serve areas proposed for addition to the UGB

As mentioned above, Lake Oswego could potentially serve the reserve but would require system upgrades and additions within the UGB. Connection points to the system that would facilitate such service can be found at: Atherton Road near Stafford Road, Childs Road near SW 35th Court, and via the Bryant Road Pump Station at Bryant Road and Cardinal Drive. Trunk lines and pumps stations would need to be developed within the reserve. The City of West Linn indicated that the wastewater treatment plant would need to be expanded in order to provide capacity for the reserve area and there is space for expansion at the treatment plant. An alternative to consider would be to construct a pre-treatment plant within the Stafford reserve area. In addition, existing pump stations would require upgrades. Existing pipe capacities are unknown and further analysis would be required to determine the extent of trunk line upgrades.

Impacts to existing facilities that serve nearby areas already inside the UGB

As mentioned above, Lake Oswego could potentially serve the reserve but would require system upgrades and additions to existing facilities within the UGB along with new facilities in the reserve area. Wastewater services (digesters) in the WES system are expected to need some upgrades to provide service for growth beyond that in the current UGB. The upgrades and financial impacts are beyond the scope of this report. The significant impacts to the wastewater system are primarily from the financial contributions required to build the mains within the reserve area. New wastewater mains must be provided to allow development of the reserve area and the laterals off the mains are provided by the development community. With major facilities located at a lower

elevation than that reserve area, West Linn may be the logical provider of sewerage services and sewer would need to flow through the Borland urban reserve to connect to the existing gravity line in Willamette Falls Drive, thus the Borland urban reserve is expected to precede this reserve area.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$3.69
12 – 18" pipe (gravity)	$4.09
Greater than 18" (gravity)	$3.72
Total	**$11.51**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn serves the adjacent areas inside the UGB to the east and the City of Lake Oswego serves the adjacent areas inside the UGB to the north and west. Both cities are part of the Lake Oswego – Tigard Water Partnership. Potable water comes from the South Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWB operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division Street in Oregon City. The water treatment plant was upgraded in October 2016. Both cities have stated that there are no problems or issues related to serving the areas currently within the UGB regarding supply, pumping, storage, and piping.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Both cities have indicated the ability to provide potable water to the reserve area. Lake Oswego has roughly 2 MGD of excess treatment capacity. No excess capacity exists for transmission however. Water storage and pumping for the reserves does not exist at this time. Connection points exist at Laurel Street and Erickson Street where access is made to the Bergis Reservoir for transmission. Additional storage would need to be created in the reserve area. A pump station at McVey and Oak Street is available but will need expansion. The City of West Linn indicated that there are no issues with water supply to serve the reserve area. The treatment plant will likely require upgrades to deliver the supply. There is a 16-inch waterline in Rosemont Road that could be used to serve the area. There will be several pressure zones within the Stafford reserve area and, as with Lake Oswego, new water tanks will be needed to provide both adequate storage and pressure.

Impacts to existing facilities that serve nearby areas already inside the UGB

Potable water could readily come from Lake Oswego or West Linn. Lake Oswego has 2.0 MGD available and West Linn has enough water rights to supply the system, but some capacity related upgrades to the water treatment plant will be necessary. Both Cities have indicated that new water storage tanks will be required to serve the area. New water mains must be provided to allow

development of this reserve area. The laterals off the mains are provided by the development community. Only limited knowledge is available at this time regarding the amount of upsizing that would be needed. The Borland urban reserve is expected to precede this reserve in terms of urbanization. Doing so would allow for location of water facilities and the related distribution network that would be necessary to serve portions of the reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.77
18" and larger	$22.53
Storage/pumping	$10.36
Total	**$38.66**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$33.55
Water quality/detention	$32.6
Total	**$66.15**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in West Linn, which borders the reserve area on the east side, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Willamette Drive at I-205

has a congested volume/capacity ratio (<1.0) in both directions as does I-205 between Willamette Drive and Salamo Road. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. All the roads in Lake Oswego, which borders the reserve area on the west and north sides, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak except for Highway 43 from Oak Street to Glenmorrie Drive which has a congested volume/capacity ratio (<1.0) in both directions for the pm peak.

Transit: Two TriMet bus lines serve West Linn. Route 35 runs along Willamette Drive and Route 154 runs along Willamette Falls Drive providing transit service to the Town Centers and a small portion of the city. Five TriMet bus lines serve Lake Oswego along the major roadways of the city including Country Club Road, Boones Ferry Road, Kruse Way, Highway 43 and South Shore Blvd. These bus routes connect the Lake Oswego Town Center to transit centers and downtown Portland.

Bike: There are nine miles of dedicated bike lanes and four and a half miles of established bikeways in West Linn that generally run in a north south alignment due to topography limitations, thereby limiting east-west bike travel. Several residential areas and neighborhoods, such as Willamette and Barrington Heights have few bike facilities that connect to other parts of the system. Lake Oswego had 11.33 miles of dedicated bike lanes and seven miles of established bikeways, although most of them do not connect to other bike facilities which results in numerous gaps in the system. The Town Center is not well served by bike facilities.

Pedestrian: Large portions of West Linn are well served by sidewalks, mostly in areas that have been developed more recently. Older neighborhoods such as Willamette and Sunset have very few sidewalks. The Willamette Falls Drive Streetscape Project improved pedestrian accessibility in the historic Willamette neighborhood. The Rosemont and Salamo Trails provides a pedestrian connection route along Rosemont and Salamo Roads that ties the lower and upper portions of the city together on the west side. A significant portion of Lake Oswego does not contain sidewalks including most of the residential areas. The commercial portion of the Town Center does include sidewalks as well as a major portion of Boones Ferry Road. The Kruse Way Trail, William Stafford Trail and the Stafford Trail provide some longer pedestrian connections.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Most of the roadways in West Linn that border the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. I-205 between Willamette Drive and Salamo Road has a congested volume/capacity ratio (<1.0) in both directions. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. All the roads in Lake Oswego that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Neither of the two TriMet bus lines that serve West Linn are close to the reserve area nor do they have a potential direct route to the reserve area. TriMet bus route 36 that runs along South Shore Blvd. in Lake Oswego is approximately one mile from the reserve area via Stafford Road. Most of the reserve area is two-three miles from a bus route with no direct road connections between the bus routes and the reserve area.

Bike: There is an established bikeway along S Rosemont Road that extends from the West Linn city limits west to SW Stafford Road. Dedicated bike lanes on Hidden Springs Road, Santa Anita Drive and Salamo Road also connect into the reserve area. There is an established bikeway along SW Stafford Road that extends from the Lake Oswego city limits to S Rosemont Road. There is a dedicated bike lane on SW Stafford Road, south of SW Sunset Drive in the reserve area that extends south of the Tualatin River to the Borland urban reserve.

Pedestrian: Some of the nearby neighborhood streets in West Linn have sidewalks but connections to the reserve area may be difficult given the development pattern. In addition, once you get past the nearby neighborhoods there are gaps in sidewalks or pedestrian facilities along the major streets that limits pedestrian movement. The Rosemont Trail along S Rosemont Road provides access to the reserve area. There is one adjacent residential street in Lake Oswego that contains sidewalks however it is limited to that street with no connections to other pedestrian facilities. The Stafford Trail provides access to the Rosemont Trail from a limited portion of Lake Oswego.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Most of the roadways in West Linn that border the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Local roads such as Hidden Springs Road and Rosemont and Salamo Roads could see some impact from additional traffic, especially if I-205 is congested. I-205 between Willamette Drive and Salamo Road has a congested volume/capacity ratio (<1.0) in both directions. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. It is expected that I-205 would see additional traffic. All the roads in Lake Oswego that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 43 and Stafford Road/McVey Road in Lake Oswego could see additional traffic.

Transit: There would be no impact to the existing bus routes that serve West Linn and Lake Oswego. See transit analysis below.

Bike: The established bikeways on S Rosemont Road and SW Stafford Road that extend into the reserve area would see additional use as a result of urbanization of the area. The dedicated bike lanes on Hidden Springs Road, Santa Anita Drive and Salamo Road in West Linn that connect into the reserve area would also be expected to see additional use.

Pedestrian: The Rosemont Trail along S Rosemont Road would be expected to see additional use as a result of urbanization especially as it connects with some commercial retail development. Sidewalks in the adjacent neighborhoods would not be impacted as they provide internal circulation. The Stafford Trail in Lake Oswego would also be expected to see additional use although it currently only connects to some nearby residential areas prior to ending at near Patton Street.

Need for new transportation facilities and costs (see attached transportation map)

SW Stafford Road, S Rosemont Road, SW Johnson Road (between SW Stafford and SW Long Farm Road), SE Long Farm Road, S Sunshine Lane, S Station Lane will need to be improved to urban

arterial standards. A short section of S Rosemont Road is considered a ½ street improvement as the other portion is inside the UGB. One new arterial is needed to connect SW Long Farm Road to S Sunshine Lane. S Bergis Road, S Whitten Road, S Sweetbriar Road, S Clematis Road, S Wisteria Road and SW Johnson Road (remaining section of road) will need to be improved to urban collector standards. Two new collectors are needed, between SW Johnson Road and S Sweetbriar Road and between S Whitten Lane and S Bergis Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$202.65
	Existing/Improved 1/2	$6.13
	New	$8.76
Collectors	Type	Cost (in millions)
	Existing/Improved	$191.61
	New	$41.63
Total		**$450.78**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30-minute headways for all day service, five days a week, with two additional buses at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $728,000 and grows 2% per year.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There are seven stream corridors that flow south through the area, including Pecan Creek and Wilson Creek that ultimately drain into the Tualatin River. The first stream flows along the western edge of the reserve area for 1,370 feet through five rural residential properties. The stream includes a wooded riparian canopy with slopes greater than 25% and there is riparian and some upland habitat identified along the stream corridor. The portion of the reserve area where the stream joins the Tualatin River is within the 100-year floodplain. The increased protection levels for streams, wetlands, steep slopes, and habitat areas within the UGB will lessen any potential impacts. Given the relatively small size of the parcels and the fact that they abut existing residences in Lake Oswego, thus removing the need for any road connections, any impacts on the stream corridor and habitat areas will be minor.

Pecan Creek flows through the western portion of the area, west of SW Stafford Road and SW Pattulo Way for 1.2 miles. Over 3,000 feet of the creek flows through land either owned by Metro (open space), City of Lake Oswego (park) or Portland General Electric. The remaining portion of the stream flows along the back edges of rural residential parcels that are wooded. A significant portion of lower Pecan Creek is adjacent to steep slopes and there is riparian and upland habitat identified along the stream corridor. The area where Pecan Creek joins the Tualatin River is within the 100-year floodplain. There are two tributaries to Pecan Creek, totaling 3,600 feet that primarily flow along the wooded edges of residential parcels. The western tributary flows mainly through an area where the slopes are greater than 25%. In addition, an 850-foot portion of the northern tributary flows through land owned by the City of Lake Oswego. As one would expect the two tributaries also have adjacent riparian and upland habitat identified along the corridors. Based on the increased protection levels for streams, steep slopes and habitat areas and the fact that significant portions of the streams are on publicly owned land, impacts to Pecan Creek and its tributaries from future urbanization of the area would be minor.

A small stream flows south through the Shadow Wood Park neighborhood on the east side of SW Stafford Road for approximately 2,900 feet. A significant portion of the stream flows through Clackamas County owned land, Shadow Park Homeowners Association land or platted street right-of-way that is not constructed. This stream corridor also contains slopes greater than 25%. The northern portion of the stream is within a very large parcel that could be developed in the future and would be susceptible to impacts from urbanization. There is riparian and upland habitat identified along the stream corridor and 100-year floodplain where the stream meets the Tualatin River. The increased protection levels for streams, steep slopes and habitat areas inside the UGB, combined with the public owned land and the homeowners association land, would allow urbanization to occur without impacts to this stream except for that portion of the stream that is north of SW Johnson Road which could see moderate impacts depending on the design of the future development.

Wilson Creek flows south through the central portion of the reserve area for approximately 2.3 miles before draining into the Tualatin River. A 0.88-acre wetland identified on the National Wetland Inventory (NWI) is located at the headwaters of the stream and 100-year floodplain is identified where the stream meets the Tualatin River. Almost the entire length of the stream flows through forested portions of parcels that either contain rural residences or are vacant. Approximately 4,520 feet of Wilson Creek is on City of Lake Oswego, Metro, or private open space land. There are slopes greater than 25% along the stream corridor, mostly occurring on the Metro or private open space land. The entire length of the Wilson Creek corridor has been identified as riparian habitat with numerous locations of upland habitat also identified. In several locations the stream is located such that urbanization of the area would not impact the stream corridor; however, there are a few large vacant parcels where impacts could occur if the area were developed to urban densities and standard transportation connections were made. There are five tributaries to Wilson Creek that range in length from 1,200 feet to just over one mile and total 3.1 miles in length. A 0.35-acre wetland identified on the NWI is located along one stream and numerous ponds not identified as wetlands are also present. The smallest tributary is located on private open space and a portion of another tributary is on Metro owned land. About half of the stream corridors flow

through forested areas with the remaining half in open fields. Riparian habitat is identified along the stream corridors with some upland habitat identified in areas that are forested. There are significant stretches where the streams could be impacted by future development, the extent of the impact depending mostly on the need for transportation connections. The increased protection levels for streams and habitat areas on land inside the UGB, combined with the publicly owned land, and the private open space land will lessen the impacts of urbanization on the stream corridors. However, as Wilson Creek runs lengthwise through the center of the reserve area and its tributaries spread out mainly to the east through some large vacant parcels, the opportunity for impacts to the stream and habitat areas from urbanization, especially through needed transportation connections, is significant.

The next stream flows south from the S Sweetbriar Road area for approximately 1.3 miles before draining into the Tualatin River near where I-205 crosses the river. About 2,500 feet of the stream flows through private open space land with the remaining portion flowing along the side and back forested sections of rural residential parcels. There are slopes greater than 25% along a significant length of the stream and riparian and upland habitat is identified along the entire length of the stream. The location of the stream along the edges of parcels adjacent to the open space, combined with the private open space land and the increased protection level for streams, habitat areas and steep slopes for land inside the UGB, urbanization could occur with minimal impacts to the stream corridor.

The sixth stream flows south from the S Clematis Road area for approximately 1.3 miles before draining into the Tualatin River near SW Johnson Road. The stream flows between S Grapevine Road and S Wisteria Road, along the back edges of the rural residential parcels that front onto the two roads. A significant portion of the stream is within a forested ravine and riparian and upland habitat is identified along its entire length. A small second stream that flows from the I-205 area appears to meet this stream at the Tualatin River. This stream is piped in some locations and has four wetlands (1.8 acres total) identified on the NWI located in the general area. In addition, there is a considerable area of 100-year floodplain where the streams meet the Tualatin River. Given the location of the stream between the parcels, the presence of steep slopes, and the increased protection level for riparian and upland habitat, wetlands and 100-year floodplain inside the UGB, urbanization could occur with minimal impacts to the stream corridors.

Finally, the seventh stream flows south from the S Brandywine Drive area for just over one mile before flowing into the City of West Linn and draining into the Tualatin River. Just under half of the stream flows through vacant forested parcels that have some large areas of slopes greater than 25%. The remainder of the stream is located on the back portion of rural residential properties. Like the other streams, there is riparian and upland habitat identified along the stream corridor. The steep slopes and habitat areas on the vacant parcels will limit the amount of development that can occur, thus reducing the impacts to the stream and habitat areas. In addition, the rural residential properties contain high value homes that will also deter future redevelopment of those properties; thus urbanization could occur with minimal to no impact on this stream corridor.

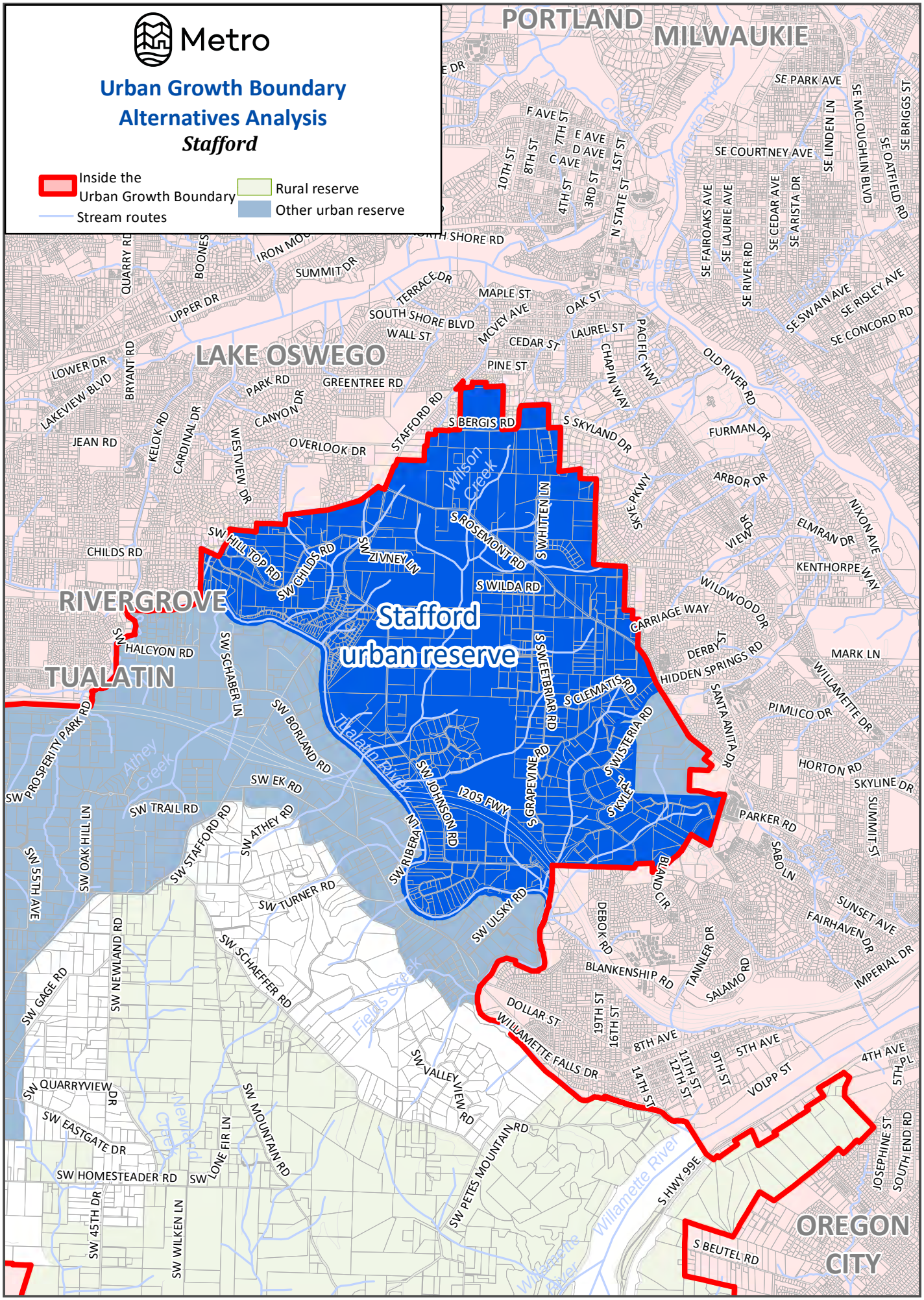
Overall urbanization of the reserve area could occur with low to moderate or high impacts to the streams, wetlands and habitat areas depending on the overall design of the development and most importantly future road connections.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. However, given the high number of high value homes and the fact that and 81% of the parcels are less than five acres in size, redevelopment of the area will be slow. The 290 acres of public land, 177 acres of private open space, steep slopes and stream and habitat corridors that divide the area up, results in four locations that have the potential for development at an urban level. Thus, any social impacts related to loss of sense of place and rural lifestyle for current residents will be localized, happen over an extended timeframe and overall minimal for the entire area. Most of the potential development locations are adjacent to the current UGB, which already may reduce the impact of a loss of rural lifestyle for the residents. The additional traffic generated through urbanization will impact SW Stafford Road and S Rosemont Road which could provide negative energy impacts as these two roads are the main access points to the reserve area. Three conceptual trails, the I-205, River to River and Pecan Creek Trail, would connect to the existing Rosemont and Stevens Meadows Trails, thereby providing options for non-automobile travel, thus reducing some energy impacts. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential development, even though it will occur overtime, should outweigh this loss. However, the economic impact of providing urban services may be high due to the limited areas that could be developed to urban densities and the potential impacts to natural areas because of roadway connections. Overall, this reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

There is no farm or forest land adjacent to the reserve area. Thus, the proposed urban uses have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.



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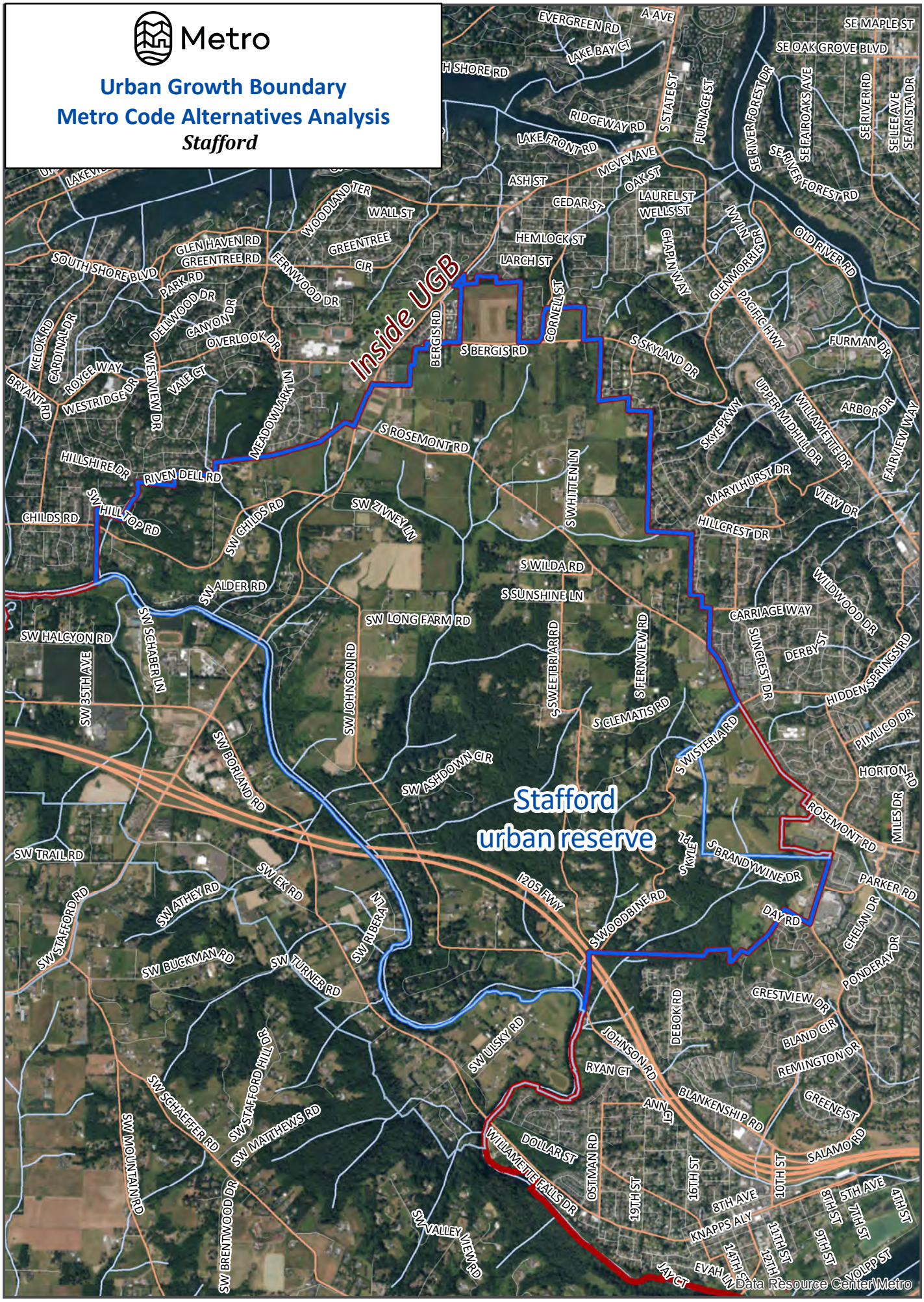
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Stafford



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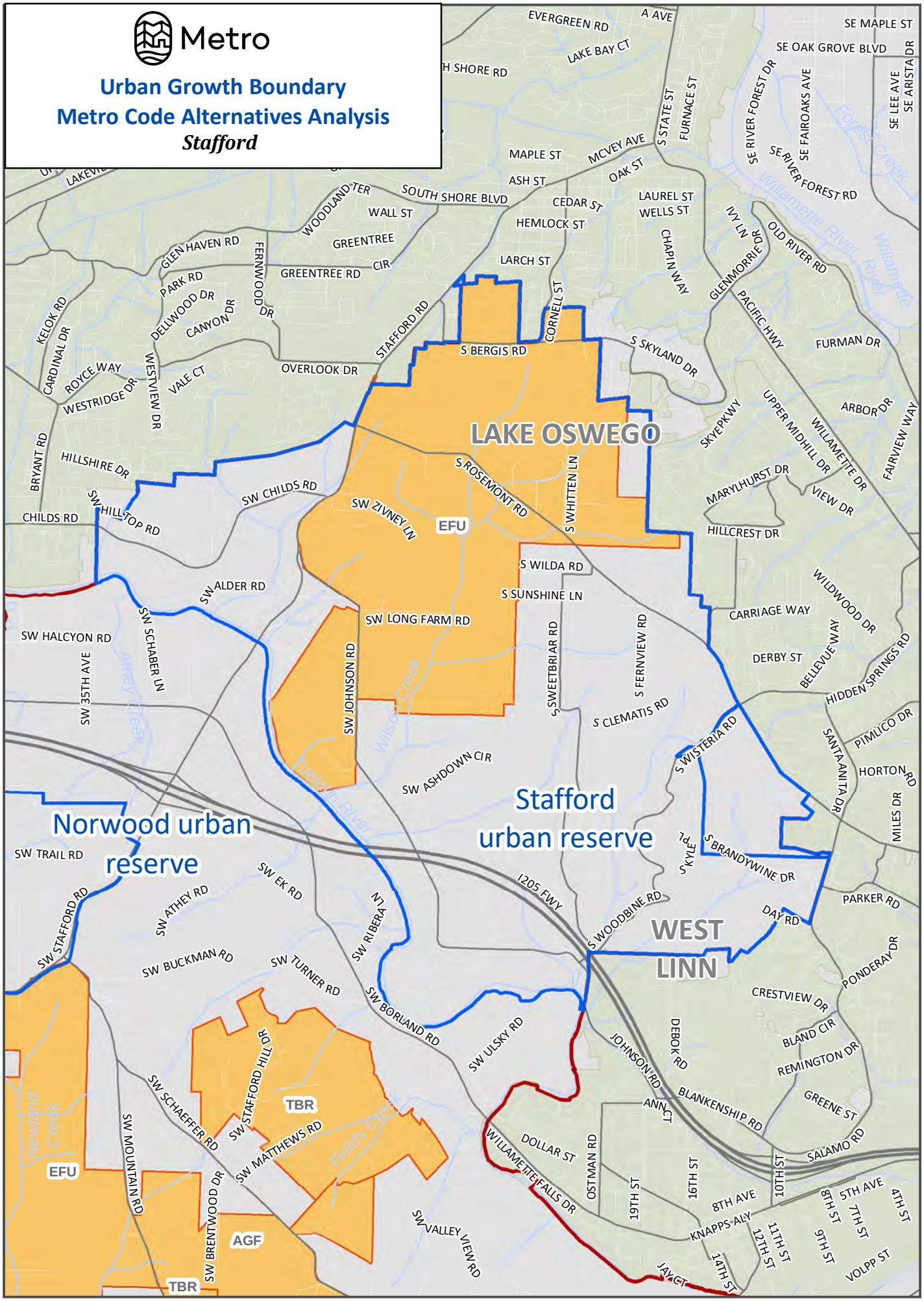

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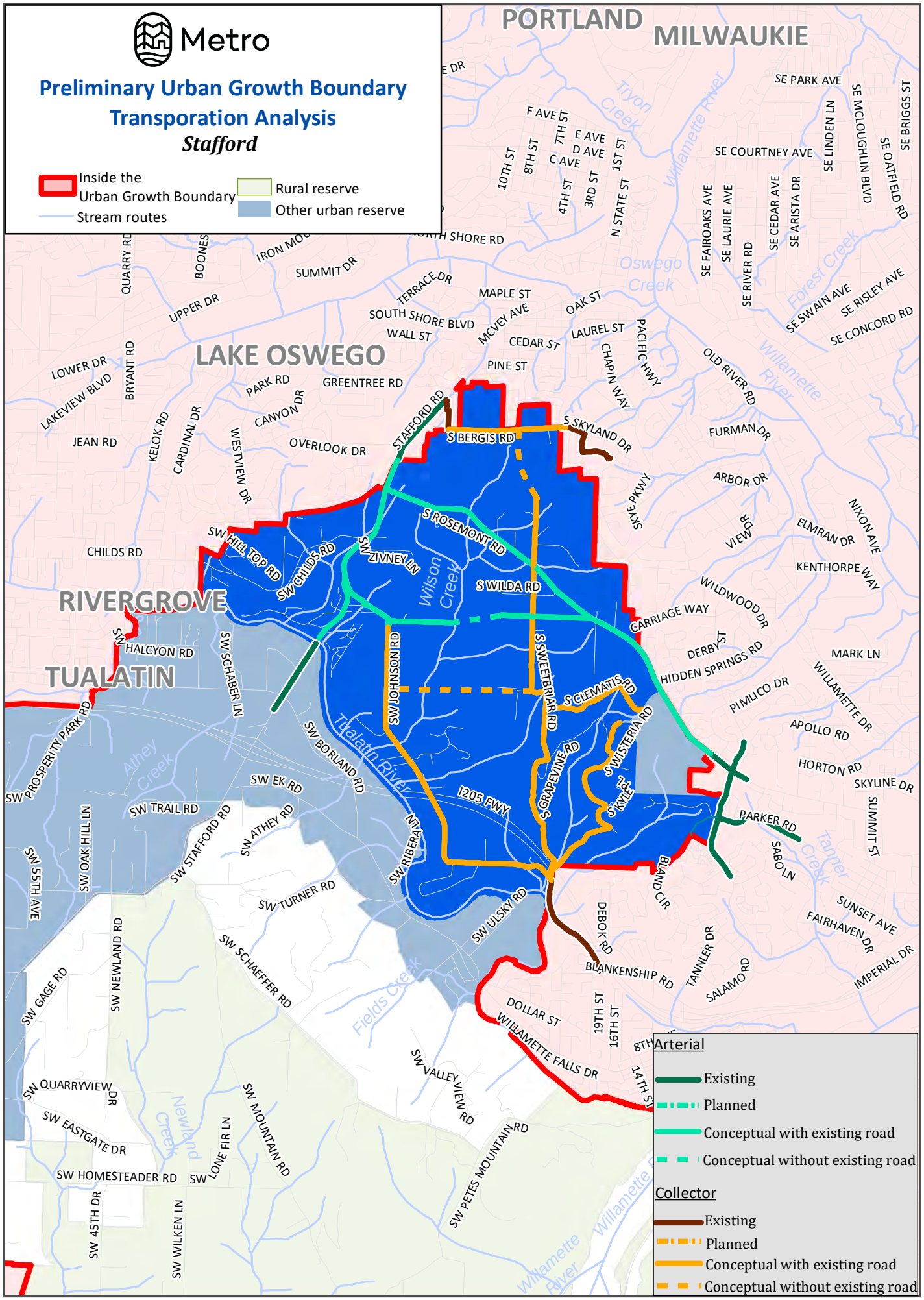

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TONQUIN URBAN RESERVE AREA

Total Acres	573	Parcel Acres	559
Gross Vacant Buildable Acres	143	Net Vacant Buildable Acres	108

General Description (see attached map)

The Tonquin Urban Reserve Area is an irregular shaped area between the cities of Tualatin and Sherwood that totals 573 acres in size. The current UGB forms the eastern, northern, and western boundaries of the area. SW Tonquin Road diagonally splits the area in a northwest to southeast direction and provides access to the area. Construction of the Basalt Creek Parkway and SW 124th Avenue Extension provide access to the area. This area is very conflicted in its uses; a large portion is utilized by three quarry sites, there is a sportsmen club, protected open space land, a fire department facility, and a few rural residences.

Parcelization and Development Pattern (see attached aerial photo)

This medium sized urban reserve area contains 30 parcels, six of which have single family residences. Parcels range in size from one-third of an acre to 164 acres. All but eight of the parcels area greater than five acres and nine are greater than 20 acres in size. Approximately 192 acres are owned by industrial users engaged in aggregate products and the Tualatin Valley Sportsmen Club owns 224 acres, a portion of which is also being used for aggregate mining. The sportsmen club has a firearms range that is utilized by both club members and law enforcement agencies. The Tualatin Valley Fire and Rescue Training Center is located at the corner of SW Morgan Road and SW Tonquin Road. Three parcels are owned by the United States Government and are part of the Rock Creek Unit of the Tualatin River National Wildlife Refuge. A power line runs along the northern edge of the area for approximately 2,100 feet. The entire reserve area is identified on Washington County's Rural and Natural Resource Plan as an area with more than one significant natural resource on the site.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

This area contains several uses and constraints that impact the ability to efficiently accommodate land needs. As noted above a significant portion of the area is currently being used for quarry operations and once a quarry is no longer being mined a reclamation plan must be implemented. Thus, any re-use of the quarry areas will be well in the future, possibly even beyond the 20-year timeframe for this analysis. The area also contains a significant amount of natural resources that greatly reduce the ability to accommodate a significant amount of residential or employment land

need. The Ice Age Tonquin Trail is planned to bisect the area diagonally connecting Sherwood with both Tualatin and Wilsonville. This area can accommodate a very limited portion of both a residential and employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood owns, operates, and maintains the wastewater collection system within City limits, and Clean Water Services (CWS) provides wastewater treatment at the Durham Wastewater Treatment Plant which has capacity to serve lands inside the UGB. Sewer is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the city. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham treatment plant. The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The master plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station and treatment plant). However, at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Capacity appears to be available at the Durham treatment plant although small upgrades may be required. Assuming areas within the existing UGB develop prior to the reserve area; the system would not have capacity to serve the area. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Sewer from the reserve area will be served by the Rock Creek Trunk Line. Currently, no existing sewer extends to the site and a sewer line would need to be constructed through the Tonquin Employment Area (inside the UGB) to serve this reserve area. New lines will need to be extended throughout the site. The laterals off the mains will be provided by the development community. Based on topography, sewer service for this site would require a pump station. CWS' Durham treatment plant is a large facility with a broad service area. The cumulative addition of multiple urban reserves could result in a need for some expansion to handle additional load. Upsizing of existing infrastructure would be required as noted above.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$6.77
Force main	$2.09
Pump station	$0.80
Total	**$9.66**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood draws most of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville. Sherwood owns 5 million gallons per day (MGD) of production capacity at the WRWTP. Sherwood also maintains four groundwater wells for back-up supply and maintains an emergency connection and transmission piping through the City of Tualatin's water system. The City of Sherwood Water Master Plan was updated in 2015. According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping. The Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within a 20-year planning horizon. To support the 20-year planning horizon, the city will need an additional 1 mgd of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Water supply for this reserve area appears to be adequate, or the city will be able to generate the supply as this area comes online. A portion of this reserve area was included in the Water Master Plan and according to the Master Plan, there would be available capacity in the existing system with regards to storage, pumping, and piping to serve a portion of the site (through the 20-year planning horizon). As mentioned above, the city will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional land added from the reserve areas.

Impacts to existing facilities that serve nearby areas already inside the UGB

New water mains must be provided to allow development of the reserve area. It appears that new water mains can be extended to this reserve area near its western boundary. The undeveloped TEA that is inside the UGB lies between existing development and the reserve area. If the TEA is developed first, water service could presumably be extended to the site from the TEA. The laterals off the mains will be provided by the development community.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.94
18" and larger	$3.17
Storage/pumping	$1.23
Total	**$10.34**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$4.57
Water quality/detention	$4.65
Total	**$9.22**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roads in Tualatin and in the unincorporated area east of the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. SW Boones Ferry Road at the Tualatin River has a severely congested volume/capacity ration (>1.0) for the southbound lane and a congested volume/capacity ratio (<1.0) for the northbound lane. Highway 99W at SW Tualatin Road and I-5 between SW Tualatin-Sherwood Road and the Tualatin River has a congested volume/capacity ratio in both directions. SW Tualatin-Sherwood Road, from SW Nyberg Road to Sherwood is classified as a high injury corridor. The intersections of SW Tualatin-Sherwood Road/SW Boones Ferry Road and SW Martinazzi Ave/SW Boones Ferry Road are classified as top 5% high injury intersections.

Most of the roads in Sherwood, which borders a portion of the reserve area to the west, also have an acceptable volume/capacity ratio for the 2015 pm peak. SW Tualatin-Sherwood Road at SW Oregon Street and SW Elwert Road at SW Edy Road have a congested volume/capacity ratio in both directions. SW Tualatin Sherwood Road is classified as a high injury corridor.

Transit: Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SW Tualatin-Sherwood Road and SW Boones Ferry Road providing service to the Town Center and employment areas. Two TriMet bus lines serve the Sherwood Town Center. Route 94 on Highway 99W and Route 97 on SW Tualatin-Sherwood Road.

Bike: Tualatin has a fairly well-established bike route system of dedicated bike lanes (25 miles), established bikeways (7 miles) and local trails that connect the employment areas and Town Center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city. Sherwood has numerous dedicated bike lanes (8 miles) and established bikeways (3 miles) along the major roadways that connect with some local trails and bike friendly streets, including a connection to Old Town. There are numerous gaps to some of the residential areas south of the railroad.

Pedestrian: Most of the residential areas of Tualatin have sidewalks with less pedestrian connections in the employment areas. The Town Center has a fairly well-established pedestrian network that also includes access to some trails. The Tualatin River Greenway Trail connects the Town Center to parks in Durham and Tigard to the north as well as to Browns Ferry Park along the Tualatin River on the east side of I-5. Most of the residential neighborhoods in Sherwood have sidewalks with several local trails that connect the different neighborhoods together. The Town Center is well connected with sidewalks as is most of Old Town.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: Access to the area from Tualatin in the north is by SW 124th Ave and access in the south from Tualatin is by Basalt Creek Parkway. Neither of these two roads existed when the 2015 PM Peak volume/capacity ratio analysis was completed. The only access point from Sherwood is along SW Tonquin Road which has an acceptable volume/capacity ratio.

Transit: The closest TriMet bus route is the 97, which is approximately one mile from the reserve area and provides service between Sherwood and Tualatin during the morning and afternoon commute times along SW Tualatin-Sherwood Road. All other bus routes are over a mile away. The WES Commuter Rail tracks are about ¼ mile away, but the closest station is about four miles away in Tualatin.

Bike: The closest bike facility is the dedicated bike lane on SW Oregon Street in Sherwood that is approximately ⅓ mile from the reserve area via SW Tonquin Road. This bike lane is approximately ½ mile long, running from the roundabout to just short of SW Tualatin-Sherwood Road and does not provide a connection point to other bike facilities.

Pedestrian: The closest sidewalks are along SW Oregon Street which is approximately⅓ mile from the reserve area via SW Tonquin Road. The sidewalks connect to the sidewalks along SW Tualatin-Sherwood Road to the north that extend towards the Town Center and employment areas. There is a⅓ mile gap in sidewalks to the south that leads to Old Town.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Basalt Creek Parkway as well as SW 124th Ave would be expected to see additional use as both roads were designed to provide capacity for future employment uses within the current UGB and the urban reserve area. SW Tonquin Road currently has an acceptable volume/capacity ratio and would be expected to see additional traffic to and from Sherwood.

Transit: The existing bus lines that serve Sherwood and Tualatin would not be impacted. See transit analysis below.

Bike: The dedicated bike lane on SW Oregon Street in Sherwood would be expected to see additional use however the⅓ mile gap on the portion of SW Tonquin Road that is already inside the UGB and the larger gap on SW Oregon Street would need to be addressed to reach maximum potential future use.

Pedestrian: The sidewalks along SW Oregon Street would be expected to see additional use however the ⅓ mile gaps on the portion of SW Tonquin Road that is already inside the UGB and on SW Oregon Street would need to be addressed to make the important connection to Old Town.

Need for new transportation facilities and costs (see attached transportation map)

SW Tonquin Road would need to be improved to urban arterial standards. A new collector would need to be built to connect from SW Dahlke Lane to the north to SW Tonquin Road and then east to the reserve boundary.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$69.29
Collectors	Type	Cost (in millions)
	New	$22.08
Total		**$91.37**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service and determined service is unlikely to occur.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

Rock Creek and a tributary flow north through the western portion of the reserve area for just over one mile. Approximately two-thirds of the stream corridor is on federal land that is part of the Tualatin River National Wildlife Refuge. The non-federal land that contains Rock Creek is included in the Refuge's Rock Creek Unit acquisition boundary, indicating a desire for the Refuge to purchase the land in the future. There are two National Wetland Inventory (NWI) wetlands associated with Rock Creek, each one approximately 11 acres in size, that are also on federal land. There is a significant amount of riparian and upland habitat associated with Rock Creek. Two additional NWI wetlands have been identified that total 1.4 acres. The riparian corridor and adjacent upland habitat on the Refuge land will not be impacted by urbanization of the reserve area. However, urbanization of the land between the Refuge properties may impact the stream corridor resulting in negative effects downstream, unless the Refuge is successful in purchasing this land that is within the acquisition boundary.

Coffee Lake Creek flows south through the eastern portion of the reserve area for approximately 1.5 miles. The northern portion of the stream flows through open land under the power lines and forested areas of the gun club property, prior to draining into a pond associated with one of the quarry operations. An 8.9-acre NWI wetland is associated with this portion of the stream corridor. The remaining portion of the stream is manipulated by a series of quarry operations before leaving the reserve area. Numerous NWI wetlands, totaling approximately 18 acres, are identified on the various quarry lands. As one would expect there is no evidence of habitat on the quarry sites. It is impossible to assess the impacts urbanization may have on the stream and wetlands prior to the reclamation plan being developed. Overall urbanization of the area could occur with low to moderate impacts to the stream corridors, wetlands and upland habitat areas, depending on the ability of the Wildlife Refuge to purchase additional land and the components of the reclamation plans for the individual quarry sites.

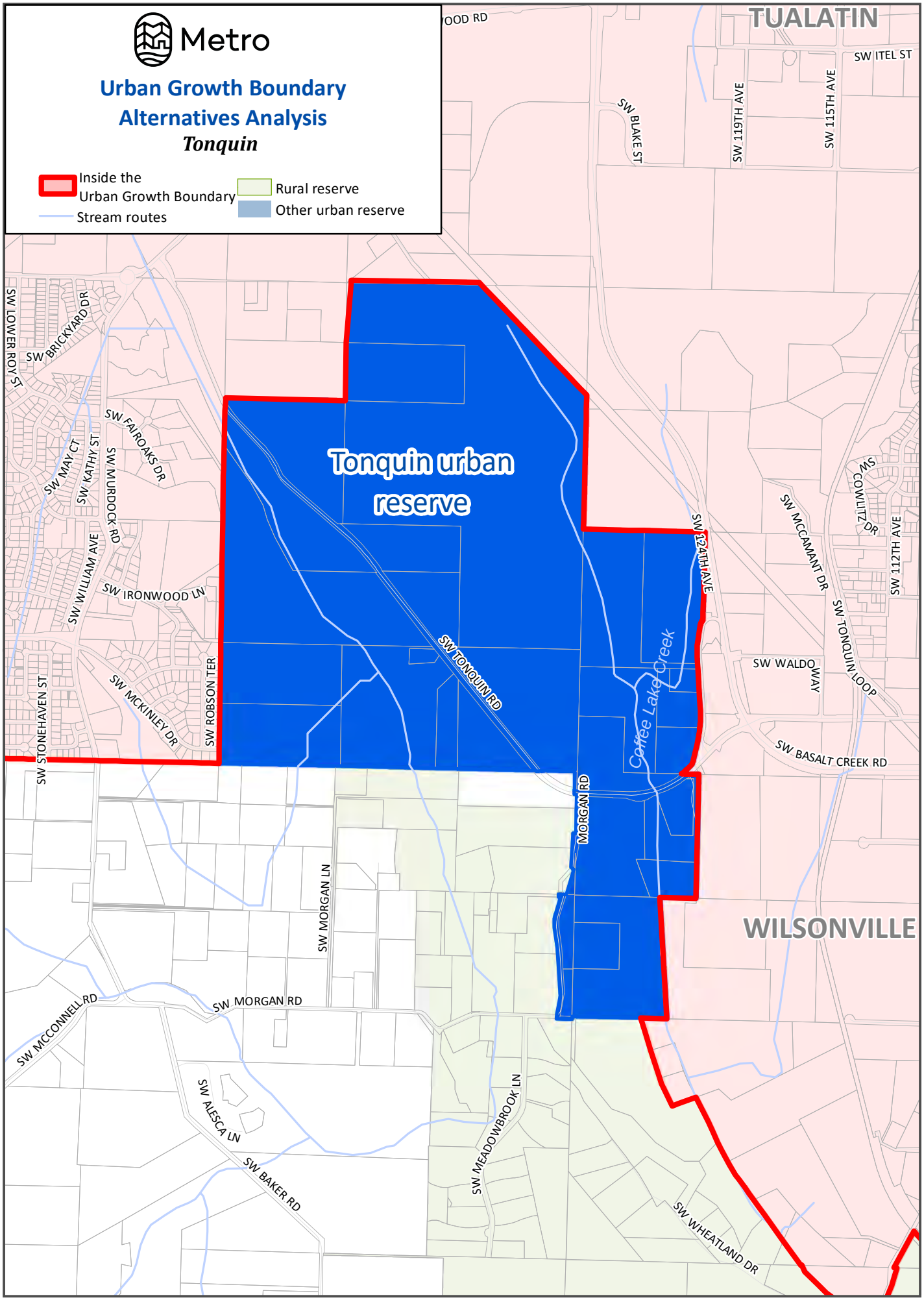
Energy, Economic & Social

As noted previously this area contains a significant amount of land that is not conducive to urbanization due to public ownership, quarry activities and a private club. There are seven properties totaling 63 acres that have the potential for development in the short term. Six of the properties have residences and five of the six have significant natural resources identified on them, which further reduces the amount of development that could occur. Therefore, any development that did occur would be very minor and isolated, if the quarries continue to operate. While any development will impact the six existing residences, the social impacts of future urbanization on these existing residents would be small. Given the modest amount of development that would occur, the increase in traffic would not be great and would not have significant energy consequences. The quarry activity within the reserve area is significant and the loss of the economic impact from these uses would be considerable if the extraction activities were terminated prior to the rock resource being exhausted. Overall, this analysis area has low to medium economic, social

and energy consequences from urbanization, depending on the timing of the termination of the quarry activity.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Only the southern edge of the reserve area is not defined by the UGB, and most of the adjacent land is zoned for rural residential use. There is one very small block of exclusive farm use (EFU) zoned land that borders the very southwestern corner of the area. This block of EFU land contains two residences and no agricultural activities, thus the proposed urban uses have high compatibility with nearby agricultural activities occurring on farm land outside the UGB.



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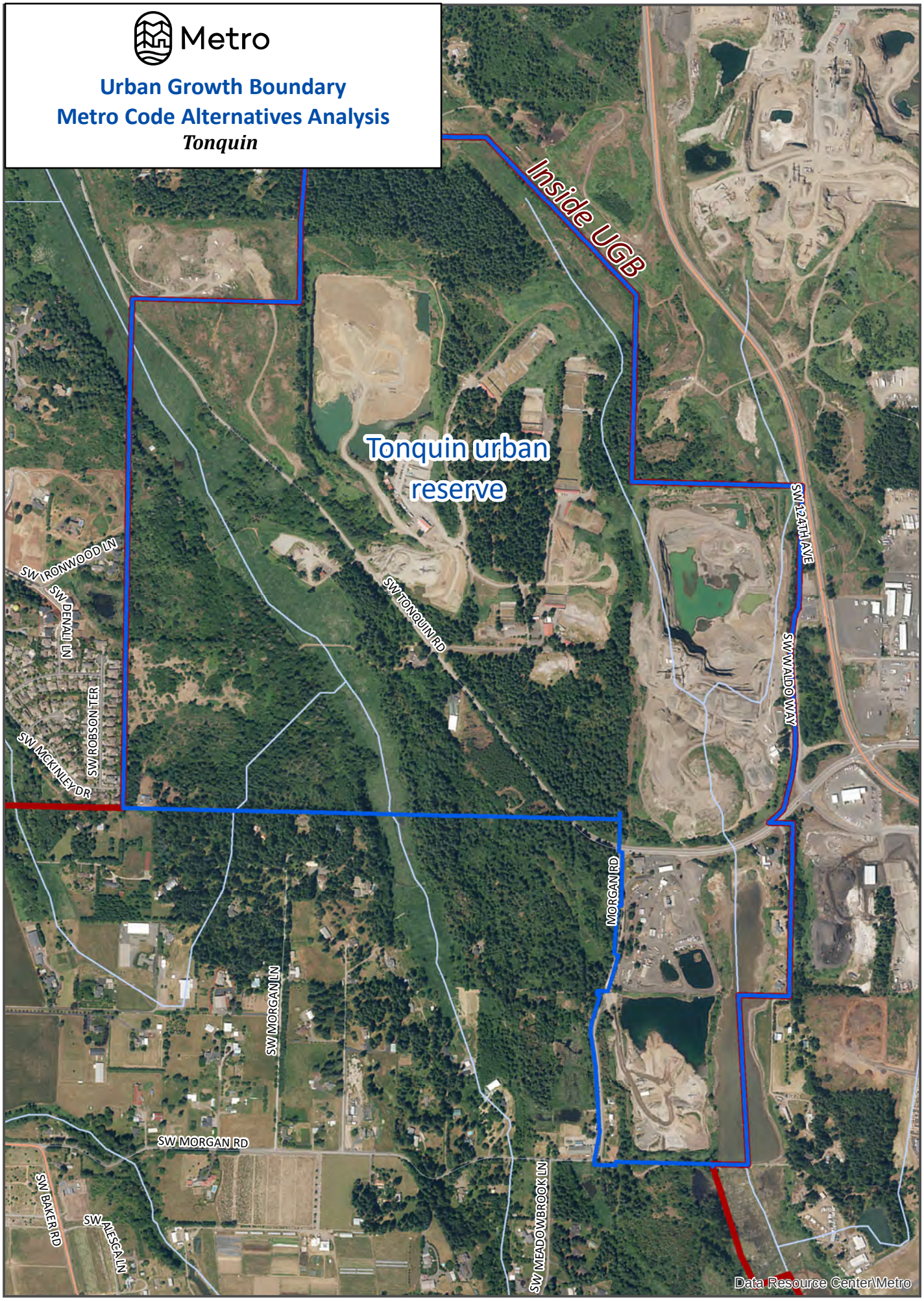
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Tonquin



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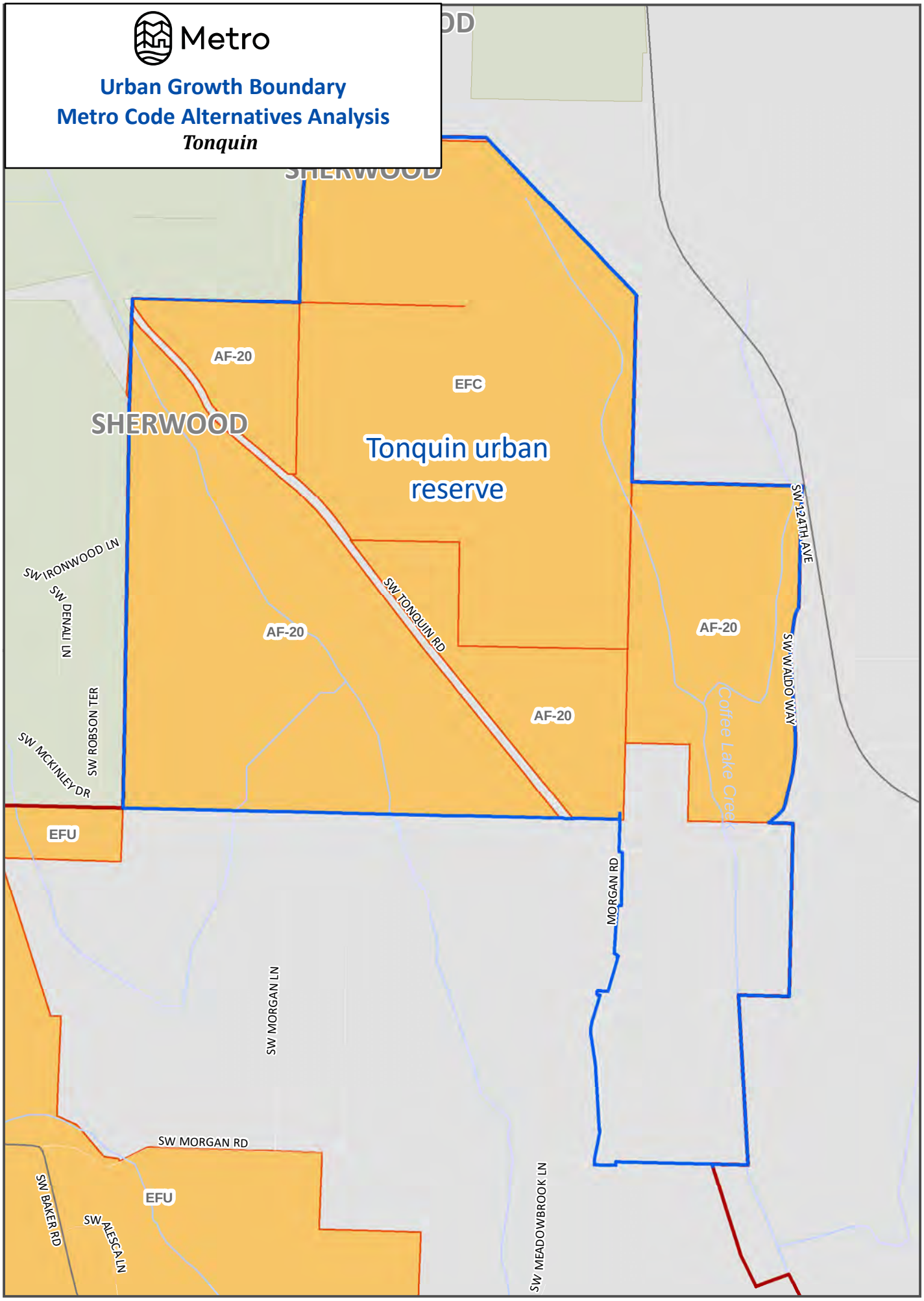

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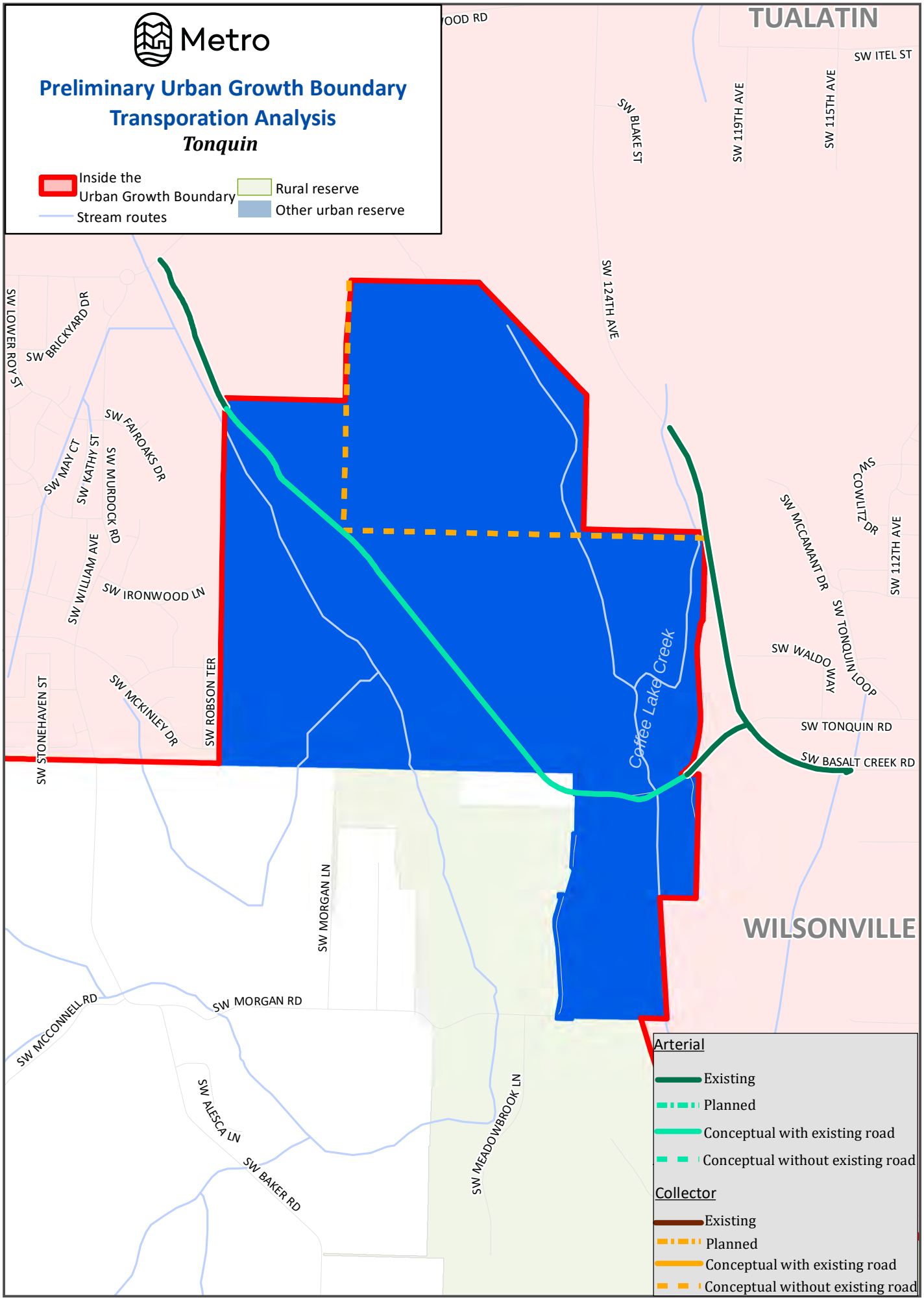

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WILSONVILLE SOUTHWEST URBAN RESERVE AREA

Total Acres	67	Parcel Acres	64
Gross Vacant Buildable Acres	27	Net Vacant Buildable Acres	20

General Description (see attached map)

The Wilsonville Southwest Urban Reserve Area is an irregular shaped area on the west side of Wilsonville that totals 67 acres in size. The reserve area is on the south side of SW Wilsonville Road and almost extends to the Willamette River. The Graham Oaks Nature Park is directly north of the reserve area, across SW Wilsonville Road. The current UGB forms the eastern boundary, and the area is served by SW Wilsonville Road.

Parcelization and Development Pattern (see attached aerial photo)

This very small urban reserve area contains four parcels, three of which are less than six acres and one 52-acre parcel. The area contains three rural residences, and most of the land is in agricultural activity, mainly in orchard uses and pastureland. Available data does not suggest the existence of power lines or public easements through this area. There is a large block of Metro-owned open space along the southern edge of the urban reserve area.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

The reserve area gently slopes towards the Willamette River and contains a large swath of land that has slopes greater than 10% along the southern edge of the area. The northern most portion of the area near SW Wilsonville Road is generally flat and could accommodate an employment land need. While it does have good access to I-5 it is some distance from the existing employment areas of the city. The reserve area also provides the opportunity for future residential development. Therefore, this area is able to accommodate both a residential and employment land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

The wastewater treatment plant was upgraded in 2014 which increased capacity from 2.5 MGD to 4.0 MGD resulting in excess capacity. The city has a 20-year program in place to replace aging concrete pipe. There is capacity to serve areas already in the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area will use some of the additional capacity but will not likely trigger any treatment plant upgrades. The City is planning to expand the treatment plant in 2030, however future industrial development in the Basalt and Coffee Creek areas could require capacity upgrades sooner depending on the timing of the industrial development. It is unknown at this time if additional pump station capacity will be available for development within the URA.

Impacts to existing facilities that serve nearby areas already inside the UGB

Based on a conceptual level sewer sizing analysis, approximately 0.4 cfs will be added to the existing system. Conceptual sewer layouts indicate that the additional flows would utilize existing sewer lines ranging in size from 8-inch (at the upstream connection) to 30-inch (at the treatment plant. In addition, new flows would potentially utilize the existing Corral Creek lift station and Rivergreen lift station. It is possible that capacity improvements would be required to the pump stations and the existing sewer lines. Available capacity of the existing infrastructure was not available at this time, and therefore, the extent of required improvements and associated costs are unknown.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12” pipe (gravity)	$0.61
Total	**$0.61**

Water Distribution Services

Capacity of existing facilities to serve areas already inside the UGB

Wilsonville owns and maintains the Willamette River Water Treatment Plant, which is capable of processing 15 MGD. A planned improvement will bring the treatment plant capacity to 20 MGD in order to serve the existing UGB through the year 2036. Current storage capacity is at 11 MG and the City has funded a project to provide additional storage to serve proposed development within the existing UGB. At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

The City has ample water rights for the long term, so water supply is not an issue. The expected additional 10 MG expansion of the treatment plant in 2035 should provide capacity for the reserve area. Existing storage tanks do not have capacity to serve development outside of the existing UGB.

Impacts to existing facilities that serve nearby areas already inside the UGB

The City feels confident that it will have water capacity and storage to serve the reserve area. Numerous connection points exist at the edge of the reserve area and are assumed to be of adequate size. Transmission lines within the reserve area are expected to be built as development occurs.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$1.52
18" and larger	$0.9
Storage/pumping	$0.32
Total	**$2.74**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve area therefore, it is not anticipated that existing facilities would be utilized.

Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater conveyance, treatment, and discharge are anticipated to occur within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$0.68
Water quality/detention	$0.73
Total	**$1.41**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: All roadways in Wilsonville have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The intersection of SW Stafford Road and SW 65th Ave is in the top 5% of high injury intersections.

Transit: South Metro Area Regional Transit (SMART) provides full transit services to the City of Wilsonville through seven bus lines, medical transport services, a Villebois shopping shuttle and connections to Keizer and Woodburn. Most the city's developed areas are within ¼-mile of a transit stop. TriMet's Westside Express Service (WES) Commuter Rail originates its route in Wilsonville, servicing four other stations on its way to Beaverton.

Bike: Wilsonville has a well-defined bike network of dedicated bike lanes (19 miles) and established bikeways (8.25 miles) that connects neighborhoods, schools, parks, community centers, business districts and natural resource areas.

Pedestrian: Wilsonville has a fairly well-defined pedestrian network in its residential neighborhoods with less pedestrian amenities in the industrial and employment areas. Interstate 5 provides a barrier for east-west pedestrian connections.

Capacity of existing facilities to serve areas proposed for addition to the UGB

Roadway: All roadways that serve the urban reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: SMART's Route 4 – Wilsonville Road serves the Graham Oaks Nature Park that is across SW Wilsonville Road from the urban reserve area.

Bike: SW Wilsonville Road has a dedicated bike lane and Graham Oaks Nature Park has an established bikeway that connects to Villebois and other bike facilities. Also nearby is an established bikeway along the Ice Age Tonquin Trail that connects to the Willamette River east of the reserve area.

Pedestrian: SW Wilsonville Road and some of the nearby residential neighborhoods provide full sidewalk amenities. A crosswalk provides access to the Graham Oaks Nature Park and Villebois to the north and the Ice Age Tonquin Trial and the Willamette River to the south and east of the reserve area.

Impacts to existing facilities that serve nearby areas already inside the UGB

Roadway: Roadways that serve nearby areas inside the UGB will not be impacted by the addition of the urban reserve, apart from the improvement of some adjacent facilities to urban standards.

Transit: Existing SMART route 4 may see a small increase in ridership, see transit analysis below.

Bike: Bike facility improvements on SW Wilsonville Road as part of the improvement of the road to urban standards will provide appropriate bike access from the urban reserve area to Graham Oaks Nature Park and the Ice Age Tonquin Trail. In addition, a connection to SW Willamette Way will provide an alternative route to the Ice Age Tonquin Trail.

Pedestrian: Pedestrian facility improvements on SW Wilsonville Road as part of the improvement of the road to urban standards will provide appropriate pedestrian access from the urban reserve area to Graham Oaks Nature Park and the Ice Age Tonquin Trail. In addition, a connection to SW Willamette Way will provide an alternative pedestrian access to the Ice Age Tonquin Trail.

Need for new transportation facilities and costs (see attached transportation map)

SW Wilsonville Road will need to be improved to urban arterial standards.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$13.11
Total		**$13.11**

Provision of public transit service

South Metro Area Regional Transit (SMART) evaluated the reserve area for providing transit service. The Wilsonville Southwest reserve area is within a half mile of current services and SMART does not intend to add additional service to cover the half mile.

Prior to land being included in the UGB a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There are no stream corridors or wetlands within the reserve area. Corral Creek is located just south of the reserve area on Metro owned open space land. Some riparian and upland habitat associated with Corral Creek is identified in the lower portion of the reserve area. The upland habitat extends into the orchards, which would not be included in a natural resource protection program as it is an agricultural product. Given that the natural resources are located in the southern portion of the reserve area, urbanization of the remaining portion could occur with no impacts to the habitat areas, thus the reserve area has low environmental consequences.

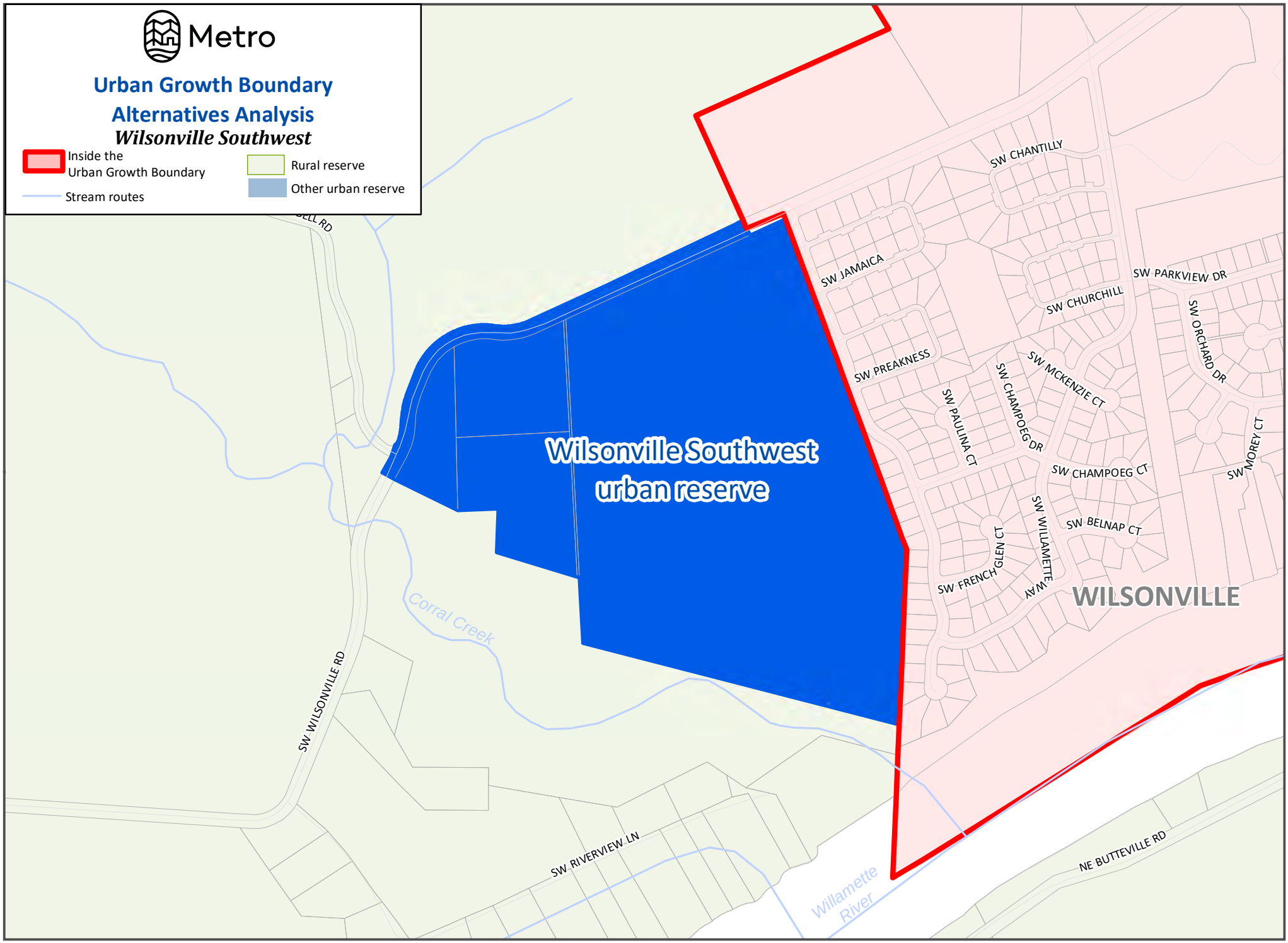
Energy, Economic & Social

This area is very small, thus future urbanization of the reserve area will be minor in scale. While any development will impact the three existing residences their location close to an established neighborhood of Wilsonville, both a primary and middle school and the Grahams Oak Nature Park

will reduce the social impacts of future urbanization. SW Wilsonville Road provides an easy connection to commercial and employment areas in the City of Wilsonville, the WES commuter line and I-5, which could help reduce the increase in VMT from urbanization of the area. In addition, given the modest amount of development that would occur, the increase in traffic would not be great and would not have significant energy consequences. The future build out of the commercial area of Villebois to the north will provide nearby commercial/retail opportunities that will be connected to the existing Ice Age Tonquin Trail, which could reduce some local automobile trips for new residents. The agricultural activity within the reserve area is minimal from an acreage standpoint. The loss of the economic impact from these agricultural uses would not be considerable and the potential economic impact of residential or employment development, even though it is not significant will outweigh this loss. Overall, this analysis area has low economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

Three sides of the reserve area are bordered by land zoned for exclusive farm use (EFU) with fourth side bordering the UGB. The EFU land to south is owned by Metro as open space and contains no agricultural activities. The EFU land directly west is forested and includes a rural residence. The EFU land to the north is home to the Graham Oaks Nature Park that is owned by Metro. While it appears that there is agricultural activity occurring at the park, the mowing of the fields is part of Metro's maintenance actions to restore an oak prairie on the site. Due to no agricultural activities occurring on the adjacent EFU zoned land, the proposed urban uses have a high compatibility with nearby agricultural activities occurring on farm land outside the UGB.



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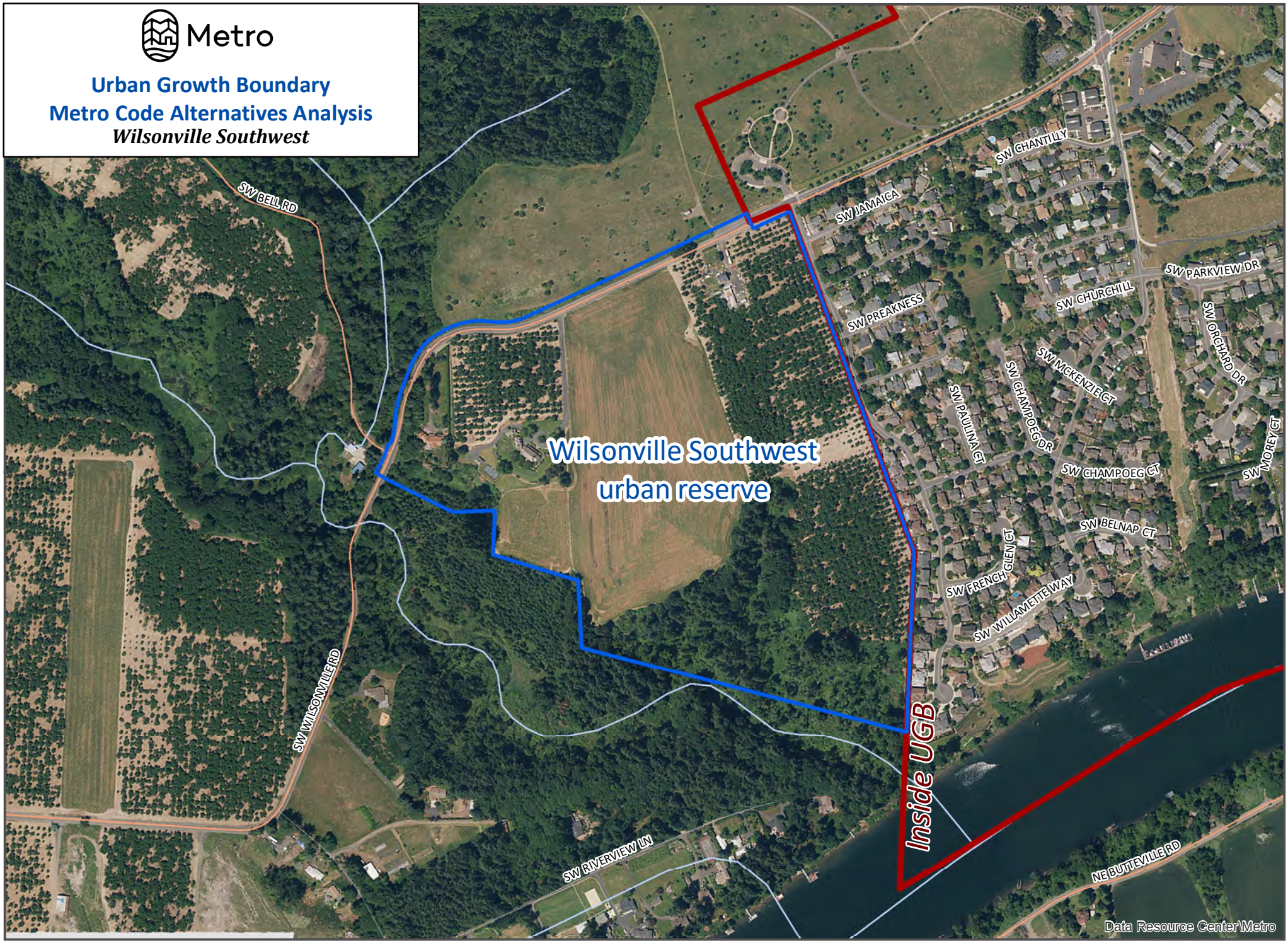
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Wilsonville Southwest



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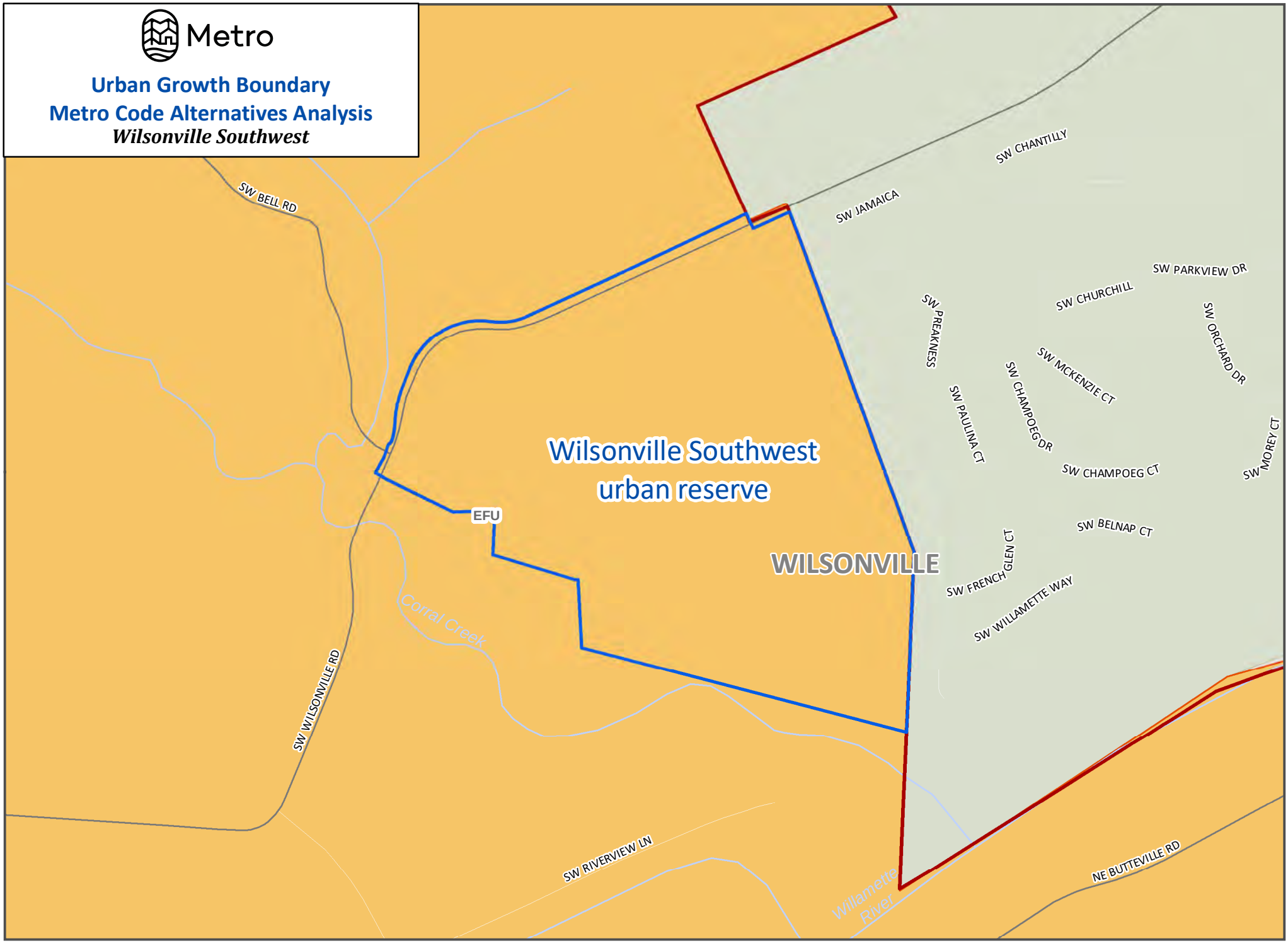

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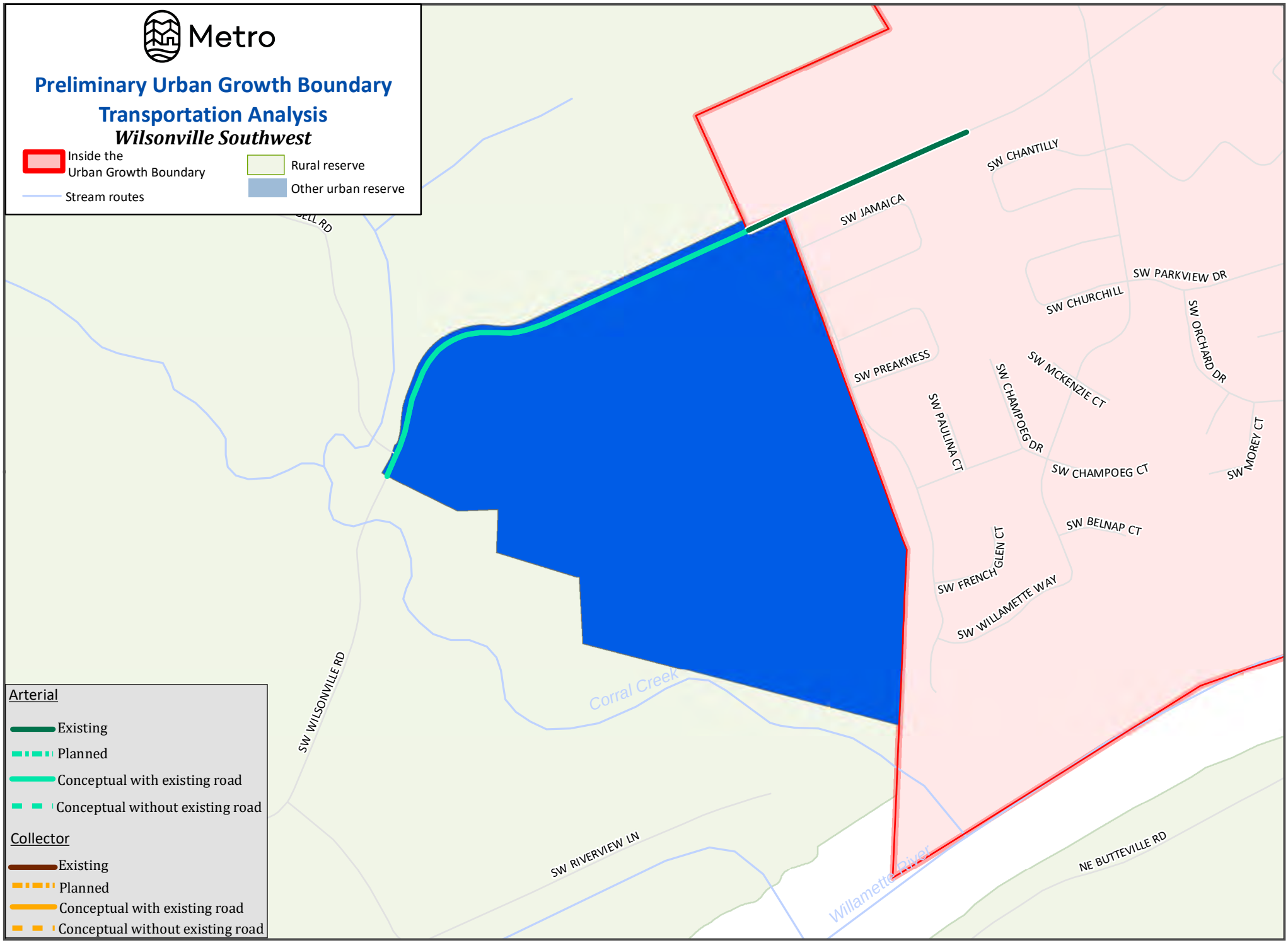

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Appendix 3: 2018 OTAK Report: Assessment of Potential Urban Growth Boundary Expansion Areas

Assessment of Potential Urban Growth Boundary Expansion Areas

Prepared for:
Metro
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Portland, OR 97232-2736

Prepared by:
Otak, Inc.
808 SW 3rd Avenue
Portland, OR 97204

May 2018

Table of Contents

ADVANCE URBAN RESERVE AREA (4H)	5
BEAVER CREEK BLUFFS URBAN RESERVE AREA (3G)	9
BEEF BEND SOUTH URBAN RESERVE AREA (6D)	13
BENDEMEER URBAN RESERVE AREA (8F)	17
BETHANY WEST URBAN RESERVE AREA(8C)	21
BORING-HIGHWAY 26 URBAN RESERVE AREA (1F)	25
BORING URBAN RESERVE AREA (1D)	29
BORLAND URBAN RESERVE AREA (4C)	33
BROOKWOOD PARKWAY URBAN RESERVE AREA(8B)	37
COOPER MOUNTAIN URBAN RESERVE AREA (6B)	41
DAMASCUS URBAN RESERVE AREA (2A)	45
DAVID HILL URBAN RESERVE AREA (7A)	49
ELLIGSEN NORTH URBAN RESERVE AREA (4G)	53
ELLIGSEN SOUTH URBAN RESERVE AREA (4F)	57
GRAHAMS FERRY URBAN RESERVE AREA (5G)	61
GRESHAM EAST URBAN RESERVE AREA (1C)	65
HENRICI URBAN RESERVE AREA (3F)	69
HOLCOMB URBAN RESERVE AREA (3B)	73
HOLLY LANE/NEWELL CREEK CANYON URBAN RESERVE AREA (3C)	77
I-5 EAST-WASHINGTON COUNTY URBAN RESERVE AREA	81
MAPLELANE URBAN RESERVE AREA (3D)	85
NORWOOD URBAN RESERVE AREA (4D)	89
ROSEMONT URBAN RESERVE AREA (4B)	93
ROY ROGERS EAST URBAN RESERVE AREA (6C)	97
ROY ROGERS WEST URBAN RESERVE AREA (6C)	101
SHERWOOD NORTH URBAN RESERVE AREA (5A)	105
SHERWOOD SOUTH URBAN RESERVE AREA (5D)	109
SHERWOOD WEST URBAN RESERVE AREA (5B)	113
SOUTH URBAN RESERVE AREA (6H)	117
STAFFORD URBAN RESERVE AREA (4A)	121
TONQUIN URBAN RESERVE AREA (5F)	125
WILSONVILLE SOUTHWEST URBAN RESERVE AREA (5H)	129

ASSESSMENT OF POTENTIAL URBAN GROWTH BOUNDARY EXPANSION AREAS

This document conveys the potential facilities, and accompanying costs that might be incurred for provision or conveyance of water, sewer and stormwater for the 32 Urban Reserves in existence as of April, 2018. The analysis focused on:

- The capacity of existing public facilities and services to serve areas already inside the UGB;
- The capacity of existing public facilities and services to serve areas proposed for addition to the UGB;
- The impacts to existing water, sanitary sewer and storm water facilities that serve nearby areas already inside the UGB; and
- The need for new water, sewer and stormwater facilities to serve the areas considered for possible UGB expansion.

For addressing the first three bullets above Otak relied on a series of interviews with service providers and examination of adopted master plans where current and relevant. Jurisdictions that might serve each URA were interviewed to determine deficiencies within their existing systems, potential issues with serving the additional URA areas, and potential points of connections to existing utility networks. Otak began the interview process by sending a preliminary questionnaire which was then used in a follow up interview as a discussion guide. Several service providers supplied written comments; most provided verbal input during the interviews.

In order to assess the need for new facilities within the reserves (fourth bullet) Otak created detailed maps of each reserve, where the team then placed the potential facilities. Guiding the decision of where to place infrastructure was a combination of:

- Known needs or issues noted in master plans or from interviews
- GIS mapping of existing facilities for determining likely points of connection to the existing facilities
- A proposed arterial and collector level roadway network provided by Metro staff
- Assumed residential densities of 10 dwelling units per net residential acre as per Metro direction
- Professional judgement regarding location of lines, pumps and reservoirs, and sizing of related pipes.

For each Urban Reserve Area (URA) an analysis was completed develop a conceptual utility plan to serve the area with public utilities (water, sanitary sewer, and storm drain). Utility networks drawn on maps of each reserve were then digitized into Otak's Geographic Information System (GIS) using the same coordinate system as Metro's RLIS. Pipe sizes and lengths and other facilities were then extracted from the GIS and placed into Microsoft Excel where cost factors were applied for all of the potential facilities identified for each urban reserve.

Based on the conceptual utility plans, a cost estimate was developed for water, sanitary sewer, and stormwater facilities within each URA. The cost estimates are in 2018 dollars. Unit costs were based on recent industry construction data and recent bid tabulations from relevant projects. The cost estimates should be considered preliminary, concept level estimates, and may not include all potential costs necessary for construction. Costs may change as more detailed information related to land use intensities and locations becomes available for potential development within the URA, and conceptual utility layouts are refined and further developed.

Water

Water estimates include larger diameter water lines needed to serve the site. The water lines are assumed to be located in existing and proposed collector and arterial streets, as provided by Metro. Costs have also been included for storage and pumping improvements needed to serve the URA. Costs for additional storage and pumping were calculated based on the proposed population within the URA, provided by Metro. Smaller diameter waterline will be located in local streets and are not included in this estimate. It is assumed that these costs will be paid for by developers.

Sanitary Sewer

For each URA a conceptual level sanitary sewer plan was developed based on an analysis of existing GIS contours. Where possible, it was assumed that sanitary sewer lines would be constructed within the proposed arterial/collector road network. However, the analysis showed that often gravity sewers would be needed outside of proposed roadways, adjacent to existing drainage ways. In addition, the analysis of existing contours showed that some URA's would require pump stations and force mains to serve some areas. Sanitary sewer estimates include costs for potential gravity trunk lines and interceptors within each URA area. Costs for pump stations and force mains have also been included if existing grades indicated that a pressure system will be required within the URA.

Improvements to existing facilities have that have been identified during jurisdictional interviews or by reviewing master plans have been identified in the URA summary. Costs for these improvements are not included in the cost estimates.

Storm Drain

Storm drain estimates include storm water conveyance, storm water quality, and storm water detention costs for arterial and collector streets. It was assumed that both proposed arterials and collectors as well as improvements to existing arterials and collectors will require new storm drainage conveyance, water quality, and detention. Costs included are based on the lengths of roadway improvements provided by Metro. It is assumed that all storm water can be discharged on-site. Costs are not included for local roads or development areas, as they will be constructed at the developer's expense.

Assumptions

The intent of the analysis is provide an assessment of infrastructure needs and costs for the purpose of comparison among the various URAs. In order to deliver an apples to apples comparison a number or assumptions were made or relied upon. Actual practices at the jurisdictional level will likely vary. For example, this analysis assumed an average of 10 dwelling units per net acre. Planning at the local level that aims to implement a city's numerous goals, such as needed housing types, transportation performance, public input and desired community character will lead to variations in housing densities and mix of uses and the responding infrastructure needs. Accordingly, actual costs will vary. Following is listing of assumptions that were utilized by this analysis.

- Land use – all URAs were considered solely for residential development
- Buildable Lands – GIS mapping was performed by Metro and its partner jurisdictions in order to determine the amount of usable land within each URA
- Density – 10 dwelling units were assigned per net acre from the buildable lands analysis
- Number of Housing Units – Metro provided the following assignment of units per reserve.

Urban Reserve	Dwelling Units
Advance	1,617
Beaver Creek Bluffs	1,151
Beef Bend South	2,304
Bendemeer	2,221
Bethany West	458
Boring	10,197
Boring Hwy 26	3,891
Borland	4,236
Brookwood Parkway	242
Cooper Mt.	4,116
Damascus	6,426
David Hill	1,435
Elligsen Road North	3,511
Elligsen Road South	1,645
Grahams Ferry	797
Gresham	4,444
Henrici	2,346
Holcomb	1,707
Holly Ln Newell Creek	1,480
I-5 East	4,028
Maplelane	2,212
Norwood	8,097
Rosemont	862
Roy Rogers East	1,235
Roy Rogers West	1,574
Sherwood North	503
Sherwood South	1,841
Sherwood West	6,495
South	2,691
Stafford	8,557
Tonquin	1,009
Wilsonville SW	252

- Household size – some consumption measures, such as water and sewer respond to the number of people assumed to be in each household. Keeping constant with the previous Goal 14 analysis performed by Metro the household size was assumed to be 2.3 persons per dwelling unit. Vacancy rate, which can also fluctuate by jurisdiction and location, but is typically low, was not considered.

- Demand – Pipes and other facilities were sized in accordance with the expected demand. This demand is derived from per person or dwelling unit usage, or based on surface area in the case of stormwater. Otak reviewed actual usage data from numerous Metro area jurisdictions.

    - Sewer daily quantity per person was 80 gallons.

    - A Peaking factor of 2.6 was applied in order to respond to high usage times such as mornings when people are getting ready for work and school.

    - An Inflow and Infiltration factor of 1,800 gallons per acre per day was also applied in order to size the network large enough to accommodate the future when pipes have aged and experienced joint leakage, root breaks and other causes for groundwater to enter the system. Of note, Clean Water Services typically assumes 4,000 gallons, however a review of area master plans revealed that local jurisdictions more commonly assume between 1,600 and 2,000 gallons per acre per day.

    - Water demand was assumed at 150 gallons per person per day, a figure also taken from relevant master plans within the Metro area.

- Costs – To determine costs, Otak relied on a review of recent bid documents summaries known as bid tabulations from recent projects within Washington and Clackamas counties. The following assumptions were made for costs of infrastructure.

Sewer	Force Main	Boring	Less than 12"	12"to 18"	Greater than 18"
Dollars per linear foot	$175	$350	$170	$190	$250

- Sewer pump station costs were assigned on a case by case basis as per the expected flow required.

Water	12" Diameter and Smaller	18" Diameter and Larger	Storage and Pumping
Dollars per linear foot	$280	$420	NA
Per gallon costs	NA	NA	$3.50

Stormwater	Arterial Conveyance	Collector Conveyance	Arterial Water Quality and Detention	Collector Water Quality and Detention
Dollars per linear foot	$225	$200	$240	$180

ADVANCE URBAN RESERVE AREA (4H)

ADVANCE URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water comes from the west side of the City of Wilsonville. The City owns and maintains the Willamette River Water Treatment Plant (WRWTP). The plant is capable of processing 15 million gallons per day (MGD). A planned improvement will bring the treatment plant capacity to 20 MGD in order to serve the existing UGB through year 2036. In 2035, an additional 10 MGD expansion will be needed to provide service for long-term growth through year 2050. The daily operation of the water treatment plant is performed under contract by Veolia Water North America.

Current storage capacity is at 11 MG. The City has budgeted a project to provide additional storage to serve proposed development within the existing UGB.

At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Sewer

The City of Wilsonville is served by a modern plant, located at 9275 Southwest Tauchman Road. The plant was rebuilt and upgraded in 2014 to include modern wastewater treatment technology, and a new odor control system. This increase capacity from 2.5 MGD to 4.0 MGD in order to accommodate continued growth.

The City has current projects planned for the Memorial Park Lift Station over the next three years. In addition, the City has a 20-year program in place to replace aging concrete pipe.

Stormwater

No current issues were identified within the City that would impact the development of the urban reserve area (URA). For stormwater management, the downtown area uses a regional facility. New development would be encouraged to use LIDA facilities to treat stormwater on-site.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City noted that they have ample water rights for the long-term, so water supply should not be an issue. The additional 10 MG expansion of the treatment plant in 2035 should provide for the URA areas. Currently, existing storage tanks will not have capacity to serve development outside of the existing UGB.

Sewer

The Advance URA is part of the Frog Pond area. Frog Pond West is currently within the UGB. Trunklines are currently utilizing approximately 50% of their capacities. The development of Frog Pond West will use some of that capacity. Any additional capacity could be available for use by the Advance URA.

Existing pump stations are currently being upgraded for existing and currently planned uses. It is unknown at this time if additional pump station capacity will be available for development within the URA.

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area will use some capacity, but will not likely trigger any treatment plant upgrades. However, future industrial development anticipated in the Basalt and Coffee Creek areas could require capacity upgrades. Depending on actual development rates, the City is planning to expand the treatment plant in 2030.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

It is anticipated that a new water storage tank will be constructed within the next 5 to 8 years in order to provide adequate storage for the Frog Pond/ Advance area. In addition, the planned water treatment plant improvements will provide additional capacity for the Frog Pond/Advance areas.

Sewer

Based on conceptual level sewer sizing analysis, approximately 2.0 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows from the Advance URA will connect to the Boekman interceptor and will pass through the Memorial Park Lift Station before reaching the wastewater treatment plant.

Current plans for improvements for the Memorial Park Lift Station are currently planned to support current growth within the existing UGB. These improvements could assist in provided capacity for the URA development; however, excess capacity is unknown at this time. Therefore, the extent of required improvements to the existing trunk line and pump station and their associated costs are unknown.

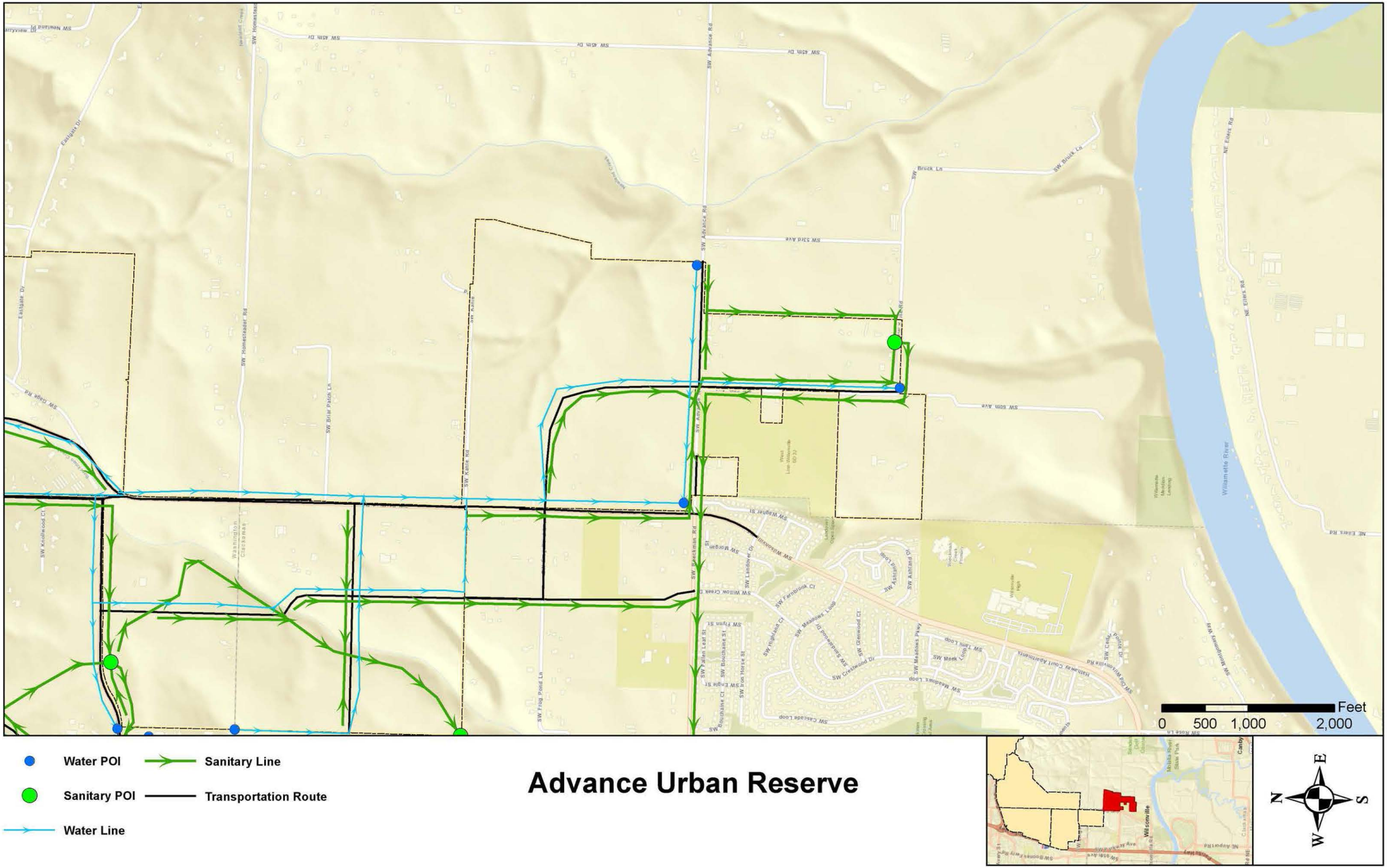
Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA, therefore, improvements to existing stormwater facilities are not anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	13,200			7,300
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$2,244,000	$0	$0	$1,277,500
			Subtotal Cost	**$3,521,500**
Proposed Pump Stations				$500,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$4,021,500**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		8,100	2,500	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$2,268,000	$1,050,000	
			Subtotal Cost	**$3,318,000**
Storage and Pumping Costs				$ 1,960,000
			Total Water System Cost Estimate	**$5,278,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		11,000	3,600	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,200,000	$810,000	
			Subtotal Cost	**$3,010,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$1,980,000	$864,000	
			Subtotal Cost	**$2,844,000**
			Total Storm Drain Cost Estimate	**$ 5,854,000**


Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route
Advance Urban Reserve
Feet
0 500 1,000 2,000
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W

BEAVER CREEK BLUFFS URBAN RESERVE AREA (3G)

BEAVER CREEK BLUFFS URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). The City of Oregon City serves lands within their corporate boundary. Oregon City has expanded their city to include recent UGB expansions to its southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas.

CRW is planning for the urban reserve areas (URAs) but will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As these reserves areas are brought in, the cities intend to serve these areas. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the sites. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban.

CRW states that it does have adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 million gallons per day (MGD) water treatment plant. Volumes available for their service area are 7.4 MGD on north and around four MGD on south for a total availability of approximately 11 MGD. CRW currently serves a back bone project that will bring water south across the carver bridge to serve all of the pressure zones to the south. Of note, Sunrise Water Authority plans to buy 6 to 10 MGD more in the future. However, even with growth they would still have plenty (at least 5 MGD) of unused capacity. The treatment plant is 50 years old and a pending Facility Master Plan will determine what types of upgrades will be needed in the future.

As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the area.

CRW is building transmission lines and pumps to serve the south side of the river. The existing network is generally in a good state of repair. However, there are many places with old 1960 steel pipes. They prioritize upgrades and replacements locally on a case by case basis. For example, if the pipes are inside a city, they are less likely to be replacing them because the new facilities might be claimed for city ownership.

CRW is setting aside $2 million per year for system upgrades. Larger projects such as the backbone, ($24 million cost) was done through a bond. Phase two will be a $15 million bond.

Oregon City has plans to build reservoirs that could serve URAs, but no timeline information is available at this time.

Regarding safety CRW has an intertie with Portland to the north and the North Clackamas County Water Commission (NCCWC) which serves Gladstone, Sunrise Water Authority, and Oak Lodge. A southern intertie with South Fork Water provides an additional source.

Sewer

Oregon City is planning for this growth. The Infrastructure Master Plan includes planned improvements and funding that will be required to support the expected growth within the existing UGB.

Stormwater

No storm water issues were noted.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

CRW has more than enough water to serve the URAs. However, some locations such as Holly Lane/Newell Creek Canyon make more sense for Oregon City to serve as they are isolated from the CRW network. The remaining reserves can be served by CRW when the new storage reservoir is constructed. Construction of the reservoir is expected within the next few years.

Generally the urban reserves in the Oregon City area of Clackamas County are small and not very easily used for growth. Most of them contain steep lands with slide potential and fairly dense rural development may preclude conversion to urban residential densities. Beaver Creek Bluffs areas are small with only limited development potential. Water will be provided from Oregon City as CRW doesn't have facilities in those locations.

Sewer

How much excess capacity is within the system and can the excess capacity be used to accommodate additional flow from areas proposed for addition to the UGB?

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities (wastewater treatment, and interstate (I-205) and Hwy 213 and 99E) and their conditions. As noted in the water discussion, the area has topographic challenges which seem difficult to overcome and if these natural boundaries were to be overcome the infrastructure would be an expensive endeavor.

Wastewater conveyance is a major constraint and Hwy 213 is a major constraint for much more urban development south of our existing UGB.

The City, the area's sewer provider, is not completing infrastructure planning for growth in the URAs. Development outside the UGB will include major infrastructure changes which the city believes will be cost prohibitive. Costs for the improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Stormwater

Stormwater conveyance and treatment will be constructed along with development. Stormwater will be discharged within the URAs. Existing stormwater infrastructure will not be impacted.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

As referred to above, the water networks in place can serve areas adjacent to them without significant upgrades.

Sewer

There will be significant impacts to these facilities. Most of this infrastructure would be built by the development community. The other facilities will require major construction in sensitive (landslide prone) areas.

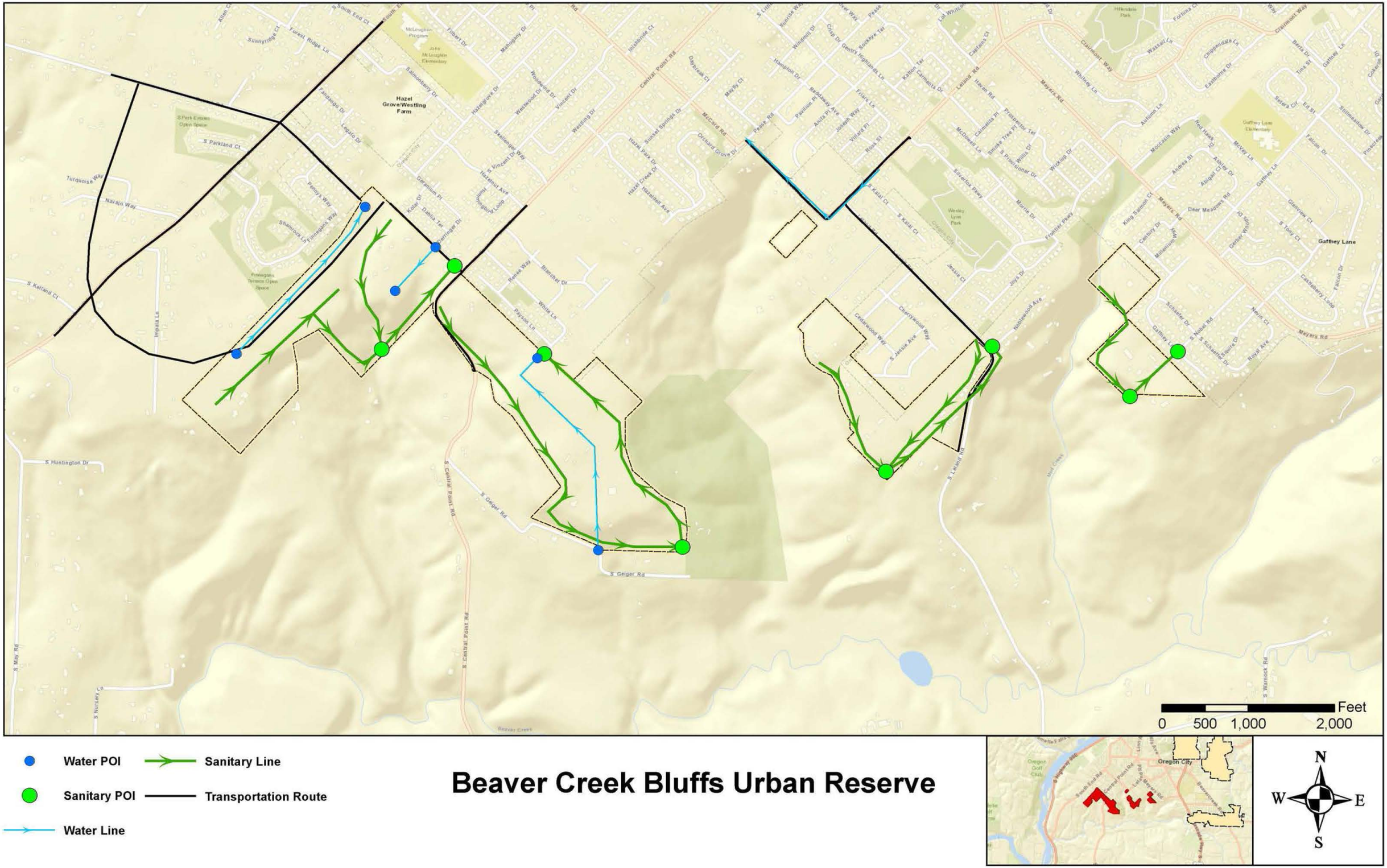
Stormwater

Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	14,500			7,100
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$2,465,000	$0	$0	$1,242,500
			Subtotal Cost	**$3,707,500**
Proposed Pump Stations				$1,450,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$5,157,500**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		7,800	0	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$2,184,000	$0	
			Subtotal Cost	**$2,184,000**
Storage and Pumping Costs				$ 1,400,000
			Total Water System Cost Estimate	**$3,584,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		15,700	10,100	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$3,140,000	$2,272,500	
			Subtotal Cost	**$5,412,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,826,000	$2,424,000	
			Subtotal Cost	**$5,250,000**
			Total Storm Drain Cost Estimate	**$10,662,500**



Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route

Beaver Creek Bluffs Urban Reserve

BEEF BEND SOUTH URBAN RESERVE AREA (6D)

BEEF BEND SOUTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

The Tigard Water District, along with the cities of Durham, King City, and Tigard, contract with the City of Tigard to deliver water to the customers in this urban reserve area (URA). The areas covered by the Intergovernmental Agreement, (IGA) make up the Tigard Water Service Area (TWSA).

Information provided by the City of Tigard indicates that the water supply, storage, and piping are sufficient to serve the existing UGB. Minor deficiencies were identified with the Water Treatment Plant; however, there are plans to correct the deficiencies in the near future.

Sewer

Clean Water Services (CWS) provides wastewater treatment through the Durham Wastewater Treatment Plant (WWTP).

CWS is currently working to complete significant capital improvements relating to their conveyance piping that are necessary to serve all of the land currently within the UGB. These improvements are scheduled to be fully complete in 2020.

Storm Water

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 2,304 dwelling units appears to be adequate, or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Roy Rogers West URA is approximately 0.8 MG.

The City of Tigard is currently in the process of updating their Water Master Plan. The Master Plan update will include the Roy Rogers West, Roy Rogers East, and the Beef Bend South URA's. The Master Plan will identify excess capacity within the system and determine if it can be used within the proposed URA's. In addition, the City plans to acquire property in the adjacent River Terrace area that can be used for the construction of additional storage to serve the proposed URA's.

Sewer

Capacity appears to be available in the CWS, Durham WWTP. This URA projected for 2,304 dwelling units may require upgrades to the WWTP. The estimated flows added to the system with the development of this URA is approximately 3.2 cfs.

Flows from Beef Bend South URA will connect to an existing gravity sewer in a development along the east boundary of Beef Bend South at SW Fischer Road. The existing sewer is currently an 8-inch line; however, CWS indicated plans to upsize this line to a trunk line in the future. This line connects to an existing 18-inch trunk line in SW 131st Avenue, and from there flows via gravity through the CWS interceptor to the Durham WWTP. The available capacity of the existing lines is unknown at this time.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

With the current Water Master Plan update, the City of Tigard is planning for the expansion of this URA. The majority of impacts are local in nature, occurring as facilities are developed.

New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

Sewer

Wastewater services are provided by the Durham WWTP. Some interceptor and/or trunk lines are at capacity per CWS and may require upgrades for this amount of urban development. The upgrades and financial impacts are beyond the scope of this report.

Impacts to the wastewater system are local in nature, occurring as facilities are developed. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

From the connection to the existing system, sewer flows by gravity to the WWTP. However, in order to get sewer to the connection point, up to four pump stations within the Beef Bend South URA may be needed.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

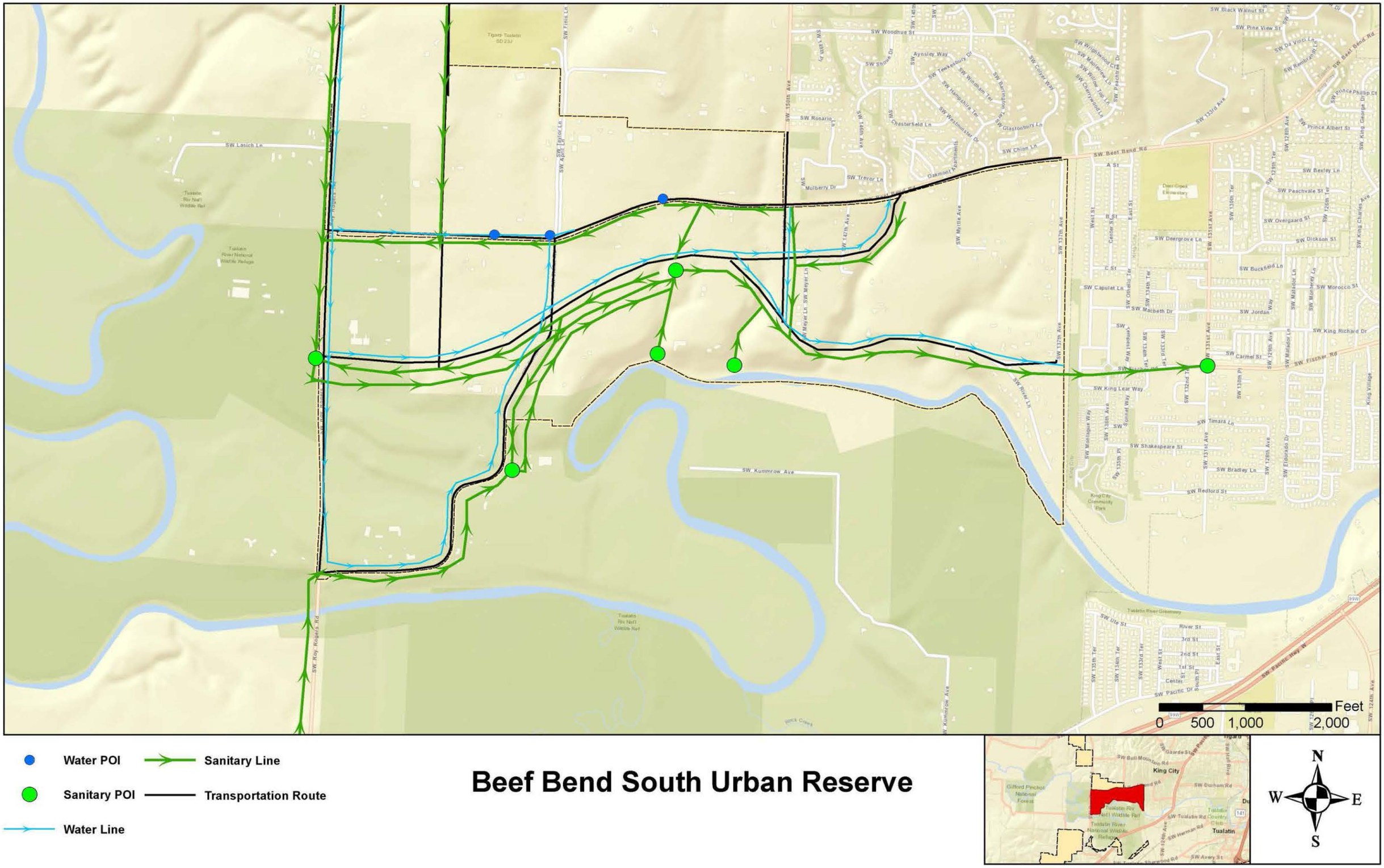
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	12,500	6,700		9,750
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$2,125,000	$1,273,000	$0	$1,706,250
			Subtotal Cost	**$5,104,250**
Proposed Pump Stations				$1,200,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$6,304,250**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		9,000	13,300	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$2,520,000	$5,586,000	
			Subtotal Cost	**$8,106,000**
Storage and Pumping Costs				$ 2,800,000
			Total Water System Cost Estimate	**$10,906,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		23,800	12,700	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$4,760,000	$2,857,500	
			Subtotal Cost	**$7,617,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$4,284,000	$3,048,000	
			Subtotal Cost	**$7,332,000**
			Total Storm Drain Cost Estimate	**$14,949,500**


Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route
Beef Bend South Urban Reserve
Feet
0 500 1,000 2,000
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S
King City
Tualatin

BENDEMEER URBAN RESERVE AREA (8F)

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Potable water is supplied to the UGB by the Tualatin Valley Water District (TVWD). TVWD has indicated that there is sufficient capacity in terms of water supply, treatment, storage, and piping to serve areas within the current UGB.

Sewer

Clean Water Services (CWS) provides sewer services for development within unincorporated Washington County. The City of Hillsboro has existing facilities that extend near the intersection of NW West Union Rd and NW Cornelius Pass Road, which feeds into the CWS system.

CWS provides wastewater treatment through the Rock Creek Wastewater Treatment Plant (WWTP).

CWS has indicated that there is capacity to serve areas within the existing UGB.

Stormwater

There is no indication of issues with existing stormwater that would impact this urban reserve area (URA).

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

TVWD indicated water for this URA for 2,221 dwelling units appears to be adequate; or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Bendemeer URA is approximately 0.8 MG.

There is an existing 16-inch water line in NW West Union Road. TVWD indicated that the Bendemeer URA could be served from this site.

Sewer

The estimated peak flow added to the system with the development of this URA is approximately 3.3 cfs (2.1 MGD).

Existing topography of the URA suggest that sewer flows from the eastern portion of the site and will flow toward the existing 24-inch CWS Rock Creek trunk line that traverses through the site. The western portion of the site generally flows toward NW Cornelius Pass Road. The City of Hillsboro has existing sewer pipes near the intersection of NW West Union Road and NW Cornelius Pass Road. These pipes range in size from 8-inch to 18-inch before connecting to the CWS trunk line.

CWS has indicated that there is additional capacity at the CWS, Rock Creek WWTP.

The additional capacity within the existing pipes is unknown at this time.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

New water mains will be required before this area can reach its growth potential. Laterals will be developer funded.

TVWD conveys that their system is ready to serve the area.

Sewer

New sewer mains will be required before this area can reach its growth potential. Laterals will be developer funded.

This URA is projected to have 2,221 dwelling units, therefore may require small upgrades to WWTP. The upgrades and financial impacts are beyond the scope of this narrative.

New laterals are provided by the developer.

The amount of any up-sizing (if any) from the serving utility that would be needed is not known at this time.

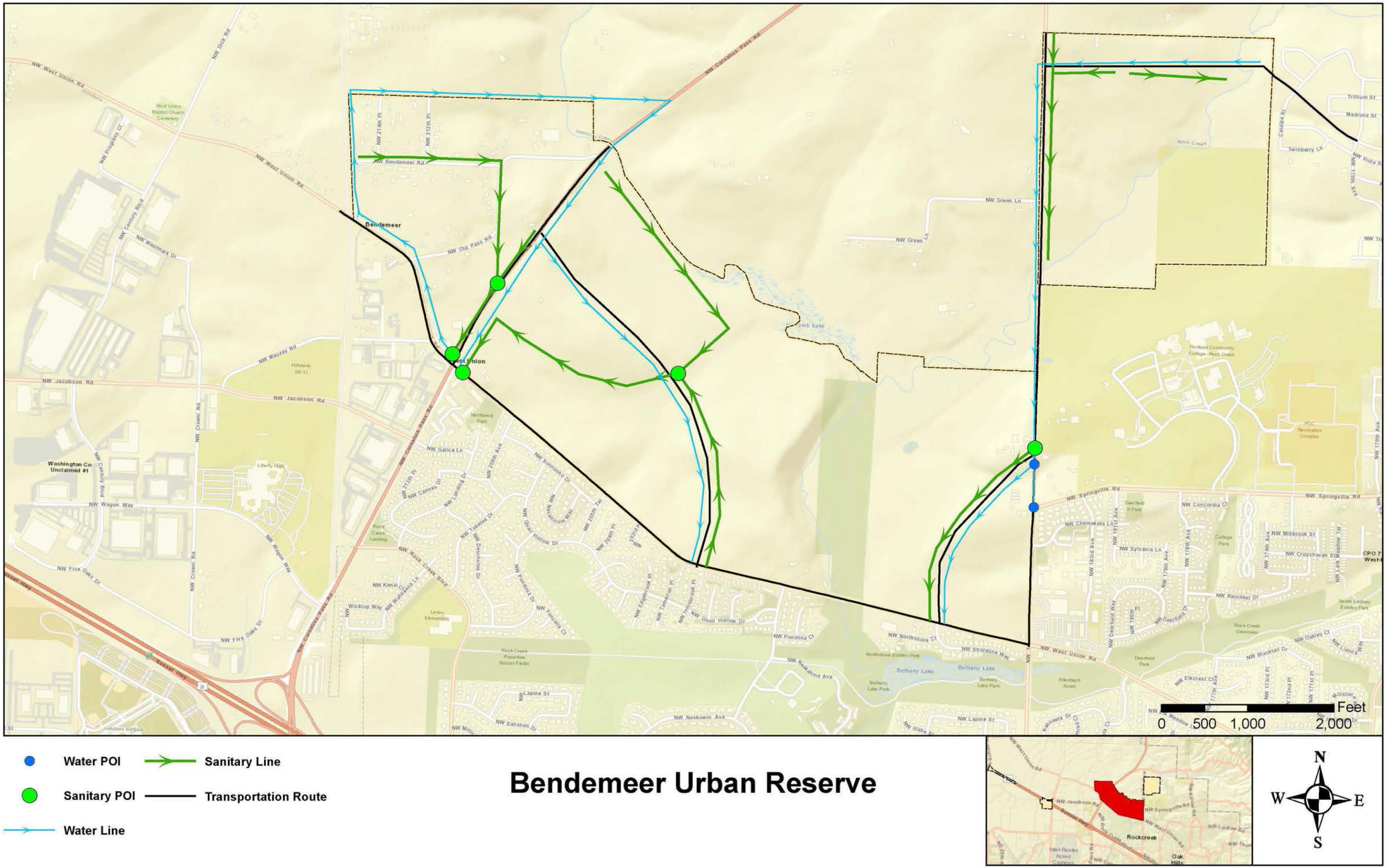
Storm Water

Stormwater will be conveyed, treated, and disposed of on-site, therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	5,500	9,800		
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$935,000	$1,862,000	$0	$0
			Subtotal Cost	**$2,797,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				$105
			Total Sewer System Cost Estimate	**$2,797,105**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		7,300	900	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$2,044,000	$378,000	
			Subtotal Cost	**$2,422,000**
Storage and Pumping Costs				$ 2,695,000
			Total Water System Cost Estimate	**$5,117,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		4,600	18,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$920,000	$4,230,000	
			Subtotal Cost	**$5,150,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$828,000	$4,512,000	
			Subtotal Cost	**$5,340,000**
			Total Storm Drain Cost Estimate	**$10,490,000**



Bendemeer Urban Reserve

BETHANY WEST URBAN RESERVE AREA(8C)

BETHANY WEST URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Potable water is supplied to the UGB by the Tualatin Valley Water District (TVWD). TVWD has indicated that there is sufficient capacity in terms of water supply, treatment, storage, and piping to serve areas within the current UGB.

Sewer

Clean Water Services (CWS) is the service provider for unincorporated Washington County. CWS provides wastewater treatment through the Rock Creek Wastewater Treatment Plant (WWTP). It appears that there is adequate capacity to meet UGB needs.

Stormwater

There is no indication of issues with existing stormwater that would impact this urban reserve area (URA).

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

TVWD indicated water for this URA for 458 dwelling units appears to be adequate; or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Bethany West URA is approximately 0.2 MG.

Sewer

The estimated peak flow added to the system with the development of this URA is approximately 0.8 cfs (0.5 million gallons per day (MGD)).

An existing 24-inch sanitary sewer trunk crosses the Bethany West URA along the north side of Rock Creek. Flows continue via gravity flow through the CWS trunk and interceptor sewer lines and reach the Rock Creek WWTP.

CWS has indicated that the Rock Creek WWTP has capacity available. Existing sewer trunk and interceptor line presumably also have available capacity.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

New water mains will be required before this area can reach its growth potential. Laterals will be developer funded.

The amount of up-sizing (if any) from the serving utility that would be needed is unknown at this time.

TVWD noted that the bridge on Shackelford Road in North Bethany that would connect to NW 185th Avenue would need to be constructed in order to provide water service to this URA from North Bethany. For the purposes of this report, it is assumed that the bridge will be constructed along with the transportation improvements.

Sewer

New sewer mains will be required before this area can reach its growth potential. Laterals will be developer funded.

This URA is projected to have 458 dwelling units; therefore impacts to the WWTP are expected to be minimal, with no anticipated upgrades.

The amount of up-sizing (if any) from the serving utility that would be needed is not known at this time.

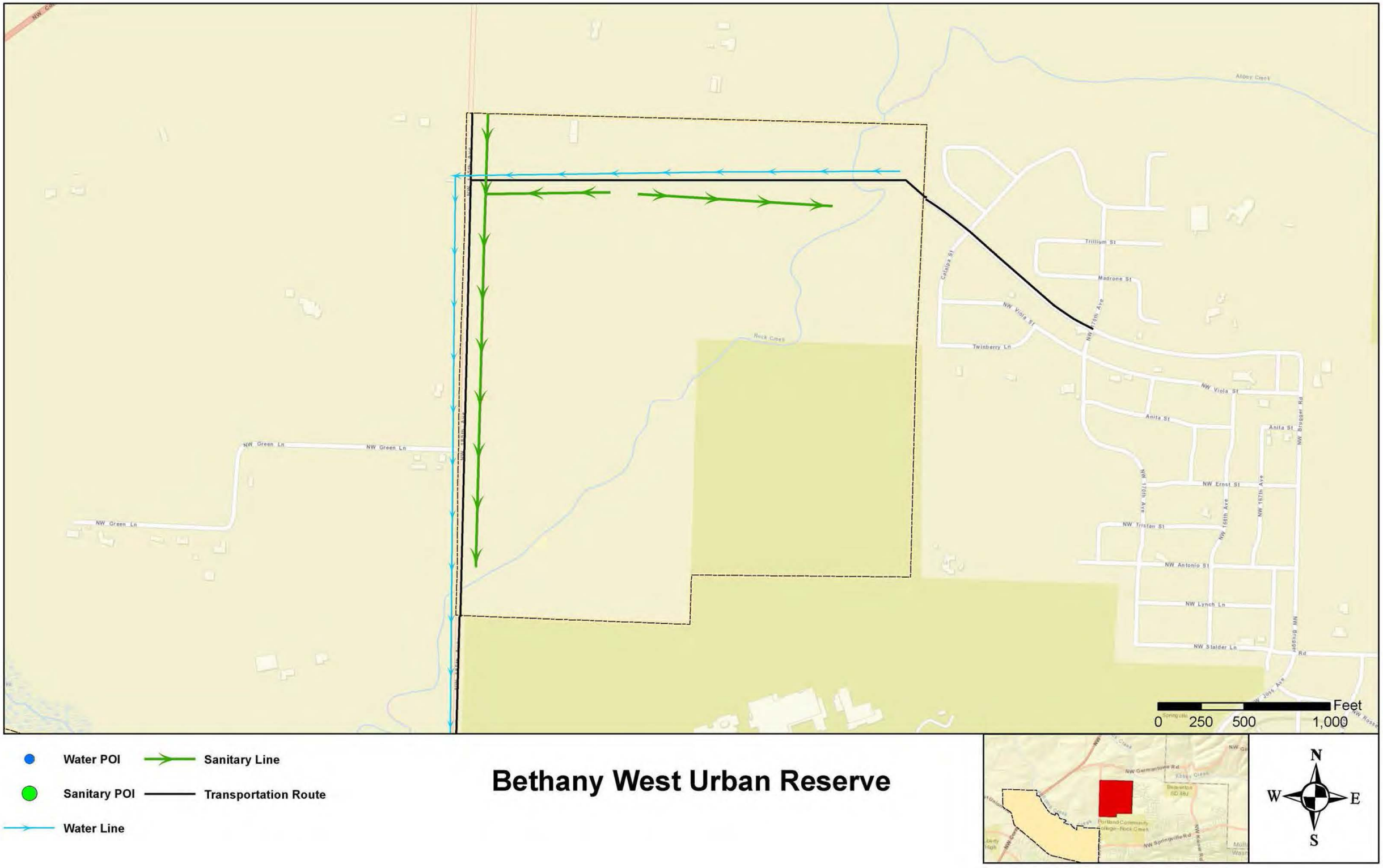
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	6,700			
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$1,139,000	$0	$0	$0
			Subtotal Cost	**$1,139,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$1,139,000**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		2,600	5,200	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$728,000	$2,184,000	
			Subtotal Cost	**$2,912,000**
Storage and Pumping Costs				$ 560,000
			Total Water System Cost Estimate	**$3,472,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		4,000	4,000	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$800,000	$900,000	
			Subtotal Cost	**$1,700,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$720,000	$960,000	
			Subtotal Cost	**$1,680,000**
			Total Storm Drain Cost Estimate	**$3,380,000**



Bethany West Urban Reserve

BORING-HIGHWAY 26 URBAN RESERVE AREA (1F)

BORING HIGHWAY 26 URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Most of the district's land is outside of a UGB; 257th is roughly the western boundary. The highest use recorded was last year at 49% of maximum capacity. Two reservoirs, totaling 800,000 gallons serve the gravity customers. A 100,000 gallon reservoir serves customers on a pumped system (roughly 150 customers).

The existing pipe network size works for their coverage area.

Of note, the main network is comprised of asbestos concrete pipe that is nearing the end of its useful life. The district is starting to save money to replace the older pipes.

Sewer

Boring Hwy 26 urban reserve area (URA) is part of the Clackamas Water and Environmental Services (WES). The agency operates a sewer treatment plant in Boring. It is capable of continued operation serving the low-density area but is not sized for urban densities. This wastewater treatment plant treats wastewater from approximately 700 water users.

Stormwater

No issues have been identified.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA serving 3,891 dwelling units may not be available. Estimated average daily water demand for the Boring Hwy 26 URA is approximately 1.4 MG. The current water use is approximately 700 water customers. The magnitude of increase would be a significant challenge for a provider of this size.

The District still has about half of its supply available. They feel that they could meet the new demand from urbanization but would need some new pipes and upsizing in places. A new well coming online in 5 years will add 5.0 to 8.0 million gallons per day (MGD). This will be the district's fifth well. Sand filtration is the only treatment. There is no chlorine, no fluoride, or anything else used.

If they expand west toward to UGB in Damascus they would need to upsize a mile and a half or so of pipe.

There is a possibility that they could obtain water services from Gresham, which is roughly 4.5 miles to the northwest. This option, if selected, would be costly and is accordingly not considered in financial impacts.

Sewer

Wastewater capacity for this URA for 3,891 dwelling units may not be available. Estimated flows generated with the Boring Hwy 26 URA are approximately 4.8 cfs.

The current water use is approximately 700 water customers; therefore we could assume wastewater loads to be for the 700 water customers. With the URA's demand increasing to 3,891 dwelling units, the size of the WWTP would need to increase exponentially in order to serve urban levels of density.

The Boring sewer treatment plant, however does not likely have this ability to handle growth. Discharge from the plant follows the North Fork Deep Creek drainage to the Clackamas River. Expansion is not viable due to the limited flow in the drainage. Accordingly, sewer would likely need to be provided by the City of Gresham. Gresham does not have any facilities proximate to the Boring Reserve at this time.

There is a possibility that they could obtain wastewater services from Gresham, which is roughly 4.5 miles to the northwest. Very costly, not considered in financial impacts.

Stormwater would be handled privately for development and publicly for public streets as development occurs.

Stormwater

The impacts to existing water, sanitary sewer, stormwater, and transportation facilities that serve nearby areas already inside the UGB.

Water

The district is currently running a 2-inch line to the west toward UGB. This would need to be upsized to at least 8" or 10" to support urbanization. Of note, there are no interties to other providers to provide for an alternate source in case of emergency, although they do have a backup generator to support the plant. The district believes the well in 5 years and possibly another in 15 years could support a limited urbanized reserve.

Sewer

The existing treatment plant connected to Boring will not be able to handle urbanization. Accordingly it would either continue serving rural users or be replaced by a facility capable of handling the waste from the reserve.

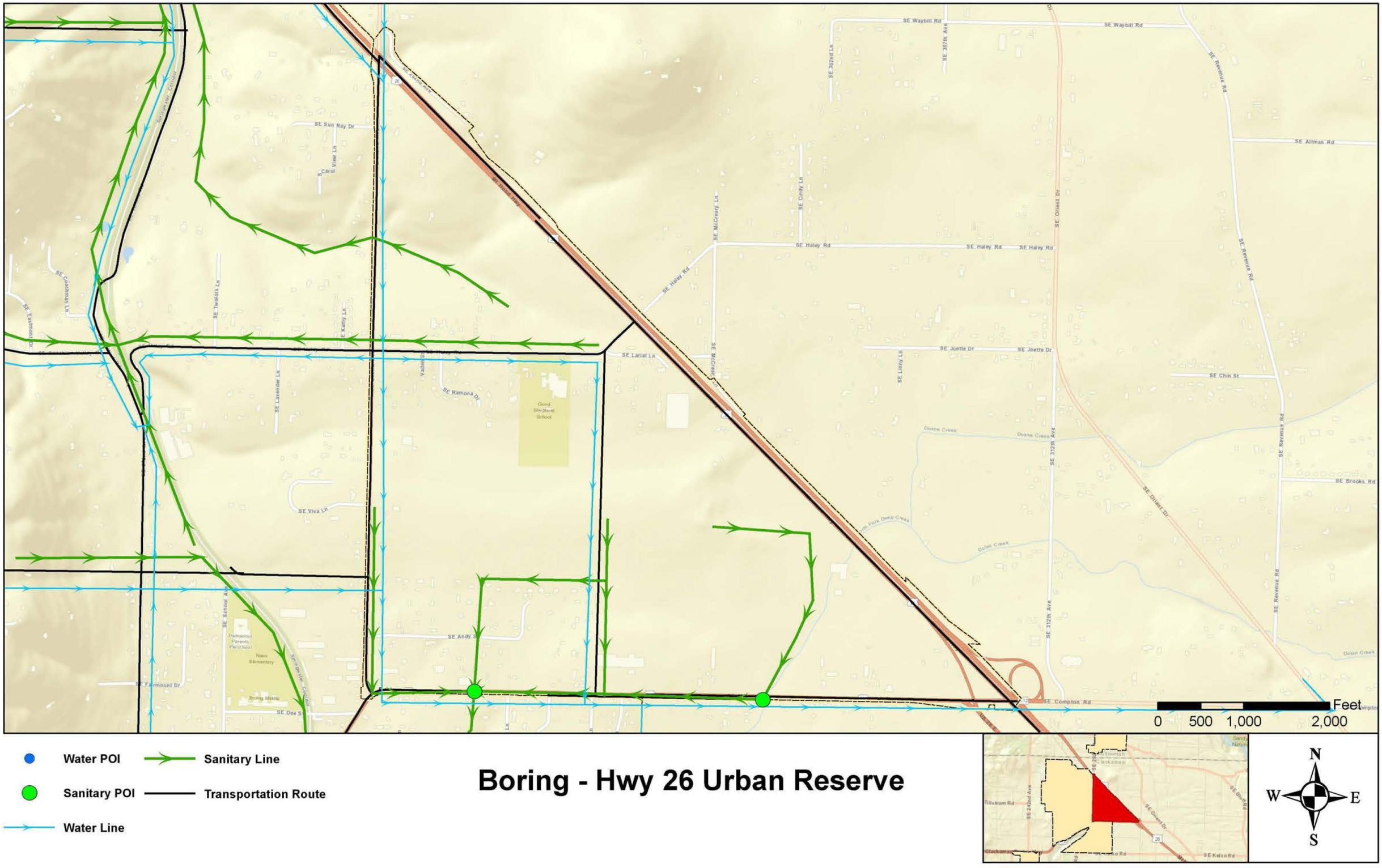
Stormwater

No stormwater facilities have been identified for which there would be impacts.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	19,300			2,100
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$3,281,000	$0	$0	$367,500
			Subtotal Cost	**$3,648,500**
Proposed Pump Stations				$700,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$4,348,500**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		6,500	22,200	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$1,820,000	$9,324,000	
			Subtotal Cost	**$11,144,000**
Storage and Pumping Costs				$ 4,725,000
			Total Water System Cost Estimate	**$15,869,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		7,300	29,700	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$1,460,000	$6,682,500	
			Subtotal Cost	**$8,142,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$1,314,000	$7,128,000	
			Subtotal Cost	**$8,442,000**
			Total Storm Drain Cost Estimate	**$ 16,584,500**



Water POI

Sanitary POI

Water Line

Sanitary Line

Transportation Route

Boring - Hwy 26 Urban Reserve

BORING URBAN RESERVE AREA (1D)

BORING URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Most of the district's land is outside of a UGB; 257th is roughly the western boundary. The highest amount of water use recorded was last year (2017) at 49% of maximum capacity. Two reservoirs, totaling 800,000 gallons serve the gravity customers. A 100,000 gallon reservoir serves customers on a pumped system (roughly 150 customers).

The existing pipe network size works for their coverage area. If they expand west toward to UGB in Damascus they would need to upsize approximately 1.5 miles of pipe.

Of note, the main network is comprised of asbestos concrete pipe that is nearing the end of its useful life. The district is starting to save money to replace the older pipes.

Sewer

Boring is part of the Clackamas Water and Environmental Services (WES). The agency operates a sewer treatment plant in Boring. It is capable of continued operation serving the low-density area but is not sized for urban densities.

Stormwater

No issues have been identified

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The District still has about half of its supply available. They feel that they could meet the new demand from urbanization but would need some new pipes and upsizing in places. A new well coming online in 5 years will add 5.0 to 8.0 million gallons per day (MGD). This will be the district's fifth well. Sand filtration is the only treatment. There is no chlorine, no fluoride, or anything else used.

Sewer

The Boring sewer treatment plant does not likely have much ability to handle growth. Discharge from the plant follows the North Fork Deep Creek drainage to the Clackamas River. Expansion is not viable due to the limited flow in the drainage. Accordingly, sewer would likely need to be provided by the City of Gresham. Gresham does not have any facilities proximate to the Boring urban reserve area (URA) at this time.

Stormwater

Stormwater would be handled privately for development and publicly for public streets as development occurs.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The estimated average daily demand generated by the development of this URA is approximately 3.5 MGD.

The district is currently running a 2-inch line to the west toward UGB. This would need to be upsized to at least 8" or 10" to support urbanization. Of note, there are no interties to other providers to provide for an alternate source in case of emergency, although they do have a backup generator to support the treatment plant. The district believes the well planned for development in 5 years, and possibly an additional well in 15 years could support the urbanized reserve.

Sewer

The estimated sewer flow rate generated by the development of the Boring URA is approximately 15.1 cfs.

The existing treatment plant connected to North Fork Deep Creek will not be able to handle urbanization. Accordingly it would either continue serving rural users or be replaced by a facility capable of handling the waste from the reserve.

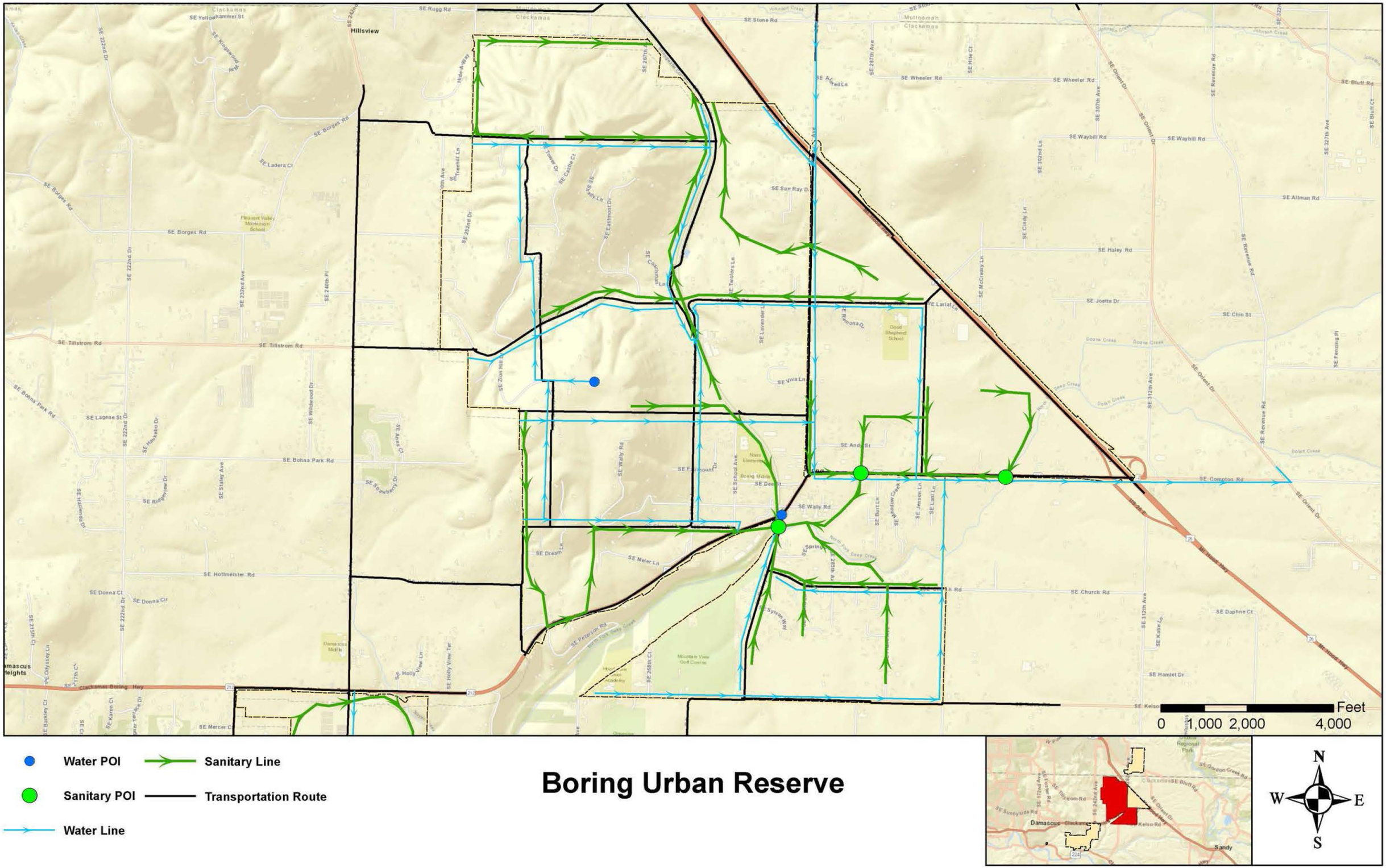
Stormwater

No storm water facilities have been identified for which there would be impacts.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	41,000	19,500		10,400
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$6,970,000	$3,705,000	$0	$1,820,000
			Subtotal Cost	**$12,495,000**
Proposed Pump Stations				$1,350,000
Proposed Borings for Creek Crossings				$355,250
			Total Sewer System Cost Estimate	**$14,200,250**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		63,000	12,100	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$17,640,000	$5,082,000	
			Subtotal Cost	**$22,722,000**
Storage and Pumping Costs				$12,320,000
			Total Water System Cost Estimate	**$35,042,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		70,000	72,400	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$14,000,000	$16,290,000	
			Subtotal Cost	**$30,290,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$12,600,000	$17,376,000	
			Subtotal Cost	**$29,976,000**
			Total Storm Drain Cost Estimate	**$60,266,000**



Boring Urban Reserve

BORLAND URBAN RESERVE AREA (4C)

BORLAND URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

This one of several urban reserve areas (URAs) where it is not clear to which city it might eventually be annexed. Water could most directly be supplied by the City of Tualatin. The City of Tualatin system appears to have enough capacity to meet UGB needs assuming completion of the long-term improvements shown in its Water Master Plan.

Sewer

Based on the existing topography throughout this URA, it appears that the western portion of the site would, following current county boundaries would be served via a connection to the Clean Water Services (CWS) sewer system. The eastern portion of the site would be served by the City of West Linn and the Tri-City Service District.

CWS has indicated that there is capacity to meet current UGB needs. CWS only serves land within Washington County.

West Linn indicated that improvements are currently happening at the treatment plant, which will then provide sufficient capacity to meet current UGB needs.

Storm Water

There is no indication of any stormwater issues related to the development of this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The estimated average daily demand generated by this URA to serve 4,236 dwelling is approximately 1.5 MG.

The City of Tualatin Water Master Plan indicates that there is adequate capacity to serve existing development. Water storage improvements are needed to serve future development within the existing UGB. Once improvements noted in the Master Plan are complete, it is unknown what additional capacity would be available to serve this URA.

Sewer

Wastewater treatment for this URA for 4,236 dwelling units would be divided among two service providers. The estimated sewer flow generated from this URA is approximately 6.9 cfs (4.5 million gallons per day (MGD)).

The western portion of the site would be routed into the CWS system. The nearest connection point is an existing 8-inch line in SW Sequoia Drive, which utilized the Sequoia Ridge Pump Station. Downstream of the pump station 8-inch gravity pipes convey flows to a City of Tualatin 18-inch trunk line, which connects to a large diameter CWS interceptor to the Durham Wastewater Treatment Plant (WWTP).

CWS has indicated that the Durham WWTP has capacity; however, significant additional flows may require plant improvements. In addition, the capacity of the existing pump stations and sewer lines are unknown.

The eastern portion of the URA would be routed to the City of West Linn and the Tri-City Service District Treatment Plant. The sewer would connect to an existing gravity line in Willamette Falls Drive. With the completion of the current treatment plant improvement project, some capacity may be available. In addition, the capacity of the existing pump stations and sewer lines are unknown.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The potable water could be provided from either Tualatin or West Linn. Service from Tualatin could be somewhat more efficient as it would not require crossing the river. As such, further impacts to the water system are primarily financial. New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time; however the City's Master Plan appears up to date.

Sewer

Load placed on wastewater services (digesters) in the WES system would contribute to a need for upgrades to accommodate the associated growth. The plant has the room required for expansion but no analysis of the flows and resultant upgrades has been performed to date. These upgrades and financial impacts are beyond the scope of this report.

The significant impacts to the wastewater system are primarily from the financial contributions required to build the mains within the URA. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are to be provided by the developers.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

A portion of the URA is located north of I-205. A sewer crossing under I-205 will likely be needed in order to convey flows to the existing Willamette Falls Drive sewer.

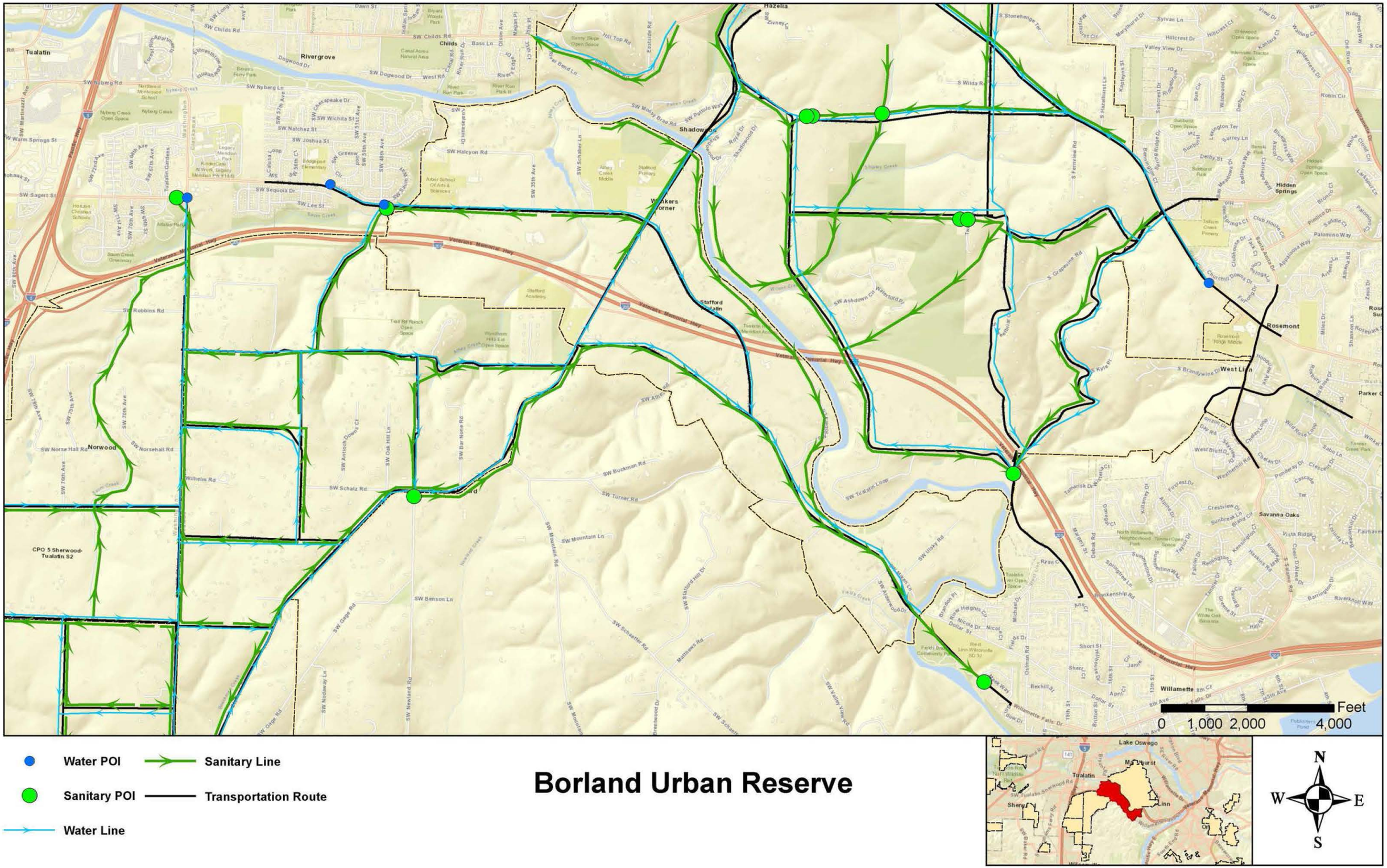
Stormwater

In this part of the region steep slopes tend to limit scour effect. Accordingly the larger issue is treating to remove pollutants. Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length			22,100	
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$0	$0	$5,525,000	$0
			Subtotal Cost	**$5,525,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				$5,728,280
			Total Sewer System Cost Estimate	**$11,253,280**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		13,000	16,200	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$3,640,000	$6,804,000	
			Subtotal Cost	**$10,444,000**
Storage and Pumping Costs				$ 5,145,000
			Total Water System Cost Estimate	**$15,589,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		4,700	40,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$940,000	$9,180,000	
			Subtotal Cost	**$10,120,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$846,000	$9,792,000	
			Subtotal Cost	**$10,638,000**
			Total Storm Drain Cost Estimate	**$20,758,000**



Borland Urban Reserve

BROOKWOOD PARKWAY URBAN RESERVE AREA(8B)

BROOKWOOD PARKWAY URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Potable water is supplied to the UGB by the Hillsboro Water District.

From the available water supply, it appears that capacity needs inside the UGB are cared for.

Sewer

Inside the UGB, the City of Hillsboro operates a local sanitary sewer utility that feeds into the regional sanitary sewer system operated by Clean Water Services (CWS). Therefore, CWS is the ultimate Wastewater System Provider.

CWS provides wastewater treatment through the Rock Creek Wastewater Treatment Plant (WWTP).

According to CWS there is adequate capacity to meet current UGB needs.

Stormwater

There is no indication of issues with existing stormwater that would impact this urban reserve area (URA).

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 242 dwelling units appears to be adequate; or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Roy Rogers West URA is approximately 0.1 MG.

Sewer

The estimated peak flows added to the system with the development of this URA is approximately 0.4 cfs (0.2 million gallons per day (MGD)).

There is a sewer connection available in Brookwood Parkway; however, based on existing topography, a pump station may be needed to use the connection.

As another alternative, the City of Hillsboro also noted that they are requiring an adjacent development to construct a sewer line in an easement through their property to serve the Brookwood URA. This line would connect to an existing 24-inch sewer in Huffman Road. Depending on the type of industrial development that happens in the area, the 24-inch sewer line could be sufficient, or it may not have enough available capacity and therefore require upsizing.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

Connections to existing water lines are available in Brookwood Parkway and Starr Boulevard. The City noted that they are considering a future storage tank north of Hwy 26 that would serve the adjacent Jackson Employment area as well as the Brookwood URA. A waterline would need to be bored under Hwy 26.

New water mains and laterals within the URA will be developer funded.

The amount of any upsizing from the serving utility that would be needed is unknown at this time.

Sewer

This URA is projected to have only 242 dwelling units, therefore future impacts are relatively small.

New wastewater mains and laterals will be provided by the developer.

The amount of any upsizing from the serving utility that would be needed, while unlikely, is not known at this time.

Storm Water

Stormwater will be conveyed, treated, and disposed of on-site, therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length				
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$0	$0	$0	$0
			Subtotal Cost	**$0**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$0**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		2,700		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$756,000	$0	
			Subtotal Cost	**$756,000**
Storage and Pumping Costs				$315,000
			Total Water System Cost Estimate	**$1,071,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length			2,200	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$0	$495,000	
			Subtotal Cost	**$495,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$0	$528,000	
			Subtotal Cost	**$528,000**
			Total Storm Drain Cost Estimate	**$1,023,000**

Water POI

Sanitary POI

Water Line

Sanitary Line

Transportation Route

Brookwood Parkway Urban Reserve

COOPER MOUNTAIN URBAN RESERVE AREA (6B)

COOPER MOUNTAIN URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

The City of Beaverton recently signed an agreement with Tualatin Valley Water District (TVWD) stating that all of the area within the Cooper Mountain area will be served by the City of Beaverton.

According to the City of Beaverton, they have ample water rights to supply the areas within the UGB as well as the Cooper Mountain urban reserve area (URA). In addition, the treatment plants have capacity for both current and future use.

The City plans to construct a new storage tank within the next three years. The facilities will provide storage for areas within the existing UGB. However, there will be excess capacity that will provide storage for the Cooper Mountain URA. In addition, there are plans to construct a new pump station to feed the storage tank.

The City has indicated that their current transmission and distribution networks are adequately sized for the Cooper Mountain area.

Sewer

The City of Beaverton will be responsible for providing sanitary sewer infrastructure in the Community Plan area through an inter-governmental agreement (IGA) with Clean Water Services, (CWS). The portion of the URA east of SW 175th Ave, and the northeast corner, will flow to the Summer Creek Trunkline. The line has sufficient capacity for existing flows. The portion of the URA east of SW 175th Avenue will flow to the existing River Terrace Pump Station.

CWS provides wastewater treatment through the River Terrace PS, then on to the Durham Wastewater Treatment Plant (WWTP). CWS is currently working on a study of the Upper Tualatin Interceptor. Any deficiencies identified are expected to be upsized by 2022.

It appears that there is capacity to meet UGB needs.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 4,116 dwelling units appears to be adequate, or they will be able to generate the supply as this area comes online.

Sewer

Capacity appears to be available in the Clean Water Services, (CWS) Durham WWTP. This Urban Reserve (6B) is projected to have 4,116 dwelling units may require small upgrades to the WWTP. The estimated flows added to the system with the development of this URA is approximately 6.5 cfs.

CWS states that they are currently in the midst of significant capital improvements that are being made to serve the Cooper Mountain and River Terrace areas.

The City is currently updating their Sanitary Sewer Masterplan. The master plan will include the Cooper Mountain (6B) URA. The City will look at the Summer Creek Trunkline in particular. Smaller 8-inch lines may need upsizing. If the study finds upsizing is required, the City will add those improvements to their capital improvement plan for completion prior to the annexation of the URA. The City also noted that lines recently constructed in the Cooper Mountain area are over-sized and should have capacity for the Cooper Mountain URA flows.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, storm water and transportation facilities that serve nearby areas already inside the UGB.

Water

Expansion is planned for this UR area, from water pumps and reservoirs, to trunk lines and mains. These water mains and reservoirs must be provided to achieve the full potential development. Therefore, the majority of impacts are local in nature, occurring as facilities are developed. . The laterals off the mains are provided by the Developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

Sewer

Wastewater services are provided by the Durham WWTP. Flows from the Cooper Mountain (6B) URA will require a new pump station at the low point on Tile Flat Road. SS flows will be pumped by the Tile Flat PS to the east, where the flows can flow by gravity to the existing River Terrace Pump Station and onto CWS trunk lines.

The Durham WWTP may require upgrades at some time as this and other URAs are moved into the UGB. The upgrades and financial impacts are beyond the scope of this narrative.

The majority of impacts are local in nature, occurring as facilities are developed. New wastewater mains must be provided to allow development of this Urban Reserve area. The laterals off the mains are provided by the Developer.

According to the City of Beaverton, any needed upsizing of existing lines (City of Beaverton or CWS) will be complete prior to the potential annexation of this URA.

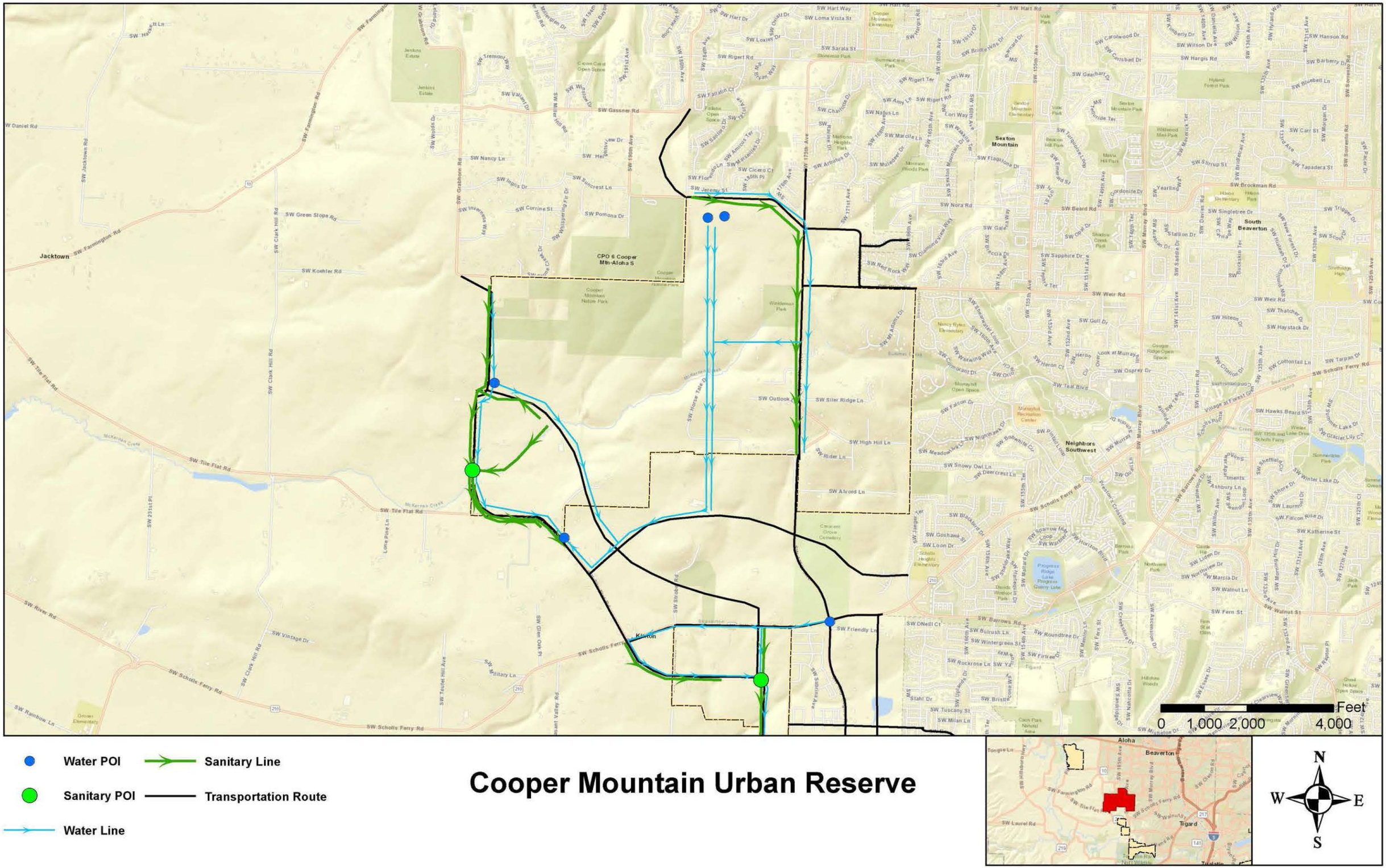
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	10,900	7,900		3,100
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$1,853,000	$1,501,000	$0	$542,500
			Subtotal Cost	**$3,896,500**
Proposed Pump Stations				$600,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$4,496,500**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		22,300	17,500	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$6,244,000	$7,350,000	
			Subtotal Cost	**$13,594,000**
Storage and Pumping Costs				$ 5,005,000
			Total Water System Cost Estimate	**$18,599,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		21,200	36,300	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$4,240,000	$8,167,500	
			Subtotal Cost	**$12,407,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$3,816,000	$8,712,000	
			Subtotal Cost	**$12,528,000**
			Total Storm Drain Cost Estimate	**$ 24,935,500**



Cooper Mountain Urban Reserve

DAMASCUS URBAN RESERVE AREA (2A)

DAMASCUS URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

The Sunrise Water Authority currently serves the area from east of I-205 and north of the Clackamas River, including Happy Valley. They will also serve Pleasant Valley and Carver when they are annexed into Happy Valley. The Sunrise Water Authority has recently completed a 20-year Capital Improvement Plan (CIP) that includes the necessary investments to serve the district's service area for the current planning horizon.

Sunrise Water Authority currently purchases 3 million gallons per day (MGD) of water from the Clackamas River Water District, but they have the option to purchase up to 10 MGD. In addition, the district also has two wells located in Damascus that can produce approximately 3.5 MGD. The estimated peak day demand for the current 20 year planning horizon in their Master Plan is 20 MGD. The water authority also has an intertie connecting to South Fork Water Board, which they can use 10 MGD during an emergency circumstances.

Water is treated at two treatment plants. The water treatment plant was built in 1964 and will need upgrades in the future. Sunrise Water Authority has not determined the cost or timing of the water treatment plant upgrades.

The agency plans to build 10 to 15 million gallons of additional storage to serve growth expected within the existing UGB. Reservoirs provide proper water pressure for lands under 470 feet. If development occurs above 470 feet elevation, an additional higher elevation reservoir may be required, however, that will not be planned for a number of years. Two large pump stations will fill the reservoirs. One will serve for Pleasant Valley; the other is to move water from the reservoirs at 610 feet elevation to Damascus in the future.

Sunrise Water Authority is using System Development Charges (SDCs) to pay for pumps, tanks (reservoir), and transmission line improvements. For water lines, they use an SDC credit method with developers for facilities they build where the capacity exceeds their individual needs. Developers are putting in the pipes currently. The District may participate with developers to get oversized pipes where necessary.

Sewer

The Damascus urban reserve area (URA) is not connected or adjacent to any municipal sewer system. The Damascus area, within the existing UGB is severed, by individual septic systems.

Stormwater

No public stormwater facilities exist that are related to the urban reserve. This item is not applicable for this area.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

As noted above, current capacity covers the growth within the UGB that is expected. There are no plans to serve the URAs at this time. However, much of the land in the URA is inside of their boundary. And, it is currently served at rural densities.

The district noted that Metro's data doesn't show much growth east in Damascus. Cities may have desires on where they want to develop, or development could occur under County jurisdiction. However, the district does not have any significant growth plans for Damascus. If growth begins to occur they will simply adjust as necessary.

The Sunrise Water Authority is currently using about 3.5 MGD in winter and 12 MGD in the summer. Interestingly the peak doesn't seem to increase with growth because the large yards and pastures that are currently being irrigated are converted to housing which has a lower demand per acre. If the Damascus area and the URA were to see urban levels of growth it is likely that the system will need expansions sooner than currently anticipated.

The existing lines in Damascus and the URA area are currently sized for rural uses. They would need to be rebuilt to accommodate urban development. It is logical to assume that Damascus will get built first and have the network in place for the URA.

Sewer

Much planning and discussion as to who would serve the Damascus area and by extension the URA has not resulted in solid conclusions. Clackamas County's Water and Environmental Services is the logical provider due to topography and location within the County. However, they are prohibited from adding significant new flows to the Clackamas River basin. Some portions of Damascus and Boring could possibly be served from the City of Gresham, but doing so would require expensive pumping infrastructure and likely expansion of Gresham's facilities. In short, serving the URA will be difficult.

Stormwater

Stormwater runoff would not utilize existing facilities. Stormwater conveyance, water quality, and detention for roadways would be developed during construction and used to handle the public sector runoff. Private property runoff would need to be treated onsite.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

Plenty of water rights are available to serve expansion areas. If the URA is to be developed the items identified in the Water Master Plan would simply need to be constructed earlier than expected.

Additionally the Clackamas River Water treatment plant will need to be expanded at some point. Expansion and development in the Damascus area could require the rebuild to be made sooner. Due to the unknown nature of the treatment plant upgrades, costs have not been included in the estimate.

Sewer

As mentioned above, none of the local sewer providers have plans to serve the URA. If services come from WES it is likely that upsizing would be needed and new trunk lines would be developed in Damascus. These would logically be sized to serve the URA. On its own, growth in the URA would not likely have negative impacts on existing systems. The larger issue however, is that there are no facilities leading to the site; they would need to be built before the URA could develop. The cost estimates do not include the extension of a trunk line to Damascus or improvements to existing infrastructure. It is assumed that these costs would be part of the development of Damascus, and that those improvements would also serve the URA.

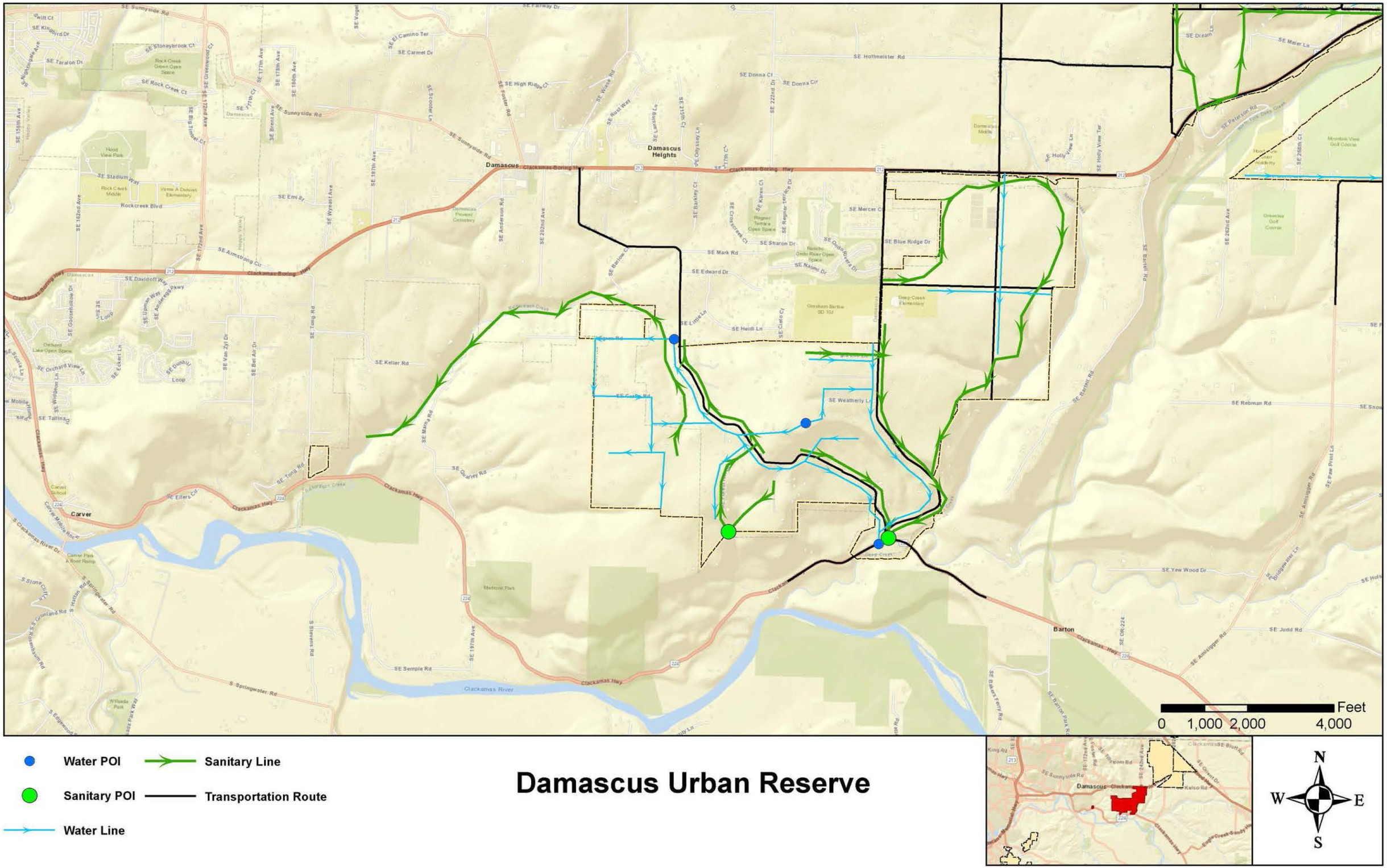
Stormwater

There is no public stormwater system that will be impacted significantly by growth in the reserve area.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length				
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$0	$0	$0	$0
			Subtotal Cost	**$0**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$0**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		2,700		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$756,000	$0	
			Subtotal Cost	**$756,000**
Storage and Pumping Costs				$7,770,000
			Total Water System Cost Estimate	**$8,526,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length			2,200	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$0	$495,000	
			Subtotal Cost	**$495,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$0	$528,000	
			Subtotal Cost	**$528,000**
			Total Storm Drain Cost Estimate	**$1,023,000**



Damascus Urban Reserve

DAVID HILL URBAN RESERVE AREA (7A)

DAVID HILL URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The City of Forest Grove is currently in the process of updating their Water Master Plan. According to the City, if current growth trends continue, they will have enough water supply through the year 2050. If growth trends exceeded expectations, the City would have options to purchase additional water or to become a partner in the Willamette Water Supply.

The City has its own treatment plant that can treat 3.7 million gallons per day (MGD). They can supplement with up to 10 MGD of water from the Joint Water Commission. Treatment capacity is sufficient for areas currently within the UGB.

City of Forest Grove water storage capacity is sufficient based on current growth trends. Anticipated industrial growth within the City could create a storage deficit within the next 10 years. If the industrial growth occurs, the city plans to utilize system development charge (SDC) funds to construct additional storage.

A currently undeveloped area of David Hill (located within the existing UGB) is located at an elevation higher than what they can serve with existing storage. New storage and associated pumps will be needed to serve this area of the UGB. Once constructed, this storage could also be utilized by the David Hill urban reserve area (URA) if sized appropriately.

The City indicated that most piping within the current UGB is sufficient; however, some piping within the David Hill area may need upsizing. If needed, these improvements would likely be completed by developers, as development occurs.

Sewer

The City of Forest Grove operates a local sanitary sewer utility that feeds into the regional sanitary sewer system operated by Clean Water Services (CWS). Therefore, CWS is the ultimate Wastewater System Provider.

CWS provides wastewater treatment through the Rock Creek WWTP. CWS has indicated that the Rock Creek WWTP has sufficient capacity. The City of Forest Grove has a current project to replace old pipes within their system and reduce infiltration and inflow.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 1,435 dwelling units appears to be adequate; or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the David Hill URA is approximately 0.5 MG.

Sewer

The estimated peak flow added to the system with the development of this URA is approximately 2.0 cfs (1.3 MGD).

The southern portion of the site would connect to an existing City of Forest Grove gravity sewer line in NW Gales Creek Road. The northern portion of the site would connect to an existing City of Forest Grove gravity sewer line in NW Thatcher Road. Existing lines vary from 12-inch to 21-inch.

City of Forest Grove lines connect to a CWS interceptor near Hwy 47 and Sunset Drive and waste is conveyed to the Hillsboro and/or Rock Creek WWTP.

CWS indicated that the Hillsboro WWTP is undergoing improvements; however, there are no plans for future expansion. Flows that exceed the capacity of the Hillsboro WWTP are sent to the Rock Creek WWTP. CWS indicated that the Rock Creek WWTP has available capacity.

Available capacity within the City of Forest Grove and CWS sewer lines is unknown at this time.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

New reservoirs, water pumps, and water mains to move water to the reservoirs and the system will be needed to achieve the full potential development. The new water mains will be required. The laterals off the mains are provided by the Developer.

For the purpose of this report and cost estimate, it is assumed that a water line will be constructed in NW Thatcher Road along the boundary of the existing undeveloped David Hill area, in order to connect to existing facilities. If the David Hill area (inside the UGB) is developed prior to the David Hill URA, then the water line would likely be constructed with the UGB development.

The amount of any upsizing from the serving utility that would be needed is unknown at this time.

Sewer

This URA is projected to have 1,435 dwelling units, therefore may require small upgrades to the WWTP. The upgrades and financial impacts are beyond the scope of this narrative.

In order to connect to existing facilities, sewer lines will need to be constructed through the undeveloped portion of David Hill (inside the UGB). If the David Hill area is developed prior to the David Hill URA, those lines would be constructed with the UGB development.

Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

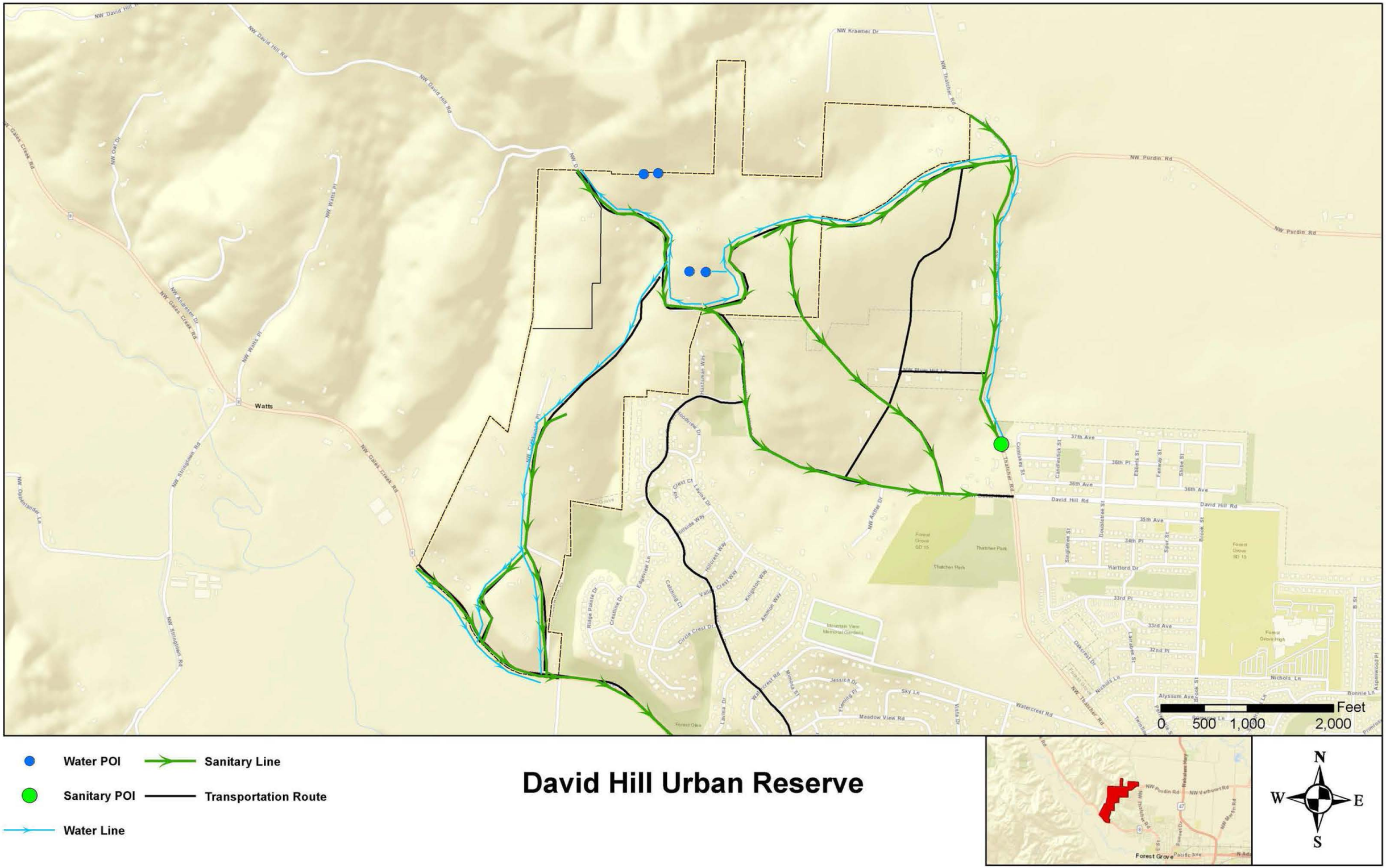
Storm Water

Stormwater will be conveyed, treated, and disposed of on-site, therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	21,200	7,100		
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$3,604,000	$1,349,000	$0	$0
			Subtotal Cost	**$4,953,000**
Proposed Pump Stations				$250,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$5,203,000**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		8,900	10,600	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$2,492,000	$4,452,000	
			Subtotal Cost	**$6,944,000**
Storage and Pumping Costs				$1,750,000
			Total Water System Cost Estimate	**$8,694,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		33,600	5,500	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$6,720,000	$1,237,500	
			Subtotal Cost	**$7,957,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$6,048,000	$1,320,000	
			Subtotal Cost	**$7,368,000**
			Total Storm Drain Cost Estimate	**$15,325,500**



David Hill Urban Reserve

ELLIGSEN NORTH URBAN RESERVE AREA (4G)

ELLIGSEN NORTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water comes from the west side of the City of Wilsonville. The City owns and maintains the Willamette River Water Treatment Plant (WRWTP). The plant is capable of processing 15 million gallons per day (MGD). A planned improvement will bring the treatment plant capacity to 20 MGD in order to serve the existing UGB through year 2036. In 2035, an additional 10 MGD expansion will be needed to provide service for long term growth through year 2050.

Current storage capacity is at 11 MG. The City has budgeted a project to provide additional storage to serve the existing UGB.

At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Sewer

The City of Wilsonville is served by a modern plant, located at 9275 Southwest Tauchman Road. The plant was rebuilt and upgraded in 2014 to include modern wastewater treatment technology, and a new odor control system. This increased capacity from 2.5 MGD to 4.0 MGD to accommodate continued growth.

Stormwater

No current issues were identified within the City that would impact the development of the urban reserve area (URA). For stormwater management, the downtown area uses a regional facility. New development would be encouraged to use Low Impact Development Approaches (LIDA) facilities to treat stormwater on-site.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City noted that they have ample water rights for the long term, so water supply should not be an issue. The additional 10 MG expansion of the treatment plant in 2035 should provide for all of the URA areas adjacent to Wilsonville.

Currently, existing storage tanks will not have capacity to serve development outside of the existing UGB.

The City did not indicate any deficiencies with water transmission lines.

Sewer

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area will use some capacity, but will not likely trigger any treatment plant upgrades. However, future industrial development anticipated in the Basalt and Coffee Creek areas could require capacity upgrades. Depending on actual development rates, the City is planning to expand the treatment plant in 2030.

The City did not provide information on the capacity of the existing truck line proposed to serve this URA, therefore, it is unknown how much additional capacity is available.

Storm Water

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City feels confident that it will have water capacity and storage to serve the URAs that lie beyond the city limits. Numerous connection points exist at the edge of the URA that is assumed to be of adequate size. Transmission lines within the URA are expected to be built as development occurs.

Sewer

Based on conceptual level sewer sizing analysis, approximately 4.4 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows will utilize the existing gravity trunk line ranging in size from 10-inch (at the upstream connection at Elligsen Road) to 30-inch (at the treatment plant).

The capacity of the existing line is not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

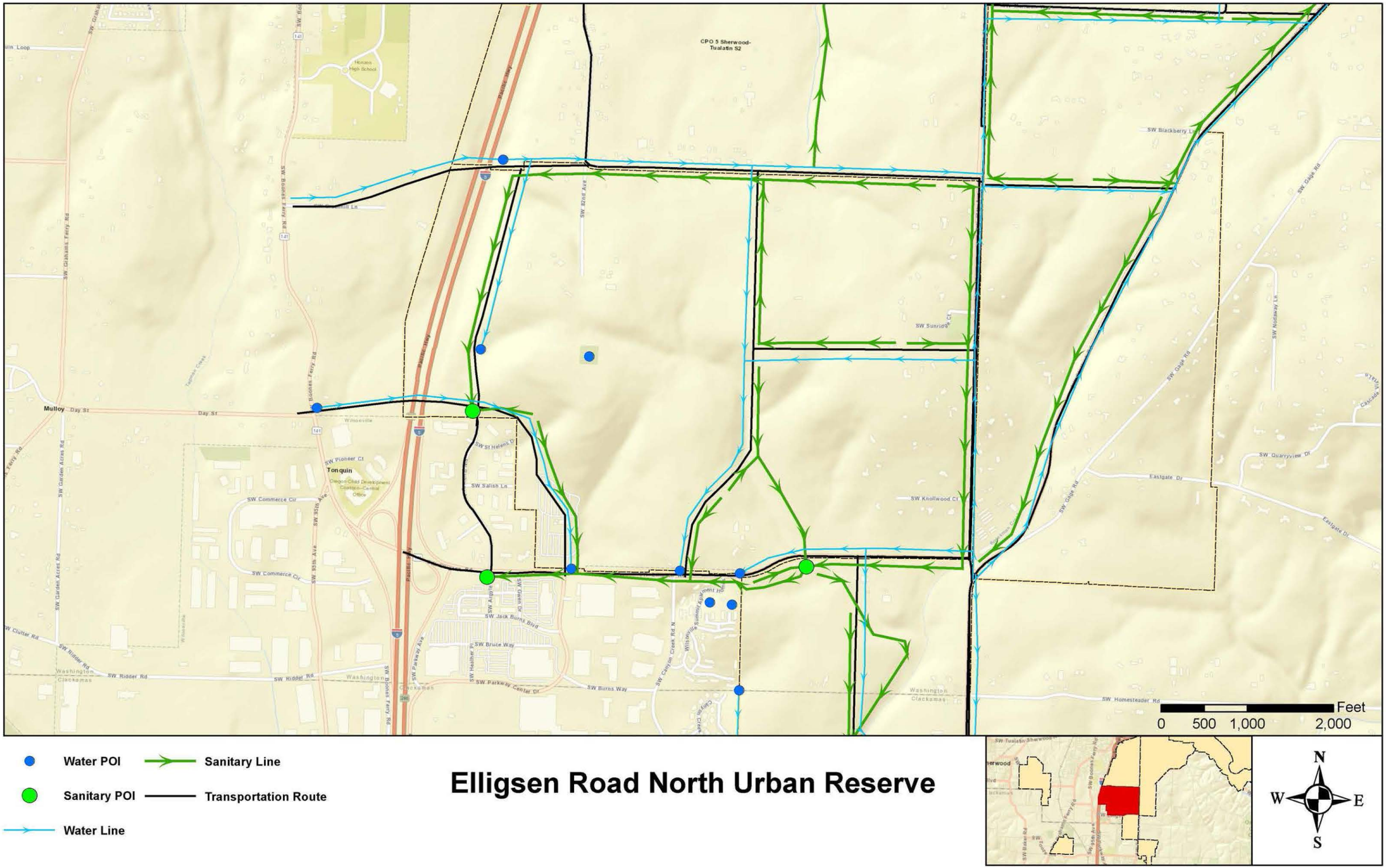
Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA, therefore, improvements to existing stormwater facilities are not anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	5,600	16,600	6,600	1,000
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$952,000	$3,154,000	$1,254,000	$175,000
			Subtotal Cost	**$5,535,000**
Proposed Pump Stations				$500,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$6,035,000**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		18,200	13,700	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$5,096,000	$5,754,000	
			Subtotal Cost	**$10,850,000**
Storage and Pumping Costs				$4,270,000
			Total Water System Cost Estimate	**$15,120,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		18,700	17,700	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$3,740,000	$3,982,500	
			Subtotal Cost	**$7,722,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$3,366,000	$4,248,000	
			Subtotal Cost	**$7,614,000**
			Total Storm Drain Cost Estimate	**$15,336,500**



Elligsen Road North Urban Reserve

ELLIGSEN SOUTH URBAN RESERVE AREA (4F)

ELLIGSEN SOUTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water comes from the west side of the City of Wilsonville. The City owns and maintains the Willamette River Water Treatment Plant. The plant is capable of processing 15 million gallons per day (MGD).

Current storage capacity is at 11 MG. The City has budgeted a project to provide additional storage to serve proposed development within the existing UGB.

At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Sewer

The City of Wilsonville is served by a modern plant, located at 9275 Southwest Tauchman Road. The plant was rebuilt and upgraded in 2014 to include modern wastewater treatment technology, and a new odor control system. This increase capacity from 2.5 MGD to 4.0 MGD to accommodate continued grown.

The City has current projects planned for the Memorial Park Lift Station over the next three years. In addition, the City has a 20-year program in place to replace aging concrete pipe.

Stormwater

No current issues were identified within the City that would impact the development of the Urban Reserve Area (URA). For stormwater management, the downtown area uses a regional facility. New development would be encouraged to use low impact development approaches (LIDA) facilities to treat stormwater on-site.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City noted that they have ample water rights for the long-term, so water supply should not be an issue. The additional 10 MG expansion of the treatment plant in 2035 should provide for the URA. Currently, existing storage tanks will not have capacity to serve development outside of the existing UGB.

Sewer

Frog Pond West is currently within the UGB. Trunklines are currently utilizing approximately 50% of their capacities. The development of Frog Pond West will use some of that capacity. Any additional capacity could be available for use by the Elligsen Road URA.

Existing pump stations are currently being upgraded for existing and currently planned uses. It is unknown at this time if additional pump station capacity will be available for development within the URA.

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area (existing UGB) will use some capacity, but will not likely trigger any treatment plant upgrades. However, future industrial development anticipated in the Basalt and Coffee Creek areas could require capacity upgrades. Depending on actual development rates, the City is planning to expand the treatment plant in 2030. At this time, it is unknown if the treatment plant will have additional capacities to serve the URA.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA area.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City feels confident that it will have water capacity and storage to serve the URAs that lie beyond the city limits. Numerous connection points exist at the edge of the URA that are assumed to be of adequate size. Transmission lines within the URA are expected to be built as development occurs.

Sewer

Based on conceptual level sewer sizing analysis, approximately 1.9 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows from the Elligsen South URA will be divided into two basins. The western basin could connect to an existing sewer 12-inch sewer in Thornton Drive. These flows will pass through the Canyon Creek Lift Station before continuing to the wastewater treatment plant in existing 12-inch to 18-inch gravity pipes. The eastern basin will connect to the Boekman interceptor (existing sizes 12-inch to 18-inch) and will pass through the Memorial Park Lift Station before reaching the wastewater treatment plant.

The capacity of the existing sewer lines and pump stations are not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

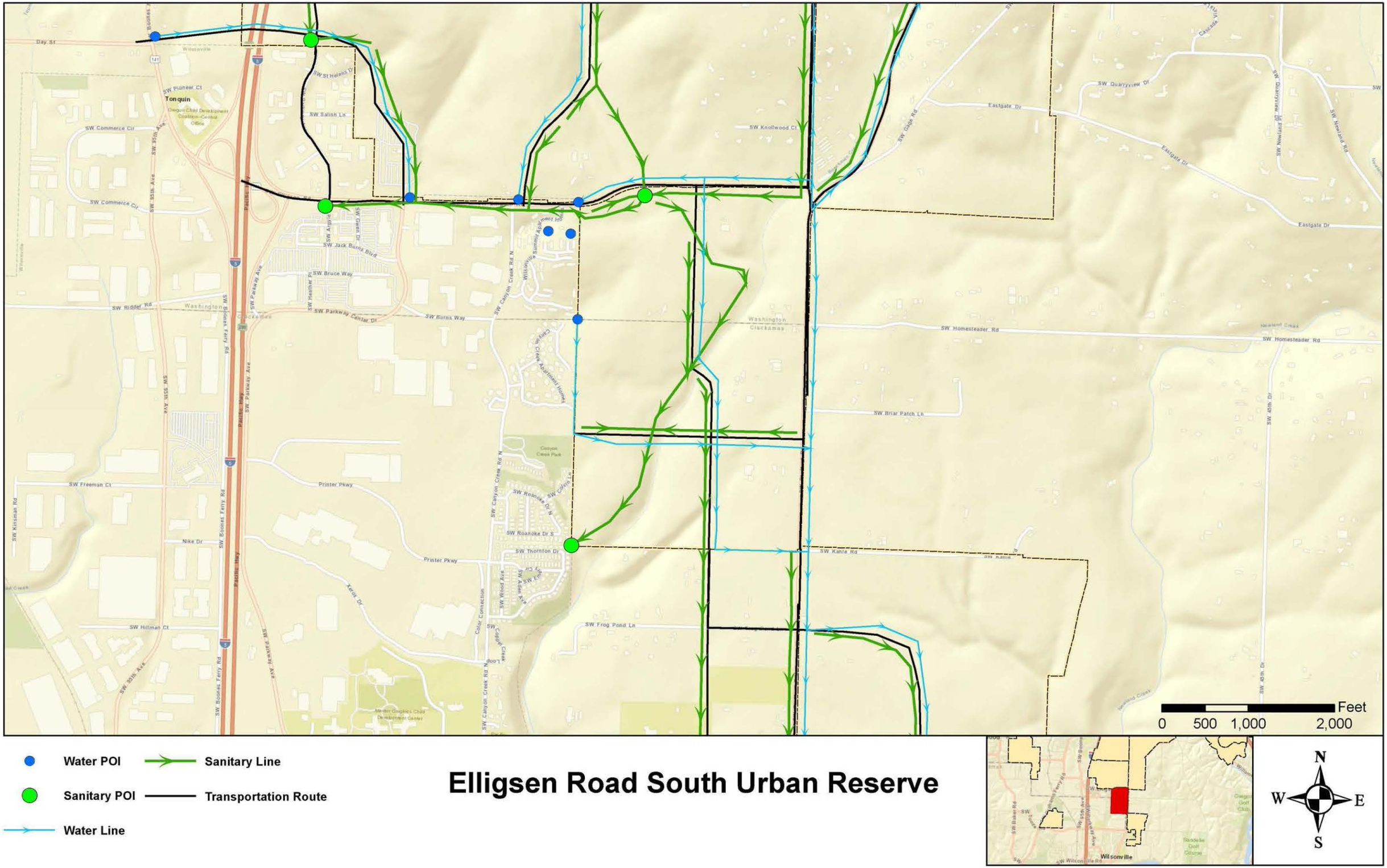
Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA area, and therefore, improvements to the existing stormwater facilities are not anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	4,100	10,100		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$697,000	$1,919,000	$0	$0
			Subtotal Cost	**$2,616,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,616,000**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length			1,400	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$0	$588,000	
			Subtotal Cost	**$588,000**
Storage and Pumping Costs				$1,995,000
			Total Water System Cost Estimate	**$2,583,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		9,100	12,700	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$1,820,000	$2,857,500	
			Subtotal Cost	**$4,677,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$1,638,000	$3,048,000	
			Subtotal Cost	**$4,686,000**
			Total Storm Drain Cost Estimate	**$9,363,500**



Elligsen Road South Urban Reserve

GRAHAMS FERRY URBAN RESERVE AREA (5G)

GRAHAMS FERRY URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water comes from the west side of the City of Wilsonville. The City owns and maintains the Willamette River Water Treatment Plant. The plant is capable of processing 15 million gallons per day (MGD).

Current storage capacity is at 11 MG. The City has budgeted for a project to provide additional storage to serve proposed development within the existing UGB.

At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Sewer

The City of Wilsonville is served by a modern plant, located at 9275 Southwest Tauchman Road. The plant was rebuilt and upgraded in 2014 to include modern wastewater treatment technology, and a new odor control system. This increase capacity from 2.5 MGD to 4.0 MGD to accommodate continued grown.

Stormwater

No current issues were identified within the City that would impact the development of the urban reserve area (URA). For stormwater management, the downtown area uses a regional facility. New development would be encouraged to use LIDA facilities to treat stormwater on-site.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City noted that they have ample water rights for the long-term, so water supply should not be an issue. The additional 10 MG expansion of the treatment plant in 2035 should provide for the URA's. Currently, existing storage tanks will not have capacity to serve development outside of the existing UGB.

Sewer

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area (existing UGB) will use some capacity, but will not likely trigger any treatment plant upgrades. However, future industrial development anticipated in the Basalt and Coffee Creek areas could require capacity upgrades. Depending on actual development rates, the City is planning to expand the treatment plant in 2030. At this time, it is unknown if the treatment plant will have additional capacities to serve the URA.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA area.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City feels confident that it will have water capacity and storage to serve the URAs that lie beyond the city limits. Numerous connection points exist at the edge of the URA that are assumed to be of adequate size. Transmission lines within the URA are expected to be built as development occurs.

Cost estimates specifically for this URA cost estimates are conceptual in nature.

Sewer

Based on conceptual level sewer sizing analysis, approximately 1.2 cfs will be added to the existing system. Conceptual sewer layouts indicate that additional flows will utilize the existing gravity trunk line ranging in size from 15-inch (at the upstream connection at Coffee Lake Drive) to 30-inch (at the treatment plant).

The capacity of the existing line is not available at this time, and therefore, the extent of required improvements to the existing trunk line and the associated costs are unknown.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA area, and therefore, improvements to the existing stormwater facilities are not anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	10,500			
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$1,785,000	$0	$0	$0
			Subtotal Cost	**$1,785,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$1,785,000**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		3,200	3,500	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$896,000	$1,470,000	
			Subtotal Cost	**$2,366,000**
Storage and Pumping Costs				$980,000
			Total Water System Cost Estimate	**$3,346,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		3,800	7,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$760,000	$1,755,000	
			Subtotal Cost	**$2,515,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$684,000	$1,872,000	
			Subtotal Cost	**$2,556,000**
			Total Storm Drain Cost Estimate	**$5,071,000**

Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route
Grahams Ferry Urban Reserve
Feet
0
500
1,000
2,000
N
W
E
S
Storwest
Far West
SW Clutter Rd
SW Ridder Rd
SW Wheatland Dr
SW Grahams Ferry Rd
SW Kaine Ter
SW Tooze Rd
SW Baker Rd
SW Malloy Way
SW Westfall Rd
SW Freeman Ct
SW Kinsman Rd
SW Nike Ave
SW Boones Ferry Rd
SW Parkway Ave
SW Parkway Center Dr
SW Bruce Way
Printer Pkwy
Nike Dr
SW Hillman Ct
SW 95th Ave
SW Boeckman Rd
SW Boberg Rd
SW Berlin Ave
SW Moffitt Dr
SW Barber St
SW Mont Blanc St
SW Denmark St
Davos Ln
Wilsonville

GRESHAM EAST URBAN RESERVE AREA (1C)

GRESHAM URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water comes from the City of Portland – Gresham is a wholesaler and through a partnership with Rockwood PUD is using a joint facility. Recent master plan analysis has determined that the city will need additional supply in the future. It has options as to the source. It may negotiate its contract with the City of Portland to purchase more water. The current agreement is for 7.5 million gallons per day (MGD) and can be increased. Portland is currently upgrading its treatment plant. Depending on the costs of the upgrades, Gresham may choose to develop more wells.

Additional treatment facilities are currently being considered based on source supply decisions regarding either purchase from Portland or identifying ground water sources. Water storage will also need to be constructed as demand increases. Additional pump capacity will need to be constructed. This need is identified in the Water System Master Plan.

The pipe network conveying water is adequately sized and will be extended with development

Sewer

The City of Gresham is served by a modern plant, located at 20015 NE Sandy Blvd. It is a state of the art, NET-Zero plant, using waste generated gases and solar to power Wastewater Treatment Plant (WWTP) functions. The City has replaced all pipes older than 1950's era. Accordingly the pipe network is in good condition. In places where pump stations are utilized they appropriately sized and are able handle the Pleasant Valley area. The City also has capacity for the Springwater area which is inside the UGB but not yet annexed to the Gresham.

Stormwater

There are no significant storm water issues. The City's Master Plan contains a capital improvement plan that they are using to make ongoing improvements.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Lusted Water District currently covers most of the urban reserve area (URA) currently. However, the district likely doesn't have the capacity to serve the area at urban densities. Accordingly, Gresham is the logical service provider. There is no excess capacity available at this time however. Areas added to the UGB utilizing Gresham Water will require expansion of the existing system in all categories.

Growth outside of the UGB will add to the need to expand or build new facilities. The reserve might be servable by the existing reservoir, but it's likely that new storage would need to be developed. Pumps would also need to be constructed to supply water to the new storage facilities. Distribution lines would need to be constructed at the time of development. This City has no plans for developing these systems currently.

Sewer

Gresham's Master Plan only covers full build out within its UGB. There are no plans for the expansion areas. Trunk and local lines would need to be installed by developers. It is not known if existing pump stations can handle additional load. The plant has not been evaluated for its ability to handle lands beyond the UGB.

Stormwater

No storm water issues have been identified. Commercial/industrial users treat their own runoff. For residential areas private runoff is partially treated on site to the maximum extent reasonable, the rest is treated in public facilities along with right-of-way (ROW) runoff.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

Water source and supply will be developed by expansion of wholesale contract with the City of Portland or the development of alternative sources such as groundwater. Development of alternative sources will require construction of additional treatment facilities.

The proposed reserve area is higher in elevation than the existing service area. Appropriately located additional storage will need to be constructed. Additional pump capacity will need to be constructed to deliver water to the additional storage facilities.

The transmission and distribution network will require expansion and possible upsizing. The amount of upsizing that would be needed is not known at this time.

Sewer

New trunk lines are planned for the Springwater and Pleasant Valley areas as part of private development. Future URAs would follow the same model with the private sector providing the lines. All pump stations are in service and have capacity. Planned treatment plant improvements are not related to growth.

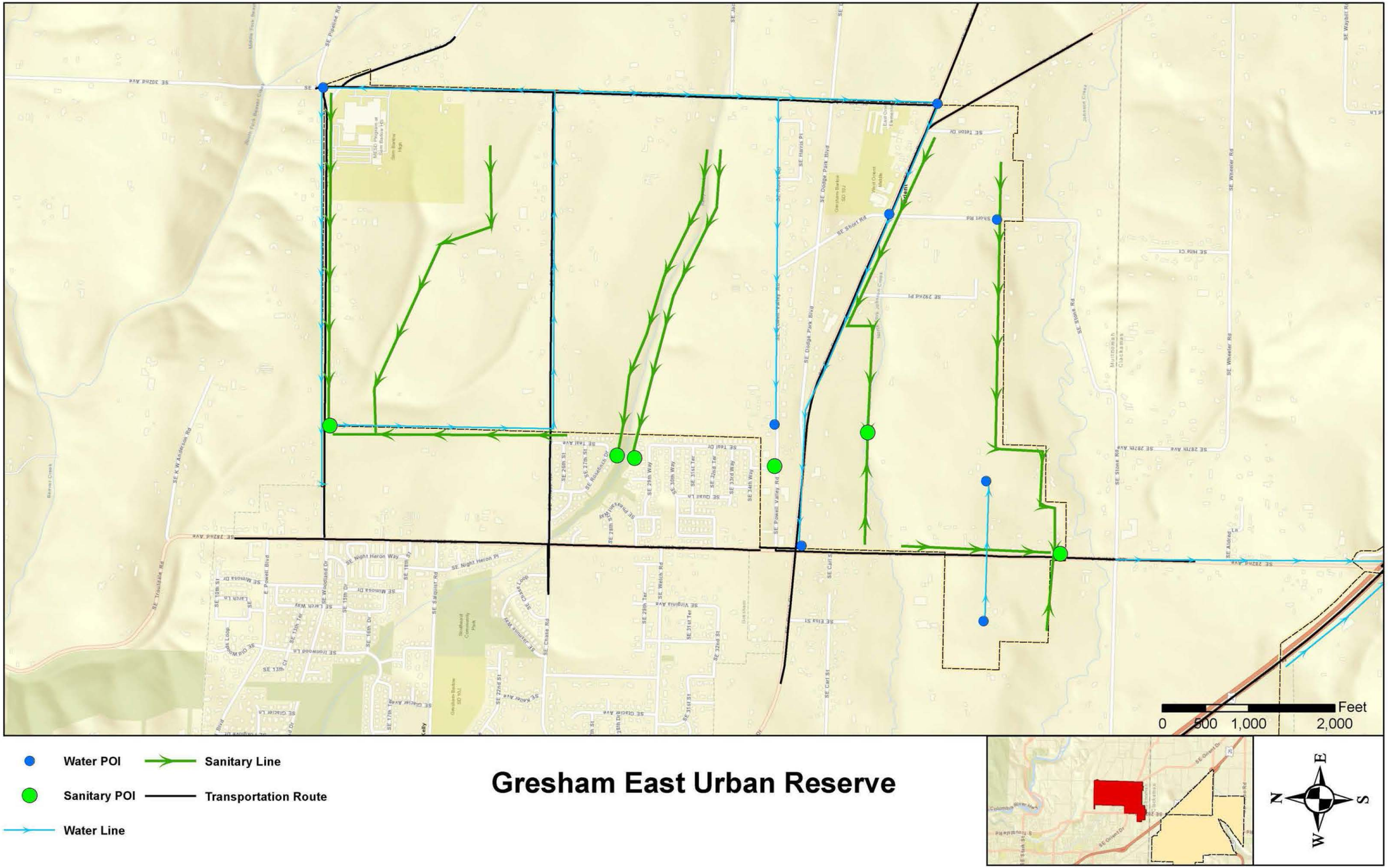
Stormwater

Areas proposed for addition to the UGB may utilize minor culverts, but it is not expected to tie into any other existing conveyance, detention, or treatment facilities.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	19,200	11,800		5,200
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$3,264,000	$2,242,000	$0	$910,000
			Subtotal Cost	**$6,416,000**
Proposed Pump Stations				$7,300,000
Proposed Borings for Creek Crossings				$455,700
			Total Sewer System Cost Estimate	**$14,171,700**

Water Services				
Water Pipe Size		12" and less	18" and greater	
Estimated Pipe Length		23,800	9,300	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$6,664,000	$3,906,000	
			Subtotal Cost	**$10,570,000**
Storage and Pumping Costs				
			Total Water System Cost Estimate	**$10,570,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		16,500	26,300	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$3,300,000	$5,917,500	
			Subtotal Cost	**$9,217,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,970,000	$6,312,000	
			Subtotal Cost	**$9,282,000**
			Total Storm Drain Cost Estimate	**$18,499,500**



Gresham East Urban Reserve

HENRICI URBAN RESERVE AREA (3F)

HENRICI URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). The City of Oregon City serves lands within their corporate boundary. Oregon City has expanded their city to include recent UGB expansions to its southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas.

CRW is planning for the urban reserve areas (URAs) but will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As these reserves areas are brought in, the cities intend to serve these areas. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the sites. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be cautious about investing in improvements for the rural areas that may become urban.

CRW states that it does have adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 million gallons per day (MGD) water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. CRW currently serves a back bone project that will bring water south across the Carver Bridge to serve all of the pressure zones to the south. Of note, Sunrise Water Authority plans to buy 6 to 10 MGD more in the future. However, even with growth they would still have plenty (at least 5 MGD) of unused capacity. The treatment plant is 50 years old and a pending Facility Master Plan will determine what types of upgrades will be needed in the future.

As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the area.

CRW is building transmission lines and pumps to serve the south side of the river. The existing network is generally in a good state of repair. However, there are many places with old 1960 steel pipes. They prioritize upgrades and replacements locally on a case by case basis. For example, if the pipes are inside a city, they are less likely to be replacing them because the new facilities might be claimed for city ownership.

CRW is setting aside $2 million per year for system upgrades. Larger projects such as the backbone, ($24 million cost) was done through a bond. Phase two will be a $15 million bond.

Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

Regarding safety CRW has an intertie with Portland to the north and the North Clackamas County Water Commission (NCCWC) which serves Gladstone, Sunrise Water Authority, and Oak Lodge. A southern intertie with South Fork Water provides an additional source.

Sewer

Oregon City is planning for this growth. The Infrastructure Master Plan includes planned improvements and funding that will be required to support the expected growth within the existing UGB.

Stormwater

No storm water issues were noted.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

CRW has more than enough water to serve the URAs. However, some locations such as Holly Ln/Newell Ck Canyon URA make more sense for Oregon City to serve as they are isolated from the CRW network. The remaining reserves can be served by CRW when the new storage reservoir is constructed. Construction of the reservoir is expected within the next few years.

Generally the URAs in the Oregon City area of Clackamas County are small and not very easily used for growth. Most of them contain steep lands with slide potential and fairly dense rural development may preclude conversion to urban residential densities. Henrici will be serviceable after the planned reservoir comes online.

Sewer

How much excess capacity is within the system and can the excess capacity be used to accommodate additional flow from areas proposed for addition to the UGB?

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities (wastewater treatment, and interstate (I-205) and Hwy 213 and 99E) and their conditions. As noted in the water discussion, the area has topographic challenges which seem difficult to overcome and if these natural boundaries were to be overcome the infrastructure would be an expensive endeavor.

Wastewater conveyance is a major constraint and Hwy 213 is a major constraint for much more urban development south of our existing UGB.

The City, the area's sewer provider, is not completing infrastructure planning for growth in the URAs. Development outside the UGB will include major infrastructure changes which the City believes will be cost prohibitive. Costs for the improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Stormwater

Stormwater conveyance and treatment will be constructed along with development. Stormwater will be discharged within the URA. Existing stormwater infrastructure will not be impacted.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

As referred to above, the water networks in place can serve areas adjacent to them without significant upgrades. However, new storage reservoirs that are currently planned are required for development in Henrici. These reservoirs are needed for lands within the existing UGB however and will be constructed regardless of the plans for the URAs in the vicinity.

Sewer

There will be significant impacts to these facilities. Most of this infrastructure would be built by the development community. The other facilities will require major construction in sensitive (landslide prone) areas.

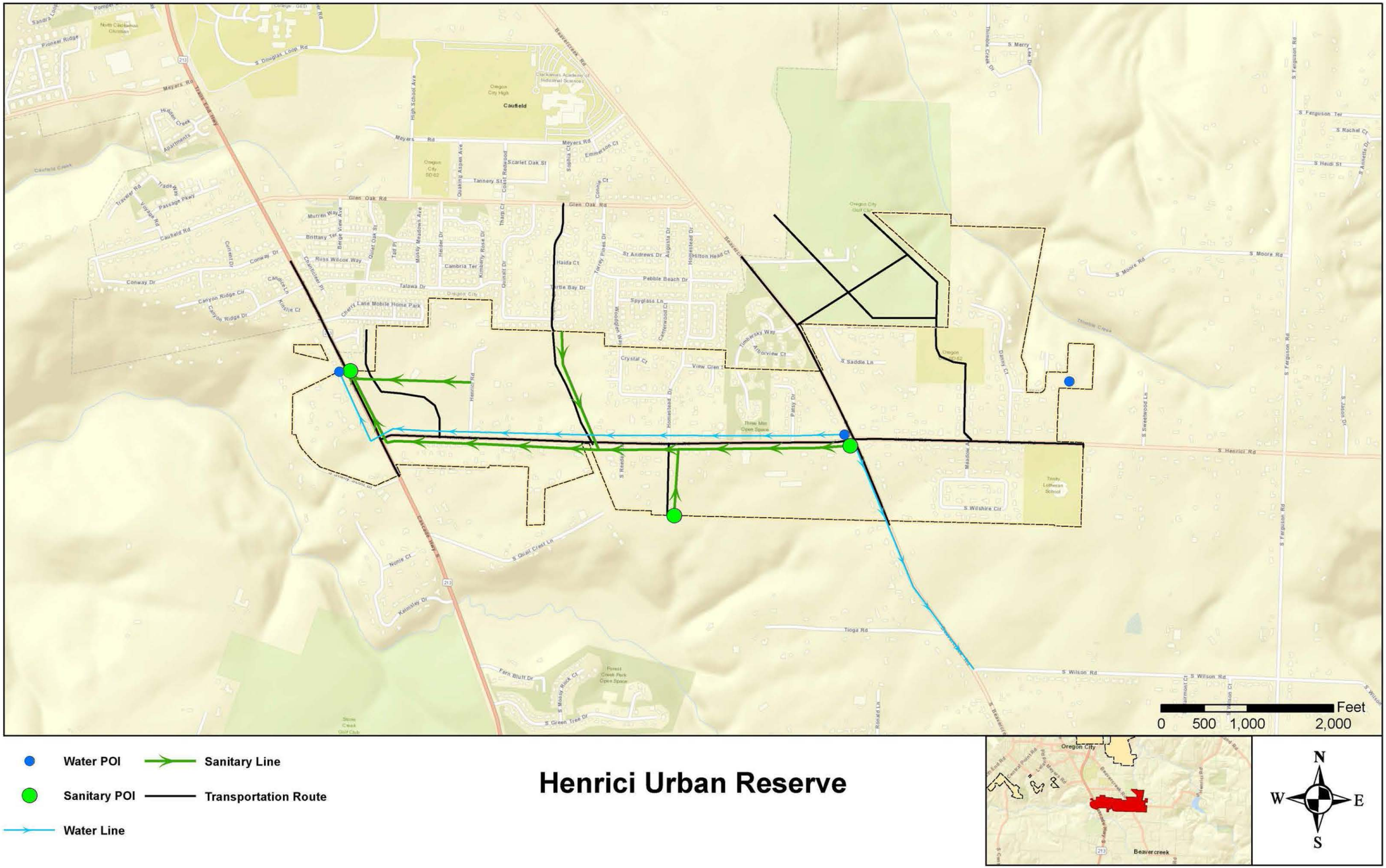
Stormwater

Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	9,900			
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$1,683,000	$0	$0	$0
			Subtotal Cost	**$1,683,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$1,683,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length			9,500	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$0	$3,990,000	
			Subtotal Cost	**$3,990,000**
Storage and Pumping Costs				$2,835,000
			Total Water System Cost Estimate	**$6,825,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		12,800	14,600	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,560,000	$3,285,000	
			Subtotal Cost	**$5,845,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,304,000	$3,504,000	
			Subtotal Cost	**$5,808,000**
			Total Storm Drain Cost Estimate	**$11,653,000**


Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route
Henrici Urban Reserve
Feet
0 500 1,000 2,000
N
S
E
W
Oregon City
Beavercreek
Caufield
Meyers Rd
Glen Oak Rd
S Henrici Rd
S Wilson Rd
S Moore Rd
S Ferguson Rd
Beavercreek Rd
Tioga Rd
S Wilshire Cir
S Saddle Ln
Pebble Beach Dr
Spyglass Ln
Crystal Ct
View Glen St
Timber Ridge Way
Alborview Ct
Three Mile Open Space
Forest Creek Park Open Space
Fern Bluff Dr
S Green Tree Dr
S Quail Creek Ln
Kelmsley Dr
Nonie Ct
Cherry Lane Mobile Home Park
Talawa Dr
Russ Wilcox Way
Brittany Ter
Cambria Ter
Haida Ct
Turtle Bay Dr
St Andrews Dr
Hilton Head Ct
Tannery St
Scarlet Oak St
Emmerson Ct
Caufield Rd
Conway Dr
Canyon Ridge Cir
Canyon Ridge Dr
Kinsie Ct
Pioneer Ridge
S Douglas Loop Rd
Hidden Creek Apartments
Traveler Rd
Trade Way
Passage Pkwy
Voyage Rd
Caufield Creek
Oregon City High
Clackamas Academy of Industrial Sciences
Oregon City SD 62
Oregon City Golf Club
Timothy Lutheran School
Three Mile Creek
Stone Creek Golf Club
North Clackamas Christian
Cascade Hwy 213
High School Ave
Henrici Rd
S Reeder Rd
Homestead Dr
Patsy Dr
Meadow Ave
Dairy Ct
S Sweetwood Ln
S Merry Lane Dr
Thimble Creek Dr
S Rachel Ct
S Heidi St
S Annette Dr
S Moore Ln
Ronald Ln
S Beaver Creek Rd
Fairmont Ct
S Wilson Ct

HOLCOMB URBAN RESERVE AREA (3B)

HOLCOMB URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). The City of Oregon City serves lands within their corporate boundary. Oregon City has expanded their city to include recent UGB expansions to its southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas.

CRW is planning for the urban reserve areas (URA)but will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As these reserves areas are brought in, the cities intend to serve these areas. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the sites. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban.

CRW states that it does have adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 million gallons per day (MGD) water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. CRW currently serves a back bone project that will bring water south across the carver bridge to serve all of the pressure zones to the south. Of note, Sunrise Water Authority plans to buy 6 to 10 MGD more in the future. However, even with growth they would still have plenty (at least 5 MGD) of unused capacity. The treatment plant is 50 years old and a pending Facility Master Plan will determine what types of upgrades will be needed in the future.

As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the area.

CRW is building transmission lines and pumps to serve the south side of the river. The existing network is generally in a good state of repair. However, there are many places with old 1960 steel pipes. They prioritize upgrades and replacements locally on a case by case basis. For example, if the pipes are inside a city, they are less likely to be replacing them because the new facilities might be claimed for city ownership.

CRW is setting aside $2 million per year for system upgrades. Larger projects such as the backbone, ($24 million cost) was done through a bond. Phase two will be a $15 million bond.

Oregon City has plans to build reservoirs that could serve URAs, but no timeline information is available at this time.

Regarding safety CRW has an intertie with Portland to the north and the North Clackamas County Water Commission (NCCWC) which serves Gladstone, Sunrise Water Authority, and Oak Lodge. A southern intertie with South Fork Water provides an additional source.

Sewer

Oregon City is planning for this growth. The Infrastructure Master Plan includes planned improvements and funding that will be required to support the expected growth within the existing UGB.

Stormwater

No storm water issues were noted.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

CRW has more than enough water to serve the URAs. However, some locations such as Holly Ln/Newell Ck Canyon URA make more sense for Oregon City to serve as they are isolated from the CRW network. The remaining reserves can be served by CRW when the new storage reservoir is constructed. Construction of the reservoir is expected within the next few years.

Generally the urban reserves in the Oregon City area of Clackamas County are small and not very easily used for growth. Most of them contain steep lands with slide potential and fairly dense rural development may preclude conversion to urban residential densities. Holcomb URA has the most development potential of the four reserves in the area.

Sewer

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities (wastewater treatment, and interstate (I-205) and Hwy 213 and 99E) and their conditions. As noted in the water discussion, the area has topographic challenges which seem difficult to overcome and if these natural boundaries were to be overcome the infrastructure would be an expensive endeavor.

Wastewater conveyance is a major constraint and Hwy 213 is a major constraint for much more urban development south of our existing UGB.

The City, the area's sewer provider, is not completing infrastructure planning for growth in the URAs. Development outside the UGB will include major infrastructure changes which the city believes will be cost prohibitive. Costs for the improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Stormwater

Stormwater conveyance and treatment will be constructed along with development. Stormwater will be discharged within the URAs. Existing stormwater infrastructure will not be impacted.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

As referred to above, the water networks in place can serve areas adjacent to them without significant upgrades.

Sewer

There will be significant impacts to these facilities. Most of this infrastructure would be built by the development community. The other facilities will require major construction in sensitive (landslide prone) areas.

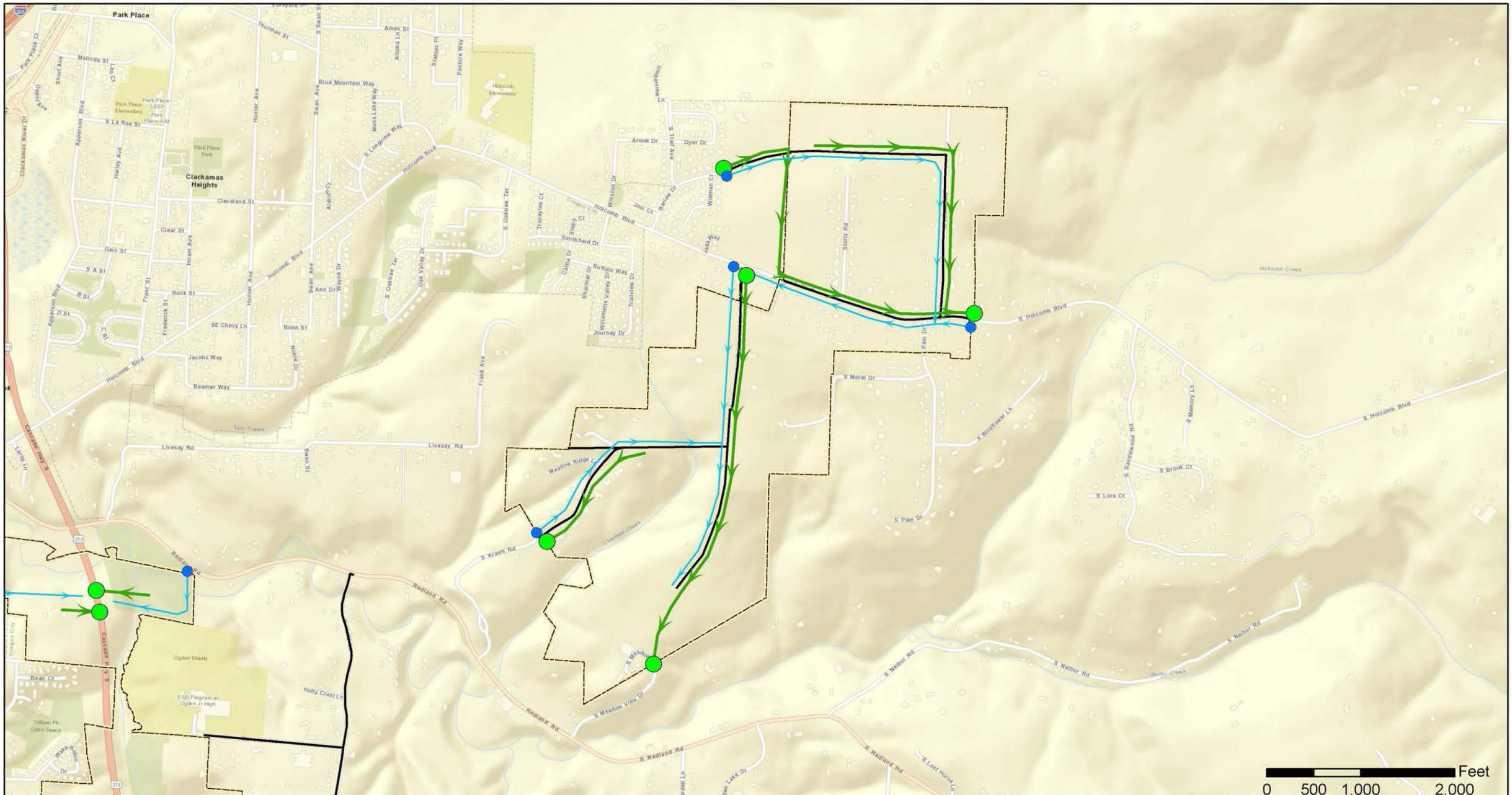
Stormwater

Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	5,700	7,600		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$969,000	$1,444,000	$0	$0
			Subtotal Cost	**$2,413,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,413,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		5,700	7,000	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$1,596,000	$2,940,000	
			Subtotal Cost	**$4,536,000**
Storage and Pumping Costs				$2,065,000
			Total Water System Cost Estimate	**$6,601,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		10,900	2,100	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,180,000	$472,500	
			Subtotal Cost	**$2,652,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$1,962,000	$504,000	
			Subtotal Cost	**$2,466,000**
			Total Storm Drain Cost Estimate	**$5,118,500**



Water POI

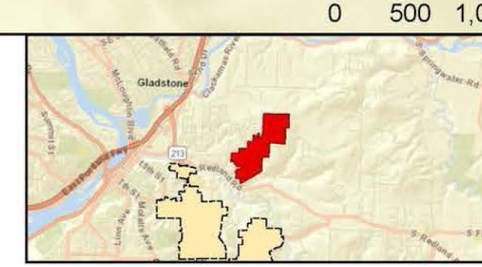
Sanitary POI

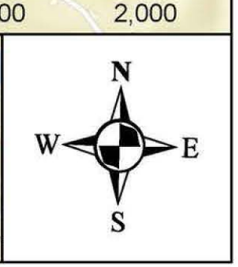
Water Line

Sanitary Line

Transportation Route

Holcomb Urban Reserve





HOLLY LANE/NEWELL CREEK CANYON URBAN RESERVE AREA (3C)

HOLLY LANE URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). The City of Oregon City serves lands within their corporate boundary. Oregon City has expanded their city to include recent UGB expansions to its southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas.

CRW is planning for the urban reserve areas (URAs)but will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As these reserves areas are brought in, the cities intend to serve these areas. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the sites. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban.

CRW states that it does have adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 million gallons per day (MGD) water treatment plant. Volumes available for their service area are 7.4 MGD on north and around four MGD on south for a total availability of approximately 11 MGD. CRW currently serves a back bone project that will bring water south across the carver bridge to serve all of the pressure zones to the south. Of note, Sunrise Water Authority plans to buy 6 to 10 MGD more in the future. However, even with growth they would still have plenty (at least 5 MGD) of unused capacity. The treatment plant is 50 years old and a pending Facility Master Plan will determine what types of upgrades will be needed in the future.

As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the area.

CRW is building transmission lines and pumps to serve the south side of the river. The existing network is generally in a good state of repair. However, there are many places with old 1960 steel pipes. They prioritize upgrades and replacements locally on a case by case basis. For example, if the pipes are inside a city, they are less likely to be replacing them because the new facilities might be claimed for city ownership.

CRW is setting aside $2 million per year for system upgrades. Larger projects such as the backbone, ($24 million cost) was done through a bond. Phase two will be a $15 million bond.

Oregon City has plans to build reservoirs that could serve URAs, but no timeline information is available at this time.

Regarding safety CRW has an intertie with Portland to the north and the North Clackamas County Water Commission (NCCWC) which serves Gladstone, Sunrise Water Authority, and Oak Lodge. A southern intertie with South Fork Water provides an additional source.

Sewer

Oregon City is planning for this growth. The Infrastructure Master Plan includes planned improvements and funding that will be required to support the expected growth within the existing UGB.

Stormwater

No stormwater issues were noted.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

CRW has more than enough water to serve the URAs. However, some locations such as Holly Ln/Newell Creek Canyon URA make more sense for Oregon City to serve as they are isolated from the CRW network. The remaining reserves can be served by CRW when the new storage reservoir is constructed. Construction of the reservoir is expected within the next few years.

Generally the urban reserves in the Oregon City area of Clackamas County are small and not very easily used for growth. Most of them contain steep lands with slide potential and fairly dense rural development may preclude conversion to urban residential densities. Holly Lane / Newell Creek Canyon has large amounts of land, but significant natural resources and topography that limit the ability for it to be developed to urban densities.

Sewer

How much excess capacity is within the system and can the excess capacity be used to accommodate additional flow from areas proposed for addition to the UGB?

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities (wastewater treatment, and interstate (I-205) and \ Hwy 213 and 99E) and their conditions. As noted in the water discussion, the area has topographic challenges which seem difficult to overcome and if these natural boundaries were to be overcome the infrastructure would be an expensive endeavor.

Wastewater conveyance is a major constraint and Hwy 213 is a major constraint for much more urban development south of our existing UGB.

The City, the area's sewer provider, is not completing infrastructure planning for growth in the URAs. Development outside the UGB will include major infrastructure changes which the city believes will be cost prohibitive. Costs for the improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Stormwater

Stormwater conveyance and treatment will be constructed along with development. Stormwater will be discharged within the URAs. Existing stormwater infrastructure will not be impacted.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

As referred to above, the water networks in place can serve areas adjacent to them without significant upgrades. However, new storage reservoirs that are currently planned are required for development in Holly Lane. These reservoirs are needed for lands within the existing UGB however and will be constructed regardless of the plans for the URAs in the vicinity.

Sewer

There will be significant impacts to these facilities. Most of this infrastructure would be built by the development community. The other facilities will require major construction in sensitive (landslide prone) areas.

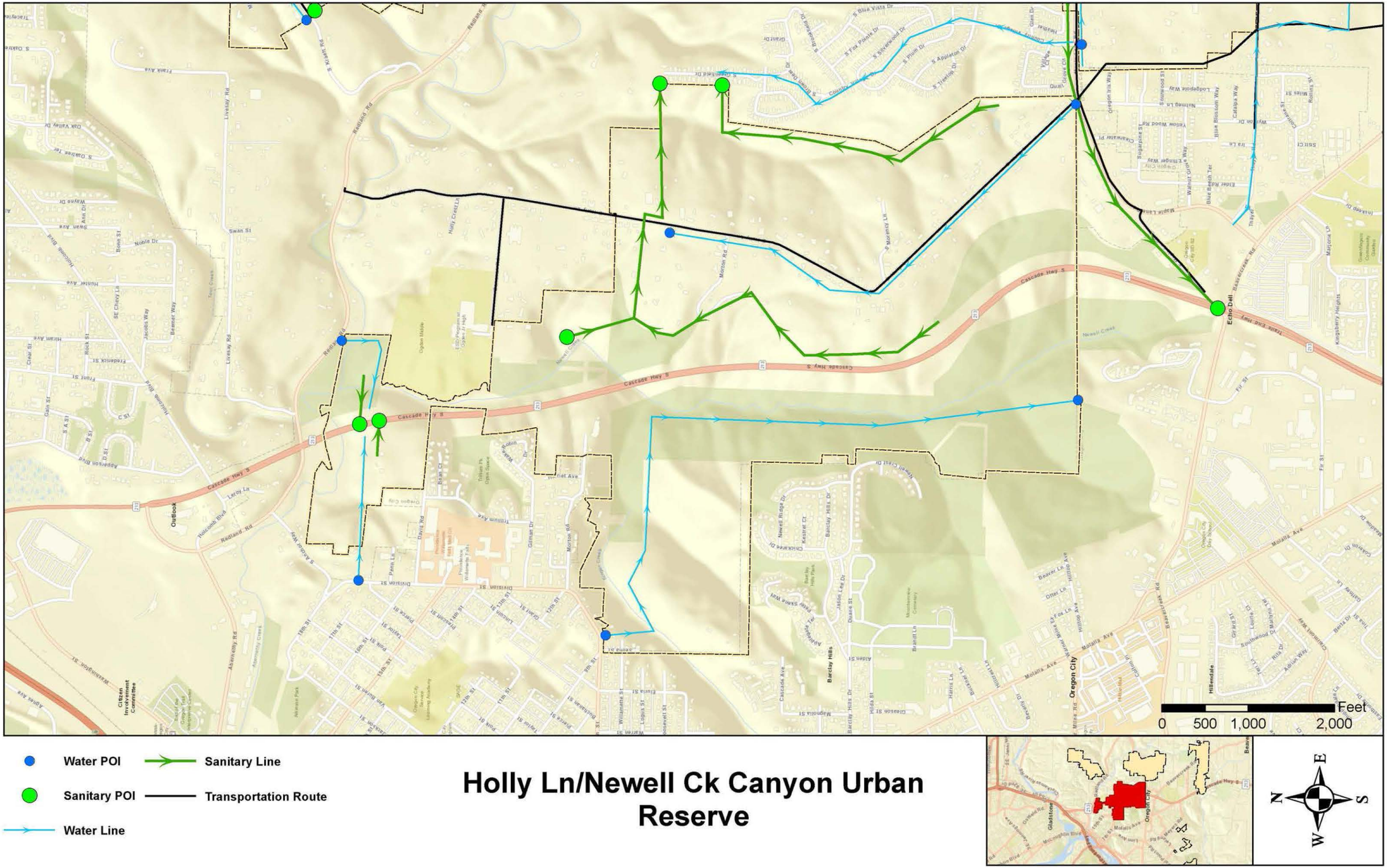
Stormwater

Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	1,800	11,200		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$306,000	$2,128,000	$0	$0
			Subtotal Cost	**$2,434,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,434,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		16,900		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$4,732,000	$0	
			Subtotal Cost	**$4,732,000**
Storage and Pumping Costs				$1,820,000
			Total Water System Cost Estimate	**$6,552,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		1,500	13,200	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$300,000	$2,970,000	
			Subtotal Cost	**$3,270,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$270,000	$3,168,000	
			Subtotal Cost	**$3,438,000**
			Total Storm Drain Cost Estimate	**$6,708,000**



Holly Ln/Newell Ck Canyon Urban Reserve

I-5 EAST-WASHINGTON COUNTY URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water could most directly be supplied by the City of Tualatin. The City of Tualatin water supply is purchased from the City of Portland, The City of Tualatin system appears to have enough capacity to meet UGB needs assuming completion of the long-term improvements shown in its water Master Plan.

Sewer

The wastewater system would expect to be served by the Clean Water Services (CWS) and its Durham Wastewater Treatment Plant (WWTP).

CWS actively manages there facilities and generally has, or has planned for needed capacity within the UGB.

Stormwater

There is no indication of issues with existing stormwater that would impact this urban reserve area (URA).

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 4,028 dwelling units appears to be adequate, or they will be able to generate the supply as this area comes online.

The estimated average daily demand generated by this URA to serve 4,028 dwelling is approximately 1.4 MG.

The City of Tualatin Water Master Plan indicates that there is adequate capacity to serve existing development. Water storage improvements are needed to serve future development within the existing UGB. Once improvements noted in the Master Plan are complete, it is unknown what additional capacity would be available to serve this URA.

Sewer

While the capacity may be available, wastewater treatment for this URA for 4,028 dwelling units is significant and may require additional plant improvements at the Durham WWTP. The estimated flows added to the system with the development of this URA is approximately 10.3 cfs.

Based on preliminary analysis, it appears that the likely location to connect to the existing sewer is at the CWS Saum Creek Pump Station (located north of 1-205 on SW 65th Avenue). The Saum Creek Pump Station pumps flow north to an existing 8-inch gravity line in SW 65th Avenue, which connects to an 18-inch trunk line that gravity flows through the City of Tualatin. The 18-inch trunk line connects to a large diameter CWS interceptor which conveys flows to the Durham WWTP.

Available capacity for the Saum Creek Pump Station and the downstream piping is unknown. The smaller pump stations and gravity lines will likely need upgrades for full development of the URA.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The potable water would most likely come from the City of Tualatin. Impacts are local in nature, occurring as facilities are developed. New water mains must be provided to allow development of this URA. New water mains would need to cross I-5 and I-205 to serve this URA. Elevations within the URA range from approximately 200 feet near 1-205 to 470 feet in the southeast corner. Elevations in the southeast corner of the site are above the City's highest pressure zone (currently serving to elevation 360 feet). Additional storage or pumping may be required. The laterals off the mains are expected to be provided by the developer.

The amount of upsizing from the serving utility that would be needed is not known at this time.

Sewer

CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple Urban Reserves could result in a need for some expansion in order to handle additional load. The upgrades and financial impacts are beyond the scope of this report.

Although the available capacity of the Saum Creek Pump Station and the downstream lines are unknown, it is likely that upsizing of the Pump Station and some pipes may be required to accommodate the flows from the 1-5 East URA.

In addition, to provide sanitary sewer service to the I-5 East URA, a new sewer line would need to cross I-205 at SW 65th Ave.

Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of this Urban Reserve area. The laterals off the mains are provided by the Developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

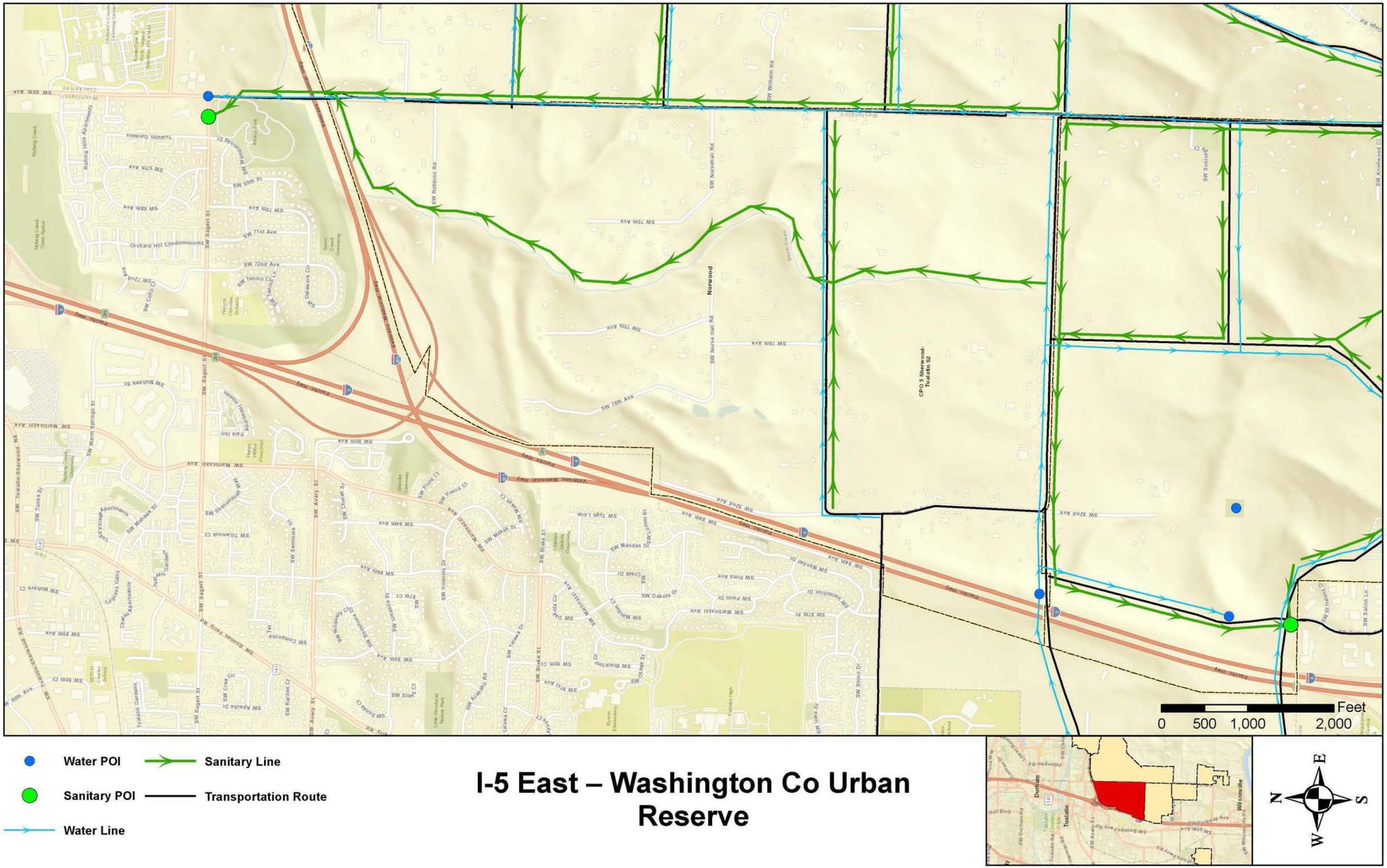
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	24"	Force Main
Estimated Pipe Length	1,900	2,700	10,200	
Estimated Pipe Unit Cost	$170	$190	$250	$175
Estimated Sewer Pipe Cost	$323,000	$513,000	$2,550,000	$0
			Subtotal Cost	**$3,386,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$3,386,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		5,400	5,600	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$1,512,000	$2,352,000	
			Subtotal Cost	**$3,864,000**
Storage and Pumping Costs				$4,865,000
			Total Water System Cost Estimate	**$8,729,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		15,200	19,000	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$3,040,000	$4,275,000	
			Subtotal Cost	**$7,315,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,736,000	$4,560,000	
			Subtotal Cost	**$7,296,000**
			Total Storm Drain Cost Estimate	**$14,611,000**



I-5 East – Washington Co Urban Reserve

MAPLELANE URBAN RESERVE AREA (3D)

MAPLELANE URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Lands within the jurisdiction of Clackamas County in this vicinity are served by Clackamas River Water (CRW). The City of Oregon City serves lands within their corporate boundary. Oregon City has expanded their city to include recent UGB expansions to its southwest. While the city is adequately served elsewhere, they do not have the water storage necessary to serve these recently annexed areas.

CRW is planning for the urban reserve areas (URAs) but will not likely be the service provider in the future. Oregon City has the general policy that they will serve all of the lands within the UGB. As these reserves areas are brought in, the cities intend to serve these areas. Oregon City would therefore annex the areas and subsequently take ownership of any water related infrastructure within the sites. There would be an exception for facilities that are needed to go beyond the area in question such as large scale transmission lines. Accordingly CRW, like many service providers must be are cautious about investing in improvements for the rural areas that may become urban.

CRW states that it does have adequate capacity to serve both the lands within the UGB and its rural customers. They operate a 30 million gallons per day (MGD) water treatment plant. Volumes available for their service area are 7.4 MGD on north and around 4 MGD on south for a total availability of approximately 11 MGD. CRW currently serves a back bone project that will bring water south across the carver bridge to serve all of the pressure zones to the south. Of note, Sunrise Water Authority plans to buy 6 to 10 MGD more in the future. However, even with growth they would still have plenty (at least 5 MGD) of unused capacity. The treatment plant is 50 years old and a pending Facility Master Plan will determine what types of upgrades will be needed in the future.

As noted above, the Beavercreek (previous UGB expansion) area needs a new reservoir to serve its pressure zone. Within five years, CRW expects to have a 2.2 or 2.5 million gallon elevated reservoir in the area. It is unclear however if this, or a future city owned facility will serve the area.

CRW is building transmission lines and pumps to serve the south side of the river. The existing network is generally in a good state of repair. However, there are many places with old 1960 steel pipes. They prioritize upgrades and replacements locally on a case by case basis. For example, if the pipes are inside a city, they are less likely to be replacing them because the new facilities might be claimed for city ownership.

CRW is setting aside $2 million per year for system upgrades. Larger projects such as the backbone, ($24 million cost) was done through a bond. Phase two will be a $15 million bond.

Oregon City has plans to build reservoirs that could serve URAs, but no timeline information is available at this time.

Regarding safety CRW has an intertie with Portland to the north and the North Clackamas County Water Commission (NCCWC) which serves Gladstone, Sunrise Water Authority, and Oak Lodge. A southern intertie with South Fork Water provides an additional source.

Sewer

Oregon City is planning for this growth. The Infrastructure Master Plan includes planned improvements and funding that will be required to support the expected growth within the existing UGB.

Stormwater

No storm water issues were noted.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

CRW has more than enough water to serve the URAs. However, some locations such as Holly Ln/Newell Creek Canyon make more sense for Oregon City to serve as they are isolated from the CRW network. The remaining reserves can be served by CRW when the new storage reservoir is constructed. Construction of the reservoir is expected within the next few years.

Generally the urban reserves in the Oregon City area of Clackamas County are small and not very easily used for growth. Most of them contain steep lands with slide potential and fairly dense rural development may preclude conversion to urban residential densities. Maple Lane is easier developed than other areas but is not located proximate to existing services.

Sewer

How much excess capacity is within the system and can the excess capacity be used to accommodate additional flow from areas proposed for addition to the UGB?

Additional growth beyond the UGB is going to be a challenge for Oregon City due to the capacity of existing major facilities (wastewater treatment, and interstate (I-205) and Hwy 213and 99E) and their conditions. As noted in the water discussion, the area has topographic challenges which seem difficult to overcome and if these natural boundaries were to be overcome the infrastructure would be an expensive endeavor.

Wastewater conveyance is a major constraint and Hwy 213 is a major constraint for much more urban development south of our existing UGB.

The City, the area's sewer provider, is not completing infrastructure planning for growth in the URAs. Development outside the UGB will include major infrastructure changes which the city believes will be cost prohibitive. Costs for the improving the existing infrastructure have not been included in the sewer cost estimate due to the unknown nature of actual improvements required.

Stormwater

Stormwater conveyance and treatment will be constructed along with development. Stormwater will be discharged within the URAs. Existing stormwater infrastructure will not be impacted.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

As referred to above, the water networks in place can serve areas adjacent to them without significant upgrades. However, new storage reservoirs that are currently planned are required for development in Maple Lane. These reservoirs are needed for lands within the existing UGB however and will be constructed regardless of the plans for the urban reserves in the vicinity.

Sewer

There will be significant impacts to these facilities. Most of this infrastructure would be built by the development community. The other facilities will require major construction in sensitive (landslide prone) areas.

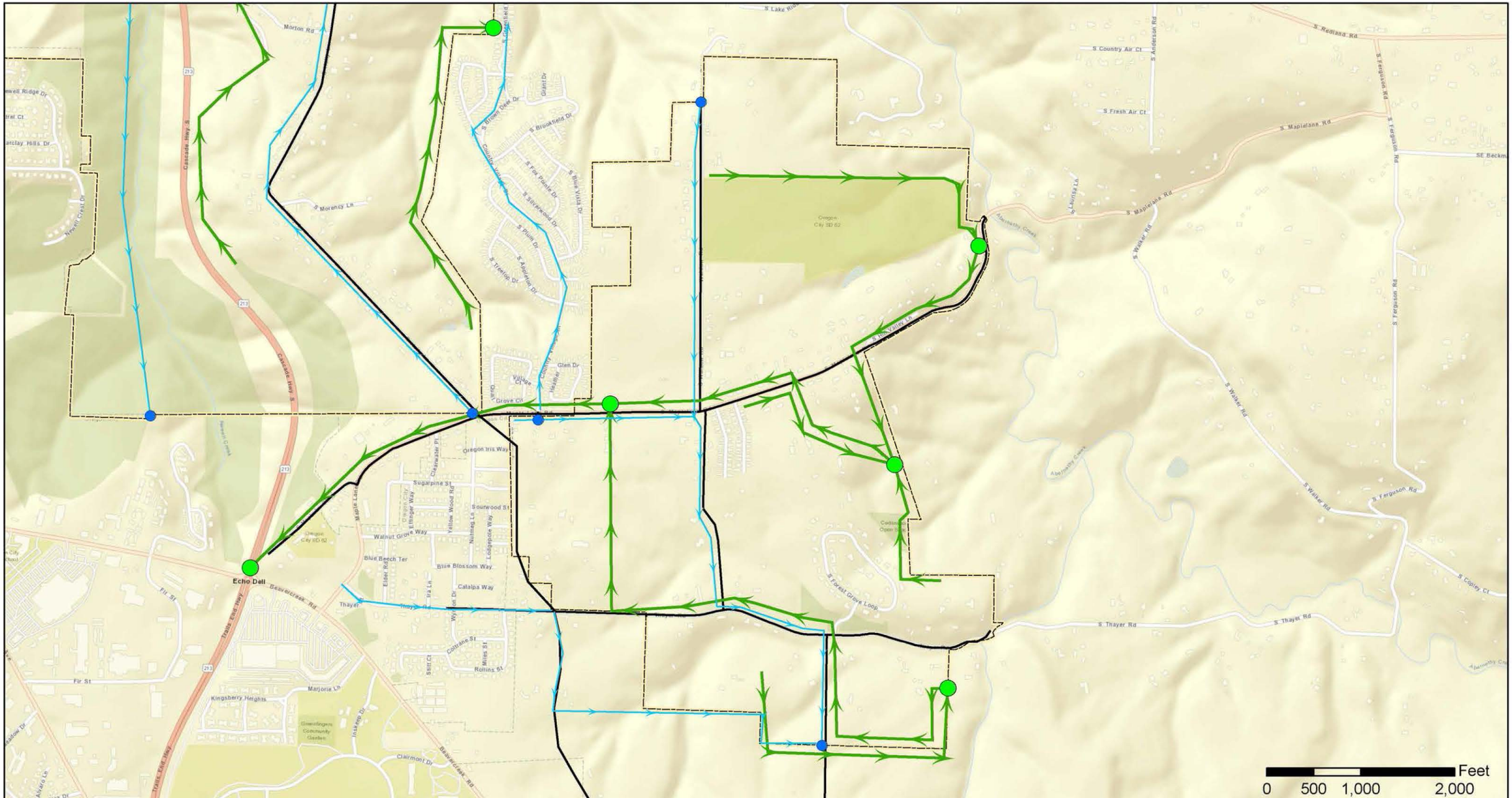
Stormwater

Stormwater will be complex but manageable given this infrastructure would be at the upstream edge of the surrounding basins.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	12,900			14,900
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$2,193,000	$0	$0	$2,607,500
			Subtotal Cost	**$4,800,500**
Proposed Pump Stations				$2,450,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$7,250,500**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		20,900		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$5,852,000	$0	
			Subtotal Cost	**$5,852,000**
Storage and Pumping Costs				$2,695,000
			Total Water System Cost Estimate	**$8,547,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		23,200	9,300	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$4,640,000	$2,092,500	
			Subtotal Cost	**$6,732,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$4,176,000	$2,232,000	
			Subtotal Cost	**$6,408,000**
			Total Storm Drain Cost Estimate	**$13,140,500**



Water POI

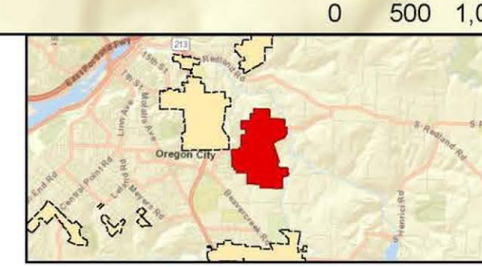
Sanitary POI

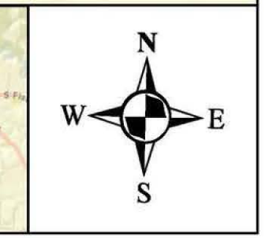
Water Line

Sanitary Line

Transportation Route

Maplelane Urban Reserve





NORWOOD URBAN RESERVE AREA (4D)

NORWOOD URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

Water could most directly be supplied by the City of Tualatin. The City of Tualatin water supply is purchased from the City of Portland, The City of Tualatin system appears to have enough capacity to meet UGB needs assuming completion of the long-term improvements shown in its Water Master Plan.

Sewer

Based on the existing topography throughout this urban reserve area (URA), it appears that this site is best served by several different jurisdictions including Clean Water Services (CWS), the City of West Linn, and the City of Wilsonville.

It appears that there is capacity to meet UGB needs.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The estimated average daily demand generated by this URA to serve 8,097 dwelling is approximately 2.8 MG.

The City of Tualatin Water Master Plan indicates that there is adequate capacity to serve existing development. Water storage improvements are needed to serve future development within the existing UGB. Once improvements noted in the Master Plan are complete, it is unknown what additional capacity would be available to serve this URA.

Sewer

While the capacity may be available, wastewater treatment for this URA for 8,097 dwelling units is significant and may require additional plant improvements at the Durham Wastewater Treatment Plant (WWTP). The estimated flows added to the system with the development of this URA are approximately 10.3 cfs. As noted above, this flow would be divided into three separate sewer systems.

The western portion of the site would be routed into the CWS system. The nearest connection point is north of 1-205 at the Saum Creek Pump Station and/or the Sequoia Ridge Pump Station. Downstream 8-inch gravity pipes convey flows to a City of Tualatin 18-inch trunk line, which connects to a large diameter CWS interceptor to the Durham WWTP.

CWS has indicated that the Durham WWTP has capacity; however, significant additional flows may require plant improvements. In addition, the capacity of the existing pump stations and sewer lines are unknown.

The eastern portion of the site will connect to an existing City of West Linn sewer located in Willamette Falls Drive. The City has indicated that the treatment plant would likely need some upgrades to accommodate additional flow. The available capacities of pump stations and pipes are unknown.

The southern portion of the site would most readily be served by Wilsonville. In order to serve this portion of the URA, the Elligsen North URA would need to be developed first. Refer to the Elligsen North URA report for constraints.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The potable water would most likely come from the City of Tualatin. Impacts are local in nature, occurring as facilities are developed. New water mains must be provided to allow development of this URA. New water mains would need to cross I-205 to serve this URA. Elevations within the URA range from approximately 200 to 460 feet in the southeast corner. The site is across I-205 from their service area B which provides water to elevations from 192 to 306 feet. Elevations in much of the URA exceed 306 feet. The City's service area C provides water up to 360; however, connection to this service area would first require the development of the I-5 East URA. Additional storage or pumping may be required to serve this URA. The laterals off the mains are expected to be provided by the developer.

The amount of upsizing from the serving utility that would be needed is not known at this time.

Cost estimates specifically for this URA cost estimates are conceptual in nature.

Sewer

CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple URAs could result in a need for some expansion in order to handle additional load. The upgrades and financial impacts are beyond the scope of this report.

In order to connect to the CWS system, a new sewer line crossing I-205 would be required.

Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

For the purpose of the cost analysis, it is assumed that the sewer to Willamette Falls Drive would connect to the sewer proposed to be developed with the Borland URA. Therefore, for the east portion of the Norwood URA to be served, the Borland URA would need to be developed first.

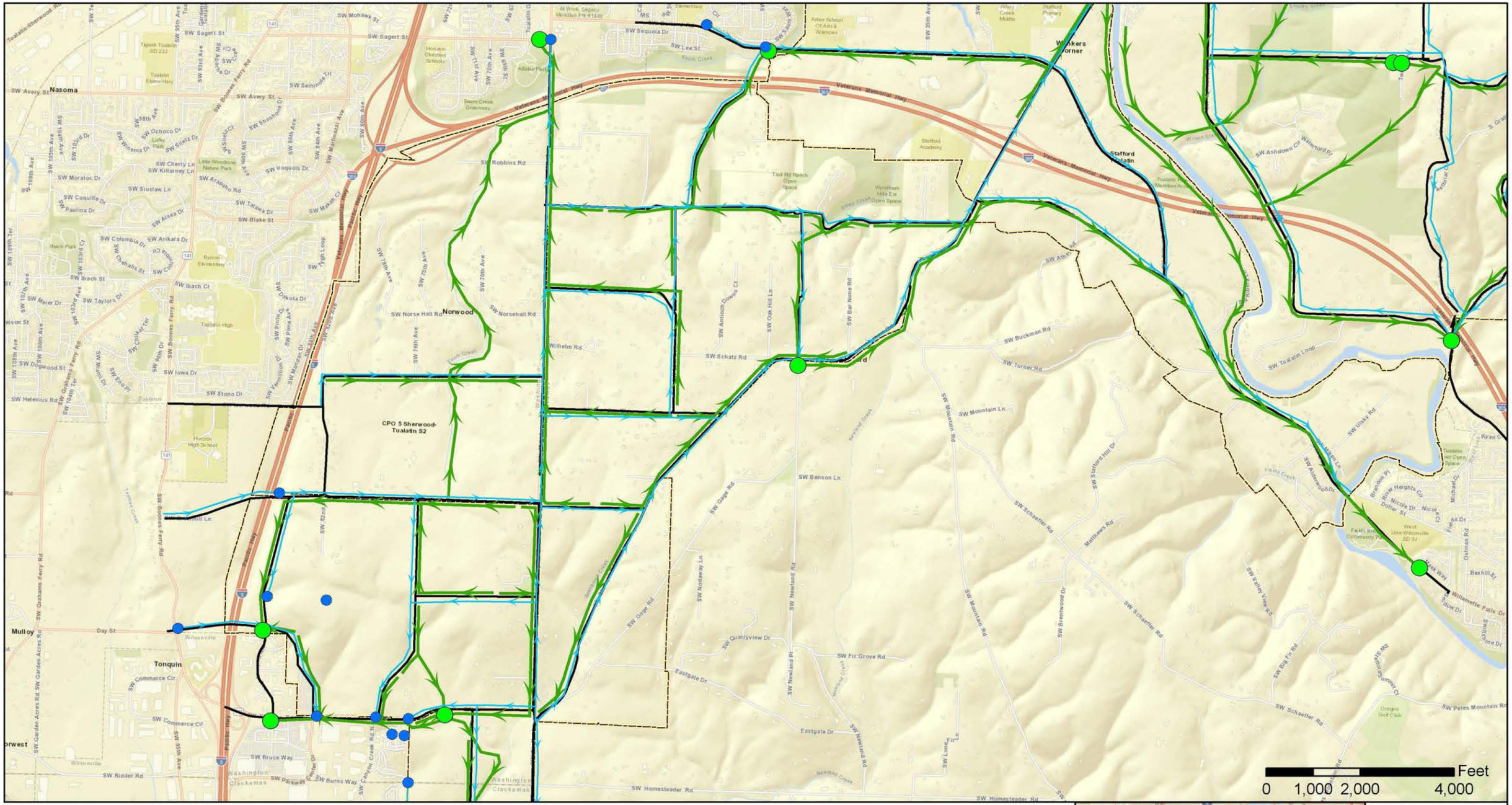
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length		41,800		1,200
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$0	$7,942,000	$0	$210,000
			Subtotal Cost	**$8,152,000**
Proposed Pump Stations				$650,000
Proposed Borings for Creek Crossings				$700,000
			Total Sewer System Cost Estimate	**$9,502,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		21,000	39,000	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$5,880,000	$16,380,000	
			Subtotal Cost	**$22,260,000**
Storage and Pumping Costs				$9,800,000
			Total Water System Cost Estimate	**$32,060,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		29,200	41,000	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$5,840,000	$9,225,000	
			Subtotal Cost	**$15,065,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$5,256,000	$9,840,000	
			Subtotal Cost	**$15,096,000**
			Total Storm Drain Cost Estimate	**$30,161,000**



Water POI

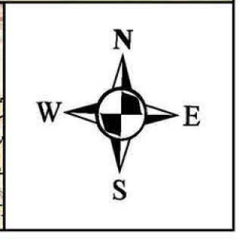
Sanitary POI

Water Line

Sanitary Line

Transportation Route

Norwood Urban Reserve



ROSEMONT URBAN RESERVE AREA (4B)

ROSEMONT URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The West Linn Water System is part of the Lake Oswego – Tigard Water Partnership. Potable water comes from south Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWF operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division St. in Oregon City. The water treatment plant was upgraded in October 2016.

According to the City of West Linn, there are also no issues serving the area currently within the UBG in regard to pumping, storage, and piping.

Sewer

The wastewater system is known as the Tri-City Service District, made up of West Linn, Oregon City and Gladstone. This service district and the Clackamas County Service District No. 1 combined, handle flows from Happy Valley, Damascus, Milwaukie, and the unincorporated portions of Clackamas County. Another component of their wastewater treatment is the Water and Environmental Services, or (WES).

According to the City of West Linn, additional treatment plant capacity is currently being constructed to accommodate areas within the existing UGB.

Stormwater

The City of West Linn indicated that there were no major issues regarding the existing stormwater system.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City of West Linn indicated that there are no issues with water supply to serve the Stafford urban reserve area (URA). However the treatment plant will likely require additions and upgrades to convey the additional potable supply. There is a 16-inch waterline in Rosemont Road that could be used to serve the URA. The City of West Linn indicated that there should be enough storage capacity in their existing system to serve the Rosemont URA.

Sewer

The treatment plant is currently being upgraded. It is unknown at this time how much additional capacity will be available beyond their current needs. If capacity is available to serve the Rosemont URA the previously mentioned upgrades may not be needed. In addition, existing pump stations would require upgrades. Existing pipe capacities are unknown and further analysis would be required at time of detailed planning to determine the extent of trunk line upgrades.

The Rosemont sewer generally flows toward the Stafford URA, and in order to convey sewer to the treatment plant, sewer lines are needed through the Stafford URA. For the purpose of this report, it has been assumed that the Rosemont URA would not develop until after sewer facilities are in place within the Stafford URA.

Stormwater

Stormwater would be conveyed, treated, and discharged on-site, and therefore, existing systems would not be impacted. All new development would utilize the current City of West Linn Storm Drainage Master Plan.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The potable water would most likely come from West Linn. Estimates indicate that an average daily demand of 0.3 MG for the Rosemont URA. Although the City has enough water rights to supply the system, upgrades to the water treatment plant will be necessary prior to distribution. New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

Sewer

The Rosemont URA would introduce and estimated 1.0 cfs into the existing system.

Wastewater services (digesters) in the WES system are expected to need some upgrades with growth beyond that in the current UGB. The upgrades and financial impacts are beyond the scope of this report.

Wastewater services would most likely come from the Stafford URA, which is largely undeveloped. Therefore the Rosemont URA would likely require that at least the skeleton wastewater system for the Stafford URA be constructed first.

The majority of impacts are local in nature, occurring as facilities are developed.

New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

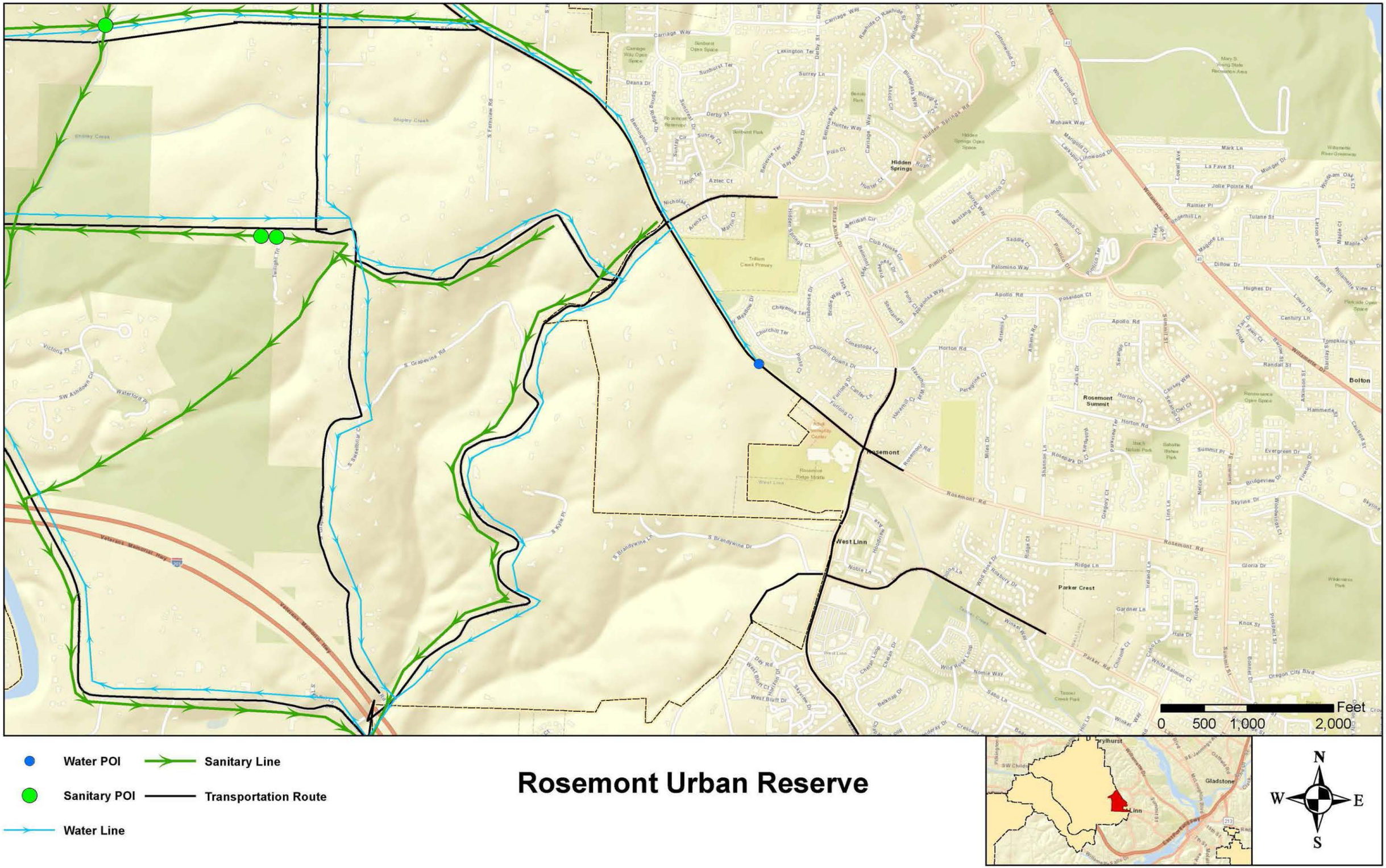
Stormwater

Stormwater would be conveyed, treated, and discharged on-site, and therefore, existing systems would not be impacted.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length				
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$0	$0	$0	$0
			Subtotal Cost	**$0**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$0**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length				
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$0	$0	
			Subtotal Cost	**$0**
Storage and Pumping Costs				$1,050,000
			Total Water System Cost Estimate	**$1,050,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		2,000	8,200	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$400,000	$1,845,000	
			Subtotal Cost	**$2,245,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$360,000	$1,968,000	
			Subtotal Cost	**$2,328,000**
			Total Storm Drain Cost Estimate	**$4,573,000**



Rosemont Urban Reserve

ROY ROGERS EAST URBAN RESERVE AREA (6C)

ROY ROGERS EAST URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The Tigard Water District, along with the Cities of Durham, King City, and Tigard, contract with the City of Tigard to deliver water to the customers in this URA. The areas covered by Intergovernmental Agreement, (IGA) make up the Tigard Water Service Area (TWSA).

Information provided by the City of Tigard indicates that the water supply, storage, and piping are sufficient to serve the existing UGB. Minor deficiencies were identified with the Water Treatment Plant, however, there are plans to correct the deficiencies in the near future.

Sewer

Clean Water Services (CWS) provides wastewater treatment through the Durham Wastewater Treatment Plant (WWTP). The facility has capacity for the growth within the existing UGB.

CWS is currently working to complete significant capital improvements relating to their conveyance piping that are necessary to serve all of the land currently within the UGB. These improvements are scheduled to be fully complete in 2020.

Stormwater

There is no indication of issues with existing stormwater that would impact this urban reserve area (URA).

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 1,235 dwelling units appears to be adequate, or the provider will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Roy Rogers West URA is approximately 0.4 MG.

The City of Tigard is currently in the process of updating their Water Master Plan. The Master Plan update will include the Roy Rogers West, Roy Rogers East, and the Beef Bend South URA's. The master plan will identify excess capacity within the system and determine if it can be used within the proposed URA's. In addition, the City plans to acquire property in the adjacent River Terrace area that can be used for the construction of additional storage to serve the proposed URA's.

Sewer

CWS has indicated that the Durham WWTP has capacity beyond the needs of the existing UGB. However, significant additional flows may require plant improvements. In addition, the available capacity of the existing pump stations and sewer lines are unknown.

This URA projected for 1,235 dwelling units, especially if combined with other expansions, could require small upgrades to the WWTP. The estimated flows added to the system with the development of this URA is approximately 1.5 cfs.

Existing topography of the Roy Rogers East URA indicates that sewer flows will be directed towards the southwest. Flows generated within this URA will flow to a pump station proposed within the Beef Bend South URA, and will be conveyed through Beef Bend South to the connection at SW Fischer Road in King City. As noted in the Beef Bend South report, available capacities within the existing lines are unknown at this time.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

With the current Water Master Plan update, the City of Tigard is planning for the expansion of this URA. Capacity appears to be adequate. The majority of impacts are local in nature, occurring as facilities are developed.

New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

Sewer

Wastewater services are provided by the Durham WWTP. Some interceptor and/or trunk lines that are at or near capacity today are being upgraded to serve the lands within the Cooper Mountain and River Terrace areas. These new facilities may have capacity for additional expansions, but the amount of excess capacity is not known at this time.

The majority of impacts are local in nature, occurring as facilities are developed. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the Developer.

There is available capacity of the existing lines for growth within the UGB. The potential capacity remaining for expansion areas is unknown at this time.

The cost analysis for the Roy Rogers East URA with regards to sanitary sewer assumes that the Beef Bend South URA will be developed prior to Roy Rogers East.

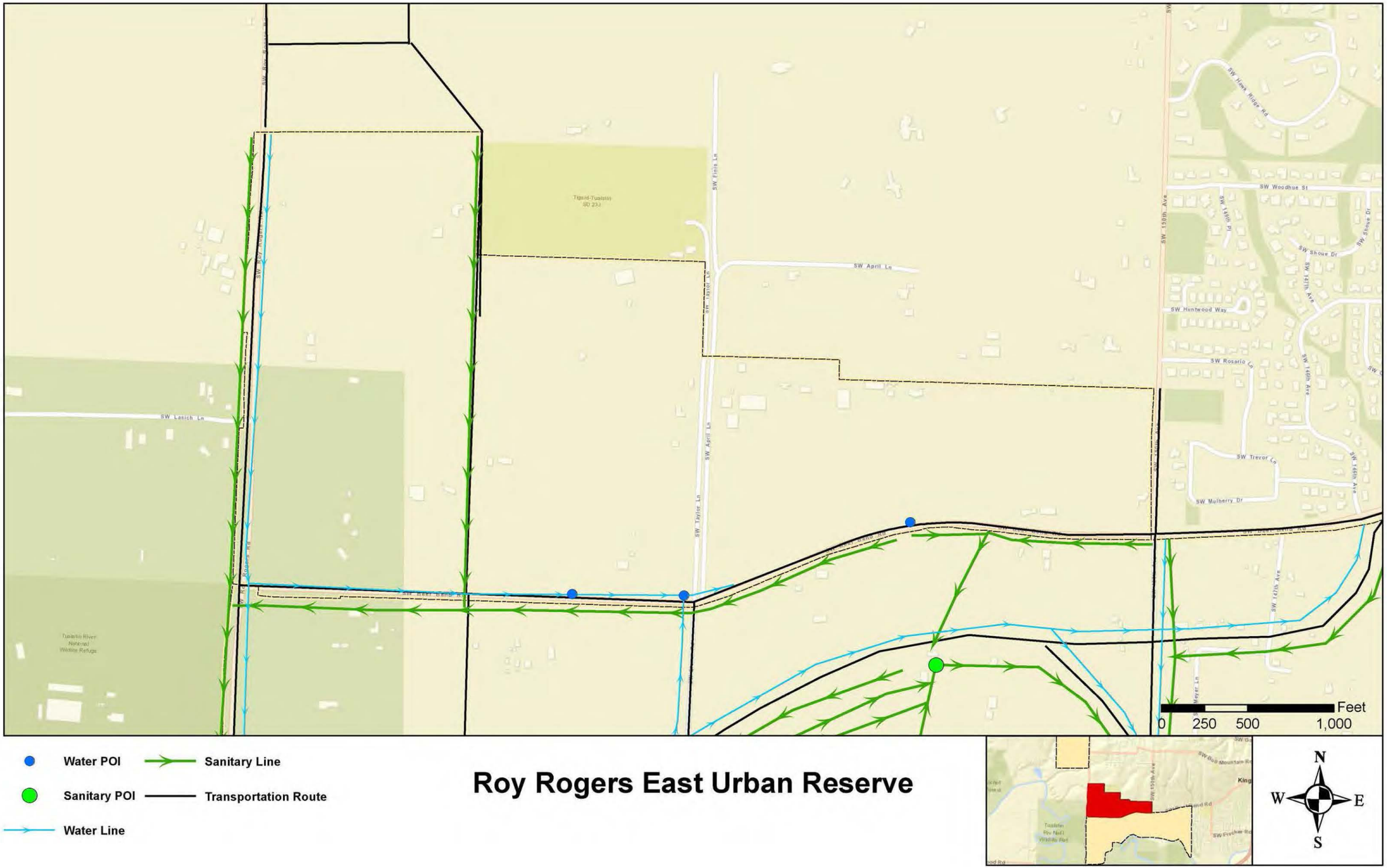
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length		14,700		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$0	$2,793,000	$0	$0
			Subtotal Cost	**$2,793,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,793,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length			5,500	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$0	$2,310,000	
			Subtotal Cost	**$2,310,000**
Storage and Pumping Costs				$1,505,000
			Total Water System Cost Estimate	**$3,815,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		3,400	12,700	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$680,000	$2,857,500	
			Subtotal Cost	**$3,537,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$612,000	$3,048,000	
			Subtotal Cost	**$3,660,000**
			Total Storm Drain Cost Estimate	**$7,197,500**


Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route
Roy Rogers East Urban Reserve
Feet
0
250
500
1,000
N
W
E
S
SW Finis Ln
SW April Ln
SW Taylor Ln
SW Lasich Ln
SW Roy Rogers Rd
SW Huntwood Way
SW Rosario Ln
SW Woodhue St
SW Shoue Dr
SW Trevor Ln
SW Mulberry Dr
SW 150th Ave
SW 147th Ave
SW 146th Ave
SW Hawk Ridge Rd
Tigard-Tualatin SD 23J
Tualatin River National Wildlife Refuge

ROY ROGERS WEST URBAN RESERVE AREA (6C)

ROY ROGERS WEST URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The Tigard Water District, along with the cities of Durham, King City, and Tigard, contract with the City of Tigard to deliver water to the customers in this urban reserve area)(URA). The areas covered by Intergovernmental Agreement, (IGA) make up the Tigard Water Service Area (TWSA).

Information provided by the City of Tigard indicates that the water supply, storage, and piping are sufficient to serve the existing UGB. Minor deficiencies were identified with the Water Treatment Plant, however, there are plans to correct the deficiencies in the near future.

Sewer

Clean Water Services (CWS) provides wastewater treatment through the Durham Wastewater Treatment Plant (WWTP).

CWS is currently working to complete significant capital improvements relating to their conveyance piping that are necessary to serve all of the land currently within the UGB. These improvements are scheduled to be fully complete in 2020.

Storm Water

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 1,574 dwelling units appears to be adequate, or provider will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Roy Rogers West URA is approximately 0.6 MG.

The City of Tigard is currently in the process of updating its Water Master Plan. The Master Plan update will include the Roy Rogers West, Roy Rogers East, and the Beef Bend South URA's. The Master Plan will identify excess capacity within the system and determine if it can be used within the proposed URA's. In addition, the City plans to acquire property in the adjacent River Terrace area that can be used for the construction of additional storage to serve the proposed URA's.

Sewer

Capacity appears to be available in the CWS Durham WWTP. This URA projected for 1,574 dwelling units may require small upgrades to the WWTP. The estimated flows added to the system with the development of this URA is approximately 2.0 cfs.

Flows from the northern portion of Roy Rogers West URA will be conveyed in an existing 24-inch CWS trunk line which flows through the north end of the site and connects to the existing River Terrace North Pump Station. From the pump station, sewer flows through large diameter CWS sewer interceptor lines to the Durham WWTP.

Flows from the southern portion of the Roy Rogers West URA will connect to sewer infrastructure proposed for the River Terrace Master Plan area. Flows from the Roy Rogers West URA will connect to a future gravity sewer line near Roy Rogers Road and Bull Mountain Road. These flows will be conveyed to the future River Terrace South Pump Station, and from there to the Durham WWTP.

CWS has indicated that the Durham WWTP has capacity; however, significant additional flows may require plant improvements. In addition, the available capacity of the existing pump stations and sewer lines are unknown.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

With the current Water Master Plan update, the City of Tigard is planning for the expansion of this URA. Capacity appears to be adequate. The majority of impacts are local in nature, occurring as facilities are developed.

New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time, but will likely be identified in the Master Plan update

Sewer

Wastewater services are provided by the Durham WWTP. Some interceptor and/or trunk lines are at capacity per CWS and may require small upgrades for this amount of urban development. The upgrades and financial impacts are beyond the scope of this report.

Impacts to the wastewater system are local in nature, occurring as facilities are developed. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

Trunk lines may be required to meet the two sub-basins, Cedar Creek and Rock Creek interceptors.

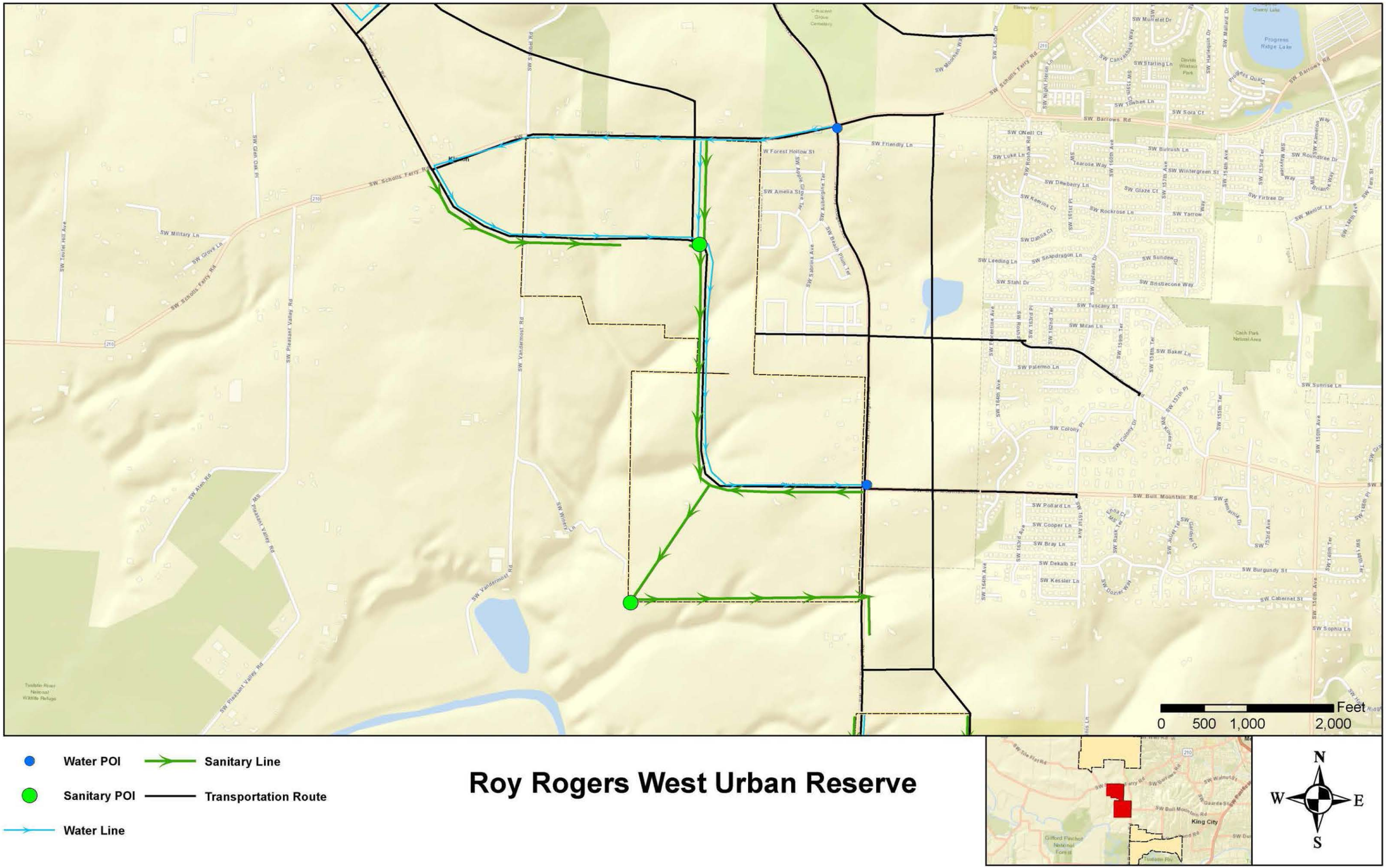
Storm Water

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length		8,400		3,200
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$0	$1,596,000	$0	$560,000
			Subtotal Cost	**$2,156,000**
Proposed Pump Stations				$500,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,656,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		1,200	12,900	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$336,000	$5,418,000	
			Subtotal Cost	**$5,754,000**
Storage and Pumping Costs				$1,925,000
			Total Water System Cost Estimate	**$7,679,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		26,700	23,900	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$5,340,000	$5,377,500	
			Subtotal Cost	**$10,717,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$4,806,000	$5,736,000	
			Subtotal Cost	**$10,542,000**
			Total Storm Drain Cost Estimate	**$21,259,500**



Roy Rogers West Urban Reserve

SHERWOOD NORTH URBAN RESERVE AREA (5A)

SHERWOOD NORTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The City of Sherwood Water Master Plan was updated in 2015. The Master Plan includes areas within the existing UGB as well as the Sherwood West urban reserve area (URA) and a portion of the Tonquin URA. The Sherwood North URA was not included in the Master Plan.

The City of Sherwood draws the majority of its water supply from the Willamette River Water Treatment Plant, (WRWTP) in the City of Wilsonville, approximately six miles southeast of Sherwood. The City owns five million gallons per day (MGD) of production capacity in the existing WRWTP facilities. Sherwood also maintains four groundwater wells within the City limits for back-up supply. Prior to 2011, the City also purchased water from the Portland Water Bureau (PWB) through the City of Tualatin's water system and maintains an emergency connection and transmission piping associated with this supply source. According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping.

According to the Master Plan, a portion of the Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within the 20-year planning horizon. To support the 20-year planning horizon, the City will need an additional one million gallons per day (MGD) of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. In addition, the existing piping is also sufficient. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Sewer

The City of Sherwood (serving the Sherwood South URA) and Clean Water Services, (CWS) has an intergovernmental agreement. The City owns, operates, and maintains the wastewater collection system within City limits, and CWS provides wastewater treatment.

Sewer from the City of Sherwood flows to the CWS Sherwood Pump Station where it is conveyed in an 18-inch force main to the CWS Upper Tualatin Interceptor. CWS provides wastewater treatment through the Durham Wastewater Treatment Plant (WWTP). CWS has indicated that the WWTP has capacity to serve areas within the current UGB.

According to the City of Sherwood 2016 Sanitary Sewer Master Plan, the existing pipe network and the Sherwood Pump Station have adequate capacity to serve existing flows. However, there are deficiencies in the pipe network and the Sherwood Pump Station to be able to serve build-out of the existing UGB.

CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 503 dwelling units appears to be adequate. The estimated average daily demand generated by the development of the Sherwood North URA is approximately 0.2MG.

The Master Plan did not include the Sherwood North URA in its analysis. However, the Sherwood West and a portion of the Tonquin URA was included. For the purpose of this report, it is assumed that only one URA will be developed at a time. The City of Sherwood Master Plan assumed that 2,066 dwelling units of Sherwood West URA would be included in the 20-year planning horizon. Therefore, presumably, if the Sherwood North URA (503 dwelling units) were to develop instead of the Sherwood West URA, there would be available capacity in the existing system with regards to storage, pumping, and piping. As mentioned above, the City will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional areas added from the URA.

Sewer

Capacity appears to be available in the CWS, Durham WWTP. This URA projected for only 503 dwelling units should not require upgrades to the WWTP. The estimated peak flow added to the system with the development of this URA is approximately 0.7 cfs (0.5 MGD).

There are several existing 8-inch sewer lines that extend from the adjacent developments near the Sherwood North URA southern boundary. The western portion of this URA would likely be served by the Sherwood trunk, while the eastern portion will be served by the Rock Creek Trunk. According to the Master Plan, both trunk lines will require improvements in order to serve the build out of the existing UGB.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

Development of this URA has no arterials or collectors. Therefore all of the water will be extended in to this URA by Developers. Connections to existing waterlines are presumably available in adjacent developed areas.

Sewer

CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple URA's could result in a need for some expansion in order to handle the additional load.

Improvements are needed to existing lines in order to serve areas within the existing UGB. If the URA is included in the UGB expansion, the improvements would presumably be sized to support development within Sherwood North URA. Cost of these improvements is not included in this analysis.

Impacts to the wastewater system are primarily local in nature, occurring as development occurs. Development of the wastewater system for this URA has no arterials or collectors. Therefore all of the utilities will be installed at the expense of the developers.

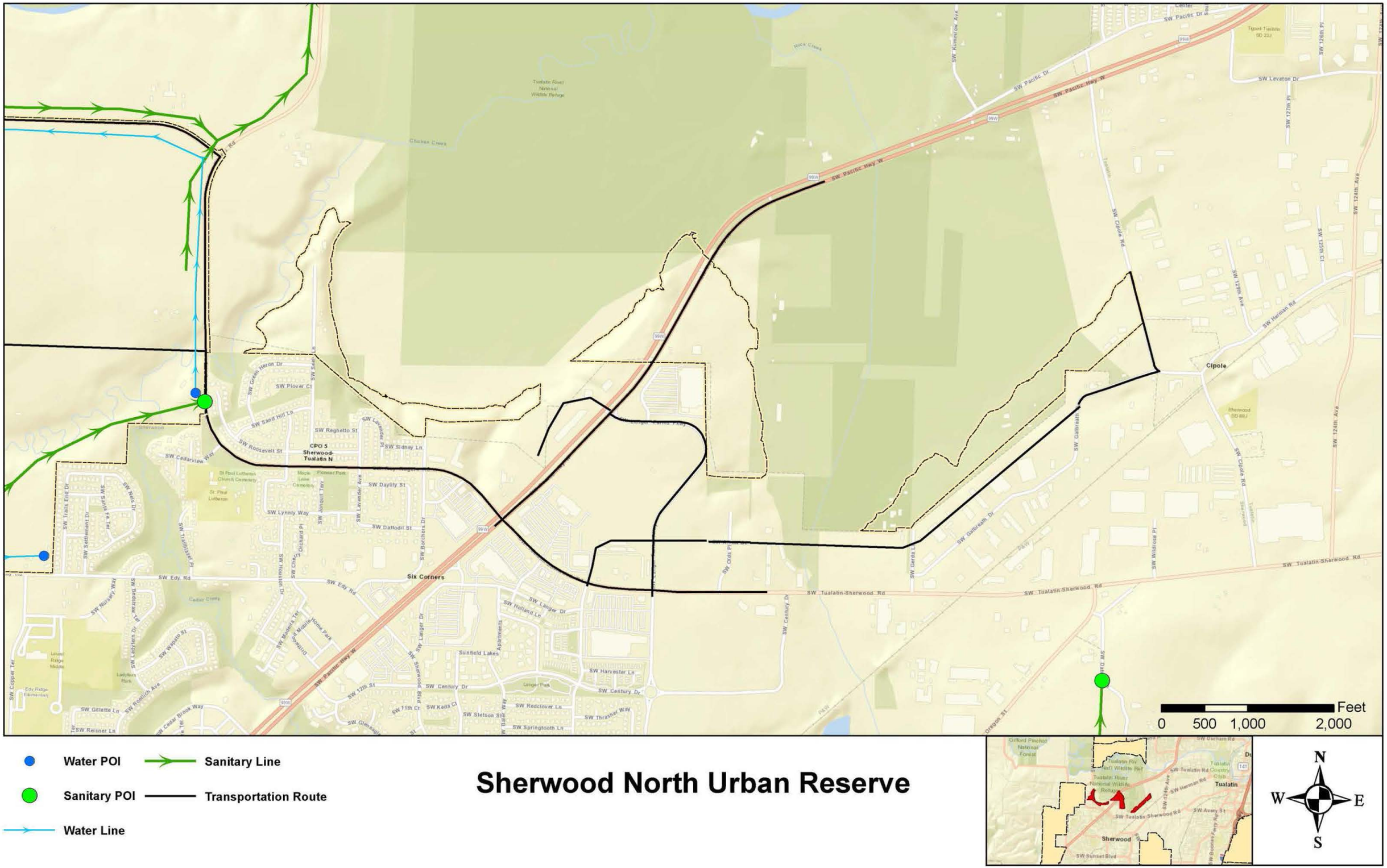
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length				
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$0	$0	$0	$0
			Subtotal Cost	**$0**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$0**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length				
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$0	$0	
			Subtotal Cost	**$0**
Storage and Pumping Costs				$630,000
			Total Water System Cost Estimate	**$630,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		13,500	10,200	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,700,000	$2,295,000	
			Subtotal Cost	**$4,995,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,430,000	$2,448,000	
			Subtotal Cost	**$4,878,000**
			Total Storm Drain Cost Estimate	**$9,873,000**



Sherwood North Urban Reserve

SHERWOOD SOUTH URBAN RESERVE AREA (5D)

SHERWOOD SOUTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

The City of Sherwood Water Master Plan was updated in 2015. The Master Plan includes areas within the existing UGB as well as the Sherwood West urban reserve area (URA) and a portion of the Tonquin URA.

The City of Sherwood draws the majority of its water supply from the Willamette River Water Treatment Plant, (WRWTP) in the City of Wilsonville, approximately six miles southeast of Sherwood. The City owns five million gallons per day (MGD) of production capacity in the existing WRWTP facilities. Sherwood also maintains four groundwater wells within the City limits for back-up supply. Prior to 2011, the City also purchases water from the Portland Water Bureau (PWB) through the City of Tualatin's water system and maintains an emergency connection and transmission piping associated with this supply source.

According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping.

According to the Master Plan, a portion of the Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within the 20-year planning horizon. To support the 20-year planning horizon, the City will need an additional 1 MGD of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. In addition, existing piping also sufficient. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Sewer

The City of Sherwood (serving the Sherwood South URA) and Clean Water Services, (CWS) has an intergovernmental agreement. The City owns, operates and maintains the wastewater collection system within City limits, and CWS provides wastewater treatment.

Sewer from the City of Sherwood is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the City. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham Wastewater Treatment Plant (WWTP). The Durham WWTP handles most of the URAs in the south, of Washington County.

The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are part of the UGB). The Sherwood South URA was not considered in the Master Plan.

The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station and treatment plant). However, the Master Plan indicates that at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor.

CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 1,841 dwelling units appears to be adequate, or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Sherwood South URA is approximately 0.6 MG.

The Master Plan did not include the Sherwood South URA in its analysis. However, the Sherwood West and a portion of the Tonquin URA was included. For the purpose of this report, it is assumed that only one URA will be developed at a time. The City of Sherwood Master Plan assumed that 2,066 dwelling units of Sherwood West URA would be included in the 20-year planning horizon. Therefore, presumably, if the Sherwood South URA (1,841 dwelling units) were to develop instead of the Sherwood West URA, there would be available capacity in the existing system with regards to storage, pumping, and piping. As mentioned above, the City will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional areas added from the URA.

Sewer

Capacity appears to be available in the CWS Durham WWTP. This URA for 1,841 dwelling units may require small upgrades to the WWTP. The estimated peak flow added to the system with the development of this URA is approximately 2.6 cfs (1.7 MGD).

Assuming areas within the existing UGB develop prior to the Sherwood South URA, the portions of the system mentioned above would not have capacity to serve the URA. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the URA.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

This report and associated cost estimates assume that the Brookman Addition will be developed prior to this URA. There are no existing waterlines adjacent to the site. Once the Brookman Addition is developed, water will be available along the URA's north boundary. The cost estimates do not include costs to extend water through the Brookman Addition. . The laterals off the mains are provided by the developer.

Sewer

Sewer from the Sherwood South URA will be served by the Sherwood trunk line. Currently, no existing sewer extends south to the site. For the purpose of this report, it is assumed that the Brookman Addition will develop prior to the URA. Sewer lines in the Brookman Addition would presumably extend to the northern boundary of the Sherwood South URA. New lines will be needed to extend throughout the site. The laterals off the mains will be provided by the developer.

CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple URAs could result in a need for some expansion in order to handle additional load.

Upsizing of existing infrastructure would be required as noted above. The actual amount of any upsizing that would be needed is not known at this time.

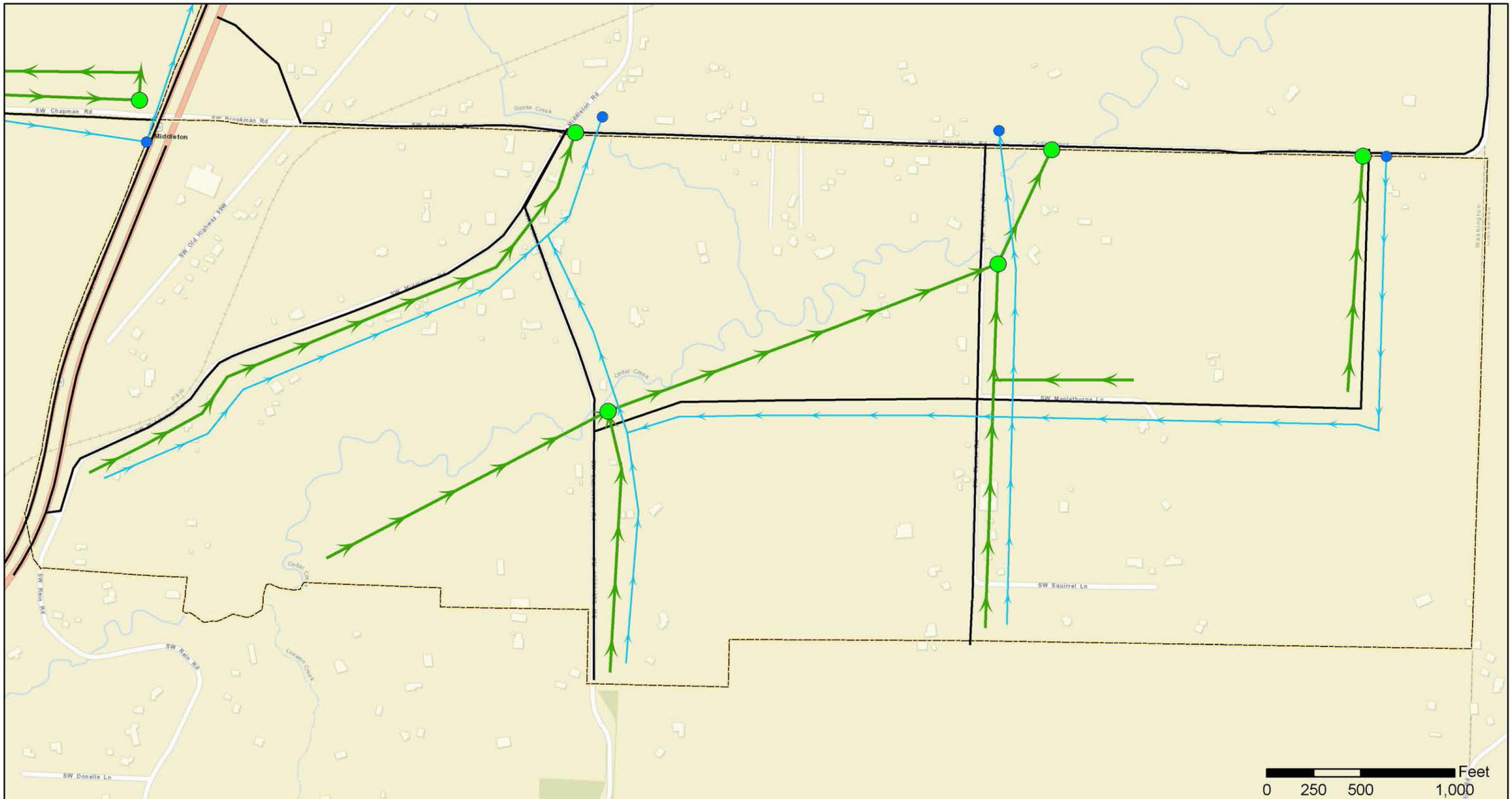
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	800	12,500		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$136,000	$2,375,000	$0	$0
			Subtotal Cost	**$2,511,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,511,000**

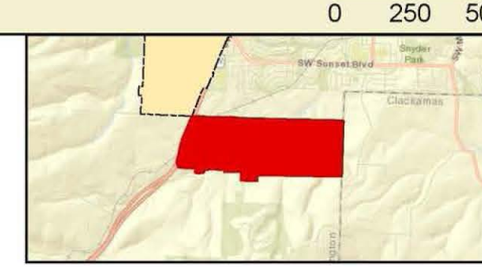
Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		14,000		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$3,920,000	$0	
			Subtotal Cost	**$3,920,000**
Storage and Pumping Costs				$7,875,000
			Total Water System Cost Estimate	**$11,795,000**

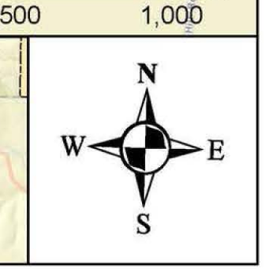
Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		14,900	10,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,980,000	$2,430,000	
			Subtotal Cost	**$5,410,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,682,000	$2,592,000	
			Subtotal Cost	**$5,274,000**
			Total Storm Drain Cost Estimate	**$10,684,000**



Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route

Sherwood South Urban Reserve





SHERWOOD WEST URBAN RESERVE AREA (5B)

SHERWOOD WEST URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The City of Sherwood Water Master Plan was updated in 2015. The Master Plan includes areas within the existing UGB as well as the Sherwood West urban reserve area (URA) and a portion of the Tonquin URA.

The City of Sherwood draws the majority of its water supply from the Willamette River Water Treatment Plant, (WRWTP) in the City of Wilsonville, approximately six miles southeast of Sherwood. The City owns five million gallons per day (MGD) of production capacity in the existing WRWTP facilities. Sherwood also maintains four groundwater wells within the City limits for back-up supply. Prior to 2011, the City also purchased water from the Portland Water Bureau (PWB) through the City of Tualatin's water system and maintains an emergency connection and transmission piping associated with this supply source.

According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping.

According to the Master Plan, a portion of the Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within the 20-year planning horizon. To support the 20-year planning horizon, the City will need an additional one MGD of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. In addition, existing piping also sufficient. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Sewer

The City of Sherwood (serving the Sherwood West URA) and Clean Water Services, (CWS) has an intergovernmental agreement. The City owns, operates, and maintains the wastewater collection system within City limits and CWS provides wastewater treatment.

Sewer from the City of Sherwood is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the City. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham Waste Water Treatment Plant (WWTP). The Durham WWTP handles most of the URA's in the south, of Washington County.

The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area and the Brookman Addition, which are part of the UGB). The Sherwood West URA was not considered in the Master Plan.

The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station, and treatment plant). However, the Master Plan indicates that at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor.

CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this Urban Reserve (5B) for 6,495 dwelling units appears to be adequate, or they will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Sherwood North URA is approximately 2.3 MG.

Sherwood West and a portion of the Tonquin URA was included in the Water Master Plan. The City of Sherwood Master Plan assumed that 2,066 dwelling units of Sherwood West URA would be included in the 20-year planning horizon. A total of 7,974 dwelling units was assumed within the Sherwood West URA at full-build out, greater than the total dwelling units assumed in this analysis. According to the Master Plan, there would be available capacity in the existing system with regards to storage, pumping, and piping to serve a portion of the site (through the 20-year planning horizon). As mentioned above, the City will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional areas added from the URA.

Sewer

Capacity appears to be available in the CWS Durham WWTP. This Urban Reserve (5B) projected for 6,495 dwelling units may require upgrades to the WWTP. The estimated peak flow added to the system with the development of this URA is approximately 8.2 cfs (5.3 MGD).

Assuming areas within the existing UGB develop prior to the Sherwood West URA, the system would not have capacity to serve the URA. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the URA.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City of Sherwood Master Plans indicate several improvements to the existing water system would be needed to serve the Sherwood West URA at full build-out. According to the Master Plan, an additional four MG of water would need to be obtained from the WRWTP to supply the area. The Master Plan indicates that full development of the area may result in minor storage and pumping deficiencies that should be evaluated in the future. The Master Plan suggests that existing piping would be sufficient; however, new waterlines would need to be extended throughout the URA. Connections to existing water lines are available along the eastern project boundary.

The laterals off the mains would be provided by the developer.

Sewer

Sewer from the Sherwood West URA will be served by the Sherwood trunk line. New lines will be needed to extend throughout the site. Based on existing topography, the northern portion of the URA should be served by gravity lines, whereas the southern portion may require a pump station and force main to convey flows to the Sherwood Trunk. The laterals off the mains will be provided by the Developer.

Wastewater services at the Durham WWTP may require upgrades for this amount of urban development. The upgrades and financial impacts are beyond the scope of this report.

Upsizing of existing infrastructure would be required as noted above. The actual amount of any upsizing that would be needed is not known at this time.

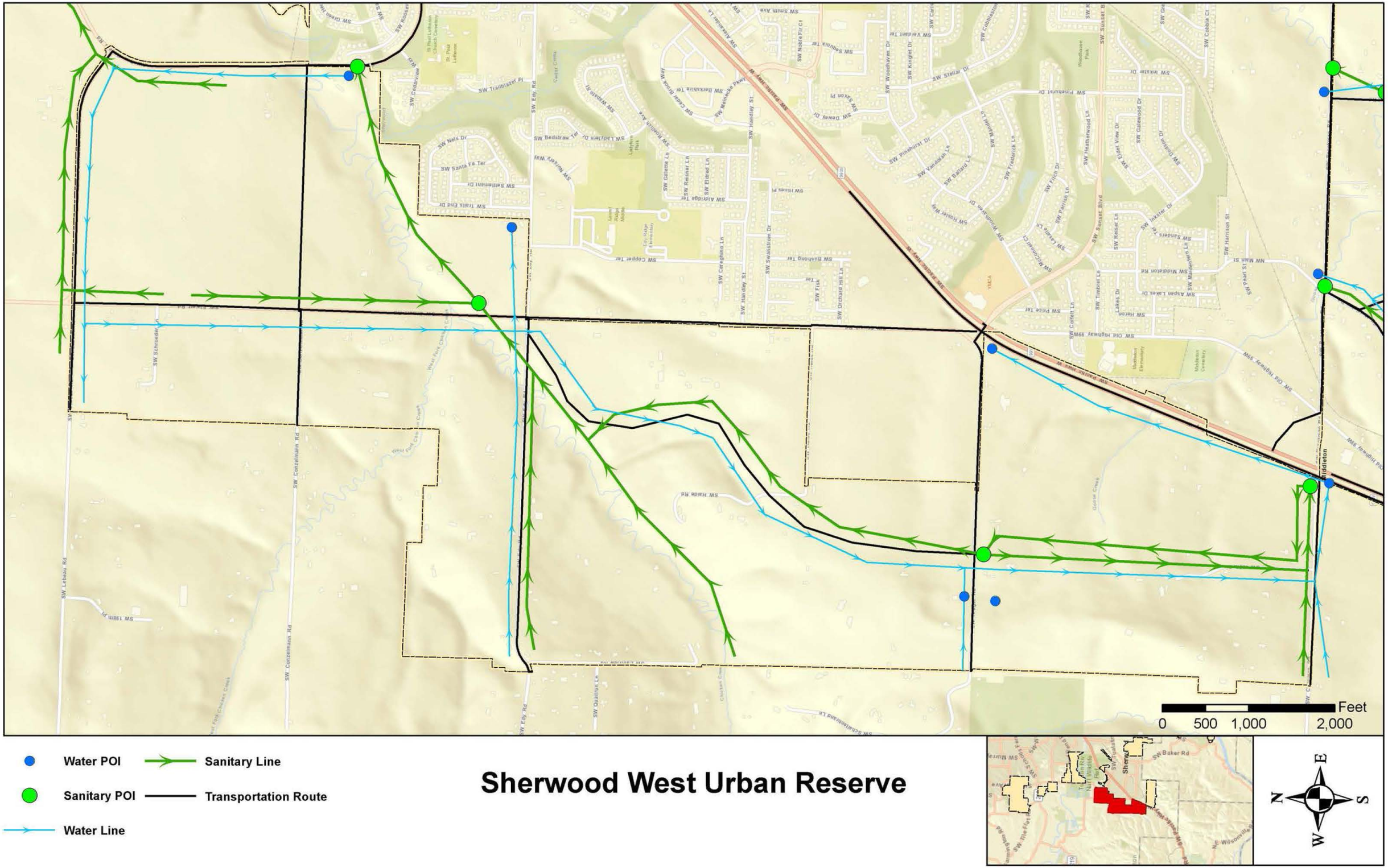
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	800	12,500		
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$136,000	$2,375,000	$0	$0
			Subtotal Cost	**$2,511,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$2,511,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		14,000		
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$3,920,000	$0	
			Subtotal Cost	**$3,920,000**
Storage and Pumping Costs				$7,875,000
			Total Water System Cost Estimate	**$11,795,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		14,900	10,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$2,980,000	$2,430,000	
			Subtotal Cost	**$5,410,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$2,682,000	$2,592,000	
			Subtotal Cost	**$5,274,000**
			Total Storm Drain Cost Estimate	**$10,684,000**



Sherwood West Urban Reserve

SOUTH URBAN RESERVE AREA (6H)

SOUTH URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already in inside the Urban Growth Boundary (UGB).

Water

Water will be provided by the City of Hillsboro a member of the Joint Water Commission (JWC). With regards to water supply, treatment, storage, and piping, it appears that Hillsboro has capacity for areas inside the current UGB.

Sewer

Sanitary sewer from the South area will flow to the Rock Creek Wastewater Treatment Plant (WWTP) via the River Road Pump Station.

Clean Water Services (CWS) provides wastewater treatment at the Rock Creek WWTP. Sanitary Sewer from the South urban reserve area (URA) will be conveyed to the WWTP via the River Road Pump Station.

It appears that there is adequate capacity to meet current UGB needs.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 2,691 dwelling units appears to be adequate, or the City will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the URA is approximately 0.9 MG.

The City of Hillsboro currently has three ground level reservoirs that provide water. In addition, Hillsboro is a partner of the Willamette Water Supply Project. There is a project planned to construct a Willamette Supply tank in the Cooper Mountain Area. The City indicated that within the proposed Willamette Water Supply, they will have capacity to serve the SouthURA.

The City is currently planning for this URA. It is possible that an existing water line in River Road will need to be upsized. This can be confirmed during the planning effort.

Sewer

CWS indicated that the Rock Creek WWTP has enough capacity to handle additional flows from the South URA. The estimated peak flows added to the system with the development of this URA is approximately 4.6 cfs (3.0 million gallons per day (MGD)).

Storm Water

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City indicated that there would not be impacts to the existing water system to serve nearby areas already inside the UGB. Hillsboro is working with the Portland Water Bureau on an Inter-governmental Agreement to have the ability to get additional water in times of emergency via an inter-tie Tualatin Valley Water District.

New water mains must be provided to achieve the full potential development. The new water mains will be developer funded. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is unknown at this time.

Sewer

This URA is projected to have 2,691 dwelling units. The Rock Creek WTTP is large facility, serving a broad area. It was of course planned and built before this URA was considered. Therefore small upgrades may be required. The upgrades and financial impacts are beyond the scope of this narrative.

According to CWS, the existing River Road Pump Station was designed for expansion, and with a pump replacement, it should be able to handle additional flows from this URA. CWS also indicated that the Rock Creek WWTP should have capacity for additional flows.

Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

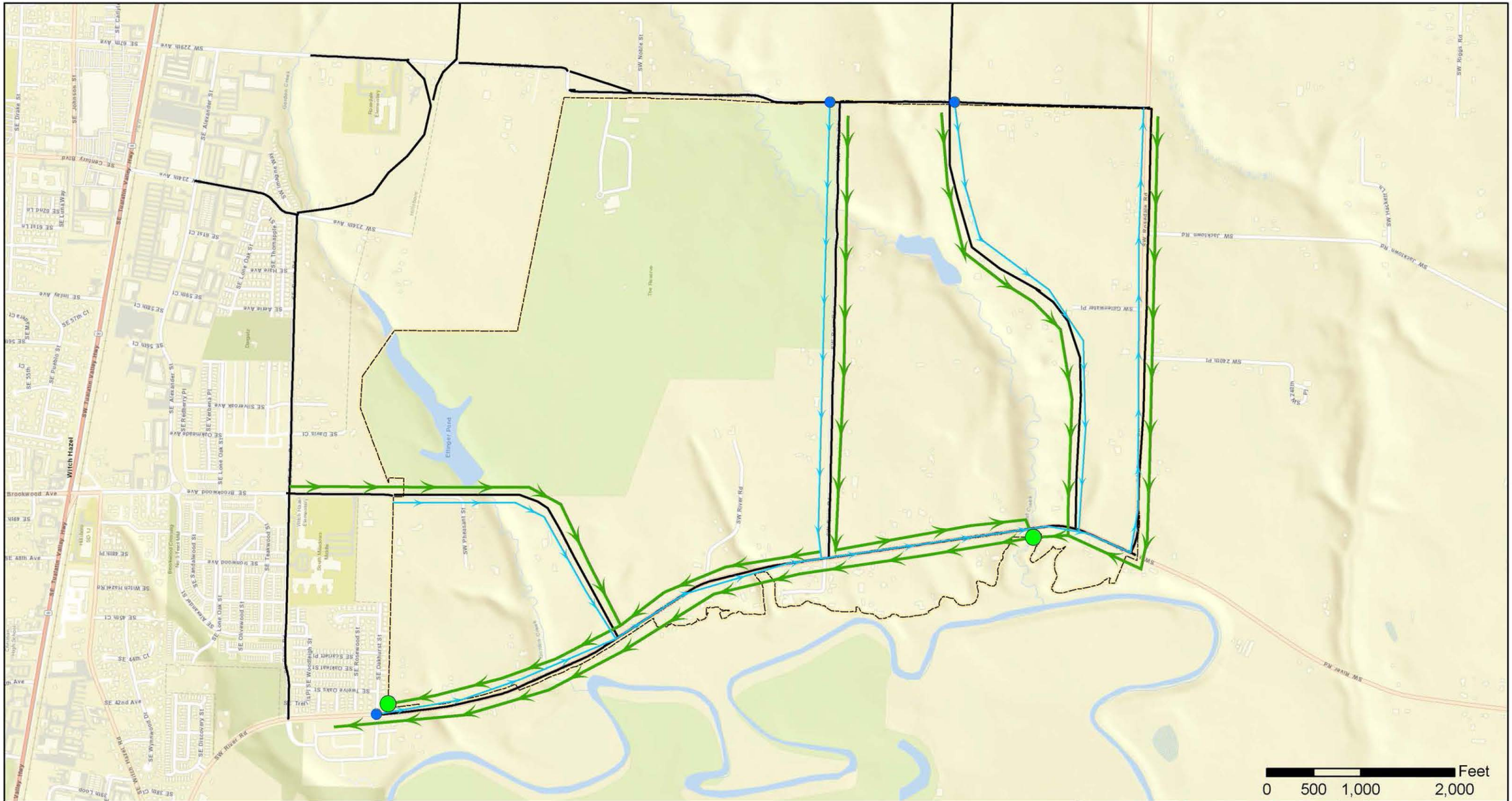
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	27,300			7,900
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$4,641,000	$0	$0	$1,382,500
			Subtotal Cost	**$6,023,500**
Proposed Pump Stations				$750,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$6,773,500**

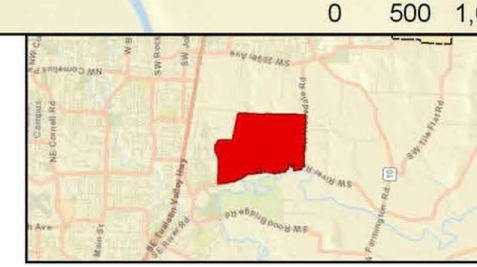
Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		13,000	13,300	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$3,640,000	$5,586,000	
			Subtotal Cost	**$9,226,000**
Storage and Pumping Costs				$3,255,000
			Total Water System Cost Estimate	**$12,481,000**

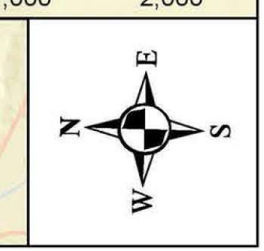
Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		38,700	11,800	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$7,740,000	$2,655,000	
			Subtotal Cost	**$10,395,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$6,966,000	$2,832,000	
			Subtotal Cost	**$9,798,000**
			Total Storm Drain Cost Estimate	**$20,193,000**



Water POI
Sanitary POI
Water Line
Sanitary Line
Transportation Route

South Urban Reserve





STAFFORD URBAN RESERVE AREA (4A)

STAFFORD URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

Two cities could potentially serve this urban reserve with potable water, Lake Oswego and West Linn.

Both of these systems are part of the Lake Oswego – Tigard Water Partnership. Potable water comes from South Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWF operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division Street. in Oregon City. The water treatment plant was upgraded in October 2016.

Both cities have stated that there are no problems or issues related to serving the areas currently within the UBG with regard to pumping, storage, and piping, and the available supply of water.

Sewer

Lake Oswego and West Linn send their sewer in different directions.

Lake Oswego sends sewer to the City of Portland's facility at the Tryon Creek Waste water Treatment Plan (WWTP). The City is currently engaging in a $26 million capital improvements plan to address issues related to aging pipe infrastructure, trunk upsizing and pump station capacity. Trunk upsizing is directed specifically to the Canal and Southwood basins.

The other wastewater system, serving West Linn, is the Tri-City Service District, made up of West Linn, Oregon City, and Gladstone. This service district and the Clackamas County Service District No. 1 combined, handles flow from Happy Valley, Damascus, Milwaukie, and the unincorporated portions of Clackamas County. A third component of their wastewater treatment is the Water and Environmental Services, or (WES). With major facilities located at a lower elevation than that urban reserve area (URA), West Linn may be the logical provider of sewerage services.

According to the City of West Linn, additional treatment plant capacity is currently being constructed to accommodate areas within the existing UGB.

West Linn has also indicated that there is adequate capacity within the existing pipe networks and pump stations.

Stormwater

The City of West Linn indicated that there were no major issues regarding the existing stormwater system.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Both cities have indicated the ability to provide potable water to the reserve area.

Lake Oswego has roughly two million gallons per day (MGD) of excess treatment capacity. No excess capacity exists for transmission however. Water storage and pumping for the reserves does not exist at this time. Connection points exist at Laurel Street and Erickson Street where access is made to the Bergis Reservoir for transmission. Additional storage would need to be created in the reserve area. A pump station at McVey and Oak Street is available but will need expansion.

The City of West Linn indicated that there are no issues with water supply to serve the Stafford URA. The treatment plant will likely require upgrades in order to deliver the supply. There is a 16-inch waterline in Rosemont Road that could be used to serve the URA. There will be several pressure zones within the Stafford area, and, as with Lake Oswego, new water tanks will be needed to provide both adequate storage and pressure for the URA.

Sewer

As mentioned above, Lake Oswego could potentially serve the reserve but would require system upgrades and additions within the UGB along with new facilities within the reserve. Connection points to the system that would facilitate such service can be found at: Atherton Road Near Stafford Road, Childs Road near SW 35th Court, and via the Bryant Road Pump Station at Bryant Road and Cardinal Drive trunk lines and pumps stations would need to be developed within the reserve.

The City of West Linn also noted that new infrastructure within the reserve would need to be constructed and indicated that the wastewater treatment plant would need to be expanded in order to provide capacity for the Stafford area. Also noted is that there is space for expansion at the treatment plant. An alternative to consider would be to construct a pre-treatment plant within the Stafford URA which could potentially eliminate the need for treatment plant expansion. In addition, existing pump stations would require upgrades. Existing pipe capacities are unknown and further analysis would be required to determine the extent of trunk line upgrades.

Stormwater

Stormwater would be conveyed, treated, and discharged on-site, and therefore, existing systems would not be impacted. All new development would utilize the current City of West Linn Storm Drainage Master Plan.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

Potable water could readily come from Lake Oswego or West Linn. Estimates indicated an average daily demand of 3.0 MG for the Stafford URA. Lake Oswego has 2.0 MGD available. West Linn has enough water rights to supply the system, but some capacity related upgrades to the water treatment plant will be necessary. Both Cities have indicated that new water storage tanks will be required to serve the area. New water mains must be provided to allow development of this URA. The laterals off the mains are provided by the developer. Only limited knowledge is available at this time regarding the amount of upsizing from the serving utility that would be needed.

The Borland urban reserve is expected to precede this reserve in terms of development phasing. Doing so would allow for location of a water facilities and the related distribution network that would be necessary to serve portions of the reserve.

Sewer

The Stafford URA would introduce an estimated 15.4 cfs into the existing system.

Wastewater services (digesters) in the WES system would need upgrades. The upgrades and financial impacts are beyond the scope of this report.

Impacts to the wastewater system are primarily financial. New wastewater mains must be provided to allow development of this Urban Reserve area. The laterals off the mains are provided by the developer.

The amount of any upsizing from the serving utility that would be needed is not known at this time.

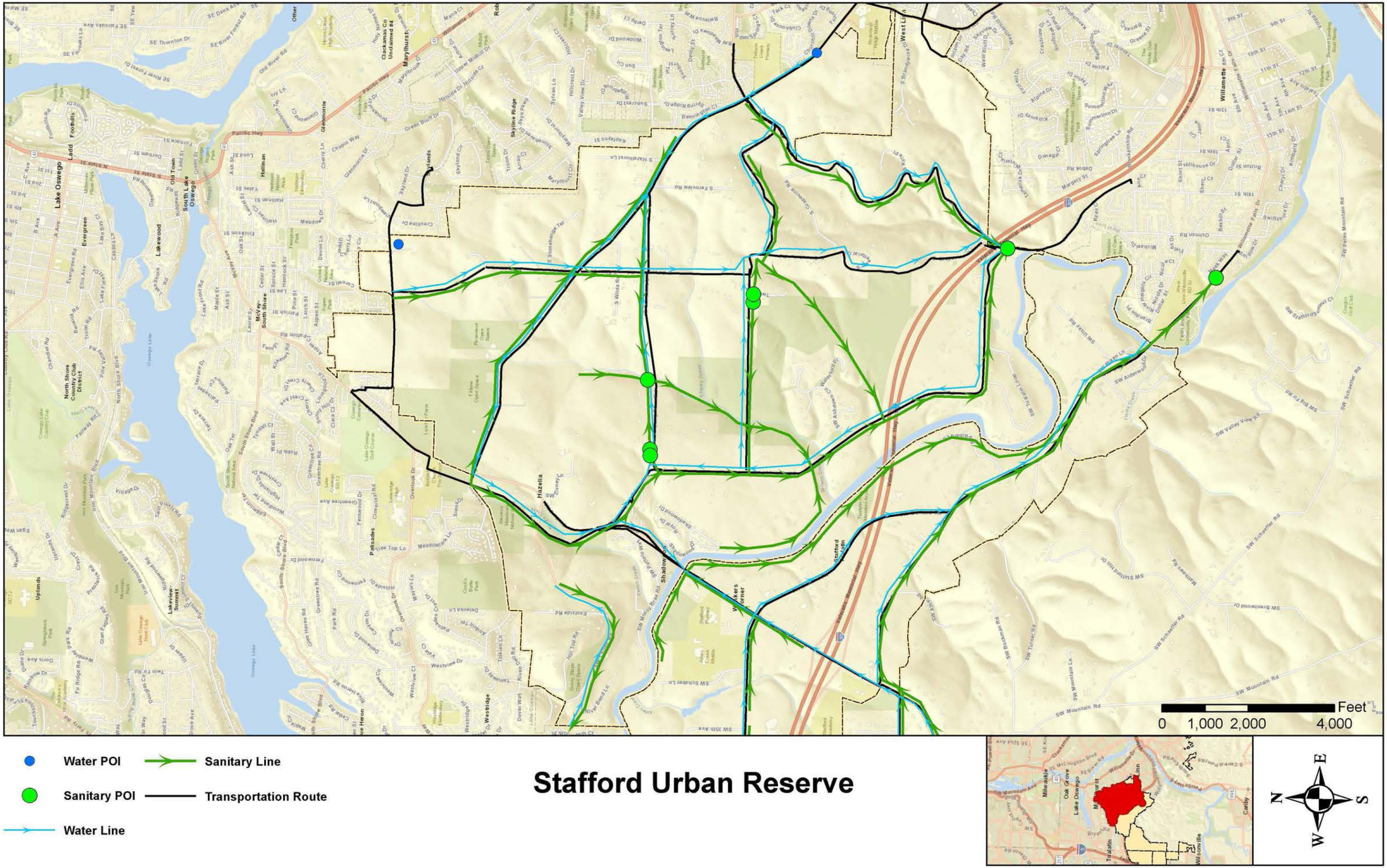
Stormwater

Stormwater would be conveyed, treated, and discharged on-site, and therefore, existing systems would not be impacted.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	21,700	21,600	14,900	
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$3,689,000	$4,104,000	$2,831,000	$0
			Subtotal Cost	**$10,624,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$10,624,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		20,100	53,700	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$5,628,000	$22,554,000	
			Subtotal Cost	**$28,182,000**
Storage and Pumping Costs				$10,360,000
			Total Water System Cost Estimate	**$38,542,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		95,600	64,300	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$19,120,000	$14,467,500	
			Subtotal Cost	**$33,587,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$17,208,000	$15,432,000	
			Subtotal Cost	**$32,640,000**
			Total Storm Drain Cost Estimate	**$66,227,500**



Stafford Urban Reserve

TONQUIN URBAN RESERVE AREA (5F)

TONQUIN URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

The City of Sherwood Water Master Plan was updated in 2015. The Master Plan includes areas within the existing Urban Growth Boundary (UGB) as well as the Sherwood West urban reserve area (URA) and a portion of the Tonquin URA.

The City of Sherwood draws the majority of its water supply from the Willamette River Water Treatment Plant, (WRWTP) in the City of Wilsonville, approximately six miles southeast of Sherwood. The City owns five million gallons per day (MGD) of production capacity in the existing WRWTP facilities. Sherwood also maintains four groundwater wells within the City limits for back-up supply. Prior to 2011, the City also purchased water from the Portland Water Bureau (PWB) through the City of Tualatin's water system and maintains an emergency connection and transmission piping associated with this supply source.

According to the Master Plan, the water system has adequate capacity to serve the existing UGB through the 10-year planning horizon with respect to water supply, storage, pumping, and piping.

According to the Master Plan, a portion of the Brookman Addition and the Tonquin Employment Area (located within the existing UGB) are projected for development within the 20-year planning horizon. To support the 20-year planning horizon, the City will need an additional one million gallons per day (MGD) of supply from the WRWTP. The Master Plan indicates that existing storage and pumping have sufficient capacity for the 20-year planning horizon. In addition, existing piping is also sufficient. New large diameter water lines will need to be extended into the currently undeveloped Brookman Addition and Tonquin Employment Area.

Sewer

The City of Sherwood (serving the Tonquin URA) and Clean Water Services (CWS) has an intergovernmental agreement. The City owns, operates, and maintains the wastewater collection system within City limits and CWS provides wastewater treatment.

Sewer from the City of Sherwood is conveyed via gravity pipes to the Sherwood Pump Station (maintained by CWS) located northeast of the City. Downstream of the pump station, flows utilize the CWS Upper Tualatin Interceptor to the Durham Wastewater Treatment Plant (WWTP). The Durham WWTP handles most of the URA in the south, of Washington County.

The City of Sherwood updated their Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the City of Sherwood city limits as well as the Tonquin Employment Area and the Brookman Addition, which are part of the UGB). The Sherwood South URA was not considered in the Master Plan.

The Master Plan indicates that there is sufficient capacity for existing development (conveyance, pump station, and treatment plant). However, the Master Plan indicates that at full build-out of the UGB, there are deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor.

CWS has indicated that it has plans to construct a new pump station to supplement the capacity of the Sherwood Pump Station. In addition, CWS is planning for upgrades to the Upper Tualatin Interceptor. These improvements are anticipated within the next five years. Upsizing of the Sherwood and Rock Creek trunk lines would be shared between City of Sherwood and CWS.

Stormwater

There is no indication of issues with existing stormwater that would impact this URA.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

Water for this URA for 1,009 dwelling units appears to be adequate, or the City will be able to generate the supply as this area comes online. The estimated average daily demand generated by the development of the Sherwood North URA is approximately 0.35MG.

The master plan included a portion of the Tonquin URA (591 dwelling units) in its analysis beyond the 20-year planning horizon. The City of Sherwood Master Plan assumed that 2,066 dwelling units of Sherwood West URA would be included in the 20-year planning horizon. Therefore, presumably, if the Tonquin URA (1,009 dwelling units) was to develop instead of the Sherwood West URA, there would be available capacity in the existing system with regards to storage, pumping, and piping. As mentioned above, the City will need to obtain additional supply from the WRWTP to serve full development of the existing UGB as well as additional areas added from the URA.

Sewer

Capacity appears to be available in the CWS, Durham WWTP. This URA for 1,009 dwelling units may require small upgrades to the WWTP if any at all. The estimated peak flow added to the system with the development of this URA is approximately 2.3 cfs (1.5 MGD).

Assuming areas within the existing UGB develop prior to the Tonquin URA, the portions of the system mentioned above would not have capacity to serve the URA. However, after improvements are made to the existing system to accommodate the current UGB, there may be additional capacity available for the URA.

Stormwater

Stormwater will be conveyed, treated, and disposed of on-site, therefore, it is not anticipated that existing facilities would be utilized.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

New water mains must be provided to allow development of this URA. It appears that new water mains can be extended to this area near its western boundary. The undeveloped Tonquin Employment Area (TEA) lies between existing development and the URA. If the TEA is developed first, water service could presumably be extended to the site from the TEA. The laterals off the mains will be provided by the developer.

Sewer

Sewer from the Tonquin URA will be served by the Rock Creek trunk line. Currently, no existing sewer extends to the site. A sewer line would need to be constructed through the Tonquin Employment Area to serve this site. New lines will be needed to extend throughout the site. The laterals off the mains will be provided by the developer. Based on existing topography, sewer service for this site would require a pump station.

CWS' Durham WWTP is a large facility with a broad service area. The cumulative addition of multiple Urban Reserves could result in a need for some expansion in order to handle additional load.

Upsizing of existing infrastructure would be required as noted above. The actual amount of any upsizing that would be needed is not known at this time.

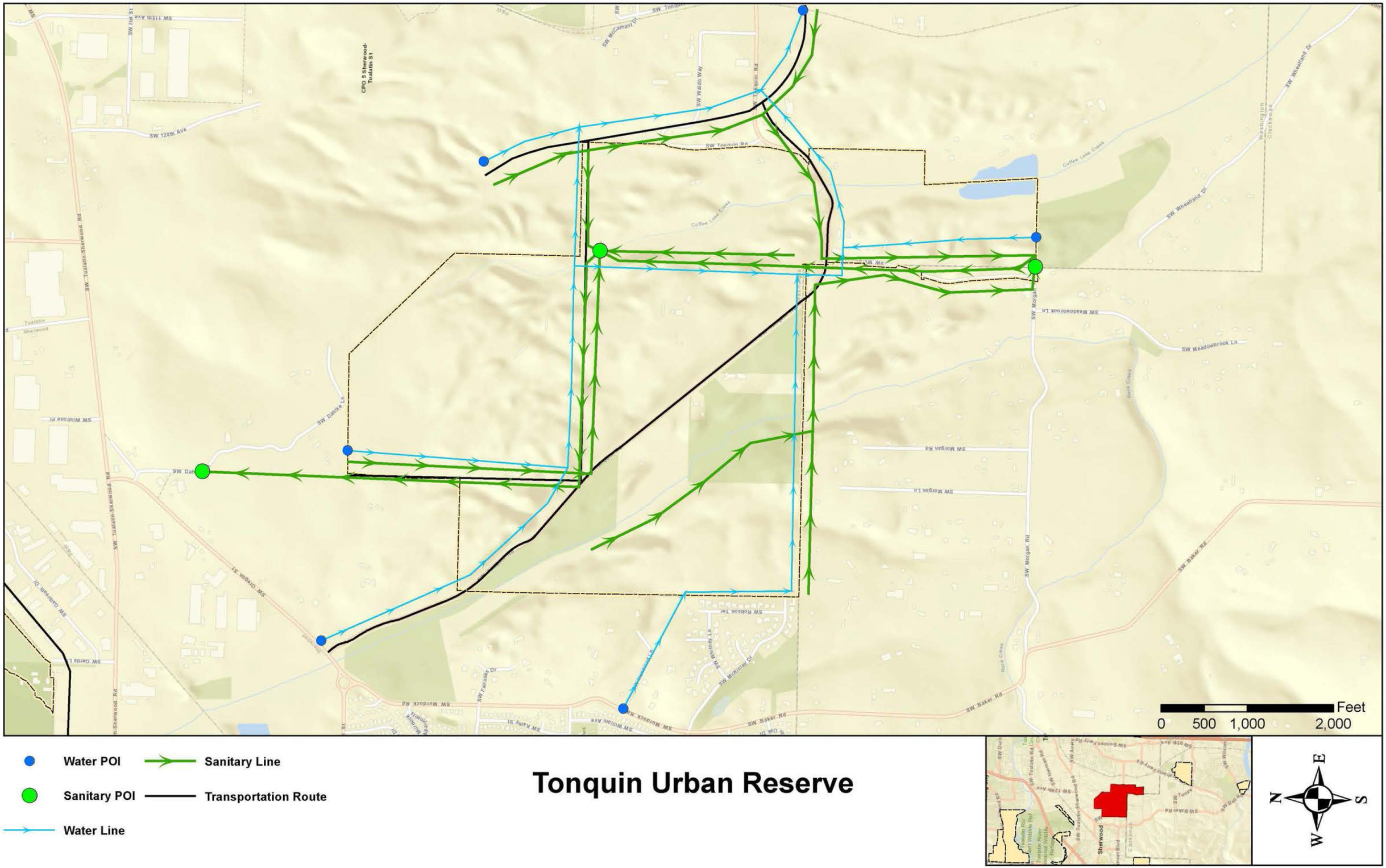
Stormwater

Stormwater will be conveyed, treated, and disposed of on-site; therefore, no impacts to existing facilities are anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	39,900			12,000
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$6,783,000	$0	$0	$2,100,000
			Subtotal Cost	**$8,883,000**
Proposed Pump Stations				$800,000
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$9,683,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		21,300	7,600	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$5,964,000	$3,192,000	
			Subtotal Cost	**$9,156,000**
Storage and Pumping Costs				$1,225,000
			Total Water System Cost Estimate	**$10,381,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length		6,700	14,400	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$1,340,000	$3,240,000	
			Subtotal Cost	**$4,580,000**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$1,206,000	$3,456,000	
			Subtotal Cost	**$4,662,000**
			Total Storm Drain Cost Estimate	**$9,242,000**



Tonquin Urban Reserve

WILSONVILLE SOUTHWEST URBAN RESERVE AREA (5H)

WILSONVILLE SOUTHWEST URBAN RESERVE AREA

The capacity of existing public facilities and services to serve areas already inside the Urban Growth Boundary (UGB).

Water

Water comes from the west side of the City of Wilsonville. The City owns and maintains the Willamette River Water Treatment Plant (WRWTP). The plant is capable of processing 15 million gallons per day (MGD).

Current storage capacity is at 11 MG. The City has budgeted for a project to provide additional storage to serve proposed development within the existing UGB.

At present, existing pump stations and pipe networks are adequate to serve the area within the existing UGB.

Sewer

The City of Wilsonville is served by a modern plant, located at 9275 Southwest Tauchman Road. The plant was rebuilt and upgraded in 2014 to include modern wastewater treatment technology, and a new odor control system. This increase capacity from 2.5 MGD to 4.0 MGD to accommodate continued growth.

Stormwater

No current issues were identified within the City that would impact the development of the Urban Reserve Area (URA). For stormwater management, the downtown area uses a regional facility. New development would be encouraged to use Low Impact Development Approaches (LIDA) facilities to treat stormwater on-site.

The capacity of existing public facilities and services to serve areas proposed for addition to the UGB.

Water

The City noted that they have ample water rights for the long term, so water supply should not be an issue. The additional 10 MG expansion of the treatment plant in 2035 should provide for the URA areas. Currently, existing storage tanks will not have capacity to serve development outside of the existing UGB.

Sewer

The wastewater treatment plant can serve a population of 35,000 people. The plant currently serves 24,000 people. The development of the Frog Pond area (existing UGB) will use some capacity, but will not likely trigger any treatment plant upgrades. However, future industrial development anticipated in the Basalt and Coffee Creek areas could require capacity upgrades. Depending on actual development rates, the City is planning to expand the treatment plant in 2030. At this time, it is unknown if the treatment plant will have additional capacities to serve the URA.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA.

The impacts to existing water, sanitary sewer, stormwater and transportation facilities that serve nearby areas already inside the UGB.

Water

The City feels confident that it will have water capacity and storage to serve the URAs that lie beyond the city limits. Numerous connection points exist at the edge of the URA that is assumed to be of adequate size. Transmission lines within the URA are expected to be built as development occurs.

Sewer

Based on a conceptual level sewer sizing analysis, approximately 0.4 cfs will be added to the existing system. Conceptual sewer layouts indicate that the additional flows would utilize existing sewer lines ranging in size from 8-inch (at the upstream connection) to 30-inch (at the treatment plant. In addition, new flows would potentially utilize the existing Corral Creek Lift Station and Rivergreen Lift Station.

It is possible that capacity improvements would be required to the pump stations and the existing sewer lines. Available capacity of the existing infrastructure was not available at this time, and therefore, the extent of required improvements and associated costs are unknown.

Stormwater

Stormwater conveyance, treatment, and discharge are anticipated to occur within the URA, and therefore, improvements to the existing stormwater facilities are not anticipated.

Sanitary Sewer Services				
Sewer Pipe Size	8" - 12"	12 - 18"	18"+	Force Main
Estimated Pipe Length	3,700			
Estimated Pipe Unit Cost	$170	$190	$190	$175
Estimated Sewer Pipe Cost	$629,000	$0	$0	$0
			Subtotal Cost	**$629,000**
Proposed Pump Stations				
Proposed Borings for Creek Crossings				
			Total Sewer System Cost Estimate	**$629,000**

Water Services				
Water Pipe Size		12" and less	16" and greater	
Estimated Pipe Length		5,500	2,200	
Estimated Pipe Unit Cost		$280	$420	
Estimated Water Pipe Cost		$1,540,000	$924,000	
			Subtotal Cost	**$2,464,000**
Storage and Pumping Costs				$315,000
			Total Water System Cost Estimate	**$2,779,000**

Storm Drain Services				
Road Classification		Collector	Arterial	
Road Length			3,100	
Storm Conveyance Unit Cost		$200	$225	
Estimated Storm Conveyance Cost		$0	$697,500	
			Subtotal Cost	**$697,500**
Estimated Storm Water Quality and Detention Unit Cost		$180	$240	
Estimated Storm Water Quality and Detention Cost		$0	$744,000	
			Subtotal Cost	**$744,000**
			Total Storm Drain Cost Estimate	**$1,441,500**

Water POI

Sanitary POI

Water Line

Sanitary Line

Transportation Route

Wilsonville Southwest Urban Reserve

N
W E
S

Appendix 4: Goal 14 UGB Location Alternatives Analysis Results

	Factor 1	Factor 2				Factor 3		Factor 4
Urban Reserve	**Accommodation of land need**	**Sanitary sewer services**	**Water services**	**Storm water services**	**Transportation services**	**Environmental Consequences**	**Social/Energy/ Economic Consequences**	**Compatibility Ag /Forest**
Beaver Creek Bluffs	Yes	Low	Low	Low	Medium	Low (high)	Low (high)	High
Bendemeer	Yes	High	High	Medium	Medium	Medium-High (low)	Low (high)	High
Bethany West	Yes	High	High	Medium	Medium	Low (high)	Low (high)	Medium
Boring	Yes	Low	Low	Medium	Low	Medium-High (low)	High (low)	Low
Boring – Hwy 26	Yes	Low	Low	Medium	Low	Low	Medium	High
Borland	Yes	Low	Medium	Medium	Low	Low (high)-Medium	Low (high)	High
Brookwood Parkway	Yes	High	High	High	Medium	Low (high)	Low (high)	High
Damascus	Yes	Low	Low	High	Low	Low (high)-Medium	High (low)	High
David Hill	Yes	Medium	Medium	Low	Low	Low (high)	Low (high)	Medium
Elligsen Road North	Yes	Low	High	Medium	High	Low (high)	Medium	Low
Elligsen Road South	Yes	Low	High	Medium	Medium	Medium-High (low)	Low (high)	Low
Grahams Ferry	Yes	Medium	Medium	Medium	High	Low (high)	Low (high)	High
Gresham East	Yes	Low	Low	Medium	Medium	Medium-High (low)	Medium	Low
Henrici	Yes	Medium	Low	Medium	High	Low (high)	Low (high)	High
Holcomb	Yes	Low	Low	Medium	Low	Low (high)	Low (high)	High

Appendix 4: Goal 14 UGB Location Alternatives Analysis Results

	Factor 1			Factor 2		Factor 3		Factor 4
Urban Reserve	**Accommodation of land need**	**Sanitary sewer services**	**Water services**	**Storm water services**	**Transportation services**	**Environmental Consequences**	**Social/Energy/ Economic Consequences**	**Compatibility Ag/Forest**
Holly Ln/ Newell Ck	Yes	Low	Low	Medium	Low	Low (high)	Low (high)	High
I-5 East	Yes	Medium	Low	Medium	Medium	Medium-High (low)	Medium	Low
Maplelane	Yes	Low	Low	Medium	Low	Medium-High (low)	Low (high)	High
Norwood	Yes	Low	Low	Medium	Low	Low (high)-Medium	Low (high)-Medium	Low
River Terrace South	Yes	Medium	Medium	Medium	Medium	Low (high)-Medium	Medium	Medium
River Terrace West	Yes	Medium	Medium	Medium	Medium	Medium-High (low)	Medium	Medium
Rosa	Yes	Medium	High	Medium	Medium	Low (high)-Medium	Medium	Medium
Rosemont	Yes	Low	High	Medium	Medium	Low (high)	Low (high)	High
Sherwood North	Yes	High	High	High	High	Low (high)-Medium	Low (high)	High
Sherwood South	Yes	Low	Medium	Low	Low	Medium-High (low)	Low	High
Sherwood West	Yes	Low	Medium	High	Medium	Low (high)–Medium	Medium	Medium
Stafford	Yes	Low	Medium	Low	Low	Medium-High (low)	Medium	High
Tonquin	Yes	Low	Low	Low	Low	Low (high)-Medium	Low (high)-Medium	High
Wilsonville Southwest	Yes	Medium	Medium	Medium	High	Low (high)	Low (high)	High

Note: Factor 3 reports on the consequences of urbanizing an area, thus a low consequence is a high score and a high consequence is a low score

UGB Alternatives Analysis

Metro Code Factors

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Excellence

We aspire to achieve exceptional results

Teamwork

We engage others in ways that foster respect and trust.

Respect

We encourage and appreciate diversity in people and ideas.

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We take pride in coming up with innovative solutions.

Sustainability

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We inspire, engage, teach and invite people to preserve and enhance the quality of life and the environment for current and future generations.

If you picnic at Blue Lake or take your kids to the Oregon Zoo, enjoy symphonies at the Schnitz or auto shows at the convention center, put out your trash or drive your car – we've already crossed paths.

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TABLE OF CONTENTS

Introduction 1

Methodology 1

Results 4

Appendices 5

UGB ALTERNATIVE ANALYSIS – METRO CODE FACTORS

INTRODUCTION

In support of the 2023 urban growth boundary (UGB) exchange proposal Metro staff completed a two–step process for assessing the urban reserve areas in the region (Attachment 1 to Findings of Fact and Conclusions of Law). The first step was an assessment of all 29 urban reserve areas under Statewide Planning Goal 14 requirements for an UGB expansion. The boundary location factors of Goal 14 are:

- *Factor 1 – Efficient accommodation of identified land needs.*
- *Factor 2 – Orderly and economic provision of public facilities and services.*
- *Factor 3 – Comparative environmental, energy, economic and social consequences.*
- *Factor 4 – Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.*

This first analysis is included as Attachment 1 to Findings of Fact and Conclusions of Law. Seven urban reserve areas – Boring, Boring-Highway 26, Damascus, Stafford, Rosemont, Norwood and Tonquin – were determined to be clearly unsuitable for urbanization in the short term. Thus, these seven urban reserve areas are not included in the second step of the two-step process, which is this evaluation of the remaining 22 urban reserve areas for addressing the Metro Code factors for an UGB expansion.

The Metro Code factors for expanding the UGB are contained in Urban Growth Management Functional Plan (Functional Plan) Title 14: Urban Growth Boundary. Like the Goal 14 locational factors the Metro Code factors are not independent criteria. When the factors are applied to compare alternative boundary locations in order to help determine the UGB location, all the factors must be weighed and balanced. The Metro Code factors are:

- *Clear transition between urban and rural lands using natural and built features to mark the transition;*
- *Protection of farmland that is important for the continuation of commercial agriculture in the region;*
- *Avoidance of conflict with regionally significant fish and wildlife habitat; and*
- *Contribution to the purposes of Centers and Corridors.*
- *Equitable and efficient distribution of housing and employment opportunities throughout the region.*

METHODOLOGY

Metro staff completed the analysis of the 22 urban reserves for meeting the Metro Code factors. Individual summary reports for each urban reserve area can be found in Attachment 2. The methodology used for each of the code factors is outlined below.

Clear transition between urban and rural lands using natural and built features to mark the transition

The presence of buffers or transition areas in the form of natural and built features may serve to limit impacts of urbanization on the adjacent rural lands. This may include river or stream corridors, steep slopes, floodplains, public land, highways, or golf courses. The presence or absence of these features was determined using Geographic Information Systems (GIS) data layers maintained by Metro's Research Center. The data layers included: tax lots, streams and rivers, floodplains, contours, slopes greater than 25%, and 2021 aerial photo.

Many urban reserve area boundaries are defined by local roads. While it may appear that the road provides separation between urban and rural land, the road by itself does not provide a clear transition area or zone. In almost all cases, the road is in the urban reserve and therefore will be developed to urban standards consistent with the local jurisdiction's requirements. As the new urban level road will be built with urban amenities such as sidewalks, bike lanes and lighting, it does not function as a transition area. Buffers may need to be incorporated into the planning and design of the new urban area, including the roadway that defines the edge of an area. A highway such as I-5 or Highway 26 on the other hand, may provide a buffer due to the very large right-of-way of the highway and the lack of pedestrian and bike facilities that bring people directly adjacent to the rural lands.

The presence or absence of agricultural activities occurring on the rural land does not influence the need for a buffer or transition area. While much focus is given to agricultural land, the code factor does not differentiate between the uses of the rural land. Thus, the presence or absence of a buffer or transition area and the resulting need for additional buffers is the same no matter the use of the rural land.

Protection of farmland that is important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of an area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region. Thus, protection of farmland in any of the urban reserves is not important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Metro's Functional Plan Title 13: Nature in Neighborhoods provides performance standards to protect, maintain, enhance, and restore significant fish and wildlife habitat through a comprehensive approach that includes voluntary, incentive based, educational and regulatory elements. Title 13 is not a "no touch" program and does allow for some impacts to habitat areas. Land brought into the UGB is subject to the requirements of Title 13 through the concept planning

and comprehensive planning requirements of Functional Plan Title 11: Planning for New Urban Areas. Metro's Title 13 Regionally Significant Fish and Wildlife Habitat Inventory included the urban reserve areas outside the UGB. The inventory includes riparian habitat (class I & II) and upland habitat (class A & B) that must be included in a protection program that meets the requirements of Title 13.

All the jurisdictions in the region have riparian habitat (class I & II) protection requirements in place that are compliant with Title 13. These riparian habitat protection programs can easily be extended to the riparian habitat areas within the urban reserve lands if the land is added to the UGB. However, protection of upland wildlife habitat (class A & B) is not required under Title 13 for land within the UGB prior to 2007. Thus, most jurisdictions do not have an upland habitat protection program in place and will need to develop a protection program that is compliant with Title 13 for the urban reserve areas.

Each urban reserve area was evaluated for the presence of riparian and upland wildlife habitat through Metro's Regionally Significant Fish and Wildlife Habitat Inventory GIS data layer. The analysis focused on the habitat areas that were not otherwise constrained by steep slopes greater than 25% and public land, both of which provide a certain level of protection due to development restrictions. The remaining habitat areas were evaluated to determine whether urbanization could occur in a way that avoided the habitat areas. The need for future transportation connections within the urban reserve areas and to adjacent land within the UGB presents the greatest potential conflicts with regionally significant fish and wildlife habitat. The potential impact to habitat areas was summarized for each urban reserve.

Contribution to the purposes of Centers and Corridors

The Metro 2040 Growth Concept was adopted as a vision to guide growth and development over the coming decades. A key component of the Growth Concept is concentrating growth in the 40 designated Centers and numerous Corridors across the region with a focus on redevelopment, multi-modal transportation and concentrations of households and employment. Centers vary greatly in geographic size, urban form and use, and transportation access, making each center truly unique.

Metro completed the State of the Centers Report in 2009 which was intended to initiate a regional discussion regarding the uniqueness of centers and their relative health. Two comparative tools, the activity spectrum, and typologies, were included to assist communities in understanding and discussing their community aspirations. The second edition of the report (published in 2011) helped measure local progress in achieving desired outcomes and illustrating the kind of investments that contribute to a successful center. In 2017 Metro finalized an online version, now titled the State of the Centers Atlas, that displays data for regional and town centers that help measure a center's performance in achieving local aspirations and regional goals and allowing for comparison between center types.

Using the information from the State of the Centers Atlas along with numerous locally adopted plans and visions for the 2040 designated Centers and downtown areas, staff evaluated whether the urbanization of the reserve area would support or contribute to the local and regional visions for a nearby 2040 Center or Corridor. Additional information was obtained from Metro's Transit Oriented Development (TOD) Program's 2016 Strategic Plan where appropriate.

Equitable and efficient distribution of housing and employment opportunities throughout the region

This factor is given less weight than the other factors in Metro's locational analysis, largely due to the policy shift undertaken by the Metro Council to focus on expanding the UGB in areas that are more ready for development as described in UGB expansion proposals submitted by cities. That policy shift is reflected in amendments to the Metro Code that place an emphasis on choosing locations for UGB expansions based in part on whether there is a city that is eager to annex and urbanize the area, with an adopted concept plan in place describing how development will occur and how needed infrastructure will be paid for.

Considering and applying this factor to the 22 urban reserve areas analyzed in this report, Metro staff believe that more weight should be given to the Goal 14 and Metro Code factors regarding efficient accommodation of in the region. The two River Terrace urban reserve areas have concept plans describing the City of Tigard's ability to provide and pay for urban services, expected housing types and number of units, natural resource protection needs and governance issues. Identifying and planning for these issues in advance dramatically increases the likelihood that those urban reserve areas will be able to be urbanized in an efficient, orderly, and timely manner. Those needs are more important for ensuring that needed housing will be provided in a reasonable timeframe than selecting an expansion location in an area that would provide geographic equity with respect to previous expansion areas but would be far less likely to develop in the short term. Regarding the efficiency component of this factor, the two River Terrace reserve areas will provide a more efficient distribution of housing because those areas are the most likely to be developed with housing than other areas where city plans for governance and development do not yet exist.

RESULTS

A summary table of results for the Metro Code analysis can be found in Appendix 3 at the end of the report. About half of the urban reserve areas did not merit a high ranking for more than one of the Metro Code sections. As outlined above in the methodology section all urban reserve areas received a high ranking for factor 2, protection of farmland for commercial agriculture, because all areas are urban reserves that by definition are appropriate for urbanization, while land important for commercial agriculture is designated as rural reserve. Numerous urban reserve areas received high ranking for factor 1. All the reserve areas except for Sherwood West received a low score for Metro Code factor 4 regarding contribution to the purposes of Centers and Corridors, primarily due to the distance between the urban reserve areas and the closest designated 2040 Center, lack of direct connections and transit service, and the character of the land uses between the two locations.

Sherwood West received a slightly higher score as the reserve area is somewhat closer and has a fairly direct connection to the Center.

Only the Brookwood Parkway and Holly Lane/Newell Creek urban reserve areas received a high score for Metro Code factors 1 and 3. These two areas are somewhat unique. Brookwood Parkway is very small at 54 acres with all but four parcels containing residences or institutional uses. There are only 24 net vacant buildable acres which limits its ability to provide land for an identified residential or employment need. Holly Lane/Newell Creek Canyon is essentially surrounded by the UGB with only a 1,100-foot urban/rural edge and has a state highway running through the middle of it. However, a significant portion of the reserve area is steeply sloped, and a considerable portion of the riparian and upland habitat areas are in public ownership, which accounts for one-third of the land in the reserve area. The main amount of buildable land is along one north-south road, South Holly Lane, which contains numerous rural residences and has very limited potential connections to land inside the UGB to the east due to steep slopes and significant natural resources.

APPENDICES

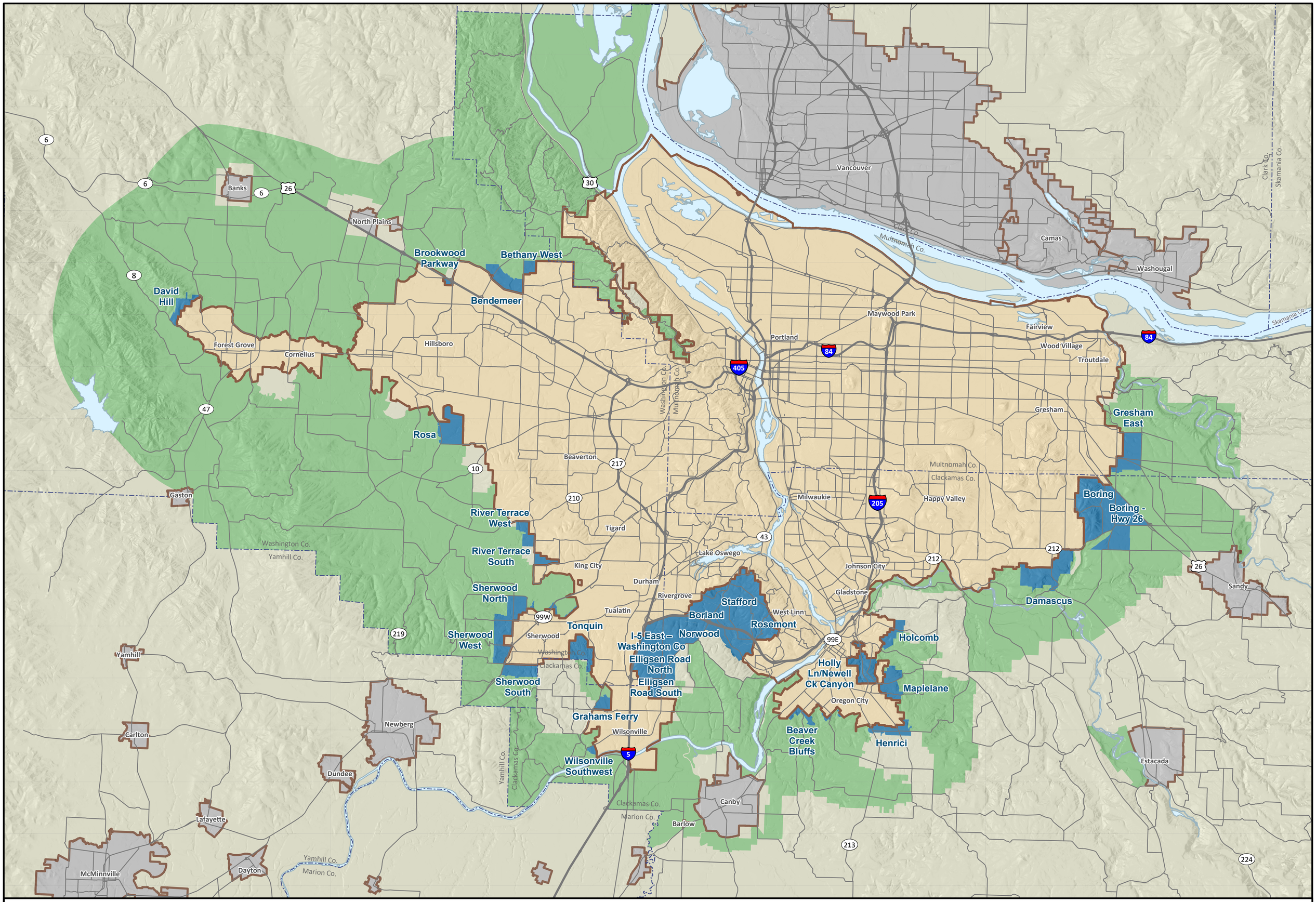
Appendix 1: Urban Reserve Map

Appendix 2: Urban Reserve Area Summary Reports

- Beaver Creek Bluffs
- Bendemeer
- Bethany West
- Borland
- Brookwood Parkway
- David Hill
- Elligsen Road North
- Elligsen Road South
- Grahams Ferry
- Gresham East
- Henrici
- Holcomb
- Holly Lane-Newell Creek Canyon
- I-5 East
- Maplelane
- River Terrace South
- River Terrace West

- Rosa
- Sherwood North
- Sherwood South
- Sherwood West
- Wilsonville Southwest

Appendix 3: Metro Code Analysis Results



Metro Code Alternatives Analysis Appendix 1

January, 2023

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County boundaries
Urban growth boundaries
Neighbor cities
Rural reserve
Urban reserve

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Appendix 2: Urban Reserve Area Summary Reports

BEAVER CREEK BLUFFS URBAN RESERVE AREA

Total Acres	228	Parcel Acres	225
Gross Vacant Buildable Acres	142	Net Vacant Buildable Acres	108

General Description (see attached map)

The Beaver Creek Bluffs Urban Reserve Area is composed of three sub-areas running east to west along the bluffs south of Oregon City. The eastern sub-area (22 acres) is adjacent to the UGB in the vicinity of Nobel Road, is bordered by the Mud and Caufield Creek drainages, and is composed of two parts separated by a short segment of the UGB. The central sub-area (43 acres) sits between Mud Creek and a tributary of Beaver Creek, bounded by S Leland Road to the east, bluffs to the south and west, and the UGB to the north. A one parcel sub-set of this central area is located at the end of S McCord Road. The western sub-area (163 acres) lies on both sides of S Center Point Road, sitting between the bluffs overlooking Beaver Creek and the current UGB to the north. Of the 228 acres within these three sub-areas, 22 are constrained by steep slopes over 25% along the bluffs. The remainder of the area is generally flat and is a logical extension of Oregon City

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the northern edge of the three irregular shaped sub-areas. The forested slope along the southern edge of the reserve sub-areas along with Beaver Creek and its tributaries, as well as Mud and Canfield Creeks, provide a clear transition between urban and rural lands using natural features.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The region's urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 49 acres of land with most of the riparian habitat occurring along an unnamed

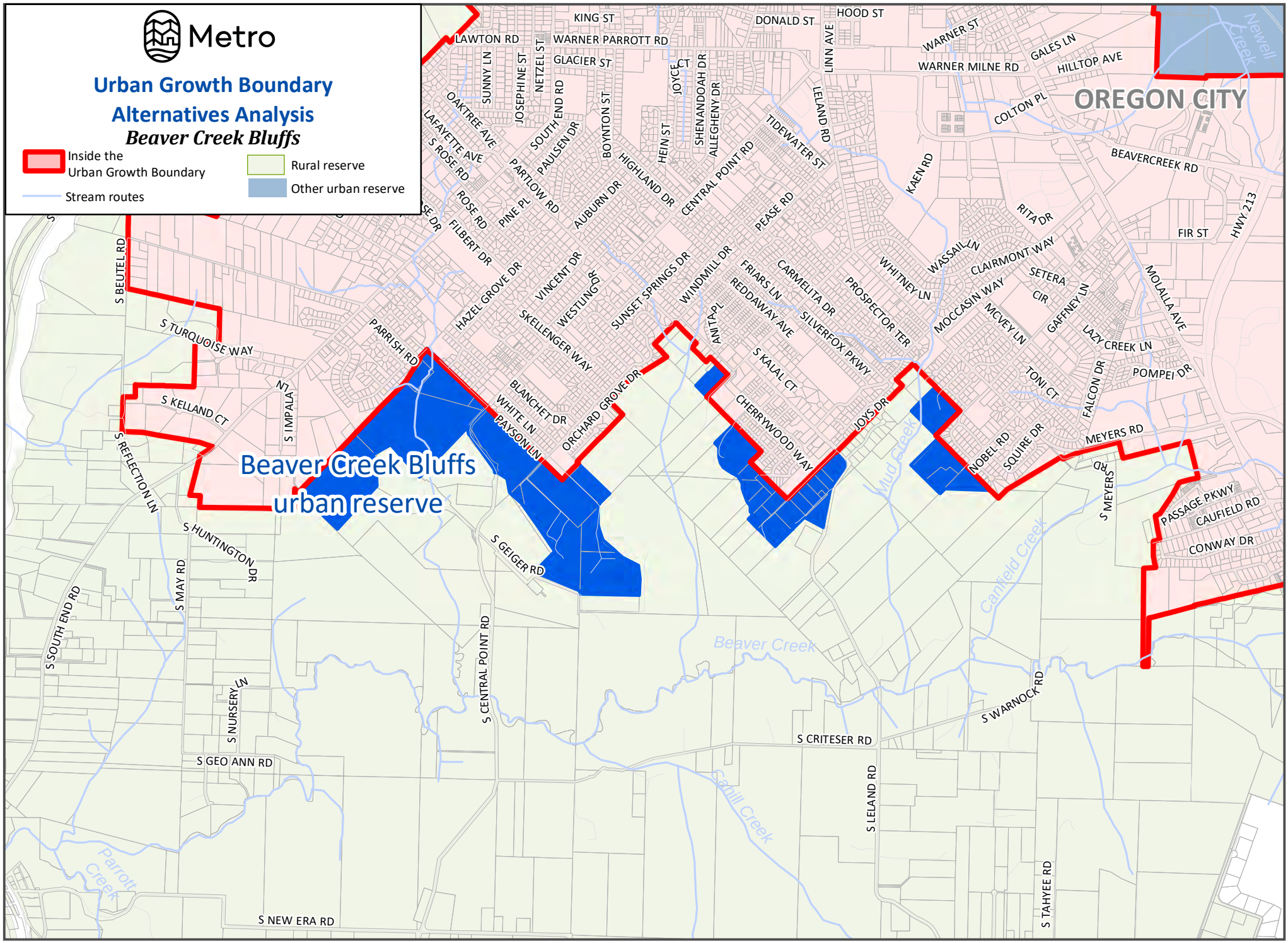
tributary to Beaver Creek that flows through the center of the westernmost subarea. There is a 1.5 acre wetland along this stream corridor. There also appears to be an additional pond in this area. A smaller amount of riparian habitat is located along a small section of Mud Creek in the easternmost subarea. Regionally significant upland habitat occurs primarily along the steeper slopes of the bluffs that form the southern boundary of the reserve subareas, although there are some larger pockets on the flatter portions of the sub-areas. Oregon City has adopted a riparian habitat protection program that is compliant with Metro's Title 13 Nature in Neighborhoods. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Urbanization of the reserve sub-areas can occur with moderate disturbance of the regionally significant fish and wildlife habitat depending mainly on any needed transportation connections across the tributary to Beaver Creek in the western sub-area and the larger pockets of upland habitat. As the western sub-area is small it is possible that a transportation connection is not needed.

Contribution to the purposes of Centers and Corridors

The Oregon City Regional Center is the closest 2040 designated center to the Beaver Creek Bluffs urban reserve area. The Regional Center serves Oregon City, Clackamas County and some neighboring cities to the south. The regional center is linked to the reserve area by S Central Point Road and S Linn Road (3.1 miles) and S Leland Rd and S Linn Rd (3.1 miles). There is no transit service between the Regional Center and the reserve area. There is one 2040 designated corridor that is outside the Regional Center in Oregon City and runs along 7th Street and Molalla Ave between the Regional Center and Clackamas Community College. The corridor is mostly built out with a mixture of single family homes, small commercial businesses and larger commercial retail uses and is almost two miles away from the middle sub-area through a series of local streets.

The city's plans for the Regional Center include mixed-use development on the vacant parcels in the northern section of the center, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to downtown through the development of housing, public spaces, habitat restoration, education and employment opportunities. Metro's 2017 State of the Centers Atlas shows a very low population, people per acre, total employees and dwelling units per acre when compared with other regional centers. The city's vision to attract more housing and employees to the regional center will elevate it to the activity spectrum levels comparable to other regional centers in the region.

Urbanization of the Beaver Creek Bluffs urban reserve area will not contribute to the vision or the purpose of the Oregon City Regional Center. The reserve area is too small and isolated from the Regional Center to support the need for more people to meet a higher level of activity. Likewise urbanization of the reserve area will not have an impact on the corridor as the area is too small and isolated from the corridor. In addition there is a significant amount of underdeveloped land within the city that provides a better opportunity for supporting the Regional Center and corridor.



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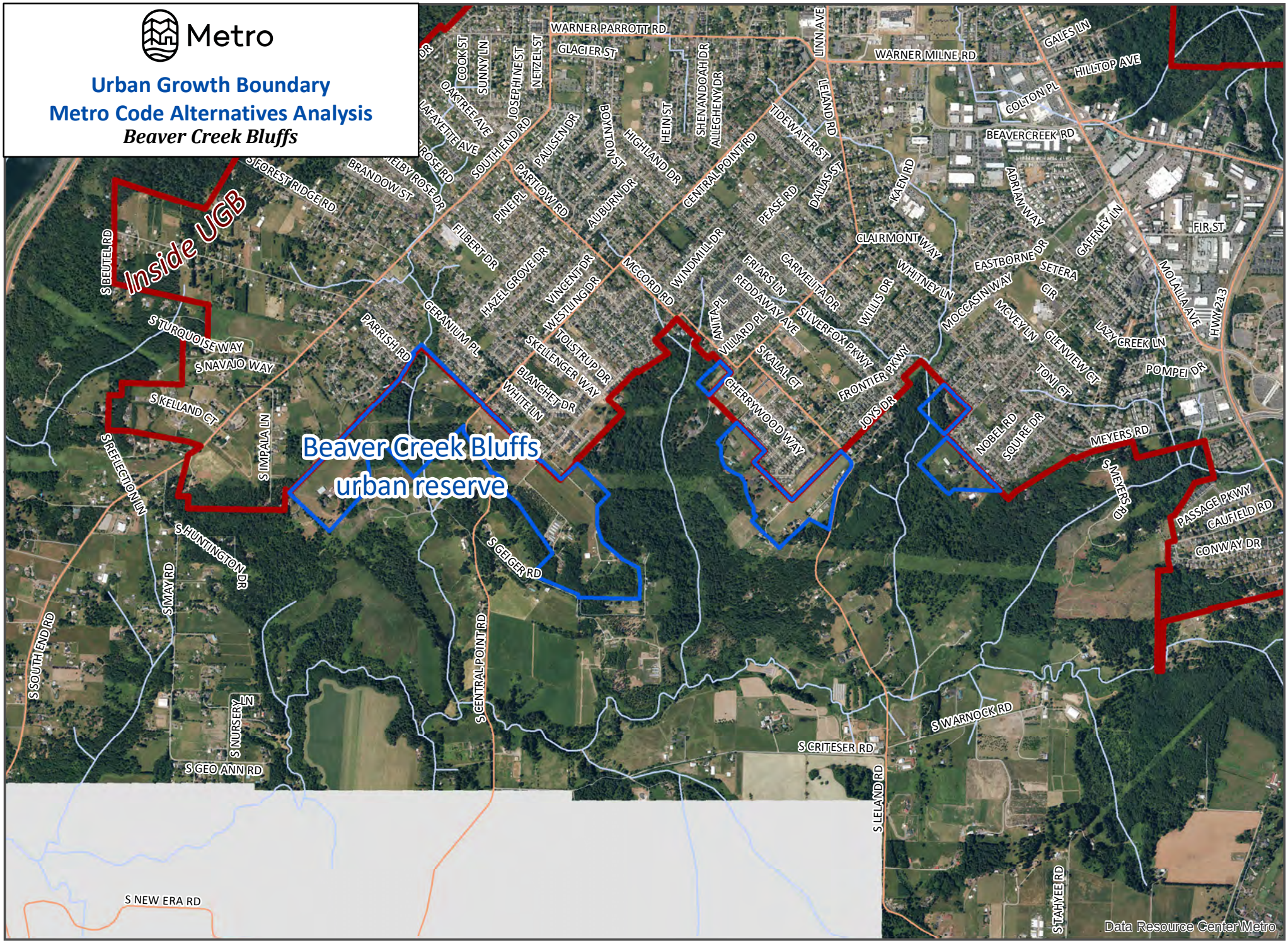
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Beaver Creek Bluffs



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BENDEMEER URBAN RESERVE AREA

Total Acres	577	Total Constrained Acres	535
Gross Vacant Buildable Acres	275	Net Vacant Buildable Acres	209

General Description (see attached map)

The Bendemeer Urban Reserve Area is an irregular shaped area located north of NW West Union Road between NW Bendemeer Road and NW 185th Ave. The UGB forms the eastern and southern boundary and rural reserves are to the west and north. Holcomb Creek and Holcomb Lake form a portion of the northern edge of the reserve area. Access to the area is provided by NW West Union Road, NW Cornelius Pass Road, and NW 185th Ave.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the eastern and southern boundary of the urban reserve area. Holcomb Creek, Holcomb Lake and Rock Creek provide a natural feature that marks the transition between urban and rural lands for three-quarters of the northern boundary of the reserve area, between NW Cornelius Pass Road and NW 185th Ave. There is no natural or built feature along the remaining portion of the northern edge of the reserve area to provide a transition zone between urban and rural lands. Along the western edge of the reserve area is a 100 foot right-of-way parcel owned by the Oregon Department of Transportation. This right-of-way parcel could provide a transition between urban and rural lands if it stays in a natural state, or if it was transformed to a trail corridor. Overall there are natural features that provide a transition between urban and rural land for the majority of the urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 91 acres of land mainly along Holcomb Creek, Holcomb Lake and Rock Creek. Additional habitat areas are located along four unnamed tributaries to the two main streams, which divide the reserve area into small developable sections of land. The City of Hillsboro, the expected governing body for the reserve area, has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to adopt upland wildlife habitat protection measures that also comply with Title 13, which does allow for impacts to the habitat areas. A Metro owned open space parcel will provide a high level of protection for some of the habitat along Rock Creek and also limit any transportation connections through that habitat area. The habitat areas along Holcomb Creek, Holcomb Lake and a portion of Rock Creek that are located along the northern edge of the reserve area are less susceptible to impacts as the land to the north is rural reserve and no transportation connections are needed to the north. The divided nature of the reserve area does make some of the habitat areas along the tributaries more susceptible to impacts due to needed transportation connections. Overall urbanization can occur with moderate to high avoidance of regionally significant riparian and upland habitat depending on the design of the development and the need for east-west transportation connections across the stream corridors.

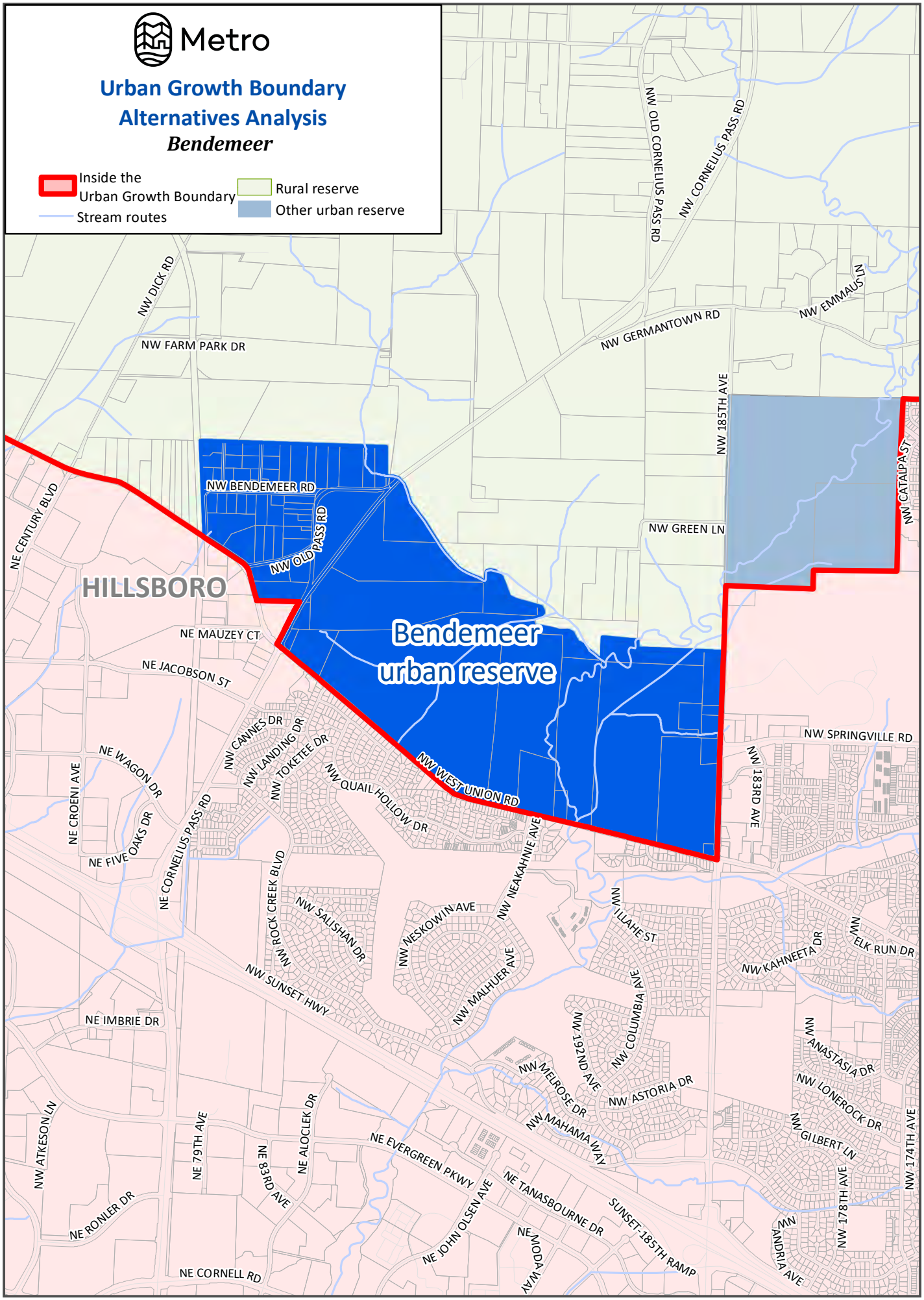
Contribution to the purposes of Centers and Corridors

The Bethany Town Center and the Tanasbourne/Amber Glen Regional Center are both about 1.25 miles away. Bethany Town Center is accessed via NW West Union Road and NW Laidlaw Road and the Tanasbourne/Amber Glen Regional Center is accessed via NW 185th Ave. Both centers are served by TriMet bus lines and the regional center is also served by the MAX Light Rail. There is a transit connection between the Tanasbourne/Amber Glen Regional Center and the reserve area. There is a trail connection from the Bethany Town Center that runs within 600 feet of the reserve area. There are two 2040 designated corridors adjacent to the reserve area. The first corridor is along NW 185th Ave from NW Springville Road south to Highway 26. The corridor is composed mainly of single-family residences and two schools, Westview High School and Rock Creek Elementary School. The second corridor is along NW Springville Road between NW 185th Ave and NW Kaiser Road. Similarly this corridor is composed mainly of single-family homes with a few multi-family developments and Portland Community College – Rock Creek.

The Bethany Community Plan calls for a mix of local retail and small community-based office uses in the Bethany Town Center that provide a community village atmosphere. The Town Center is almost completely built out with a mixture of housing types, commercial retail and a small amount of employment including a Providence Medical facility. Metro's 2017 State of the Centers Atlas shows it has average people per acre and a slightly higher than average number of dwelling units per acre when compared with other town centers in the region. Bethany also scores very high in parks access and high in sidewalk and bike route density. The Tanasbourne/Amber Glen Regional Center is a mixture of higher density residential, employment, commercial retail and institutional

uses including a Kaiser Permanente Hospital and an Oregon Health Sciences University research facility. Metro's 2017 State of the Centers Atlas shows a high level of employees and total population, slightly higher dwelling units per acre and average people per acre when compared to other regional centers in the region.

Urbanization of the reserve area will not contribute to the vision and purpose of the Tanasbourne/Amber Glen Regional Center due to the relative small size of the area. In addition, the significant amount of higher density development already within the regional center and the location of the regional center south of Highway 26 and adjacent to the Streets at Tanasbourne shopping area already make it a sub-regional draw. Likewise, urbanization of the reserve area will not contribute to the vision and purpose of the Bethany Town Center as the center is mostly built out with an appropriate mix of successful uses and the build out of the North Bethany area will have more of an impact on the Town Center than this urban reserve. Urbanization of the reserve area also will not contribute to the purpose of the two corridors as they are already built out with residences and institutional uses.



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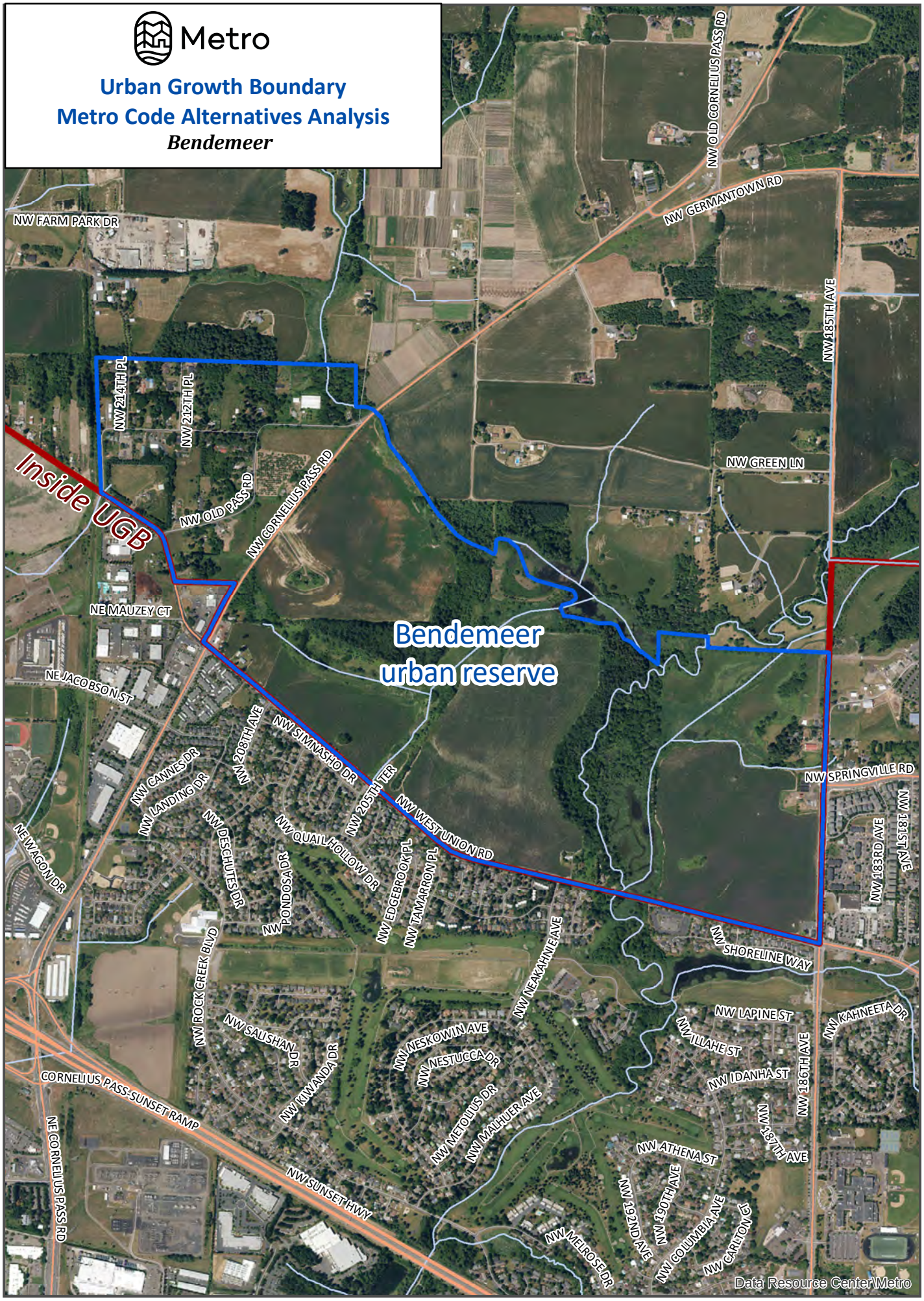
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Bendemeer



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BETHANY WEST URBAN RESERVE AREA

Total Acres	170	Parcel Acres	166
Gross Vacant Buildable Acres	97	Net Vacant Buildable Acres	74

General Description (see attached map)

The Bethany West Urban Reserve Area is a very small square shaped area on the north side of the Portland Community College Rock Creek campus. The UGB forms the boundary on the southern and eastern edges and rural reserves are to the west and north. Access to the area is provided by NW 185th Ave and NW Shackelford Road in North Bethany.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the eastern and southern boundaries of the urban reserve area. NW 185th Ave provides the edge between urban and rural land to the west. Even assuming that NW 185th Ave develops as an arterial roadway in the future, the road itself will not provide a clear transition area between future urban and rural uses. There are no natural or built features to mark the transition of urban and rural land to the north. Additional buffers will need to be incorporated into the design and planning of the urban reserve area along both of these edges. Overall there are no natural or built features that provide a transition between urban and rural lands for the urban-rural edges of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 70 acres of land and is focused on Rock Creek and an unnamed tributary. The entire habitat area is located in the southeastern to northeastern portion of the reserve area with riparian habitat being the dominant type. Washington County, the current governing body for the

reserve area, has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The County will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Additional significant habitat is on land owned by Portland Community College, which should result in extra protection for the resources. As the riparian and upland habitat is located in one section of the reserve area, urbanization can occur in the remaining portion of the area while avoiding the significant habitat areas, with the exception of an expected road connection from North Bethany along NW Shackelford Road that will need to cross Rock Creek.

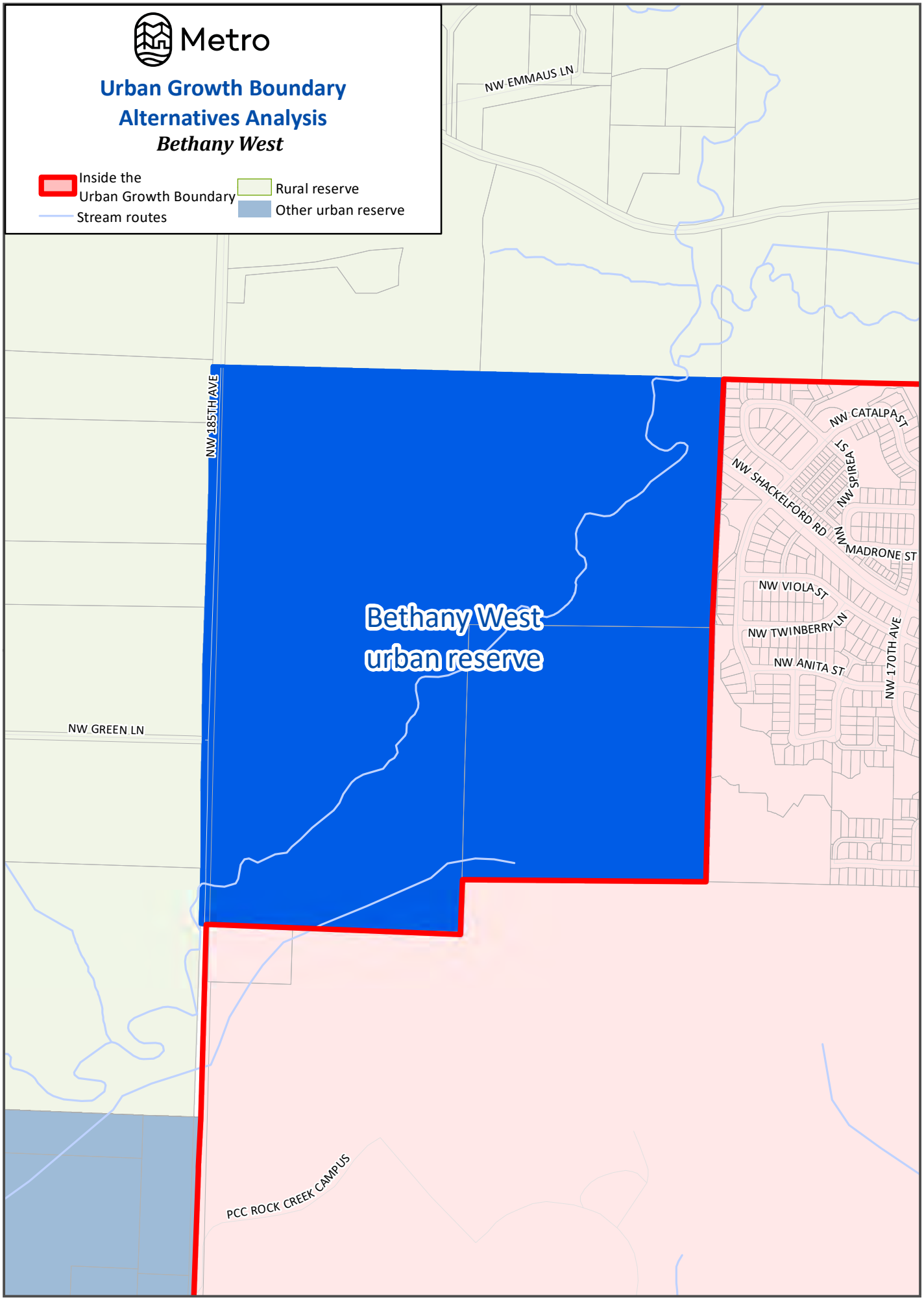
Contribution to the purposes of Centers and Corridors

The Bethany Town Center and the Tanasbourne/Amber Glen Regional Center are both about two miles away. Bethany Town Center is accessed via NW 185th Ave, NW West Union Road and NW Laidlaw Road and the Tanasbourne/Amber Glen Regional Center is accessed via NW 185th Ave. Both centers are served by TriMet bus lines and the regional center is also served by the MAX Light Rail. There is a transit stop about a ½ mile from the reserve area that connects to the Tanasbourne/Amber Glen Regional Center. There are two 2040 designated corridors near the reserve area. The first corridor is along NW 185th Ave from NW Springville Road south to Highway 26. The corridor is composed mainly of single-family residences and two schools, Westview High School and Rock Creek Elementary School. The second corridor is along NW Springville Road between NW 18th Ave and NW Kaiser Road. Similarly this corridor is composed mainly of single-family homes with a few multi-family developments and Portland Community College – Rock Creek.

The Bethany Community Plan calls for a mix of local retail and small community-based office uses in the Bethany Town Center that provide a community village atmosphere. The Bethany Town Center is almost completely built out with a mixture of housing types, commercial retail and a small amount of employment including a Providence Medical facility. Metro's 2017 State of the Centers Atlas shows it has average people per acre and a slightly higher than average number of dwelling units per acre when compared with other town centers in the region. Bethany also scores very high in parks access and high in sidewalk and bike route density. The Tanasbourne/Amber Glen Regional Center is a mixture of higher density residential, employment, commercial retail and institutional uses including a Kaiser Permanente Hospital and an Oregon Health Sciences University research facility. Metro's 2017 State of the Centers Atlas shows a high level of employees and total population, slightly higher dwelling units per acre and average people per acre when compared to other regional centers in the region.

Urbanization of the reserve area will not contribute to the vision and purpose of the Tanasbourne/Amber Glen Regional Center or the Bethany town Center due to the very small size of the area. In addition, the significant amount of higher density development already within the regional center and the location of the regional center south of Highway 26 and adjacent to the Streets at Tanasbourne shopping area already make it a sub-regional draw. The Bethany Town Center is mostly built out with an appropriate mix of successful uses and the build out of the North Bethany area will have more of an impact on the Town Center than this very small urban reserve.

Urbanization of the reserve area also will not contribute to the purpose of the two corridors as they are already built out with residences and institutional uses.



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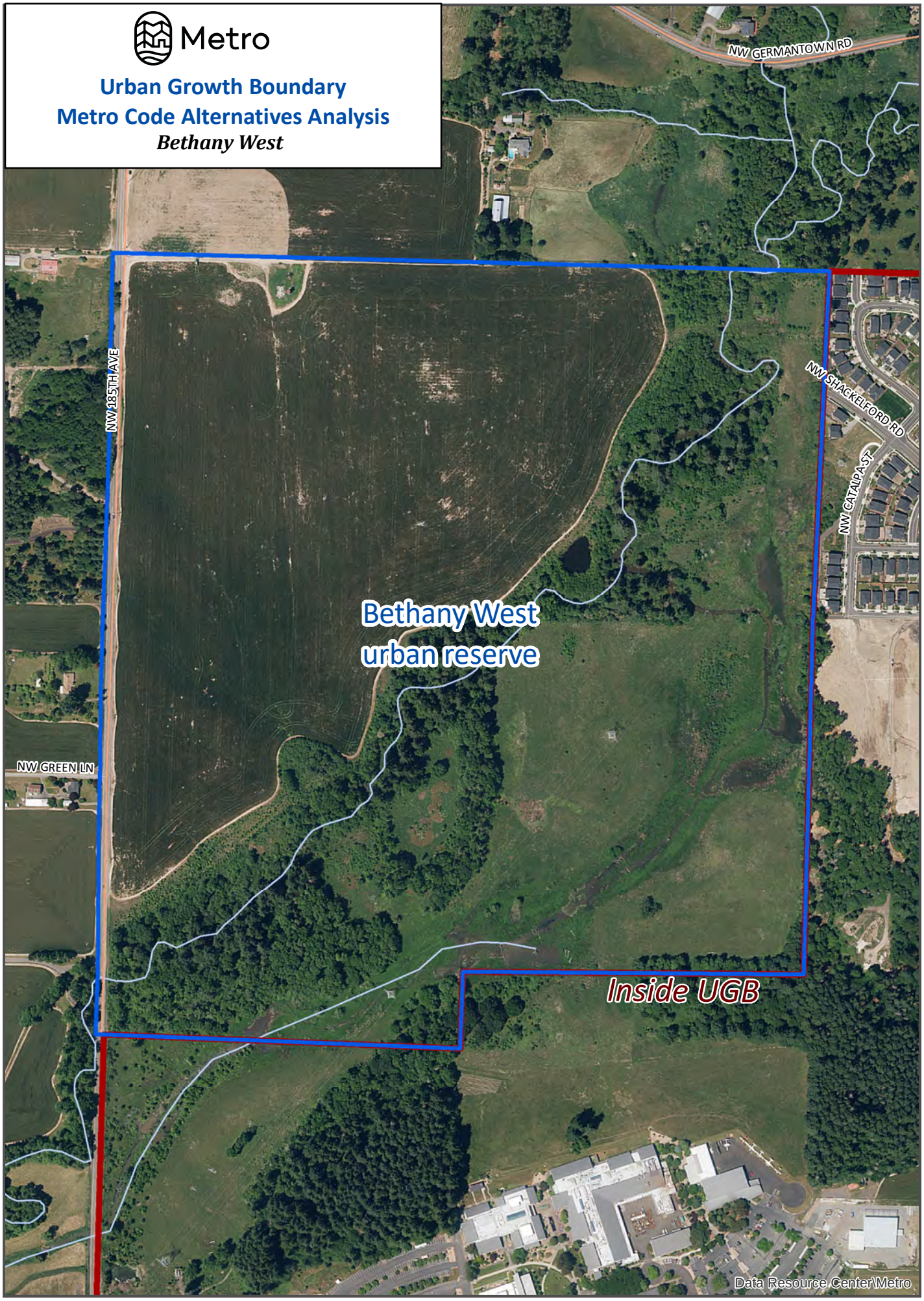
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Bethany West



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BORLAND URBAN RESERVE AREA

Total Acres	1,354	Parcel Acres	1,170
Gross Vacant Buildable Acres	508	Net Vacant Buildable Acres	385

General Description (see attached map)

The Borland Urban Reserve Area is a large irregular shaped area that straddles Interstate 205 along SW Borland Road and is 1,354 acres in size. The UGB forms the eastern boundary and a portion of the western boundary with the Tualatin River forming the northern edge. The land north of the Tualatin River and the land south and west of SW Stafford Road is urban reserve. Athey Creek and Fields Creek along with numerous other streams flow north through the reserve area to the Tualatin River. The area is generally flat with some slopes greater than 10% along the stream corridors and very minor areas of slopes greater than 25%. Access to the area is provided by SW Borland Road and SW Stafford Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the western and eastern boundaries of the urban reserve area. The Tualatin River provides a natural feature that marks the transition between urban and rural lands on the north side of the reserve area. A combination of steep forested slopes and homeowner association land provides a transition between urban and rural lands for almost the entire southern edge of the reserve area. Many of the adjacent rural residences in this location are 200-300 feet above the land in the urban reserve area. Additional buffers will need to be incorporated into the planning and design of the urban reserve area in a few locations along the southern edge to provide a clear transition from urban to rural uses. Overall there are natural features along the vast majority of the urban-rural edge to mark the transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 233 acres and is focused on the Tualatin River and the numerous stream corridors that flow north through the reserve area to the river. The locations of these streams tend to divide the reserve area into smaller unconstrained areas of land. The City of Tualatin, one of the likely governing bodies for the reserve area, has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Likewise, the City of West Linn, the other likely governing body for the reserve area, has adopted riparian habitat protection measures in compliance with Metro's Title 13 program. The City will also need to develop an upland habitat protection program that also complies with Title 13. Some of the stream corridors have adjacent steep slopes which will provide an additional level of protection for the riparian habitat areas. However the stream corridors are susceptible to impacts related to transportation connections needed to link the different sections of unconstrained land together. Overall urbanization could occur with low to moderate avoidance riparian and upland habitat depending on the number of transportation connections needed to stitch the developable areas together.

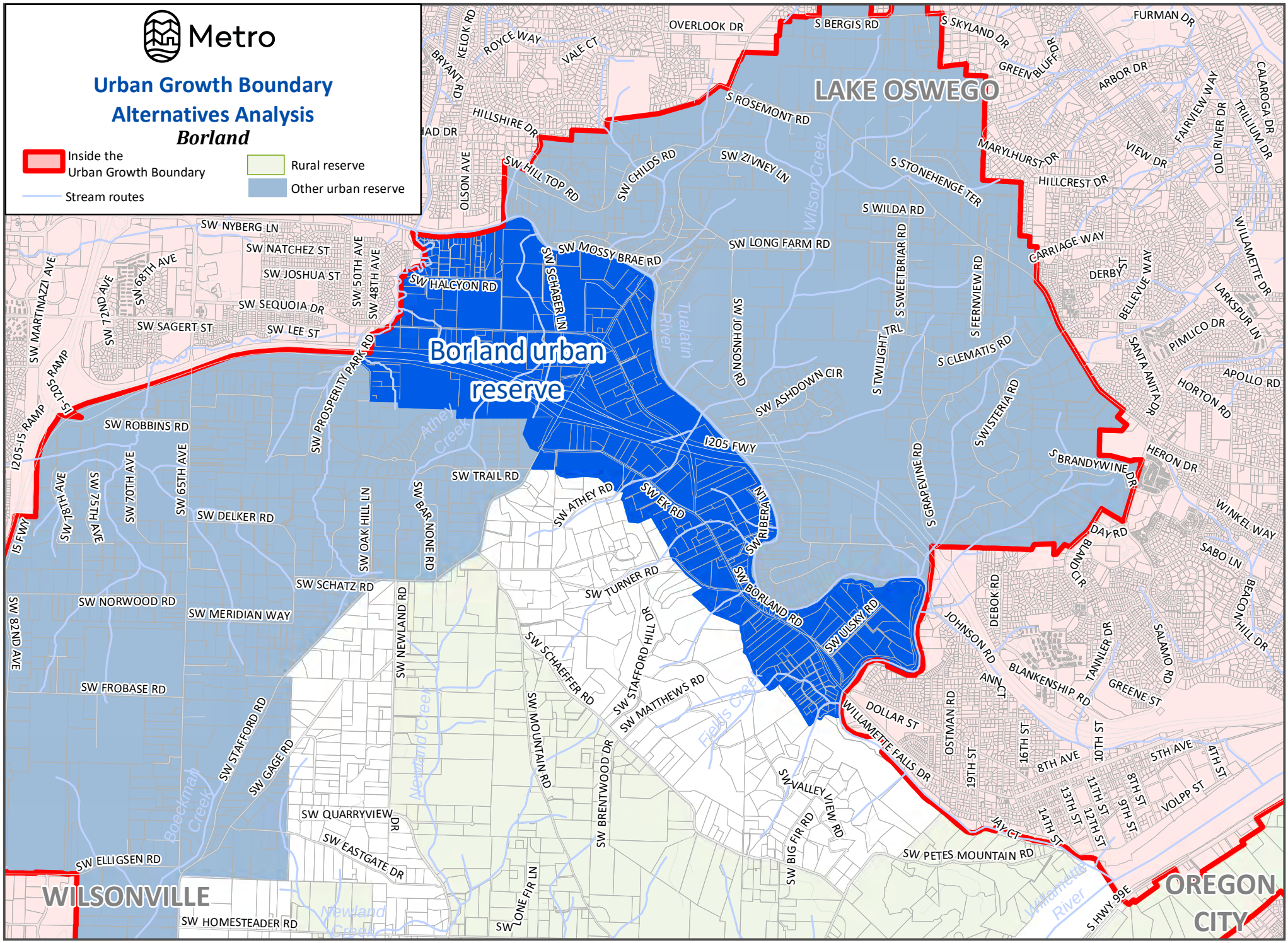
Contribution to the purposes of Centers and Corridors

Given the long linear shape of the reserve area, the east and west ends of the area are near two different 2040 designated centers. The eastern portion of the reserve area is just over a mile from the West Linn Willamette Town Center via Willamette Falls Drive. The Town Center is mostly built out with only a few parcels of undeveloped land available, mostly on the north side of I-205 away from the main commercial retail corridor along Willamette Falls Drive. The Willamette Historic District is within the Town Center. Metro's 2017 State of the Centers Atlas shows a low total population, employees, people per acre and dwelling units per acre when compared with other town centers in the region. This is consistent with how the Town Center has developed with a main commercial street and single family residences.

The Tualatin Town Center is approximately 2.25 miles from the western portion of the reserve area via SW Borland Road, SW Sager Street and SW Boones Ferry Road. The Town Center's central feature is the Lake at the Tualatin Commons development that includes residences, office and commercial uses surrounding a public plaza and walkway around the lake. The remainder of the Town Center is developed with numerous apartment complexes and a significant amount of auto oriented large scale commercial retail. Metro's 2017 State of the Centers Atlas shows a higher population and a much higher number of employees when compared to other town centers in the region. The dwelling units per acre is average and the people per acre is low when compared to other town centers. The closest 2040 designated corridor to the reserve area is SW Boones Ferry Road in the Tualatin Town Center.

Urbanization of the reserve area will not contribute to the purpose of the Willamette Town Center as little is expected to change given the current success of the commercial street, the historic

district designation on a portion of the land and West Linn's desire to maintain the current development pattern. Likewise urbanization of the reserve area will not contribute to the purpose of the Tualatin Town Center or the SW Boones Ferry Road corridor given the distance between the two locations and the auto dominated environment of the Town Center along a major freight route to I-5.



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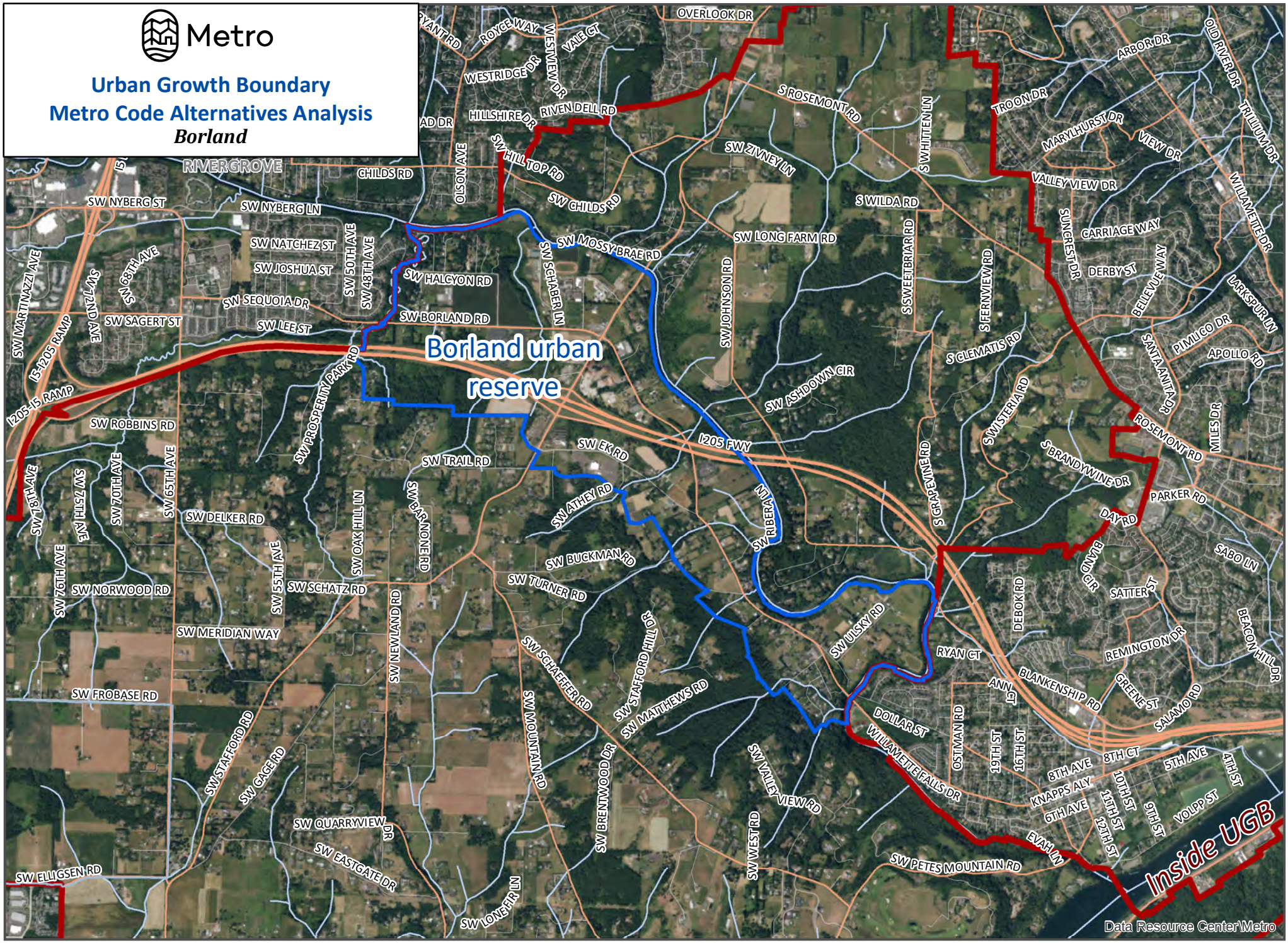
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Borland



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BROOKWOOD PARKWAY URBAN RESERVE AREA

Total Acres	53	Parcel Acres	39
Gross Vacant Buildable Acres	32	Net Vacant Buildable Acres	24

General Description (see attached map)

The Brookwood Parkway Urban Reserve Area is a very small area on the north side of Hillsboro located at the Brookwood Parkway/Highway 26 Interchange. The UGB forms the boundary on the eastern, southern and western sides and Highway 26 forms the edge to the north. Access to the area is provided by NW Meek Road, NW Oak Drive and NW Birch Ave.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the western, southern and eastern boundaries of the urban reserve area. The 330 foot right-of-way of Highway 26 provides a built feature that marks a clear transition between urban and rural lands to the north of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

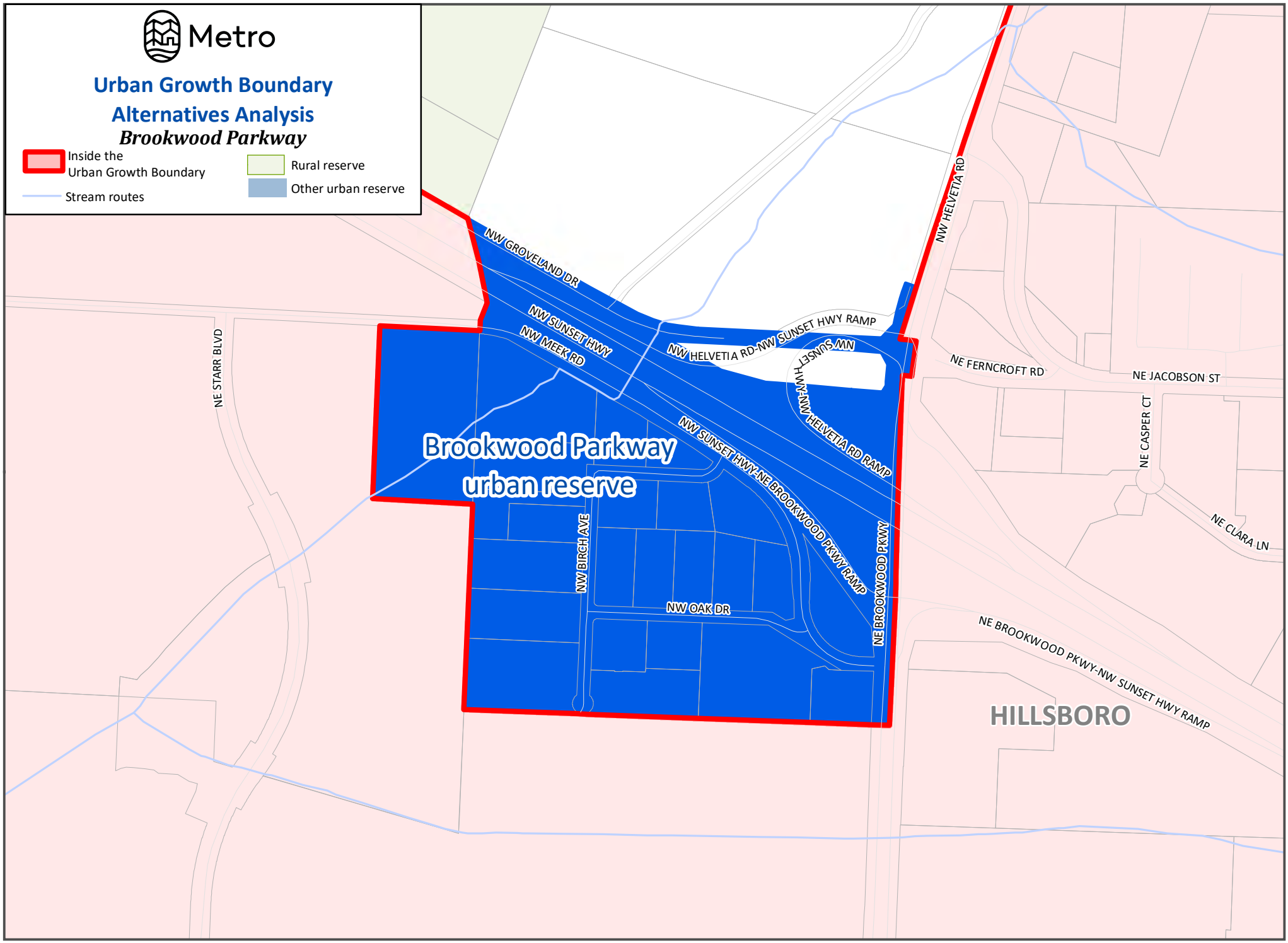
Regionally significant riparian habitat not constrained by steep slopes or in public ownership covers approximately 4.5 acres along Waible Gulch which flows through the northwest corner of the reserve area. The stream isolates a small corner of the reserve area that can be accessed from the adjacent land already inside the UGB. The City of Hillsboro has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. Due to the isolated location of the habitat and the expected protection measures that will be in place prior to development, urbanization can occur while avoiding the regionally significant riparian habitat.

Contribution to the purposes of Centers and Corridors

The Orenco Town Center is the closest 2040 designated center to the reserve area at just under two miles away via NE Brookwood Parkway, NE Shute Road and NE Butler Street. The Tanasbourne/Amber Glen Regional Center is just shy of three miles away via NE Brookwood Parkway and NE Evergreen Parkway. Both centers are well served by transit including numerous TriMet bus lines and MAX Light Rail. There are no transit connections between the centers and the urban reserve area. The closest 2040 designated corridor is along NE Evergreen Parkway, which is about 1.5 miles away via NE Brookwood Parkway and NE Evergreen Parkway. A second corridor runs south along NE Century Boulevard from NE Evergreen Parkway. Both of these corridors contain employment uses including Intel's Ronler Acres Campus along NE Century Boulevard.

The Orenco Town Center is essentially built out with a mixture of housing types and commercial retail uses. The center was built as a transit-oriented development surrounding the Orenco Light Rail Station. Metro's 2017 State of the Centers Atlas shows it has a higher than average total population, people per acre and a much higher than average number of dwelling units per acre when compared with other town centers in the region. Orenco also scores very high in parks access and sidewalk and bike route density. The Tanasbourne/Amber Glen Regional Center is a mixture of higher density residential, employment, commercial retail and institutional uses including a Kaiser Permanente Hospital and an Oregon Health Sciences University research facility. Metro's 2017 State of the Centers Atlas shows a high level of employees and total population, slightly higher dwelling units per acre and average people per acre when compared to other regional centers in the region.

Given the urban reserve area is adjacent to the North Hillsboro Industrial Sanctuary and Highway 26 development of the area with employment uses would be expected. Urbanization of the reserve area will not contribute to the vision and purpose of the Orenco Town Center or the Tanasbourne/Amber Glen Regional Center due to the very small size of the area, the significant amount of employment land near the two centers and the distance between the reserve area and the centers. Likewise urbanization of the reserve area will not contribute to the purpose of the corridor as it is already built out with employment uses that attract employees from across the region.



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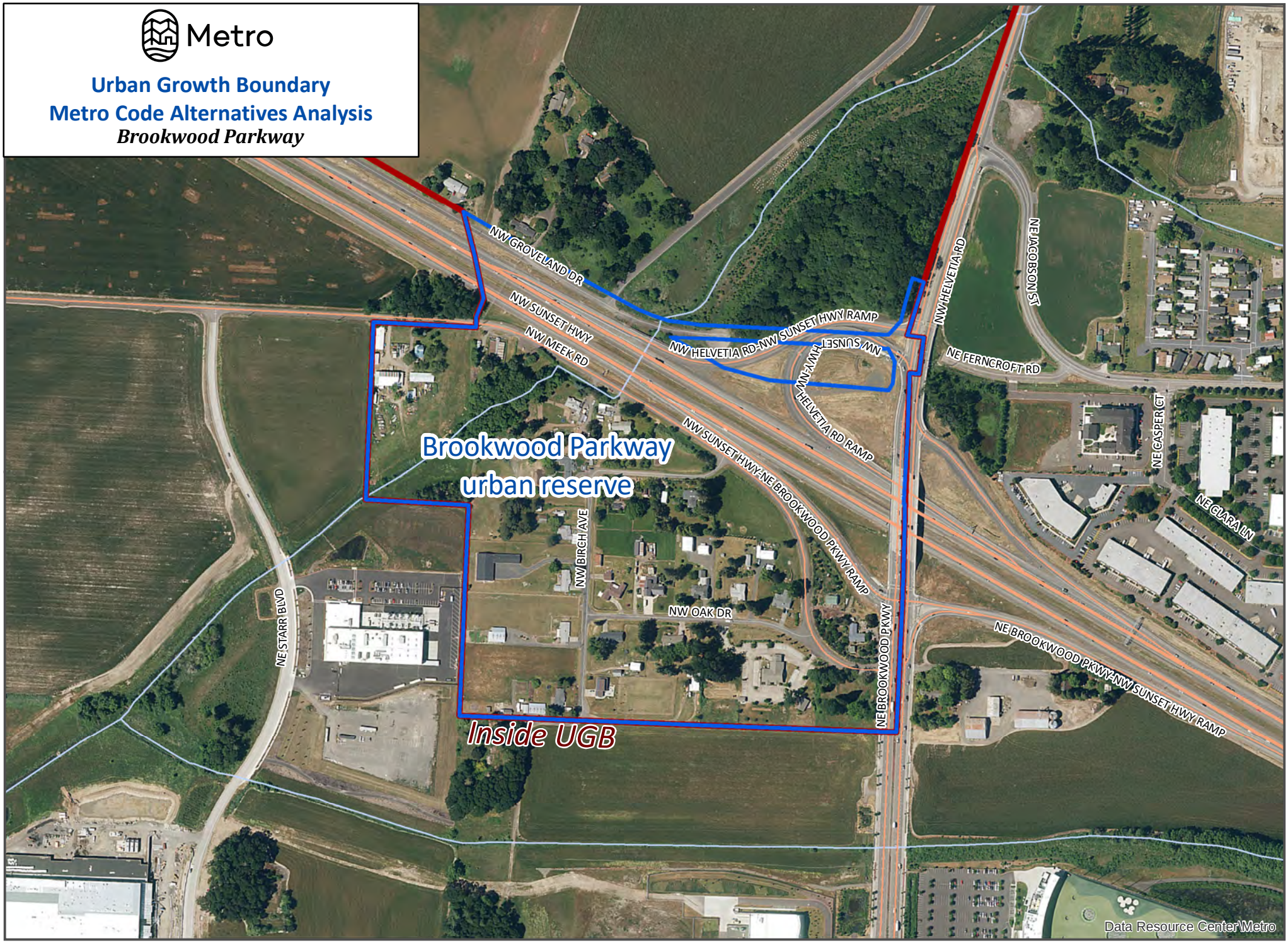
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Brookwood Parkway



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DAVID HILL URBAN RESERVE AREA

Total Acres	328	Parcel Acres	321
Gross Vacant Buildable Acres	180	Net Vacant Buildable Acres	137

General Description (see attached map)

The David Hill Urban Reserve Area is an irregular shaped area on the northwest edge of Forest Grove located in the vicinity of NW David Hill Road. The UGB forms the boundary on the eastern side and rural reserve land is to the west, north and south. The high point of the area is near David Hill Road and the land slopes down to the south towards NW Gales Creek Road and east towards NW Thatcher Road losing 440 and 360 feet respectively. Access to the area is provided by NW David Hill Road, NW Gales Creek Road and NW Thatcher Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the eastern boundary of the urban reserve area. There are steep slopes along the western and southern edges of the reserve area that provides a natural feature transition zone between the urban uses and the rural lands in these two locations. Similarly there are steep slopes along most of the northern edge of the reserve area that provides a natural feature transition zone for a large portion of the rural lands to the north. Overall, there are existing natural features that provide a clear transition between urban and rural uses for almost the entire urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

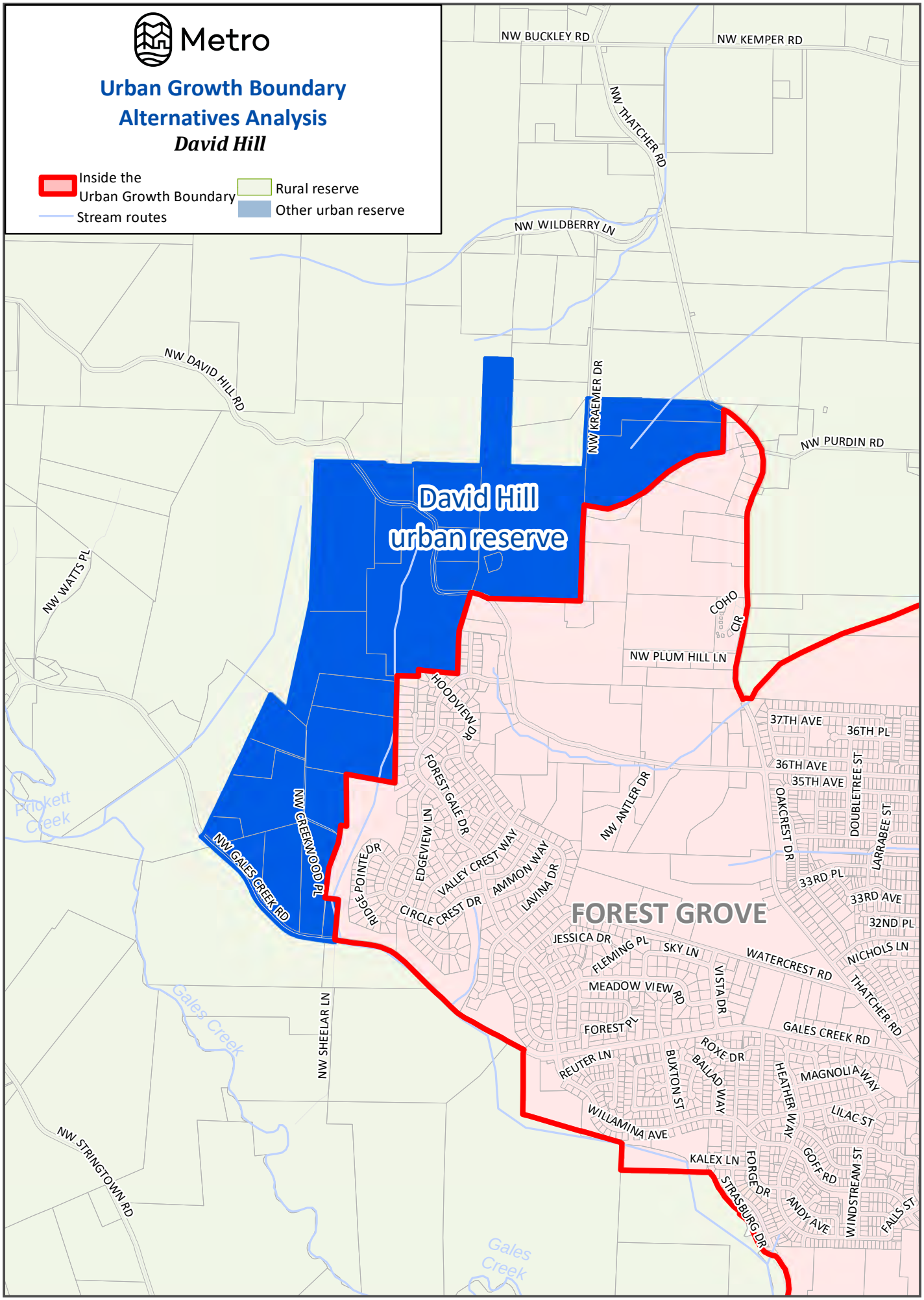
Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 46 acres with most of the habitat areas focused on two unnamed streams. A significant portion of the riparian habitat is located adjacent to steep slopes mainly along the edge

of the reserve area although one stream does extend up through the top center portion of the area. The location of the streams near the edge of the reserve area combined with the nearby steep slopes should provide some additional level of protection for that portion of the habitat area. There are two fairly large pockets of upland wildlife habitat that total about 29 acres located in the southern portion of the reserve area, although some of it appears to be a tree farm. The City of Forest Grove has adopted riparian habitat protection measures that are in compliance with Metro's Title 13 requirements as part of the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Overall urbanization can occur with a medium level of avoidance of regionally significant riparian and upland habitat depending on the design of the development, the need for transportation connections to NW Gales Creek Road and the determination of significance for some of the upland habitat areas.

Contribution to the purposes of Centers and Corridors

The Forest Grove Town Center is the closest 2040 designated center to the reserve area. The Town Center is approximately 2.5 miles away via NW Gales Creek Road, E Street, B Street and 19th Ave. The Town Center includes the historic downtown area that includes cultural and commercial retail amenities, civic buildings and the main campus of Pacific University, which encompasses a large portion of the Town Center. Recently a new 78-unit transit oriented/mixed use development opened in the Town Center. TriMet bus line 57 connects the Town Center to Cornelius and Hillsboro and the MAX Light Rail Line. GroveLink Loop provides transit services in and around the Town Center. Metro's 2017 State of the Centers Atlas shows a low number of dwelling units but a high people per acre compared to other town centers in the region, which can be attributed to the Pacific University students. The closest 2040 designated corridor extends from the Town Center along Pacific Ave to Cornelius. The corridor mostly contains a mix of small and large commercial retail uses with a small amount of residential uses and some undeveloped land near the Highway 47 intersection.

Urbanization of the reserve area will not contribute to the vision or purpose of the Forest Grove Town Center due to the distance between the two areas and the substantial amount of underdeveloped land inside the UGB that is in closer proximity to the Town Center. Redevelopment of these closer in areas would have more of an impact on the Town Center. Similarly urbanization of the reserve area will not contribute to the purpose of the corridor due to the great distance between the reserve area and the corridor and the potential of the underdeveloped land that is closer to the corridor.



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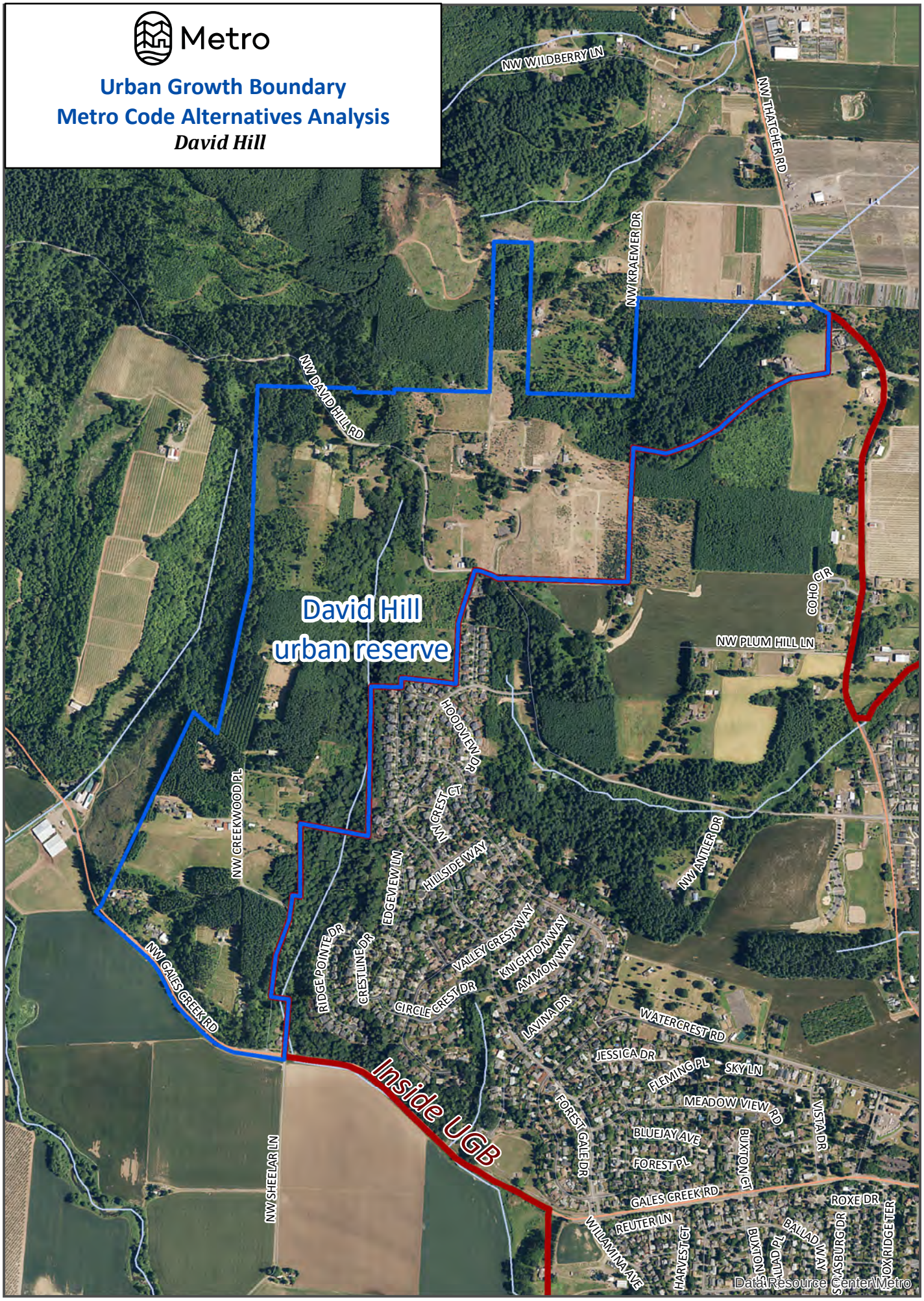
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
David Hill



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ELLIGSEN ROAD NORTH URBAN RESERVE AREA

Total Acres	633	Parcel Acres	588
Gross Vacant Buildable Acres	439	Net Vacant Buildable Acres	333

General Description (see attached map)

The Elligsen Road North Urban Reserve Area is a somewhat rectangular shaped area on the north side of Wilsonville that lies north of SW Elligsen Road, west of SW 65th Ave and south of SW Frobase Road and totals 633 acres. The UGB forms the western and southern boundaries with urban reserve land to the east and north. Interstate 5 borders a portion of the western edge of the reserve area. A tributary to Boeckman Creek flows south from the middle of the reserve area and then along SW Elligsen Road before crossing underneath to the farmland to the south. The reserve area contains a series of moderately steep hills with some slopes greater than 10% through the middle of the area. Access is provided by SW Elligsen Road, SW 65th Ave and SW Frobase Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the western boundary as well as a portion of the southern boundary of the urban reserve area. There are no natural or built features that mark a clear transition between the reserve area and the rural lands north of SW Frobase Road or east of SW 65th Ave. Similarly, there are no natural or built features that mark a clear transition between the reserve area and the rural lands south of SW Elligsen Road. Even assuming SW Frobase Road develops as a collector and SW Elligsen Road and SW 65th Ave develop as arterials in the future, the roads themselves will not provide a clear transition area between urban and rural uses. Additional buffers will need to be incorporated into the planning and design of the urban reserve area along all of these roadways. However, the rural lands along all three of these edges are designated as urban reserve and may be included in the UGB in the future. Thus, any buffers that are incorporated into the planning and design for the reserve area should consider the potential for making urban form connections in the future. Overall, there are no existing natural or built features that provide a clear transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 118 acres with the vast majority (107 acres) being upland wildlife habitat that is composed of forested slopes in the central-western portion of the reserve area. Almost all of the riparian habitat is on relatively flat land and is impacted by active agricultural activities and could easily be impacted by future development as well. However this also situation also provides the opportunity for restoration of some of the impacted riparian habitat areas. The City of Wilsonville has adopted a riparian habitat protection program that is in substantial compliance with Metro's Title 13 Nature in Neighborhoods regulations. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. As most of the habitat area is on relatively flat land and the upland habitat portion occupies a significant block of land, some impact to the regionally significant fish and wildlife habitat would be expected to occur. This is especially true given the potential transportation network needed to provide connectivity within the reserve area and to adjacent urban reserve lands in the future. Overall, future urbanization could occur with low to moderate avoidance of regionally significant fish and wildlife habitat depending on the design of the development and transportation connectivity needs.

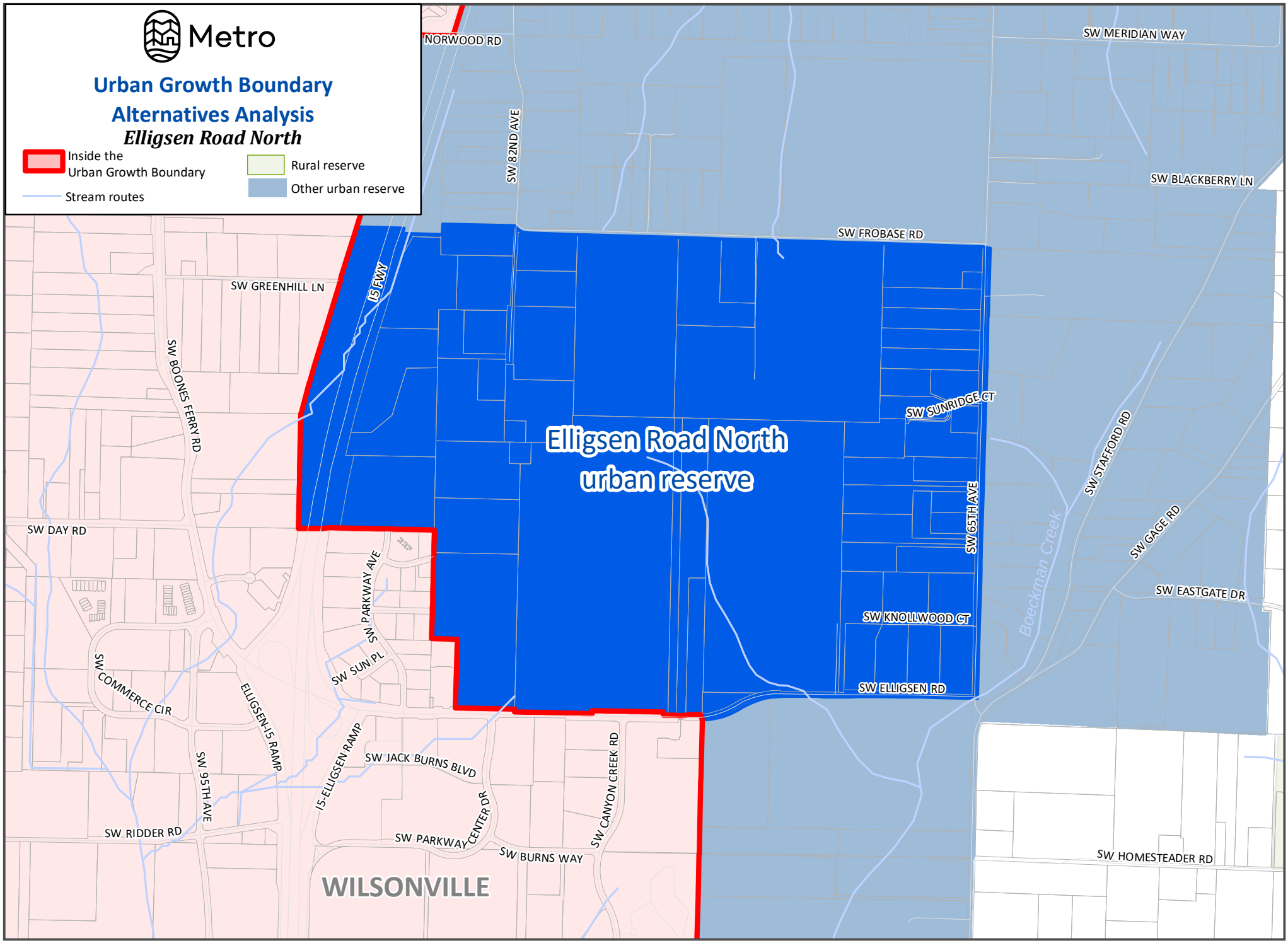
Contribution to the purposes of Centers and Corridors

The Wilsonville Town Center is the nearest 2040 center, located to the south of the reserve area. The Town Center is located east of I-5, is about 100 acres in size, and primarily serves the city. The Town Center is located a short distance from the terminus of the WES Commuter Rail line and is linked to the reserve area by SW Stafford Road/SW Wilsonville Road or by I-5 through the SW Elligsen Road interchange, both about a 2.75 mile trip. SMART, the City of Wilsonville's bus service provides service on the Route 2X Barbour line between the Town Center and the Argyle Square Shopping Center which is adjacent to a small portion of the reserve area. There is one 2040 designated corridor in Wilsonville that runs along SW Elligsen Road west of I-5 and then south along SW Parkway Ave, which parallels I-5 on the east, to the Town Center. The corridor is mostly built out with commercial retail or employment uses with some single-family and multi-family residential near the Town Center. The corridor is less than 600 feet away from the reserve area along SW Elligsen Road.

The City of Wilsonville is currently developing a Town Center Plan that envisions a vibrant walkable destination that inspires people to come together and socialize, shop, live and work.

Metro's 2017 State of the Centers Atlas shows a higher than average jobs to housing ratio, fewer people and dwellings per acre than the regional town center average, and high access to parks.

The Elligsen Road North Urban Reserve Area was identified by Wilsonville as a location for long-term future urbanization. The City's 20 Year Look process (2007) identified this area for a potential mixture of employment and residential use. Urbanization of the reserve area will not contribute to the purpose and vision of the Town Center due to the distance between the two areas and the location of the Argyle Square Shopping Center adjacent to the reserve area. Likewise urbanization of the reserve area will not have an impact on the corridor as it is mostly developed with employment and retail commercial uses and the location of the Argyle Square Shopping Center adjacent to the reserve area.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road North

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ELLIGSEN ROAD SOUTH URBAN RESERVE AREA

Total Acres	256	Parcel Acres	252
Gross Vacant Buildable Acres	214	Net Vacant Buildable Acres	162

General Description (see attached map)

The Elligsen Road South Urban Reserve Area is a rectangular shaped area on the east side of Wilsonville that lies west of SW Stafford Road and south of SW Elligsen Road and totals 256 acres. The UGB forms the western and southern boundary with undesignated land to the east and urban reserve land to the north. Boeckman Creek, which flows diagonally through the center of the urban reserve, splits the area into two evenly sized segments. The land is generally flat with some slopes greater than 10% along Boeckman Creek. Access to the area is provided by SW Stafford Road and SW Elligsen Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the western and southern boundary of the urban reserve area. There are no natural or built features that mark a clear transition between the reserve area and the rural lands to the north of SW Elligsen Road. Similarly, there are no natural or built features that mark a clear transition between the reserve area and the rural lands to the east of SW Stafford Road. Even assuming both SW Elligsen Road and SW Stafford Road develop as arterials in the future, the roads themselves will not provide a clear transition area between urban and rural uses. Additional buffers will need to be incorporated into the planning and design of the urban reserve area along both of these edges. The rural lands north of SW Elligsen Road are included in the Elligsen Road North Urban Reserve and may be included in the UGB in the future. Thus, any buffers that are incorporated into the planning and design of the reserve area should consider the potential for making urban form connections in this location in the future. Overall there are no natural or built features that provide a clear transition between the urban-rural edges of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves.

Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

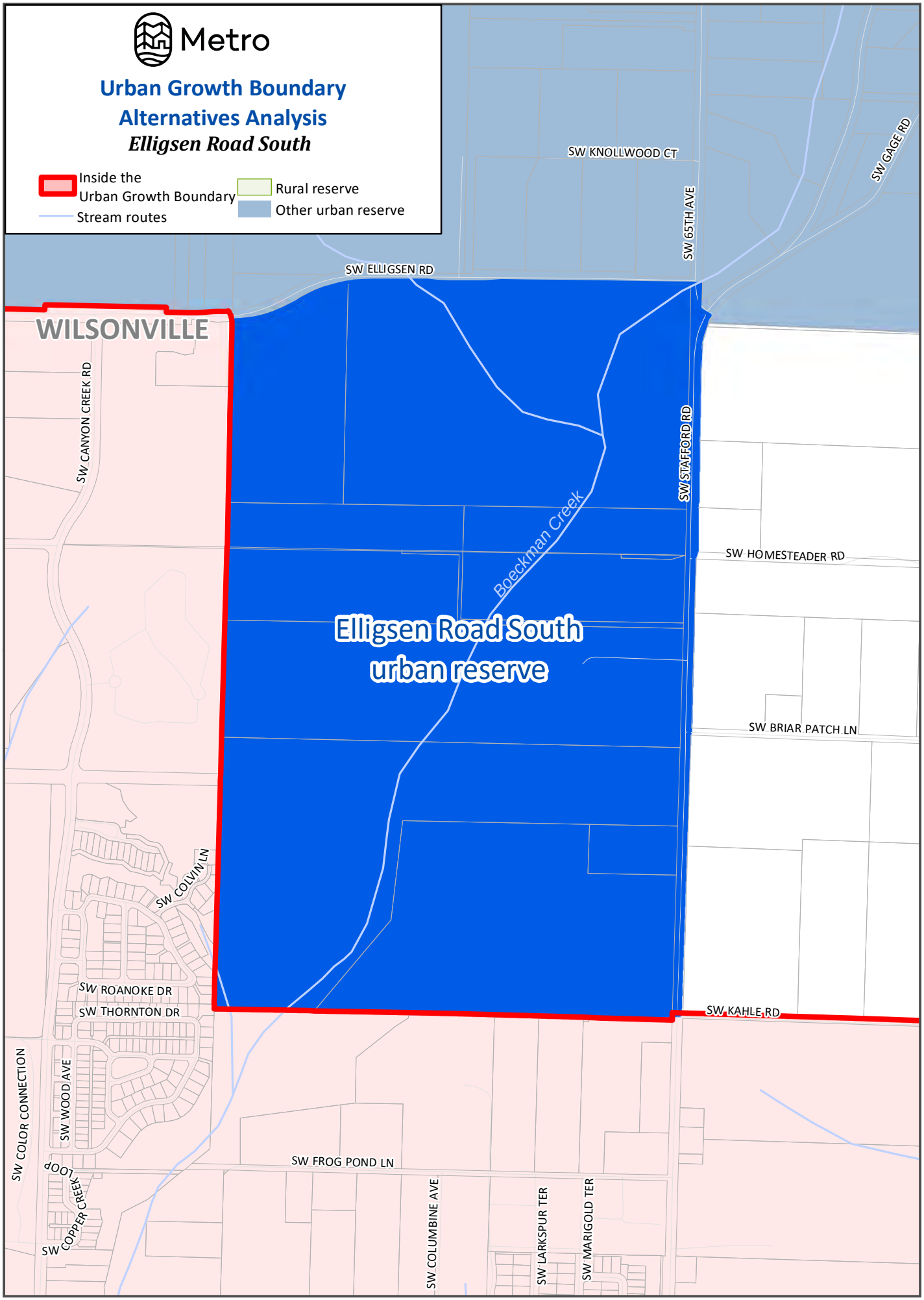
Regionally significant riparian habitat not constrained by steep slopes or in public ownership covers 16 acres of land all focused on Boeckman Creek and three tributaries. Steep slopes along the lower 1,700 feet of Boeckman Creek along with the power line easements provide additional protection or restrict development along this portion of the stream. The City of Wilsonville has adopted a riparian habitat protection program that is in substantial compliance with Metro's Title 13 Nature in Neighborhoods regulations, which does allow for impacts to habitat areas. The City's natural resource protection program will provide protection for the majority of the habitat areas but some impact is expected given the location of the stream in the middle of the reserve area and the need for a transportation network to provide connectivity within the reserve area and to adjacent lands already inside the UGB. Overall urbanization could occur with moderate to low avoidance of regionally significant riparian habitat depending on the level of impact related to transportation connections.

Contribution to the purposes of Centers and Corridors

The Wilsonville Town Center is the nearest 2040 designated center, located to the south of the reserve area. The Town Center is located east of I-5, is about 100 acres in size, and primarily serves the city. The Town Center is located a short distance from the terminus of the WES Commuter Rail line and is linked to the reserve area by SW Stafford Road/SW Wilsonville Road (2 miles) and SW Canyon Creek Road/SW Elligsen Road (2.1miles). SMART, the City of Wilsonville's bus service provides service through the Route 2X Barbour line between the Town Center and the Argyle Square Shopping Center which is approximately ½ mile from the reserve area. There is one 2040 designated corridor in Wilsonville that runs along SW Elligsen Road west of I-5 and then south along SW Parkway Ave, which parallels I-5 on the east side, to the Town Center. The corridor is about ½ mile away along SW Elligsen Road and is mostly built out with commercial retail or employment uses with some single-family and multi-family residential near the Town Center.

The City of Wilsonville is currently developing a Town Center Plan that envisions a vibrant walkable destination that inspires people to come together and socialize, shop, live and work. Metro's 2017 State of the Centers Atlas shows a higher than average jobs to housing ratio, fewer people and dwellings per acre than the regional town center average, and high access to parks.

The Elligsen Road South Urban Reserve area was identified by Wilsonville as a location for long-term future urbanization. The City's 20 Year Look process (2007) identified this area for potential residential use. Urbanization of the reserve area will not contribute to the purpose and vision of the Town Center due to the distance between the two areas and the location of the nearby Argyle Square Shopping Center. Urbanization of the reserve area will not have an impact on the corridor that is mostly developed with employment and retail commercial uses, especially given the other employment and retail uses that are closer to the reserve area.



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Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Elligsen Road South

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GRAHAMS FERRY URBAN RESERVE AREA

Total Acres	203	Parcel Acres	200
Gross Vacant Buildable Acres	92	Net Vacant Buildable Acres	70

General Description (see attached map)

The Grahams Ferry Urban Reserve Area is a block shaped area on the west side of Wilsonville, east of SW Grahams Ferry Road that totals 203 acres in size. The UGB forms the southern and eastern boundaries of this primarily flat area. The area is served by SW Grahams Ferry Road and SW Tooze Road. The Coffee Lake Wetlands natural area owned by Metro, which is inside the UGB, is east of the reserve area.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the southern and eastern boundaries of the urban reserve area. Coffee Lake Creek, its associated floodplain and nearby forested areas provide a natural transition between the reserve area and the rural lands to the north and northwest. SW Grahams Ferry Road forms the western edge of the reserve area. Even assuming SW Grahams Ferry Road is built to an urban arterial level roadway, the road itself will not provide the needed transition area between urban and rural lands. Additional buffers will need to be incorporated into the planning and design of the reserve area to provide a clear transition from urban to rural uses along this western edge. Overall, there is a natural feature transition area between urban and rural lands for approximately half of the reserve area's urban-rural edge.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 67 acres with most of the habitat associated with the Coffee Lake Creek

stream corridor along the eastern edge of the reserve area. Within the reserve area is 100-year floodplain associated with this stream. There is both riparian and upland habitat identified in the south central portion of the reserve area, although it appears that the stream has been tiled or piped and the habitat area is being actively farmed. Adjacent to the east of the reserve area is a large 200 acre block of Metro owned natural area that is part of the Coffee Lake Wetlands complex.

The City of Wilsonville has adopted a riparian habitat protection program that is in substantial compliance with Metro's Title 13 Nature in Neighborhoods regulations. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The City's protection program combined with the limited development potential within the 100-year flood plain that is along the stream corridor creates a buffer that can minimize the impacts future urbanization will have on regionally significant fish and wildlife habitat along the eastern edge of the area. The majority of the habitat area identified in the south central portion of the area has been removed through agricultural activity and manipulation of the stream corridor. Urbanization in this portion of the area will provide the opportunity to restore some of the habitat and stream corridor function. Overall, future urbanization can occur while avoiding the regionally significant habitat associated with Coffee Lake Creek and provides the opportunity for restoring some lost habitat.

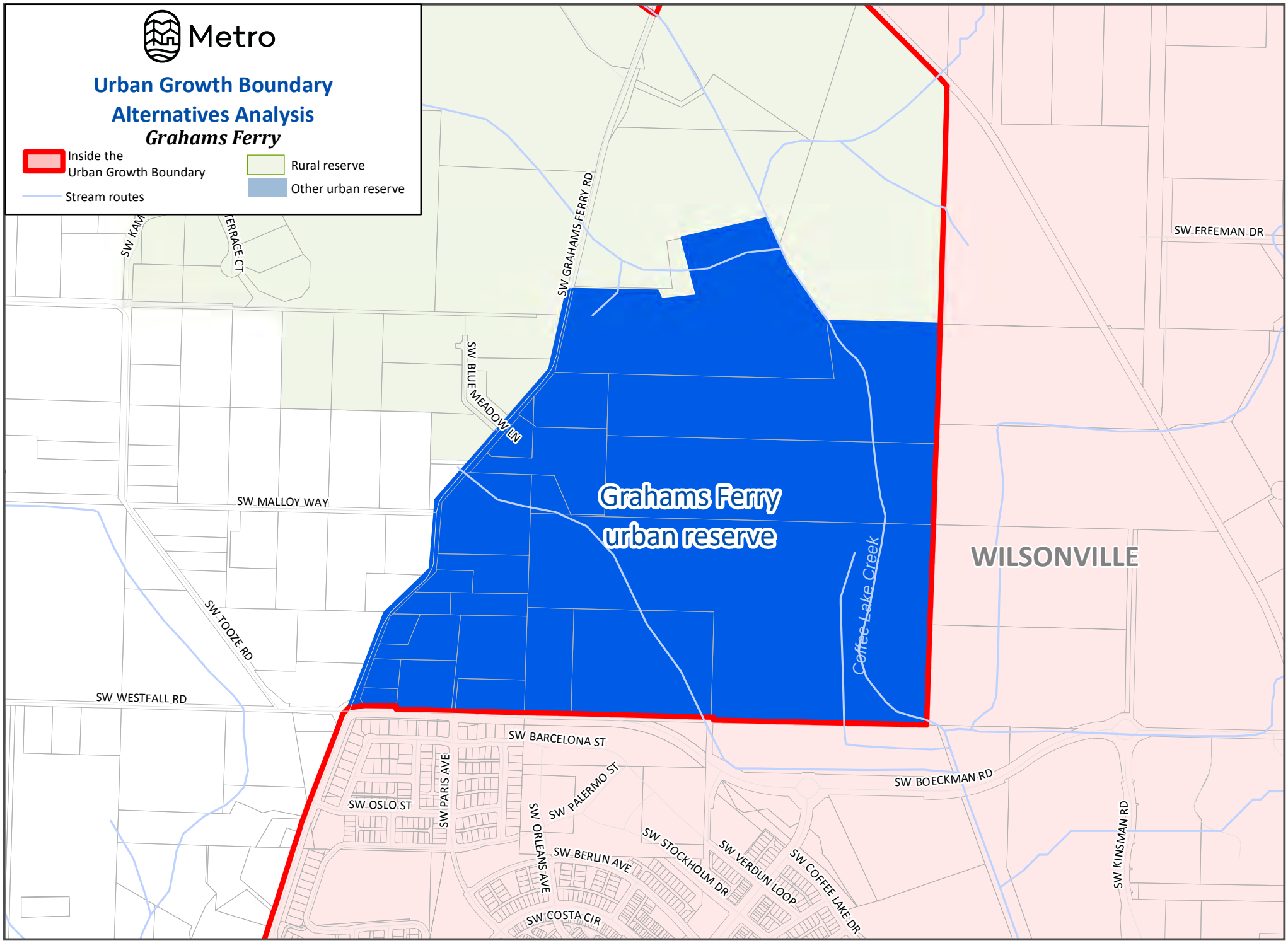
Contribution to the purposes of Centers and Corridors

The Wilsonville Town Center is the nearest 2040 center, located to the east of the reserve area. The Town Center is east of I-5, about 100 acres in size, and primarily serves the city. The Town Center is located a short distance from the terminus of the WES Commuter Rail line and is indirectly linked to the reserve area by a series of arterial roads (1.5 miles). SMART, the City of Wilsonville's bus service provides service between the Town Center and Villebois which is south of the reserve area through the Route 7 Villebois line. There is one 2040 designated corridor in Wilsonville that runs along SW Elligsen Road west of I-5 and then south along SW Parkway Ave, which parallels I-5 on the east, to the Town Center. The corridor is mostly built out with employment uses with some commercial retail on the north end and single-family and multi-family residential near the Town Center.

The City of Wilsonville is currently developing a Town Center Plan that envisions a vibrant walkable destination that inspires people to come together and socialize, shop, live and work. Metro's 2017 State of the Centers Atlas shows a higher than average jobs to housing ratio, fewer people and dwellings per acre than the regional town center average, and high access to parks.

The Grahams Ferry Urban Reserve Area was identified by Wilsonville as a location for long-term future urbanization. The City's 20 Year Look process (2007) identified the area primarily for industrial use to build on development within the Coffee Creek industrial area and to take advantage of planned infrastructure additions. The area could provide some residential use if demand warrants. Urbanization of the reserve area is unlikely to contribute to the purpose and vision of the Wilsonville Town Center due to its distance from the Town Center and its potential industrial use. Urbanization of the reserve area will not contribute to the 2040 corridor as the

closest portion of the corridor is mostly developed with employment and multi-family residential uses and the commercial areas are located a greater distance away than the Town Center.



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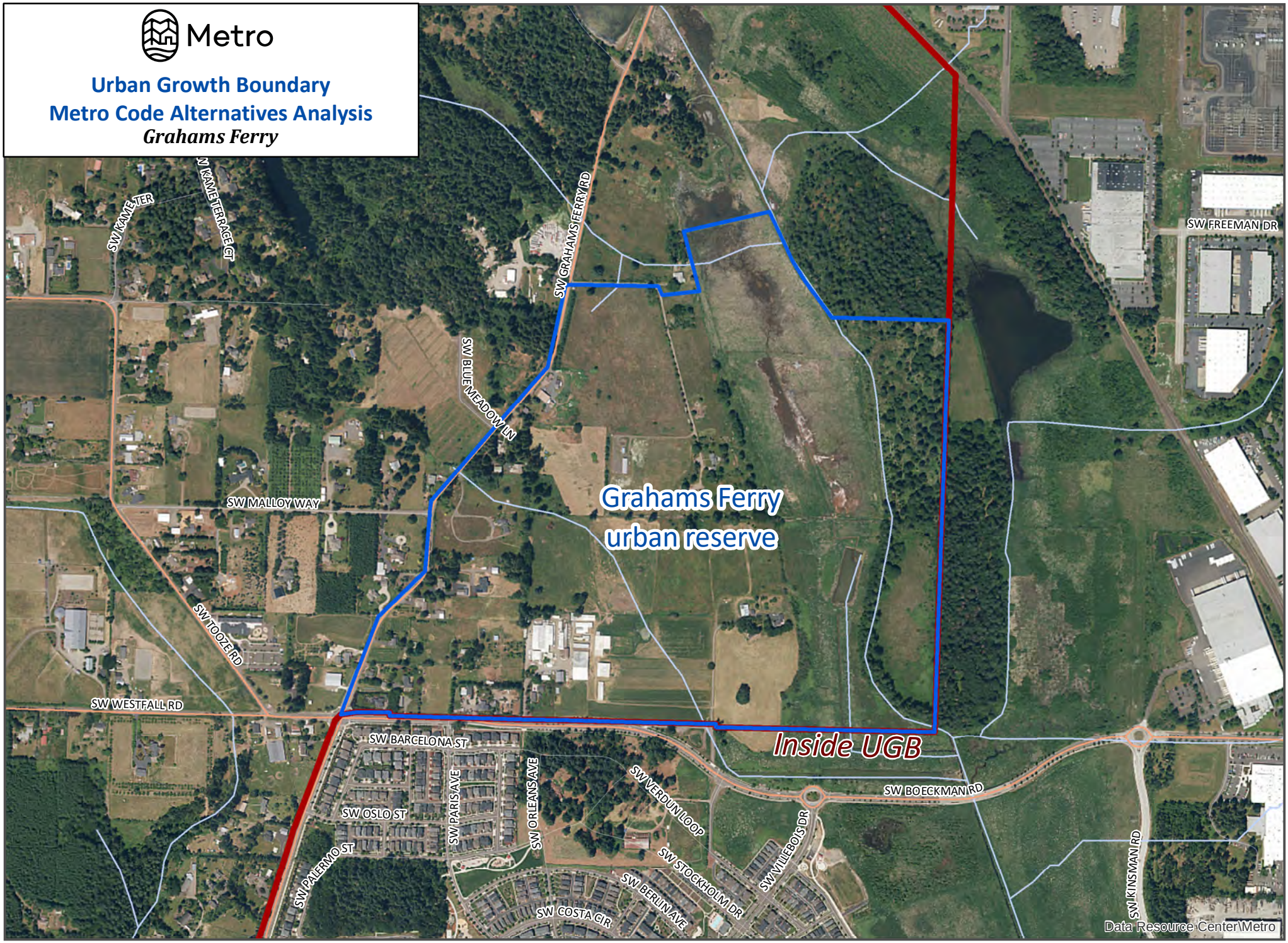
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Grahams Ferry



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GRESHAM EAST URBAN RESERVE AREA

Total Acres	857	Parcel Acres	802
Gross Vacant Buildable Acres	571	Net Vacant Buildable Acres	434

General Description (see attached map)

The Gresham East Urban Reserve is a boot-shaped area east of Gresham totaling 857 acres. The area is bounded by SE Lusted Road to the north, SE 302nd Avenue to the east and Johnson Creek to the south. The UGB forms the western edge. The urban reserve area is served by SE Lusted Road, SE 282nd Avenue, SE 302nd Avenue and by SE Orient Drive. It is primarily flat, with all slopes over 25% located along three of the four drainages that flow west through the area.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the western boundary of the urban reserve area. The South Fork of Beaver Creek is located just north of the reserve area and provides a clear transition area between the urban reserve and the rural lands further to the north. There are rural residences along the north side of SE Lusted Road; however there are some slight changes in topography in this area that helps provide a small buffer to the residences. Johnson Creek is located just south of the reserve area. While Johnson Creek itself is not within a ravine, the stream corridor combined with a hill south of SE Stone Road do provide a clear transition area between the area and adjacent rural lands to the south. There are no natural or built features to mark a transition between urban and rural lands east of SE 302nd Avenue beyond the road itself. Even assuming that 302nd Avenue develops to an urban collector level road in the future, the road itself will not provide a clear transition area between future urban and rural uses. Additional buffers will need to be incorporated into the planning of the urban reserve area to provide a clear transition from urban to rural uses along this east edge. Overall, just over half of the urban-rural edge has a natural feature that provides a clear transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

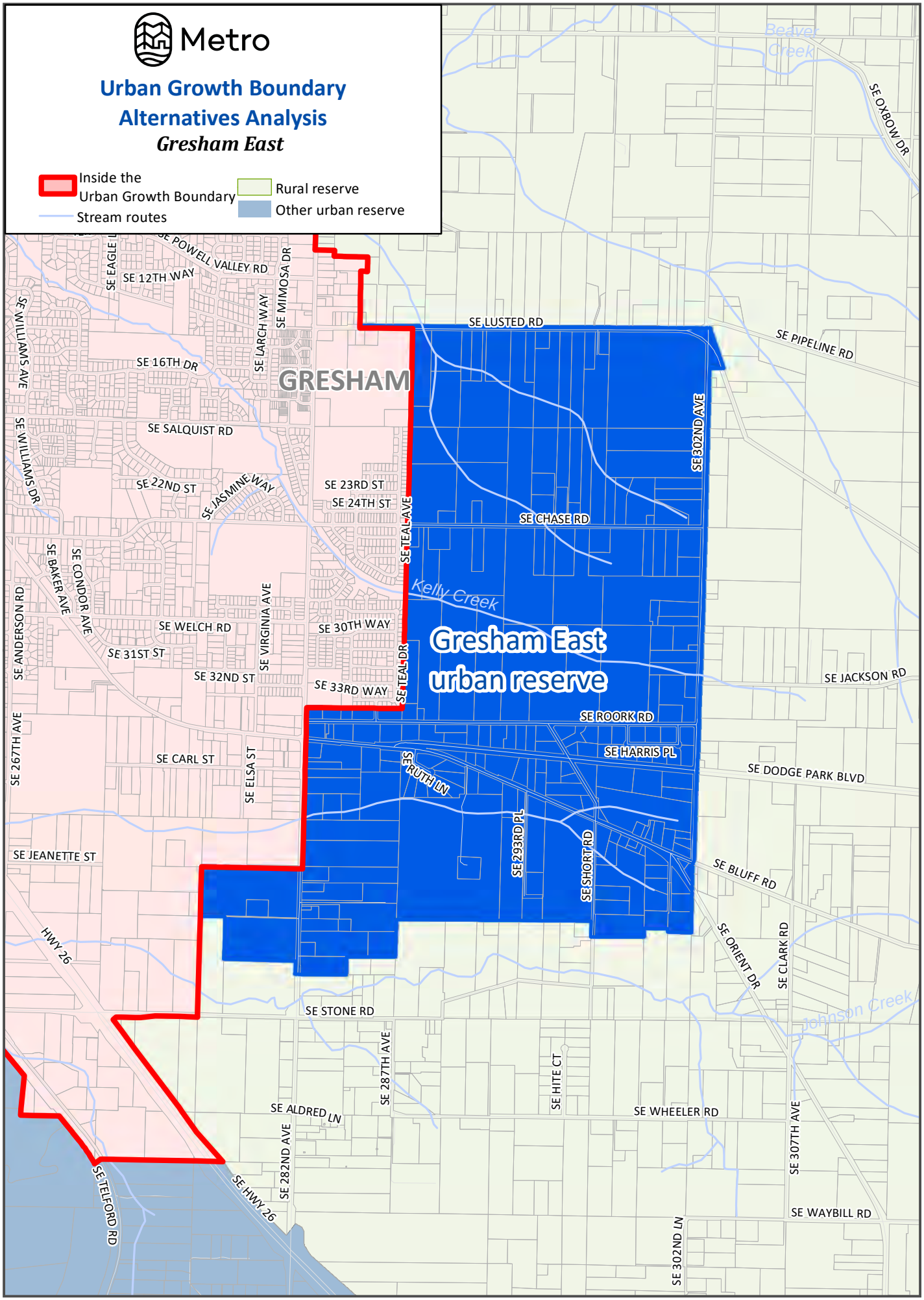
Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 60 acres with the vast majority (40 acres) being riparian wildlife habitat along the four main stream corridors that flow through the reserve area. A portion of the southernmost stream corridor runs through a nursery operation and a segment of the stream appears to be channelized. Most of the regionally significant upland habitat occurs around the northernmost stream corridor and partially within the Barlow High School property, which should provide additional protection of the habitat area. The City of Gresham has adopted a riparian habitat conservation area overlay district plan that is compliant with Metro's Title 13 program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The proximity of the habitat areas to flat, easily developable land throughout the reserve area could create a conflict between future urbanization and the protection of fish and wildlife habitat, depending mostly on needed north-south transportation connections through the middle of the reserve area. Overall, urbanization could occur with moderate to low avoidance of regionally significant fish and wildlife habitat depending on transportation connection needs.

Contribution to the purposes of Centers and Corridors

The Gresham Regional Center is the closest 2040 designated center to the Gresham East Urban Reserve Area. It is 387 acres in size, serves the city and a portion of eastern Multnomah County and is the eastern terminus of the MAX Light Rail Blue Line. The Regional Center is linked to the reserve area by Highway 26/SE Orient Drive (3 miles) and SE Powell Valley Road/SE Lusted Road (2.6 miles). Tri-Met line 84, which provides evening loop service, connects the Regional Center to the reserve area at SE 202nd Ave at SE Orient Drive. Two 2040 designated corridors that meet at the intersection of SE Burnside Road and E Powell Boulevard are about 2 miles from the reserve area. Both corridors are developed with large and small auto oriented commercial uses and car dealerships and auto support businesses.

Gresham's Three Hubs One Gresham Initiative is the City's economic, urban redevelopment and social strategy to strengthen and link the city's three commercial centers. This includes the Civic Neighborhood and Historic Downtown, both of which are within the Regional Center. The vision for the Civic Neighborhood includes mixed-use housing, grocery store and entertainment options, a community plaza and large office tenants. The vision for Historic Downtown includes mixed-use housing, place-making opportunities and additional commercial, office and entertainment places. The third hub includes the Rockwood Town Center location that is five miles from the reserve area. The vision for Rockwood includes healthcare facilities, a marketplace for local vendors and additional education, creative space on job training opportunities. Metro's 2017 State of the Centers Atlas shows a slightly lower than average jobs to housing ratio, with average people and dwelling units per acre when compared to other regional centers. Metro's 2016 Transit Oriented Development (TOD) Strategic Plan identified the Gresham Regional Center as an infill and enhance transit community, meaning it is one of the most "TOD ready" areas in the region outside of downtown Portland.

Urbanization of the reserve area will not contribute to the vision or purpose of the Gresham Regional Center due to the distance between the two areas and the substantial amount of underdeveloped land inside the UGB that is in closer proximity to the regional center. Likewise urbanization of the reserve area will not contribute to the purpose of the corridors as they are currently developed with uses that serve a much larger geographic area.



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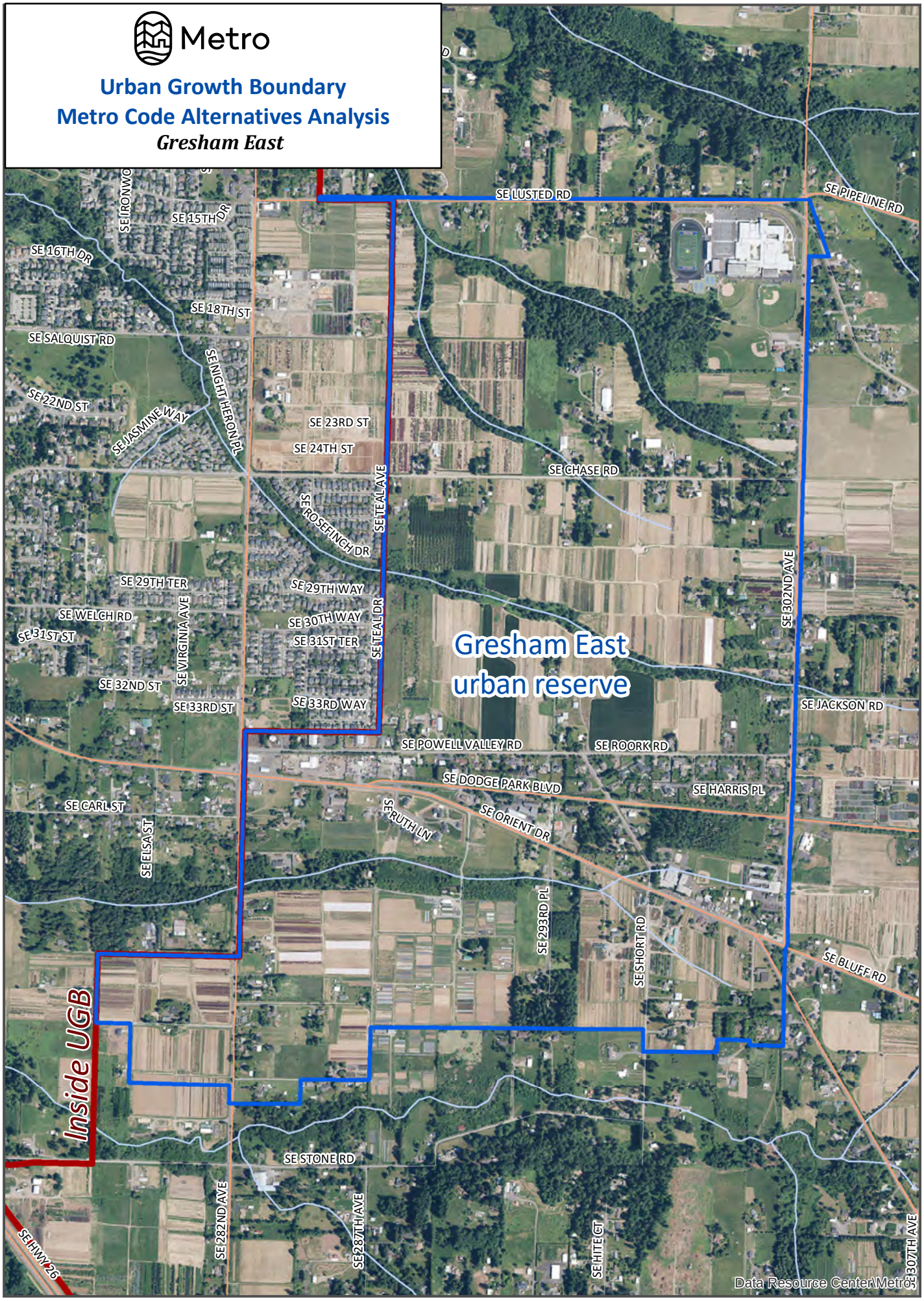
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Gresham East



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HENRICI URBAN RESERVE AREA

Total Acres	421	Parcel Acres	395
Gross Vacant Buildable Acres	303	Net Vacant Buildable Acres	230

General Description (see attached map)

The Henrici Urban Reserve Area is a rectangular shaped area on the south side of Oregon City, north and south of S Henrici Road that totals 421 acres in size. The UGB forms the northern boundary of the area. The area is primarily flat with the exception of the very western edge of the area and the northeast corner that contains forested steep slopes above Beaver Creek and Thimble Creek respectively. The area is served by S Henrici Road, S Beavercreek Road and Highway 213. There is one parcel that is separate from the rest of the area located west of Highway 213 in the vicinity of Edgemont Drive.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB provides the northern boundary of the urban reserve area. Beaver Creek provides a natural feature to mark the transition between urban and rural lands along the west boundary of the reserve area. Headwaters of Thimble Creek and nearby steep slopes provide a natural feature to mark the transition between urban and rural lands for the northeast corner of the reserve area. A small tributary to Beaver Creek and the nearby steep forested slopes provide a natural feature to mark the transition between urban and rural lands for a small portion of the southern edge of the reserve area just west of S Beavercreek Road. East of S Beavercreek Road there is no natural or built feature to provide a transition along the southern and eastern edge of the reserve area. In addition, there is no natural or built feature between Highway 213 and the small tributary to Beaver Creek to provide a buffer for a small pocket of rural land. Therefore buffers will need to be included in the design and planning of the urban reserve in these locations. Overall there is a natural feature transition area between urban and rural lands for just over half of the urban-rural edges of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves.

Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

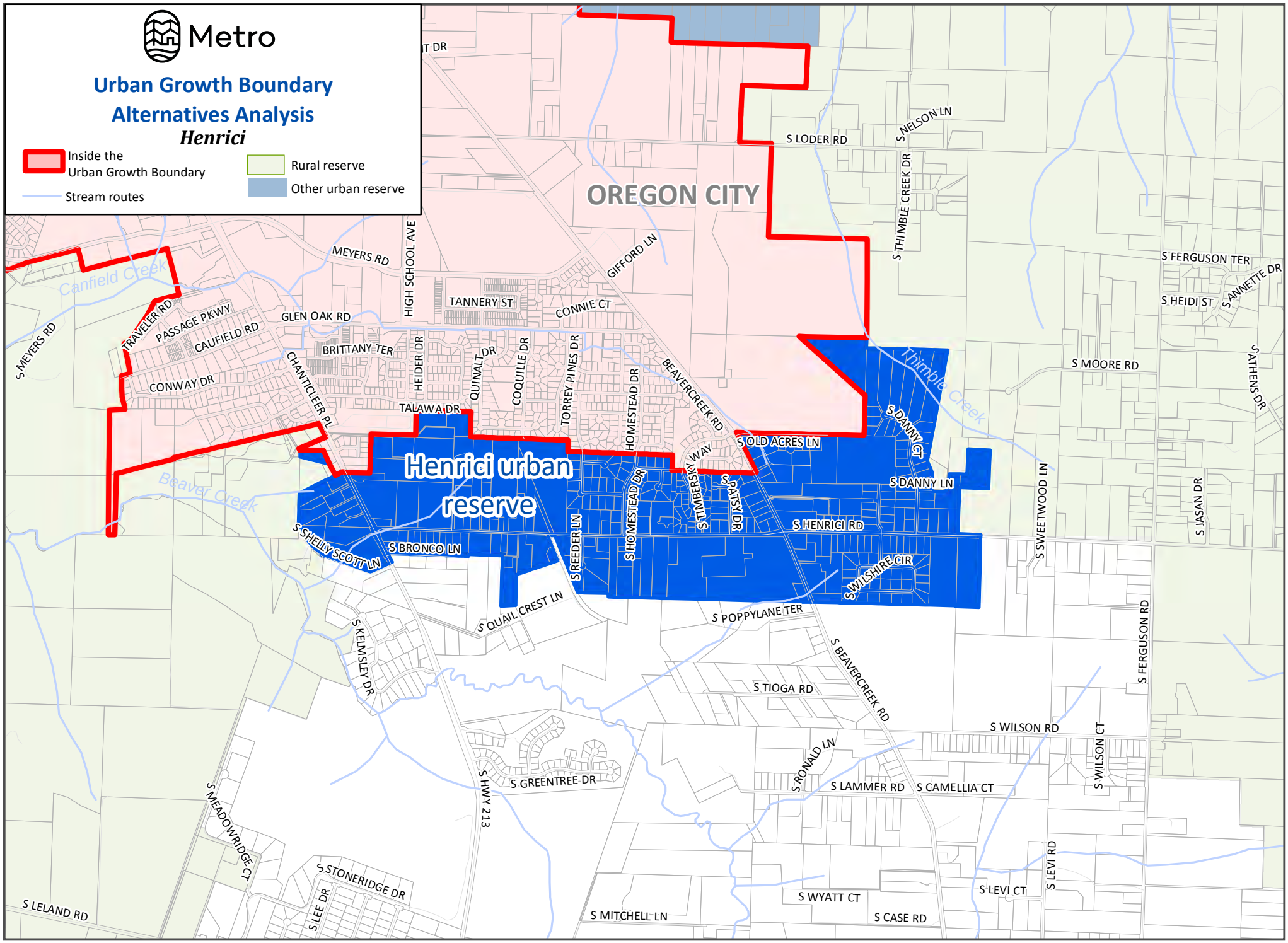
Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 32 acres with most of the riparian habitat occurring along two unnamed tributaries to Beaver Creek and a small segment of Canfield Creek. Additional riparian habitat is located along Thimble Creek that flows through the steeply sloped northeast corner of the reserve area. There is upland wildlife habitat associated with Thimble Creek as well as the tributary to Beaver Creek near Highway 213. Oregon City has adopted a riparian habitat protection program that is compliant with Metro's Title 13 Nature in Neighborhoods. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The riparian and upland habitat associated with Thimble Creek is not susceptible to impacts from urbanization due to the large area of adjacent steep slopes. The riparian habitat associated with Canfield Creek and the small tributary to Beaver Creek that is near S Beavercreek Road are susceptible to impacts from urbanization, although the location of the habitat near the edges of the reserve area may lessen the potential for impacts. The tributary to Beaver Creek near S Henrici Road and Highway 213 is more susceptible to impacts related to urbanization given its location near the road intersection, although a portion of this habitat area is a stormwater detention facility. Overall urbanization can occur with a moderate to high level of avoidance of significant fish and wildlife habitat, depending on necessary improvements to Henrici Road.

Contribution to the purposes of Centers and Corridors

The Oregon City Regional Center is the closest 2040 designated center to the Henrici urban reserve area. The Regional Center serves Oregon City, Clackamas County and some neighboring cities to the south. The Regional Center is linked to the reserve area by 7th Street, Molalla Ave and either S Beavercreek Road (4.3 miles) or Highway 213 (3.5 miles). There is no transit service between the Regional Center and the reserve area although there is transit service to Clackamas Community College which is just shy of a mile away. There is one 2040 designated corridor that is outside the Regional Center and runs along 7th Street and Molalla Ave between the Regional Center and Clackamas Community College. The corridor is mostly built out with a mixture of single family homes, small commercial businesses and larger commercial retail uses and is a little less than a mile away from the reserve area along Highway 213.

The City's plans for the Regional Center include mixed-use development on the vacant parcels in the northern section of the center, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The Regional Center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to downtown through the development of housing, public spaces, habitat restoration, education and employment opportunities. Metro's 2017 State of the Centers Atlas shows a very low population, people per acre, total employees and dwelling units per acre when compared with other regional centers indicating that the Regional Center needs to attract more housing and people to meet the City's vision.

Urbanization of the Henrici Urban Reserve Area will not contribute to the vision or the purpose of the Oregon City Regional Center as the urban reserve area is relatively small and too isolated from the Regional Center to support the need for more people to meet a higher level of activity. Likewise urbanization of the reserve area will not have an impact on the corridor as it is mostly built out with commercial retail uses along the portion of the corridor closest to the reserve area.



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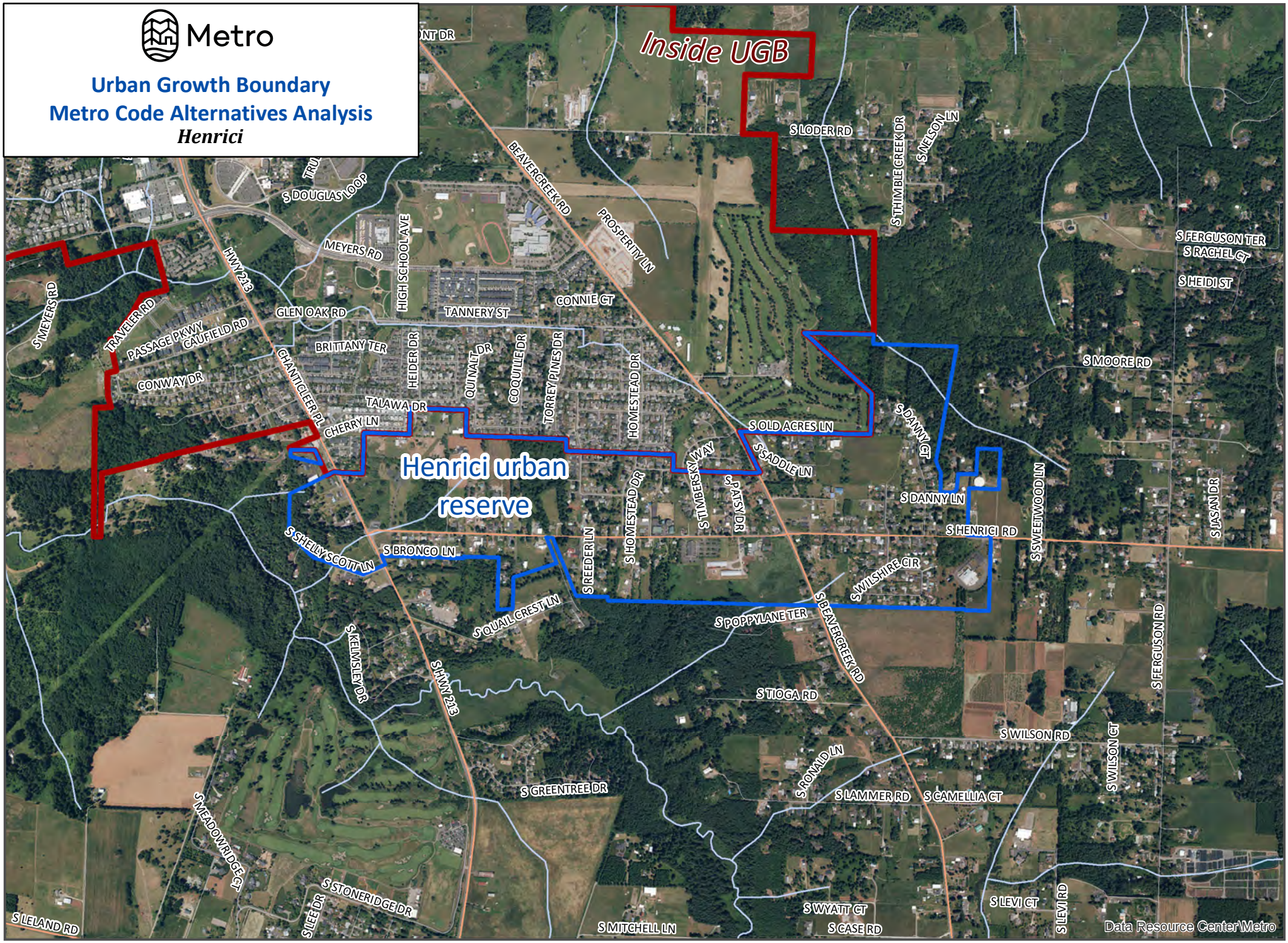
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Henrici



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HOLCOMB URBAN RESERVE AREA

Total Acres	318	Parcel Acres	309
Gross Vacant Buildable Acres	211	Net Vacant Buildable Acres	160

General Description (see attached map)

The Holcomb Urban Reserve Area is an irregular shaped area on the east side of Oregon City, north and south of S Holcomb Boulevard and is 318 acres in size. It is served by S Holcomb Boulevard with S Kraeft Road, S Stoltz Road and S Hilltop Road providing access to small pockets of rural residences. The area is a mix of forested parcels and very minor agricultural activities intermixed with rural residences. The area north of S Holcomb Boulevard is generally flat and represents the high point, losing 350 feet in elevation from S Holcomb Boulevard to the southern edge of the reserve area. A tributary of Holcomb Creek flows south through the lower portion of the reserve area, joining Holcomb Creek south of S Redland Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB provides the western boundary of the urban reserve area. There are no natural or built features to mark a clear transition between urban and rural lands to the north and along the northern portion of the eastern edge of the reserve area. Additional buffers will need to be incorporated into the planning and design of the urban reserve area to provide a clear transition from urban to rural uses. Steep slopes along with Holcomb Creek provide a natural feature that marks the transition between urban and rural lands for the remainder of the eastern edge and along the southern edge of the reserve area. Overall just under half of the urban-rural edge of the reserve area has a natural feature that provides a clear transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 71 acres with the vast majority of the riparian habitat associated with a tributary to Holcomb Creek that flows south through the lower portion of the reserve area. There is a significant amount of upland habitat associated with this stream corridor that stretches across the reserve area. There are a few pockets of upland habitat north of S Holcomb Blvd, although most of them appear to be in agricultural use. Oregon City has adopted a riparian habitat protection program that is compliant with Metro's Title 13 Nature in Neighborhoods. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. A large portion of the significant riparian and upland habitat occurs on steep slopes which will provide additional protection for the habitat areas. However there is riparian and upland habitat that is susceptible to impacts, especially the habitat areas south of S Edenwild Lane and along the eastern edge of the reserve area. The amount of potential impact depends on needed east-west and north-south road connections and the level of development that occurs along the eastern edge of the reserve area. Overall urbanization could occur with moderate avoidance of significant riparian and upland wildlife habitat depending on necessary road connections and intensity of development along the eastern edge.

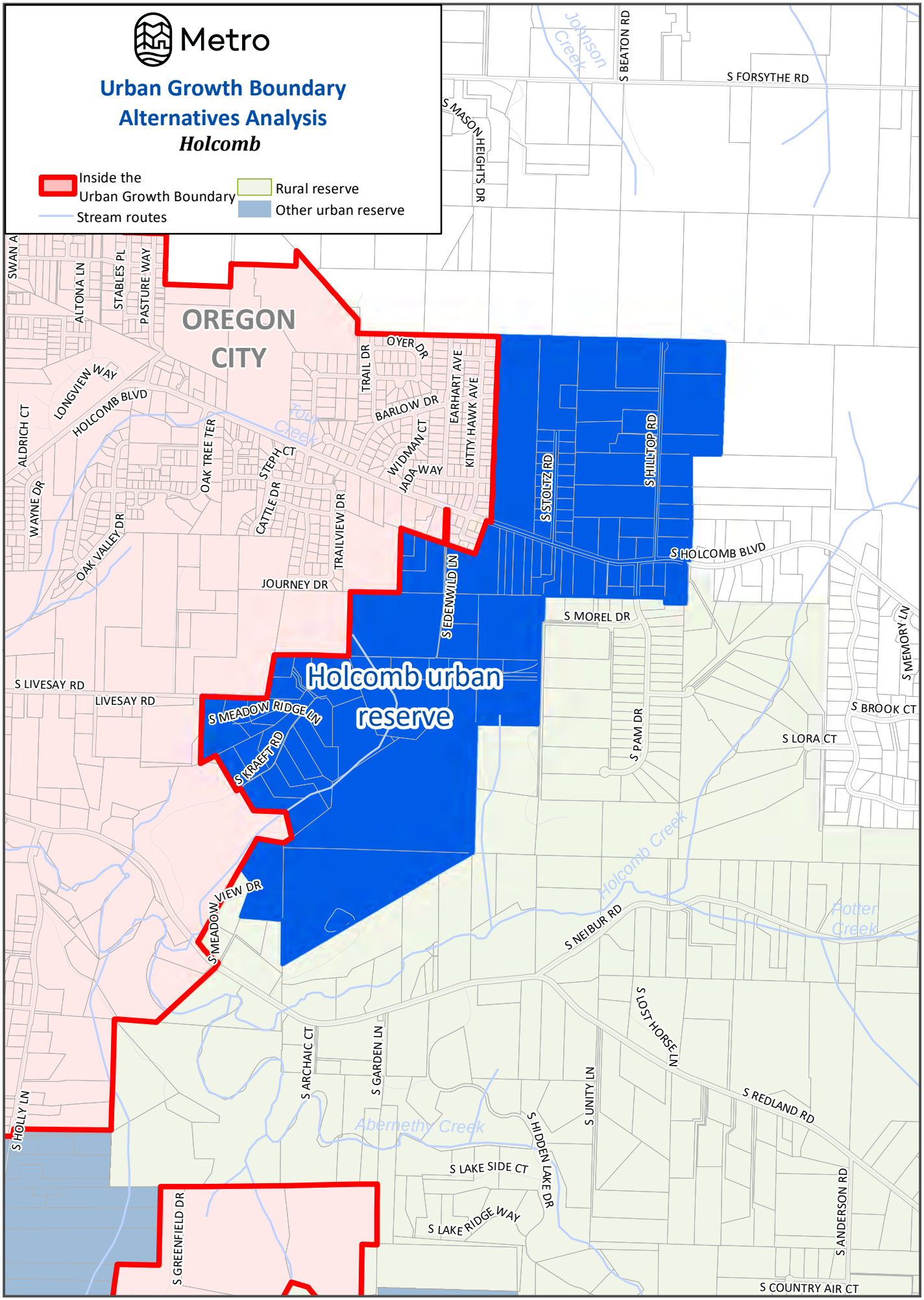
Contribution to the purposes of Centers and Corridors

The Oregon City Regional Center is the closest 2040 designated center to the Holcomb Urban Reserve Area. The Regional Center serves Oregon City, Clackamas County and some neighboring cities to the south. The Regional Center is linked to the reserve area by S Holcomb Blvd (1.75 miles). There is no transit service between the Regional Center and the reserve area although TriMet route 154 is ¾ mile away along S Holcomb Blvd. There is one 2040 designated corridor that is outside the Regional Center in Oregon City and runs along 7th Street and Molalla Ave between the Regional Center and Clackamas Community College. The corridor is mostly built out with a mixture of single family homes, small commercial businesses and larger commercial retail uses and is over three miles away from the reserve area through a series of local streets.

The City's plans for the Regional Center include mixed-use development on the vacant parcels in the northern section of the center, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The Regional Center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to downtown through the development of housing, public spaces, habitat restoration, education and employment opportunities. Metro's 2017 State of the Centers Atlas shows a very low population, people per acre, total employees and dwelling units per acre when compared with other regional centers indicating that the Regional Center needs to attract more housing and people to meet the City's vision.

Urbanization of the Holcomb urban reserve area will not contribute to the vision or the purpose of the Oregon City Regional Center. The reserve area is too great a distance from the Regional Center to support the need for more people to meet a higher level of activity. Likewise urbanization of the

reserve area will not have an impact on the corridor as the reserve area is too great a distance from the corridor.



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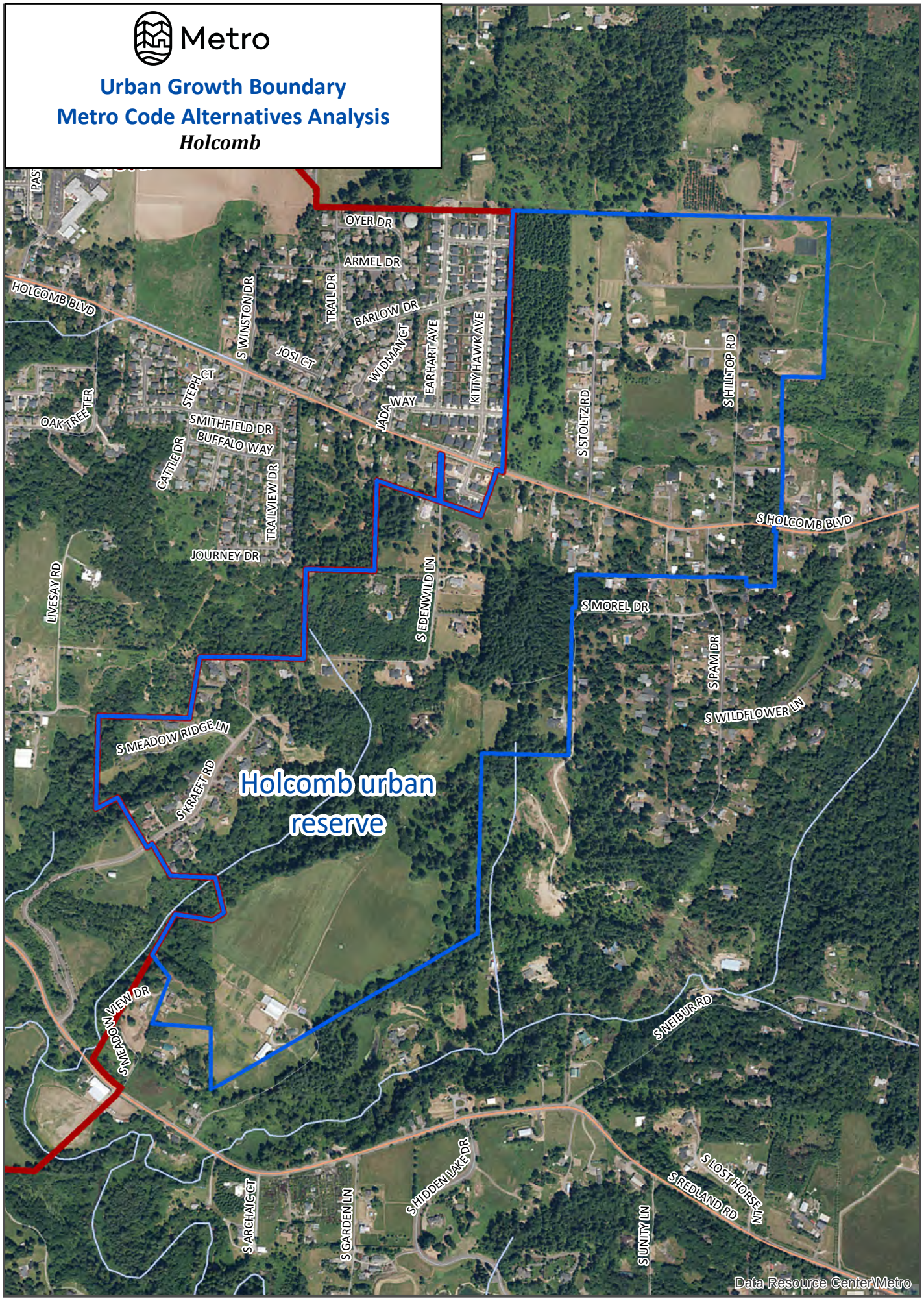
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Holcomb



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HOLLY LANE/NEWELL CREEK CANYON URBAN RESERVE AREA

Total Acres	696	Parcel Acres	591
Gross Vacant Buildable Acres	180	Net Vacant Buildable Acres	137

General Description (see attached map)

The Holly Lane/Newell Creek Canyon Urban Reserve Area is an irregular shaped area on the east side of Oregon City that straddles Highway 213 between S Redland Road and S Maplelane Road. The area is steeply sloped on both sides of the highway and is 696 acres in size. The east side of the area is served by S Holly Lane and the west side is served by Division Street and local roads such as Davis Road, 18th Street and Morton Road. This urban reserve area is unique in that it is almost surrounded by land inside the UGB and shares a 370 yard border with a rural reserve in the northeast corner. The area is a mix of forested parcels on both sides of Highway 213 that are mostly in public ownership and rural residences along S Holly Lane. Newell Creek flows north through both sides of the reserve area, joining Abernethy Creek at the northern edge of the area.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The urban reserve area is essentially surrounded by the UGB except for a small segment of rural land south of S Redland Road where steep slopes and Abernethy Creek provide a natural feature to mark a transition between the urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 75 acres with most of the habitat being upland habitat associated with a tributary to Abernethy Creek that flows along the eastern edge of the reserve area. Additional riparian and upland habitat is located along tributaries to Newell Creek in the area south of Division Street. Most

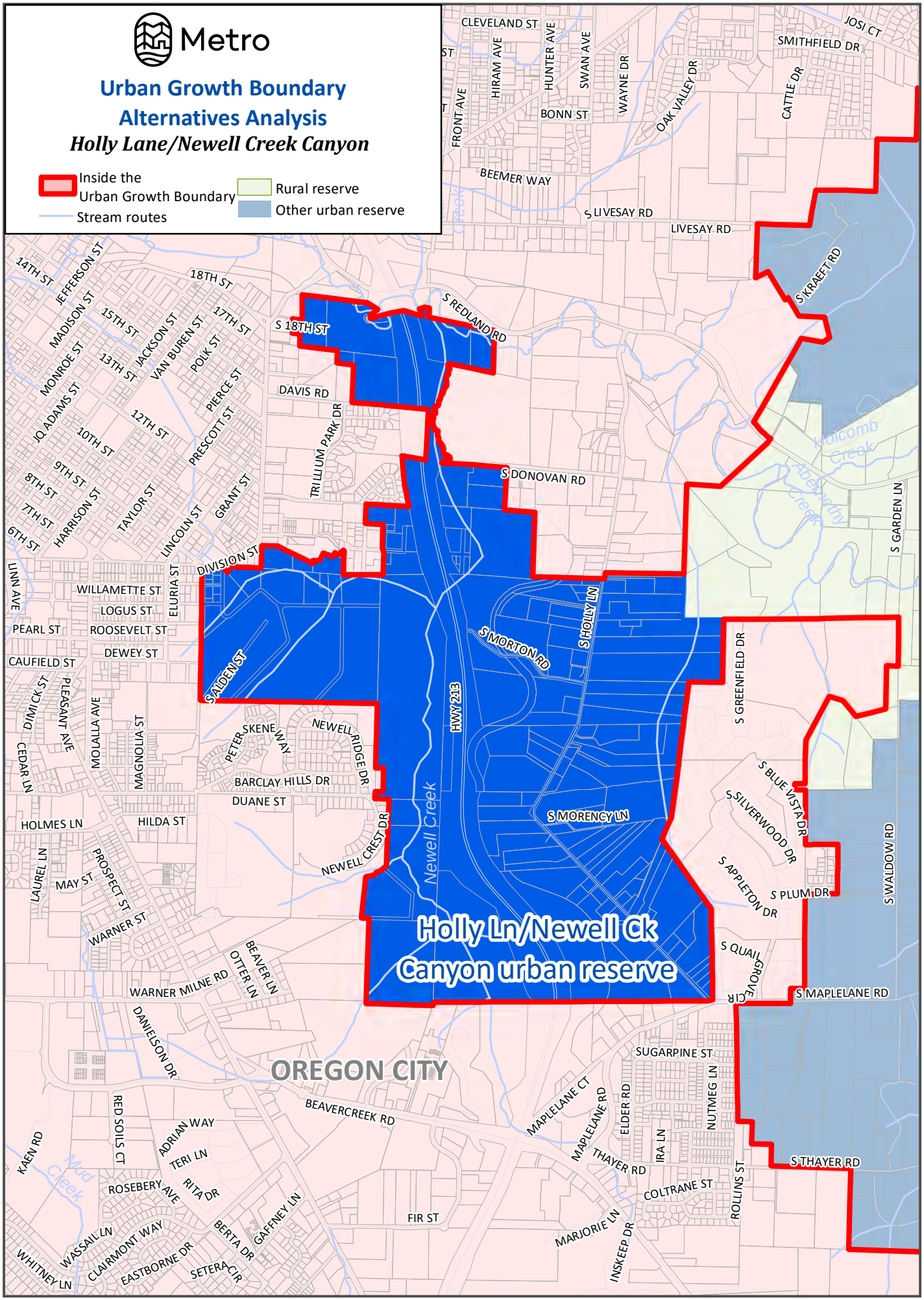
of this habitat is within a steeply sloped forested area. Metro owns over 200 acres of open space that includes Newell Creek. Oregon City has adopted a riparian habitat protection program that is compliant with Metro's Title 13 Nature in Neighborhoods. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Almost all of the buildable land in the reserve area is along S Holly Lane away from the habitat areas. Thus urbanization can occur with a high level of avoidance of regionally significant riparian and upland habitat.

Contribution to the purposes of Centers and Corridors

The Oregon City Regional Center is the closest 2040 designated center to the reserve area. The Regional Center serves Oregon City, Clackamas County and some neighboring cities to the south. The Regional Center is linked to the reserve area by S Redland Road and S Holly Lane (1.4 miles). There is no transit service between the Regional Center and the reserve area although there is transit service to Highway 213 and S Beavercreek Road which is just over a half-mile away from the southern edge of the reserve area. In addition there is transit service at Abernethy Road and Redland Road which is about 1.5 miles from the northern edge of the reserve area. There is one 2040 designated corridor that is outside the Regional Center and runs along 7th Street and Molalla Ave between the Regional Center and Clackamas Community College. The corridor is mostly built out with a mixture of single family homes, small commercial businesses and larger commercial retail uses and is 1.4miles away from the reserve area along Maplelane and Beavercreek Roads.

The City's plans for the Regional Center include mixed-use development on the vacant parcels in the northern section of the center, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The Regional Center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to downtown through the development of housing, public spaces, habitat restoration, education and employment opportunities. Metro's 2017 State of the Centers Atlas shows a very low population, people per acre, total employees and dwelling units per acre when compared with other regional centers indicating that the Regional Center needs to attract more housing and people to meet the City's vision.

Urbanization of the Holly Lane Newell Creek Canyon Urban Reserve Area will not contribute to the vision or the purpose of the Oregon City Regional Center. The developable portion of the reserve area is too small and isolated from the Regional Center to support the need for more people to meet a higher level of activity. Likewise urbanization of the reserve area will not have an impact on the corridor as it is mostly built out with commercial retail uses at the end closest to the reserve area.



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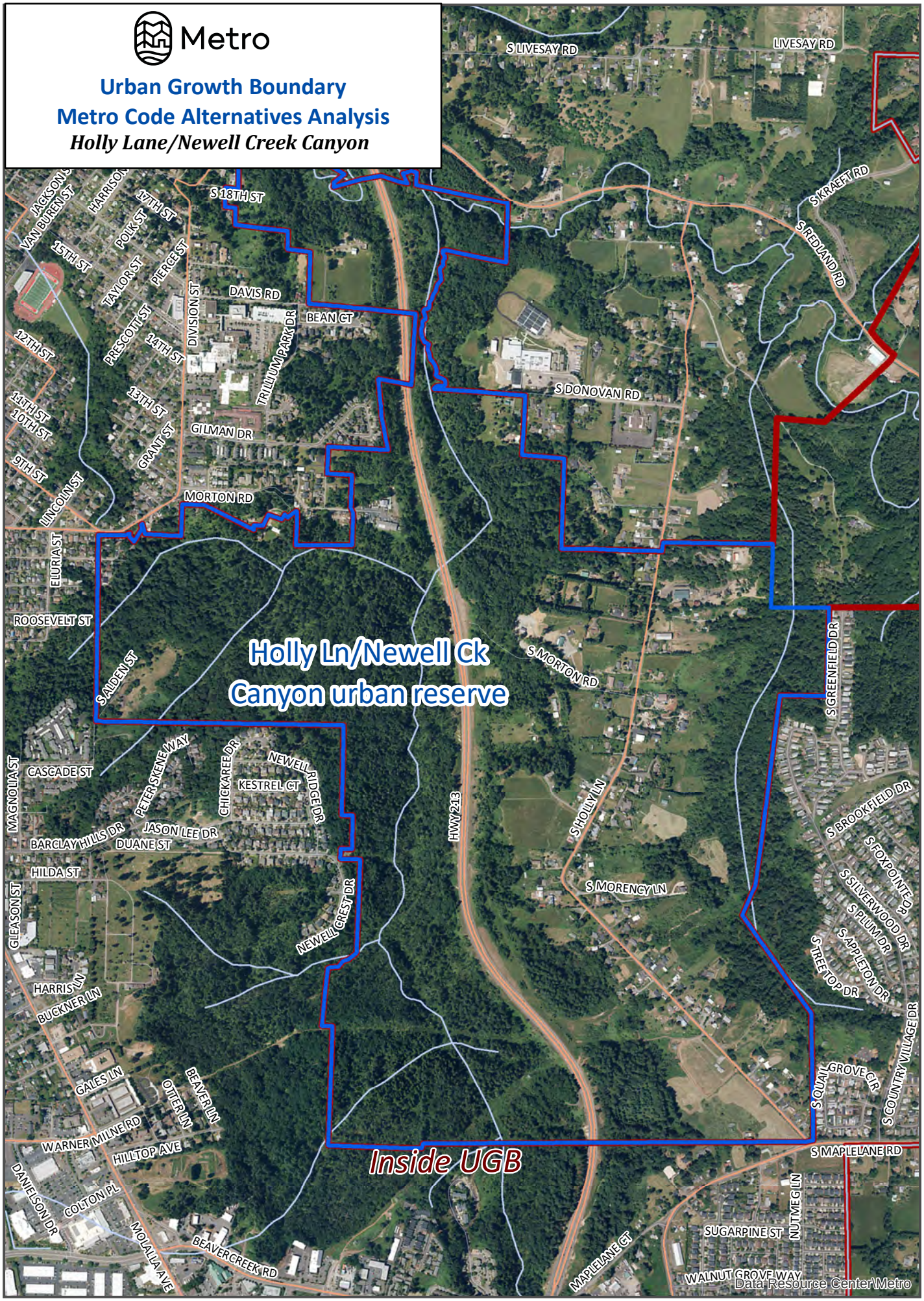
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Holly Lane/Newell Creek Canyon



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I-5 EAST URBAN RESERVE AREA

Total Acres	848	Parcel Acres	746
Gross Vacant Buildable Acres	503	Net Vacant Buildable Acres	382

General Description (see attached map)

The I-5 East Urban Reserve Area is a large somewhat rectangular shaped area on the east side of I-5, north of SW Frobase Road and west of SW 65th Ave and totals 848 acres in size. The UGB forms the western and northern boundaries as defined by I-5 and I-205 with urban reserve land to the east and south. Saum Creek flows north through the center of the reserve area with numerous tributaries joining prior to the creek crossing under I-205. The reserve area slopes from south to north with a change in elevation of 270 feet and there are some significant areas of slopes greater than 10% throughout the middle of the reserve. Access to the area is provided by SW 65th Ave and SW Frobase Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB provides the western and northern boundaries of the urban reserve area. SW Frobase Road and SW 65th Avenue provide the edges between urban and rural land to the south and east. Even assuming these two roads develop as a collector and arterial roadway respectively in the future, the roads themselves will not provide a clear transition area between future urban and rural uses. Additional buffers will need to be incorporated into the design and planning of the urban reserve area. The rural lands east of SW 65th Avenue and to the south of SW Frobase Road are included in the Norwood and Elligsen Road North Urban Reserve areas and may be included in the UGB in the future. Thus, any buffers that are incorporated into the design and planning for the reserve area should consider the potential for making urban form connections in these locations in the future. Overall there are no natural or built features along the urban-rural edge that mark a clear transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves.

Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

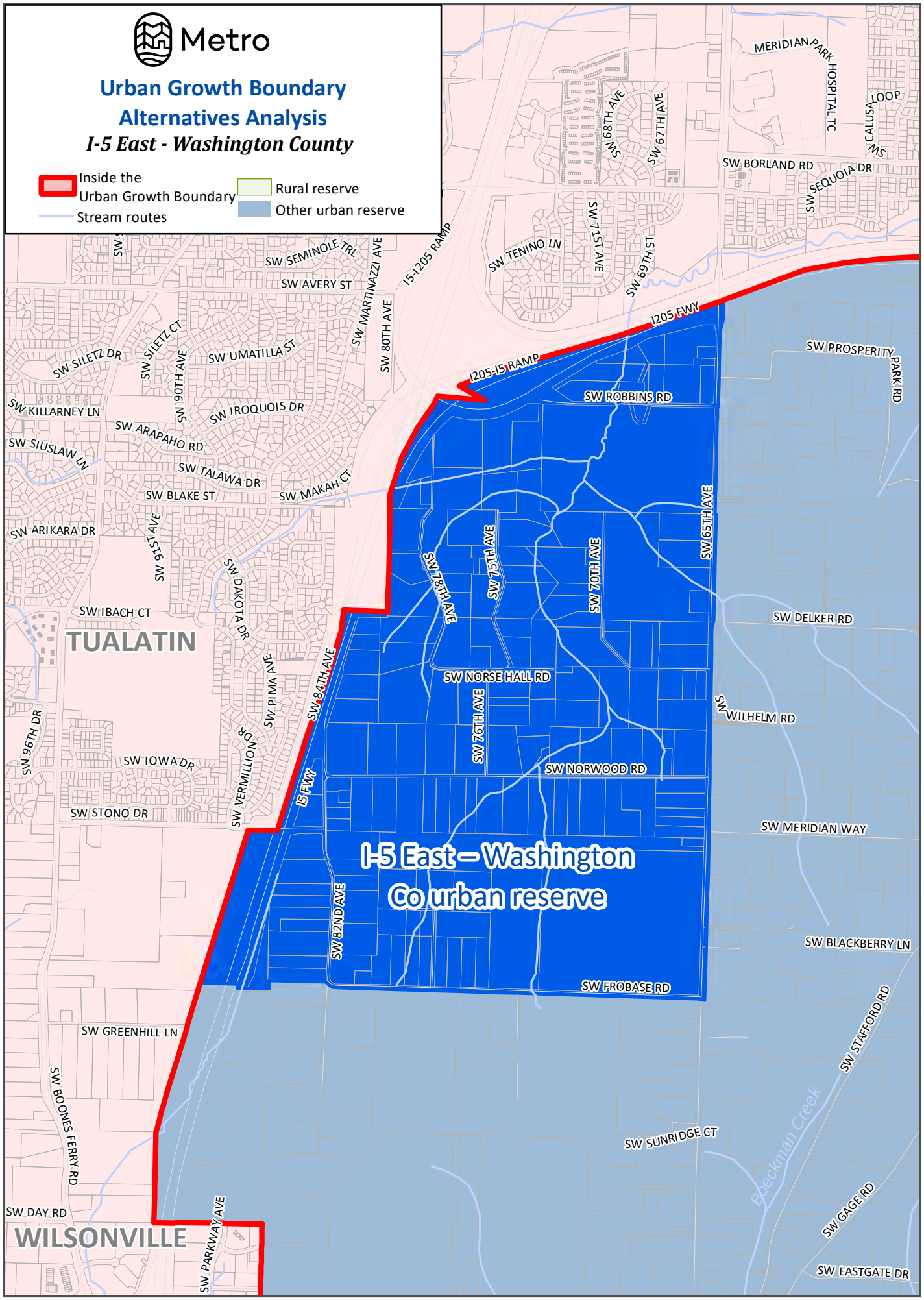
Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 175 acres of land focused on Saum Creek and numerous tributaries. Saum Creek flows north through the middle of the reserve area and there are large blocks of upland wildlife habitat associated along and between the stream corridors. There are some large steep sloped areas adjacent to some of the stream corridor segments that will provide additional protection to the habitat areas. The City of Tualatin, the expected governing body for this reserve area, has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. A portion of the riparian habitat in the southern portion of the reserve area is currently impacted by active agricultural activities and urbanization provides the opportunity to restore the riparian corridor in these locations. The riparian habitat is susceptible to impacts related to stream crossings necessary to provide transportation connectivity, mainly in the northern portion of the reserve area. Urbanization poses a higher risk to the upland habitat, which occurs generally on gentler slopes between the stream corridors. Overall, urbanization of the reserve area in a well connected manner would have a low avoidance level for the regionally significant fish and wildlife habitat that is found throughout the area.

Contribution to the purposes of Centers and Corridors

The Tualatin Town Center is the nearest 2040 designated center to the I-5 East Urban Reserve Area. It is approximately 325 acres in size, and primarily serves the surrounding residential and commercial areas in the City of Tualatin. The reserve area is connected to the Tualatin Town Center via SW 65th Avenue/SW Sagert Street and SW Nyberg Street (1.5 miles), although I-5 and I-205 present significant visual and connectivity barriers between the two locations. There is no TriMet service connecting the Town Center and the reserve area directly, although line 76 stops at SW 65th Avenue and SW Sagert Street, just north of I-205 from the area. The closest 2040 designated corridor that is outside of a 2040 center is the corridor along SW Boones Ferry Road just north of Wilsonville that crosses I-5 and extends south along SW Parkway Ave in Wilsonville to the Wilsonville Town Center. The nearest portion of the corridor, which is just over 1.5 miles from the reserve area is developed with auto oriented commercial uses including large scale retail and lodging, as you would expect near a highway interchange.

Tualatin's Town Center Plan, envisions a mixed use live, work and play center that integrates natural resources like the Tualatin River with civic, social, economic and cultural functions in a walkable community. Metro's 2017 State of the Centers Atlas shows a low dwelling unit per acre and a much higher total number of employees when compared to other town centers in the region. The Town Center has a very high access to parks score as evidenced by the numerous open space/natural areas and the Tualatin Community Park along the Tualatin River.

Urbanization of the I-5 East urban reserve area will not support the vision or purpose of the Tualatin Town Center due to its somewhat isolated nature across I-5 and I-205. In addition the reserve area could draw residential development away from the center by creating a large market for a range of housing units. Urbanization of the reserve area will not support the purpose of the corridor in Wilsonville due to the distance between the two areas and the existing uses that serve a larger geographic area and the travelling public.



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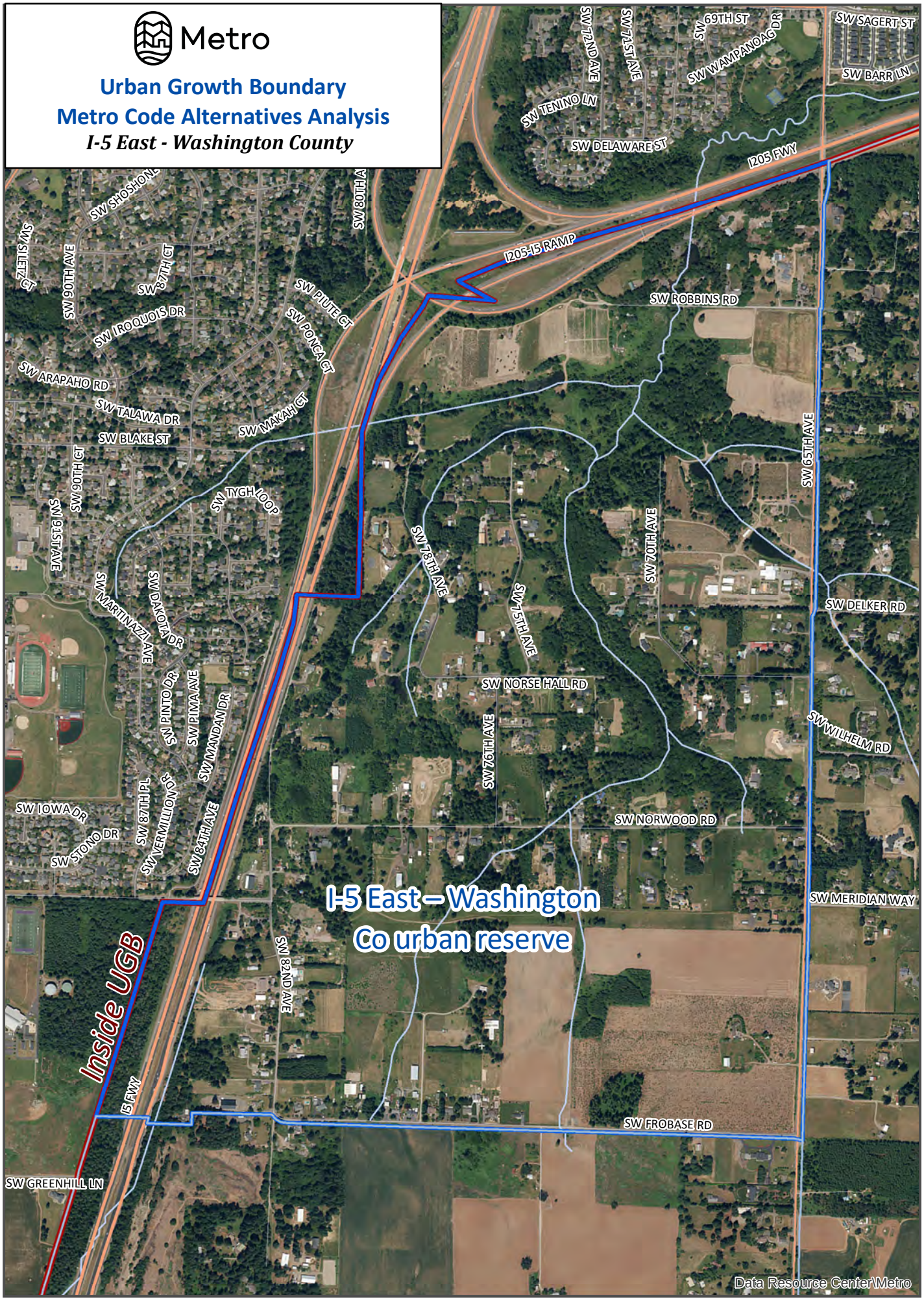
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
I-5 East - Washington County



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MAPLELANE URBAN RESERVE AREA

Total Acres	573	Parcel Acres	555
Gross Vacant Buildable Acres	270	Net Vacant Buildable Acres	205

General Description (see attached map)

The Maplelane Urban Reserve Area is an irregular shaped area on the east side of Oregon City, north and south of S Maplelane Road that totals 573 acres in size. The UGB forms the western and southern boundary of the area. A tributary to Abernathy Creek flows east through the central portion of the reserve and three tributaries to Thimble Creek flow east through the southern portion. The area is primarily flat, with the exception of some small areas of steep slopes along the stream corridors and within the forested northeastern corner of the reserve area. The area is served by S Maplelane Road, S Waldow Road and S Thayer Road. Abernethy Creek flows north, just outside of the reserve area to the east. The Oregon City School District owns a 57 acre parcel in the northern portion of the reserve area.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB provides the western and southern boundaries of the urban reserve area. Abernethy Creek and a small portion of Thimble Creek along with extensive steep forested slopes, some of which are within the urban reserve area, provide natural features that mark a clear transition between urban and rural lands to the east. Steep forested slopes provide a clear transition between urban and rural lands to the north. Overall there are natural features that provide a clear transition between urban and rural lands for the entire urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

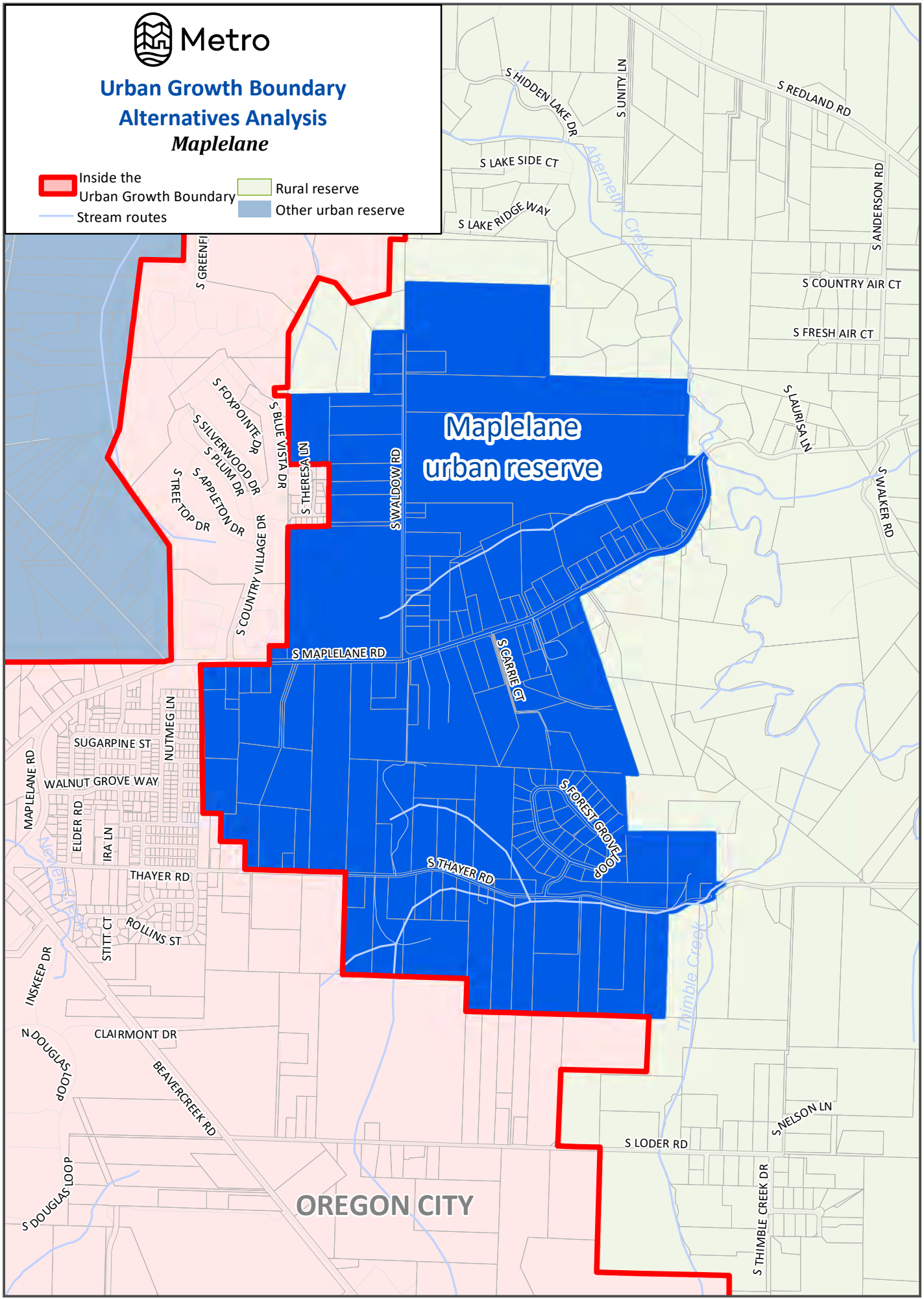
Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 88 acres. The riparian habitat occurs along an unnamed tributary to Abernethy Creek that flows through the central portion of the reserve area and three tributaries to Thimble Creek that flow through the southern portion of the reserve area. One of the tributaries to Thimble Creek flows along S Thayer Road. The upland habitat extends out of the riparian areas and along the steep slopes of the eastern edge of the reserve area. There is a significant amount of upland habitat on the Oregon City School District property. Oregon City has adopted a habitat protection program that is compliant with Metro's Title 13 Nature in Neighborhoods. The City will need to adopt an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The significant riparian habitat that is along S Thayer Road is susceptible to impacts related to the improvement of S Thayer Road to urban standards. The significant habitat adjacent to the steep slopes and the publicly owned land is less susceptible to impacts from urbanization. Urbanization can occur with low to moderate avoidance of the regionally significant fish and wildlife habitat depending on the level of impacts related to road improvements on S Thayer Road and other necessary road connections.

Contribution to the purposes of Centers and Corridors

The Oregon City Regional Center is the closest 2040 designated center to the reserve area. The Regional Center serves Oregon City, Clackamas County and some neighboring cities to the south. The Regional Center is linked to the reserve area by Highway 213/S Maplelane Road (3.2 miles). TriMet bus lines 32 & 33 run from the regional center to Clackamas Community College, approximately one mile from the reserve area. There is one 2040 designated corridor that is outside the Regional Center and runs along 7th Street and Molalla Ave between the Regional Center and Clackamas Community College. The corridor is mostly built out with a mixture of single family homes, small commercial businesses and larger commercial retail uses and is 1.5 miles away from the reserve area along Maplelane and Beavercreek Roads.

The City's plans for the Regional Center include mixed-use development on the vacant parcels in the northern section of the center, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The Regional Center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to downtown through the development of housing, public spaces, habitat restoration, education and employment opportunities. Metro's 2017 State of the Centers Atlas shows a very low population, people per acre, total employees and dwelling units per acre when compared with other regional centers indicating that the Regional Center needs to attract more housing and people to meet the city's vision.

Urbanization of the Maplelane Urban Reserve area will not contribute to the vision or the purpose of the Oregon City Regional Center. The reserve area is too isolated from to the Regional Center to help support the need for more people to meet a higher level of activity. Likewise urbanization of the reserve area will not have an impact on the corridor as it is mostly built out with commercial retail uses at the end closest to the reserve area.



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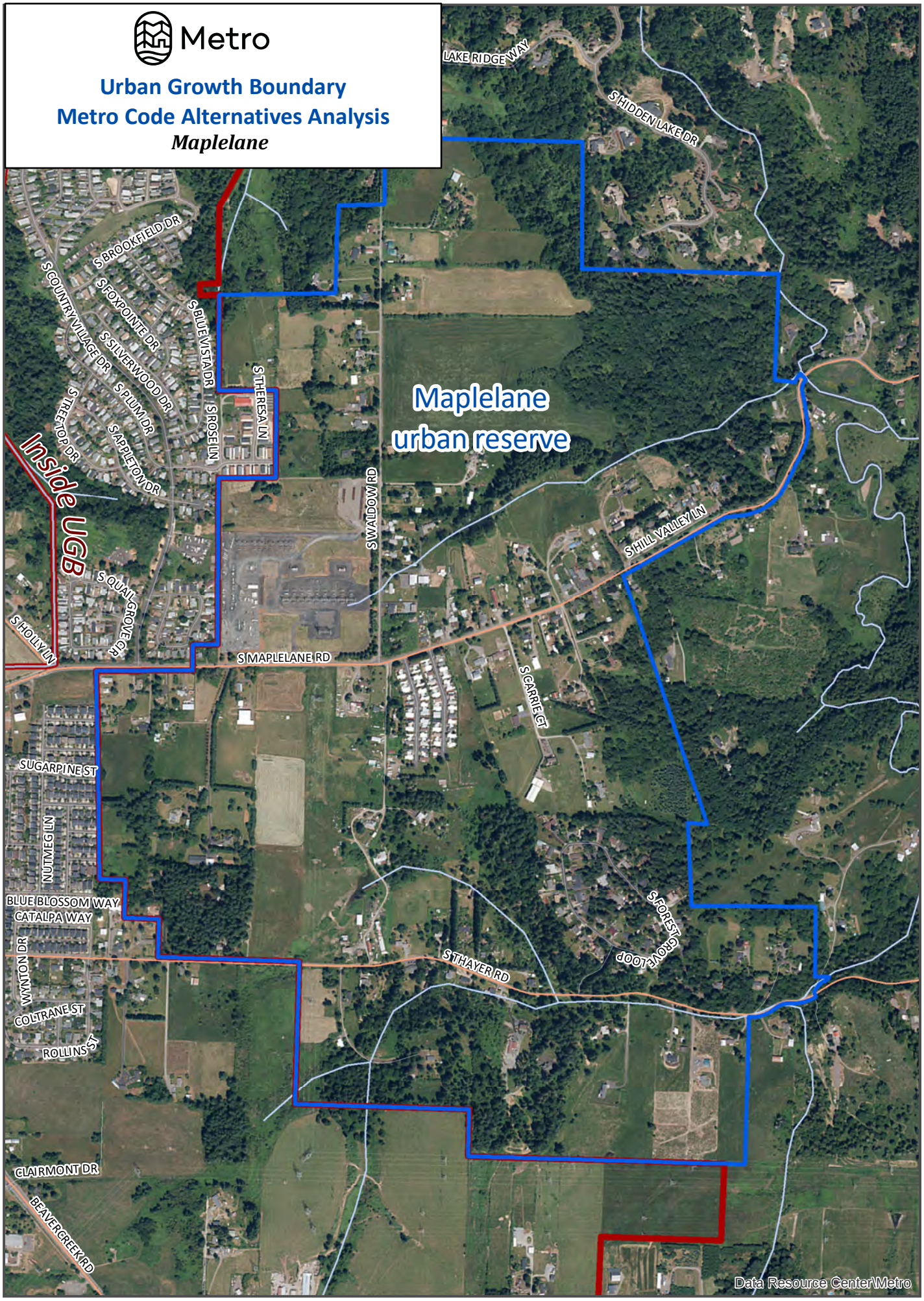
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Maplelane



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RIVER TERRACE SOUTH URBAN RESERVE AREA

Total Acres	205	Parcel Acres	190
Gross Vacant Buildable Acres	154	Net Vacant Buildable Acres	117

General Description (see attached map)

The River Terrace South Urban Reserve Area is a small sized area on the south side of Tigard that is north of SW Beef Bend Road between SW Roy Rogers Road and SW 150th Avenue. SW Beef Bend Road and SW Roy Rogers Road form the southern and western edges and the UGB forms the northern and eastern edges of the reserve area. The land gently slopes upward as you go north from SW Beef Bend Road. One stream flows south through the center of the area, a second flows south in the eastern portion of the area and a third flows west through the very northwest tip of the area. Access is provided by SW Beef Bend Road, SW Taylor Lane, SW April Lane, SW 150th Avenue and SW Roy Rogers Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB provides the northern, southern, and eastern edge of the urban reserve area. SW Roy Rogers Road forms the western edge of the reserve area. Even assuming SW Roy Rogers Road develops as an arterial roadway in the future the road itself will not provide a clear transition area between future urban and rural uses, especially given the level of traffic that may occur. Additional buffers will need to be incorporated into the planning of the urban reserve area to provide a clear transition from urban to rural uses. Overall, there are no natural or built features to mark a transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

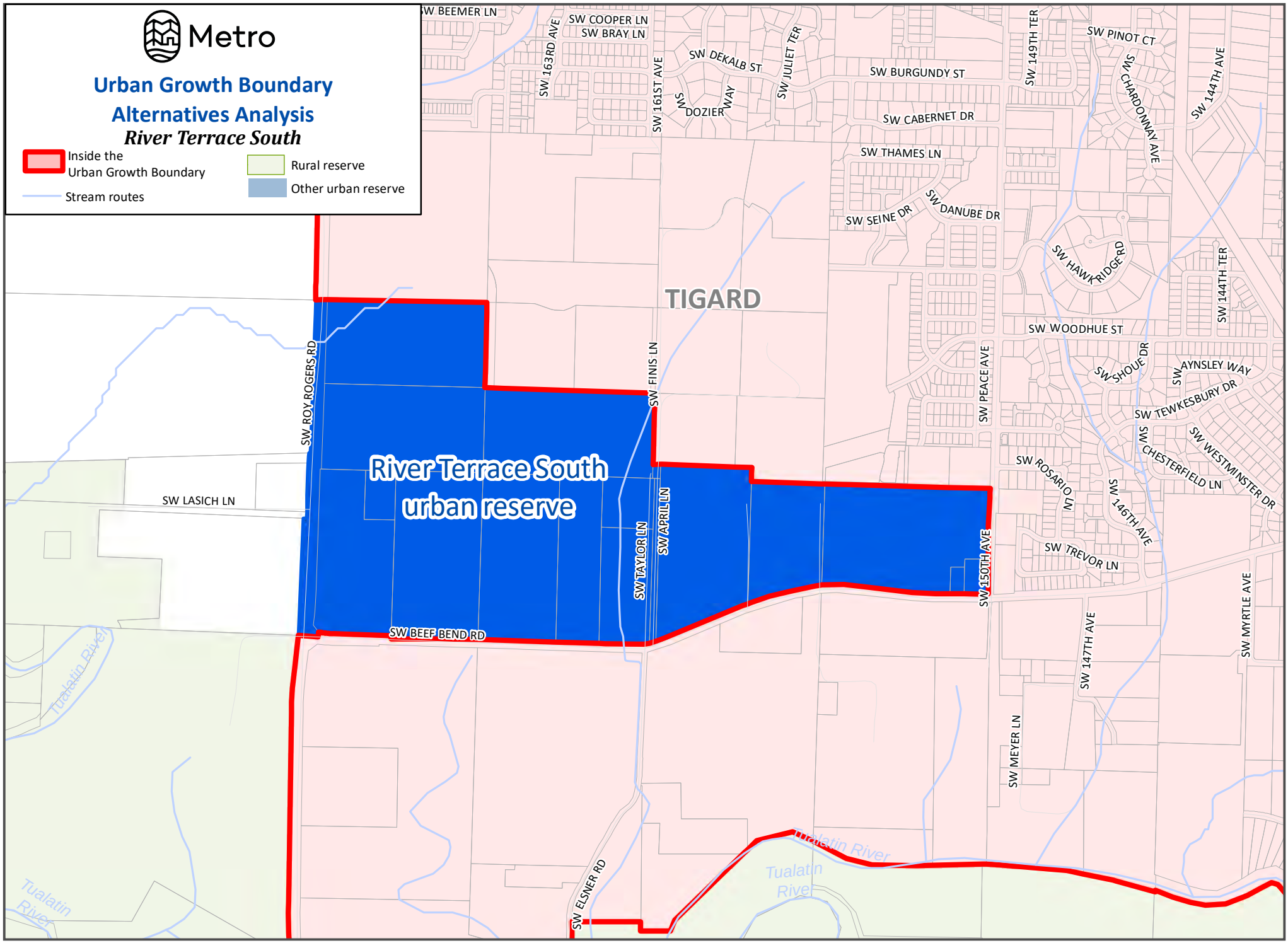
Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 30 acres along three small stream segments. Seventeen of the 30 acres are upland habitat that are located within two forested areas, one centrally located and the other in the northern segment of the reserve area. A portion of the upland habitat in the center of the area appears to be in agricultural use. The City of Tigard has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The habitat associated with the central and eastern stream corridors could be susceptible to impacts related to east-west transportation connections. The significant riparian habitat in the northwest corner of the reserve area is less susceptible to impacts due to its isolated location. Overall urbanization could occur with high to moderate avoidance of regionally significant riparian and upland habitat areas depending on the need for east–west transportation connections.

Contribution to the purposes of Centers and Corridors

There are two Metro 2040 designated centers that are both approximately two miles from the reserve area; the Murray/Scholls Town Center and King City Town Center. Of the two, the King City Town Center is more directly connected to the reserve area via SW Beef Bend Road to Highway 99W. The town center is predominantly commercial retail that focuses on Highway 99W. Local plans envision the Town Center becoming a more walkable commercial district. Metro's 2017 State of the Centers Atlas shows that the total population is very low and the total businesses per acre high when compared to other town centers in the region. It has the highest median age, 73, as a result of a retirement community being the larger of the two residential uses within the Town Center. The Murray/Scholls Town Center is linked to the reserve area by SW Roy Rogers Road and SW Scholls Ferry Road as well as SW Barrows Road off of SW Scholls Ferry Road. It has very little undeveloped land and contains numerous higher density housing developments and significant commercial retail options. The State of the Centers Atlas shows that total population, people per acre and dwelling units per acre is much higher than compared to other town centers in the region. No transit lines connect the reserve area to either town center. The Sherwood Town Center is only slightly farther than the other two centers and is accessible via SW Roy Rogers Road. The 2040 designated corridor along SW Roy Rogers Road from SW Scholls Ferry Road to just south of SW Bull Mountain Road is ⅓ of a mile from the reserve area. The northern portion of the corridor is currently being built out with residential uses while the southern portion is still rural. The River Terrace 1.0 plan calls for a small area of commercial development to serve the adjacent residential areas. King City is planning for a town center near SW Roy Rogers Road in the Kingston Terrace plan area. This town center will be directly adjacent to the urban reserve.

As noted above the Murray/Scholls Town Center already has a high number of dwelling units per acre and a significant commercial center. Adding additional residents that are two miles away is not going to add to the success of the town center, especially with the significant amount of residential development that is occurring in River Terrace 1.0 and South Cooper Mountain that is closer to the

town center. Urbanization of the reserve area will not support redevelopment of the King City Town Center to a more pedestrian friendly center due to the distance between the two locations. In addition it will be difficult to transform the retail businesses away from Highway 99W to make it a more pedestrian friendly environment without first making better pedestrian connections to portions of the existing King City community. Urbanization of the reserve area will not support the future small commercial area on SW Roy Rogers Road as the commercial development is sized to serve the nearby adjacent River Terrace 1.0 area that will be built out before the reserve area. Urbanization of the reserve area would support the future town center in the Kingston Terrace area of King City.



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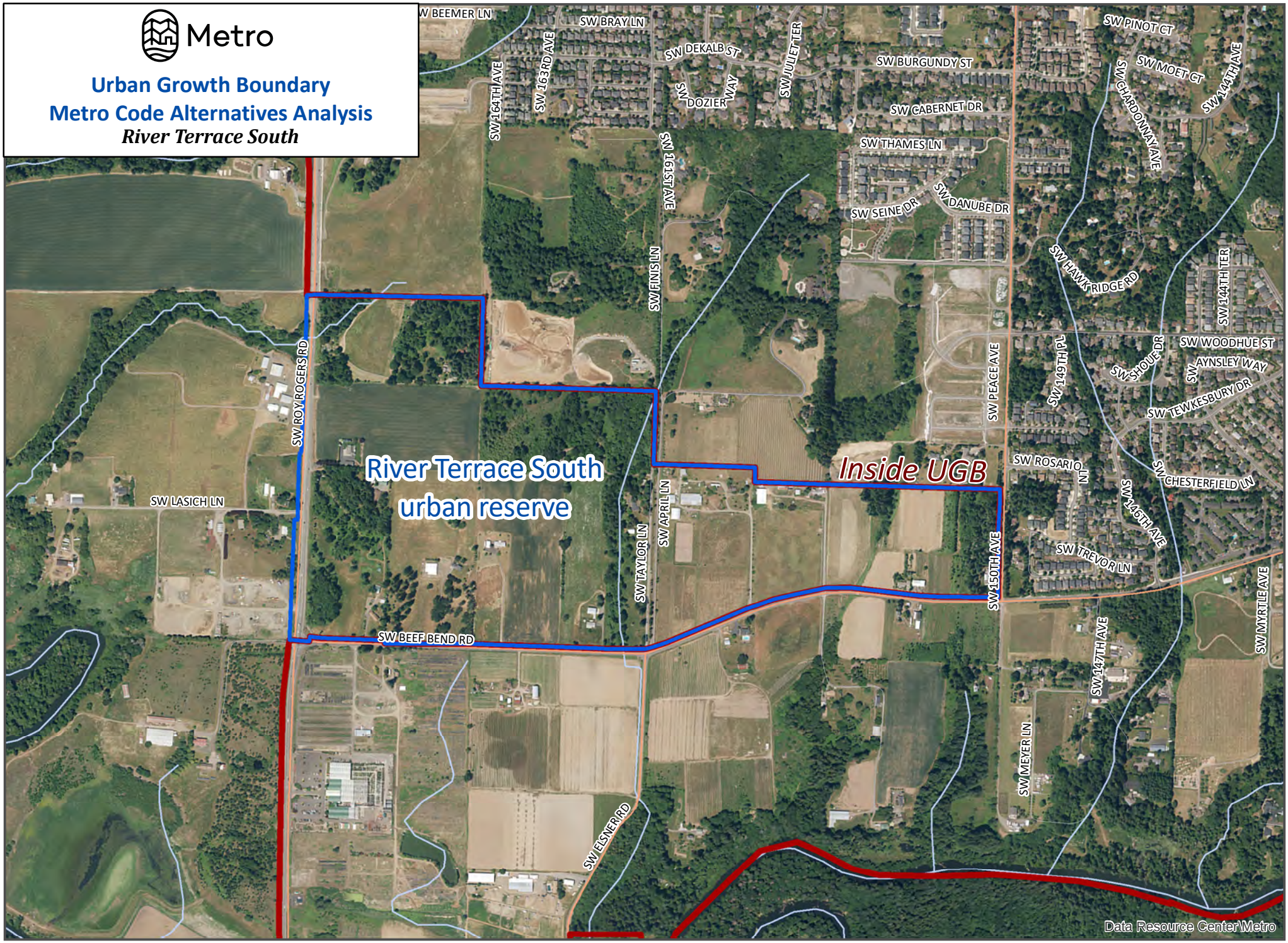
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
River Terrace South



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RIVER TERRACE WEST URBAN RESERVE AREA

Total Acres	303	Parcel Acres	301
Gross Vacant Buildable Acres	189	Net Vacant Buildable Acres	144

General Description (see attached map)

The River Terrace West Urban Reserve Area is a small area west of Tigard that is west of SW Roy Rogers Road and south of SW Scholls Ferry Road. The UGB forms the eastern and northern boundaries; rural reserve land is to the west and undesignated rural land to the south. The land is generally flat and gently slopes to the south/southwest. Access to the area is provided by SW Roy Rogers Road, SW Scholls Ferry Road, SW Bull Mountain Road, and SW Vandermost Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the northern and eastern edge of the urban reserve area. An unnamed stream located 40-60 feet below the central and southern portion of the western edge of the reserve area provides a natural feature transition zone between urban and rural lands. Similarly an unnamed stream along the southern edge of the reserve area provides a transition between urban and rural lands. There are no natural or built features to mark the transition between urban and rural lands for the northern portion of the western edge of the reserve area. Additional buffers will need to be incorporated into the planning of the urban reserve area to provide a clear transition from urban to rural uses. Overall, there is a natural feature transition area for the majority of the urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

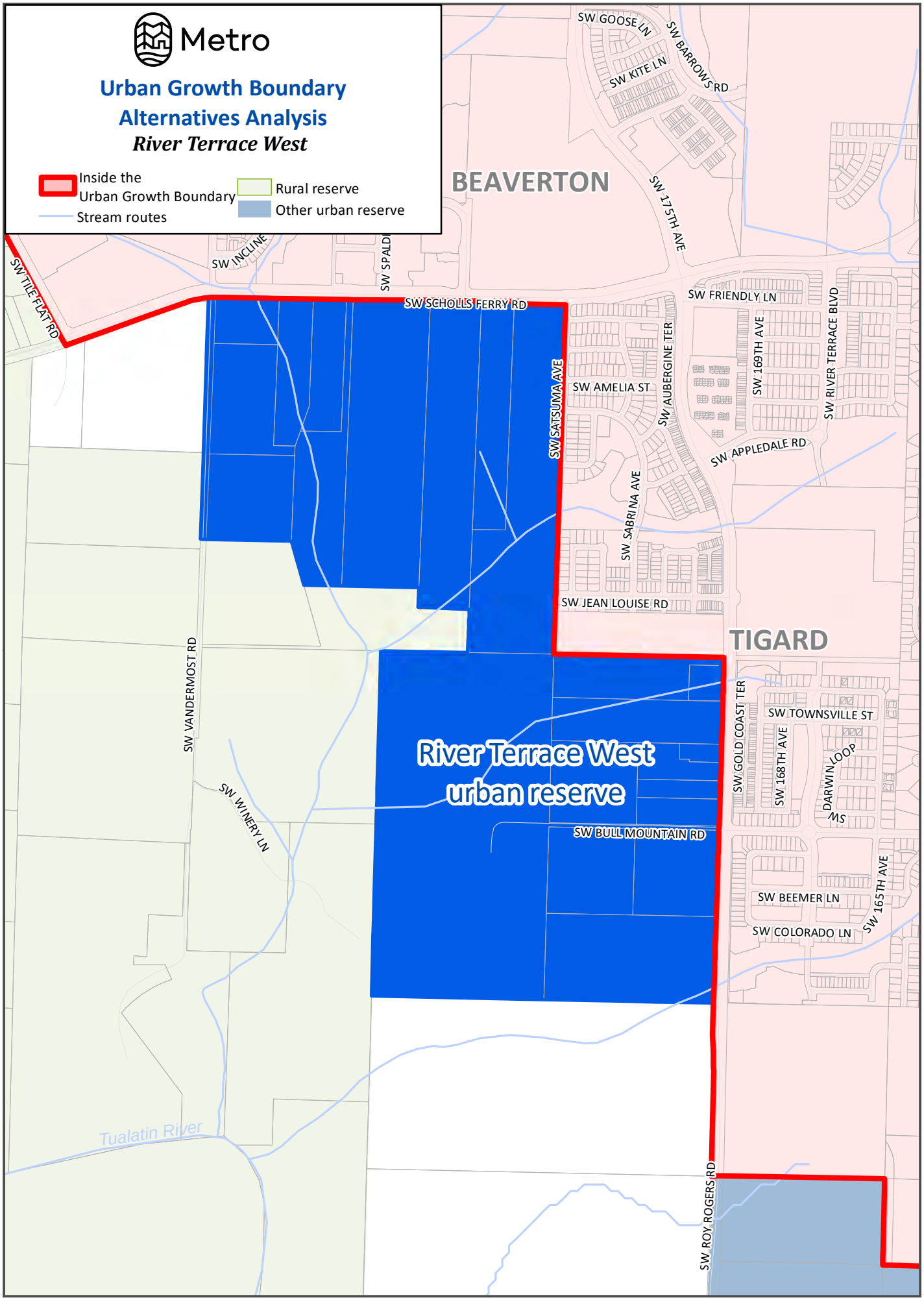
Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 92 acres focused on the three main stream corridors that flow through the

northern and central portions of the reserve area and the forested areas between the streams. A 13 acre portion of the upland habitat appears to be in agricultural use. The stream corridors divide the reserve area into smaller developable areas. The City of Tigard has adopted riparian habitat protection measures in compliance with Metro's Title 13 program through the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Portions of the habitat areas along all three main stream corridors are located in areas of steep slopes which would provide an additional level of protection from development. However the stream corridors are susceptible to impacts related to transportation connections needed to unite the different developable sections together. The adjacent River Terrace development has preserved the same stream corridors in open space tracts, and one would expect those open space tracts to be extended into the reserve area. Overall urbanization could occur with moderate avoidance of riparian and upland habitat depending on the number of transportation connections needed to stitch the developable areas together and the expected extension of the River Terrace open space tracts along the stream corridors.

Contribution to the purposes of Centers and Corridors

The closest Metro 2040 designated center is the Murray/Scholls Town Center that is one mile away via SW Scholls Ferry Road and SW Barrows Road. The Murray/Scholls Town Center has very little undeveloped land and contains numerous higher density housing developments and significant commercial retail options. Metro's 2017 State of the Centers Atlas shows that the total population, people per acre and dwelling units per acre is much higher than compared to other town centers in the region. No transit lines connect the reserve area to the town center. The 2040 designated corridor along SW Roy Rogers Road from SW Scholls Ferry Road to just south of SW Bull Mountain Road is adjacent to the reserve area. The northern portion of the corridor is currently being built out with residential uses while the southern portion is still rural. The River Terrace 1.0 plan calls for a small area of commercial development to serve the adjacent residential areas. King City is planning for a town center near SW Roy Rogers Road in the Kingston Terrace plan area. This town center will be just over one mile from the urban reserve.

As noted above the Murray/Scholls Town Center already has a high number of dwelling units per acre and a significant commercial center. Urbanization of the reserve area will not contribute to the already successful town center, especially given the large amount of residential development that is presently occurring in River Terrace 1.0 and South Cooper Mountain. Urbanization of the reserve area may support the future small commercial area on SW Roy Rogers Road as it is so close to the corridor, however the potential commercial development is sized to serve the nearby adjacent River Terrace 1.0 area that will be built out before the reserve area is, so the impact most likely would be small. Urbanization of the reserve area would not support the future town center in the Kingston Terrace area of King City as the established Murray/Scholls Town Center is slightly closer and there will be easier non-vehicular connections to this town center.



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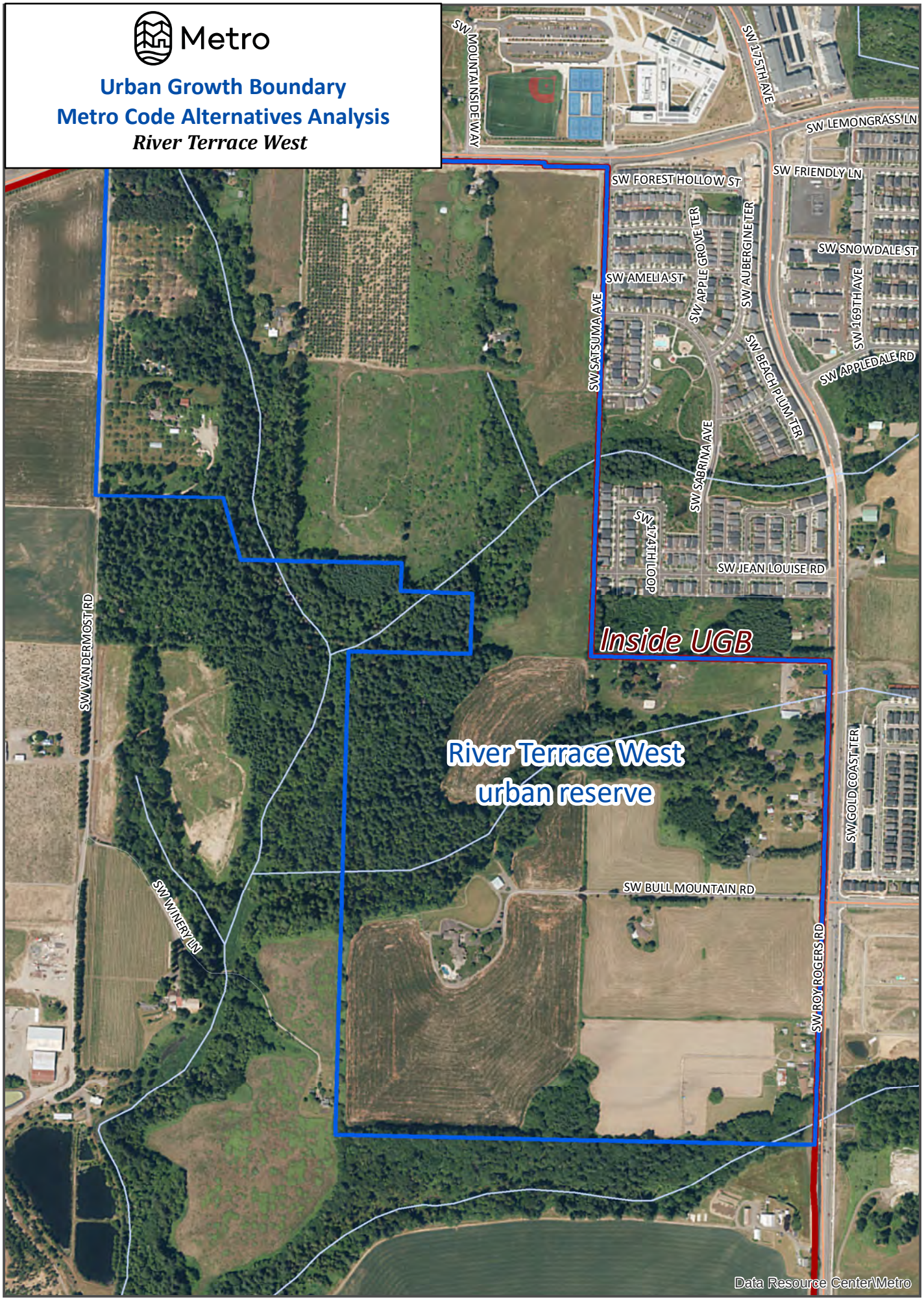
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
River Terrace West



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ROSA URBAN RESERVE AREA

Total Acres	790	Parcel Acres	775
Gross Vacant Buildable Acres	282	Net Vacant Buildable Acres	213

General Description (see attached map)

The Rosa Urban Reserve Area is a medium sized area on the south edge of Hillsboro, located north of SW Rosedale Road between SW River Road and SW 229th Avenue. The UGB forms the boundary on the east, north and a portion of the west side and rural reserve land is to the south and west. The land is relatively flat with some minor slopes near the stream corridors. Access to the area is provided by SW Rosedale Road, SW River Road, and SW 229th Avenue. SW Rosa Road bisects the southern portion of the reserve area in an east west direction

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the eastern, northern and a small portion of the western boundaries of the reserve area. The Tualatin River and the Meriwether National Golf Club provides a natural and built feature transition zone between urban land and rural lands for the remainder of the western edge. There are no natural or built features that mark a clear transition between the reserve area and the rural lands to the south of SW Rosedale Road. Even assuming SW Rosedale Road develops as a collector in the future, the road itself will not provide a clear transition area between urban and rural uses. Additional buffers will need to be incorporated into the planning and design of the urban reserve area along the southern edge. Overall there is a built and/or natural feature that provides a clear transition area between urban and rural lands for over half of the reserve area's urban-rural edge.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 142 acres of land mainly focused on Butternut Creek and a small tributary to the Tualatin River. The acreage total does not include any riparian and upland habitat along Gordon and Butternut Creeks on the Reserve Vineyards & Golf Club property, as the golf course itself is considered exempt land in Metro's buildable land analysis. A significant amount of upland habitat is identified north of Butternut Creek on either side of SW Rosa Road, although a portion of it is a filbert orchard. The riparian habitat along Butternut Creek is well established along the entire route of the stream through the southern portion of the reserve area.

The City of Hillsboro has adopted riparian habitat protection measures that are in compliance with Metro's Title 13 requirements as part of the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. As most of the habitat areas are on relatively flat land that is easily developed and located in the central portion of the reserve area, some impacts to the habitat area would be expected. This is especially true if transportation connections are made through the center of the reserve area where a large segment of upland habitat is located. Overall future urbanization could occur with a moderate to low level of avoidance of regionally significant fish and wildlife habitat areas, depending on overall design of the area and necessary transportation connections.

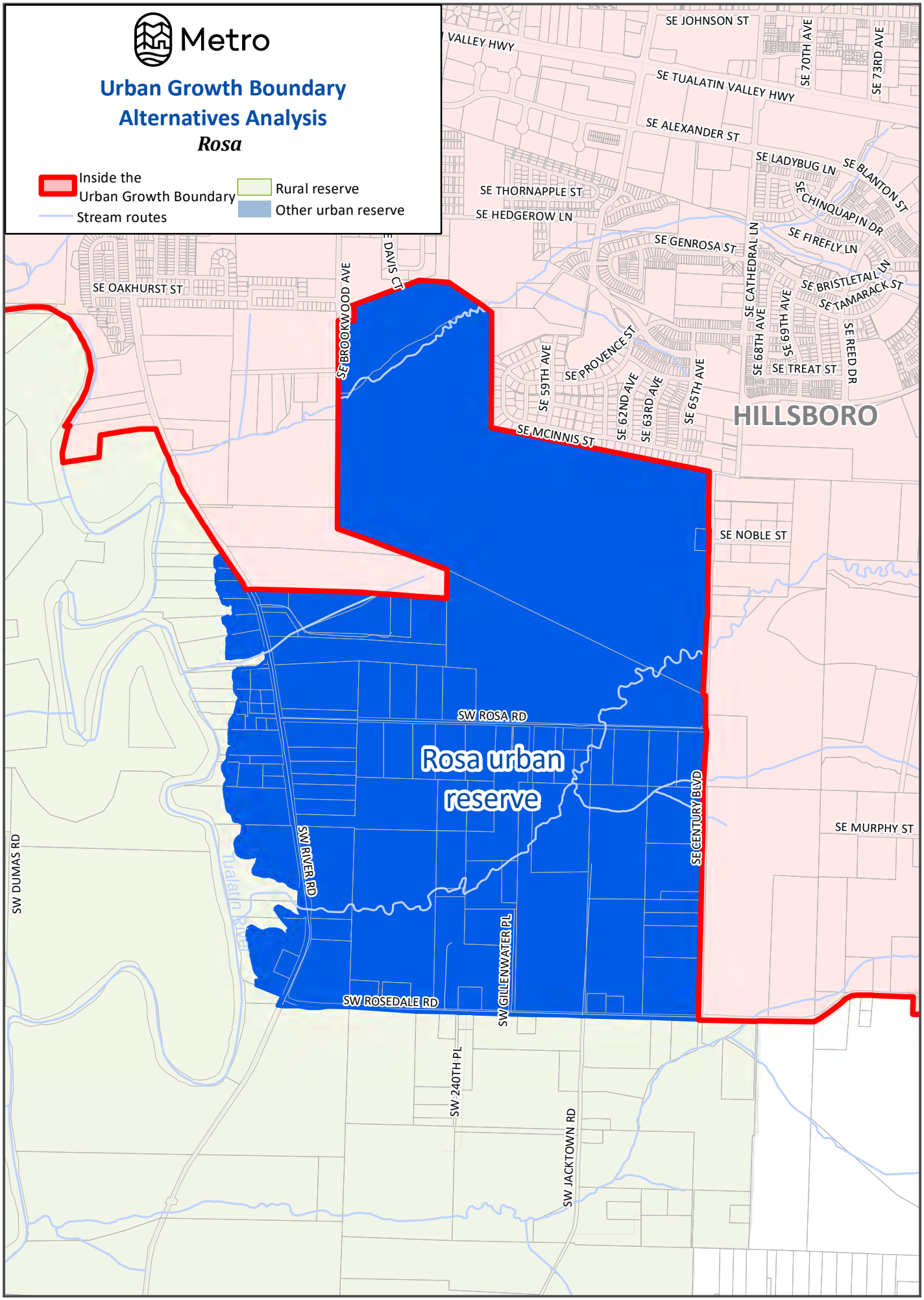
Contribution to the purposes of Centers and Corridors

The Hillsboro Regional Center is the closest 2040 designated center to the reserve area and can be accessed by SE Tualatin Valley Highway (2.65 miles) or SE River Road (2.33 miles). The Aloha Town Center is also located about 3.5 miles to the east along SE/SW Tualatin Valley Highway. Tri-Met line 57 runs along SE/SW Tualatin Valley Highway. South Hillsboro, adjacent to the east, is expected to develop with a town center area and a smaller scale village center. While these two centers are not 2040 designated centers they are expected to function in a similar fashion. SE/SW Tualatin Valley Highway is the closest 2040 designated corridor and is just over a half-mile north of the reserve area via SE Brookwood Ave. SE Tualatin Valley Highway in this location is a mixture of small scale industrial uses on the south side and small commercial retail uses and some single-family homes on the north side of the road.

The Hillsboro Regional Center includes historic downtown Hillsboro and a large surrounding area that includes a wide variety of residential, employment and commercial uses. Metro's 2017 State of the Centers Atlas shows that this very large regional center has an average number of people per acre and dwelling units per acre and a slightly lower business per acre when compared with the other regional centers in the region. The Aloha Town Center is located along SW Tualatin Valley Highway in unincorporated Washington County. In 2017 Washington County completed the Aloha Tomorrow Plan for the Town Center area to integrate land use changes, transportation improvements, and policies that support affordable housing and economic development. Metro's State of the Centers Atlas shows that the Town Center has a high total population and dwelling

units per acre but a very low number of total businesses and employees when compared with other town centers in the region.

Urbanization of the reserve area will not contribute to balancing the jobs to housing ratio, or promoting a walkable, vibrant and compact Town Center for Aloha due to the distance between the two areas. Likewise the Hillsboro Regional Center is located quite some distance from the reserve area and would not be affected by development of the reserve area. Urbanization of the reserve area would most likely support the development of the close town and village centers planned for South Hillsboro. Urbanization of the reserve area will not contribute to the purpose of the corridor as the current zoning for industrial and commercial use is focused on a larger geographical area and the traffic flow along SE Tualatin Valley Highway.



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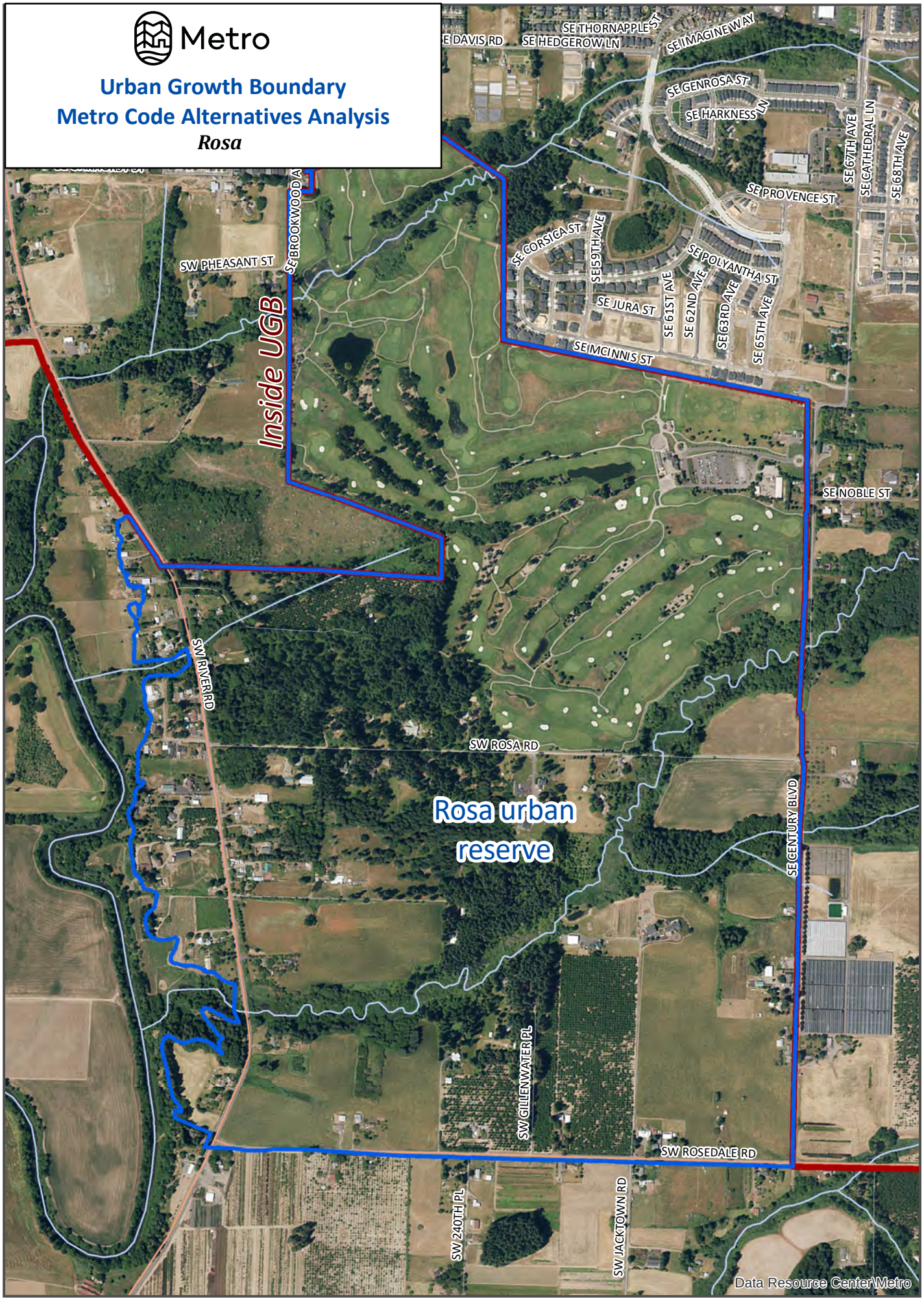
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Rosa



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SHERWOOD NORTH URBAN RESERVE AREA

Total Acres	123	Parcel Acres	111
Gross Vacant Buildable Acres	61	Net Vacant Buildable Acres	46

General Description (see attached map)

The Sherwood North Urban Reserve Area is a set of three very small sub-areas on the north side of Sherwood in the general vicinity of Highway 99W. The 100-year floodplain forms the northern boundary of all three sub-areas. The eastern sub-area is located north of SW Galbreath Drive and is approximately 35 acres in size. The middle sub-area straddles SW Pacific Highway and is approximately 57 acres in size. The western sub-area is north of SW Seely Lane and is approximately 31 acres in size. Access to the western sub-area is not straightforward whereas the middle sub-area has potential access to SW Pacific Highway and the eastern sub-area can be accessed by SW Gerda Lane and SW Cipole Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the southern edge of all three urban reserve sub-areas as well as the eastern edge of the eastern sub-area. The Chicken Creek riparian corridor provides a natural feature transition zone along the western edge of the western sub-area, which is a very small portion of the urban-rural edge. Otherwise there are no natural or built features that mark a clear transition for the remainder of the urban-rural edges in the sub-areas.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this analysis area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 24 acres with the majority of it located in the western and eastern sub-areas. The habitat areas are an extension of the floodplain and streams located in the adjacent

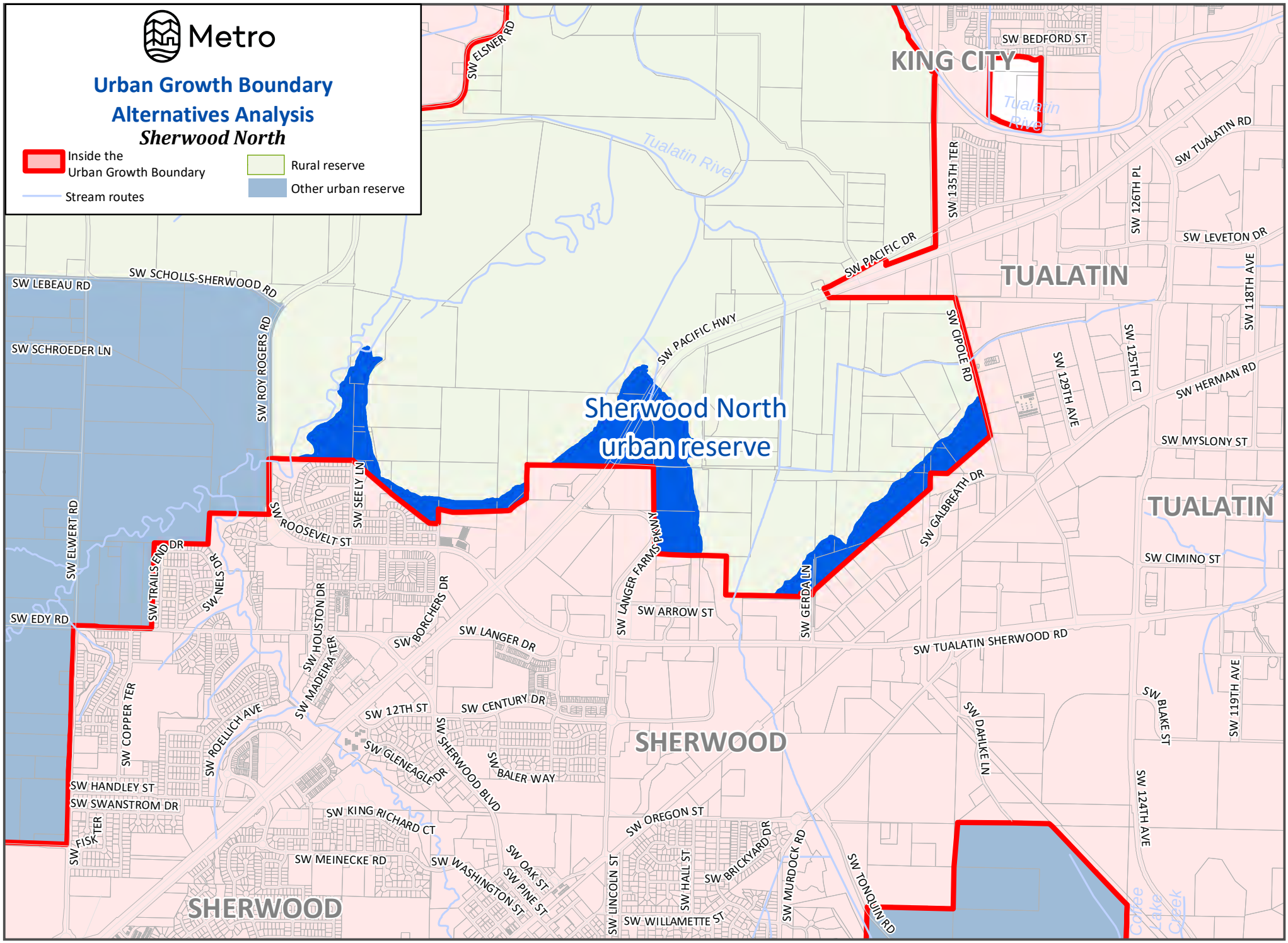
Tualatin River National Wildlife Refuge. The City of Sherwood has adopted riparian habitat protection measures that are in compliance with Metro's Title 13 requirements as part of the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Urbanization of the western and eastern sub-areas is unlikely to occur without some impact to riparian and upland wildlife habitat. A large portion of the central sub area can be urbanized while avoiding significant riparian and upland wildlife habitat.

Contribution to the purposes of Centers and Corridors

The Sherwood Town Center is the closest 2040 designated center near the reserve area. It is a small town center of 88 acres, located to the southwest of the reserve area at the intersection of the Highway 99W and SW Tualatin-Sherwood Road. The center serves the community of Sherwood and the surrounding rural areas at the southwest edge of the region. The land just outside the center contains a significant amount of housing. The three reserve sub-areas are ½ mile to one mile from the Town Center via Highway 99W, SW Tualatin-Sherwood Road or SW Roy Rogers Road. The central and eastern sub-areas have transit connections to the Town Center through TriMet routes 94 and 97 respectively. There is a 2040 designated corridor along Highway 99W that extends north of the Town Center to the middle sub-area. This portion of the corridor contains a few professional services, commercial uses and has power lines cutting across the roadway from a Portland General Electric substation.

The City completed a Town Center plan in 2013 that encompassed a larger area than Metro's 2040 designated location. The Langer Drive Commercial District portion of the City's plan most closely resembles the Metro designated area. The Langer portion is envisioned as a walkable and active shopping district complete with more pedestrian oriented buildings. Metro's 2017 State of the Centers Atlas shows a very high job to housing ratio and a very low dwelling units per acre compared to other town centers in the region.

Urbanization of the urban reserve sub-areas would not have a significant impact on the development of the Town Center area as a walkable and active shopping district due to the very small amount of development expected to occur within the sub-areas. In addition since the Town Center serves all of Sherwood and the nearby rural area it most likely will evolve over time to a more pedestrian friendly shopping district as redevelopment of the existing commercial buildings occurs to meet expectations of existing and future residents. Urbanization of the reserve area also would not impact the corridor as there is very little developable land within the reserve area and the corridor is mostly developed with only a couple of parcels that could be redeveloped.



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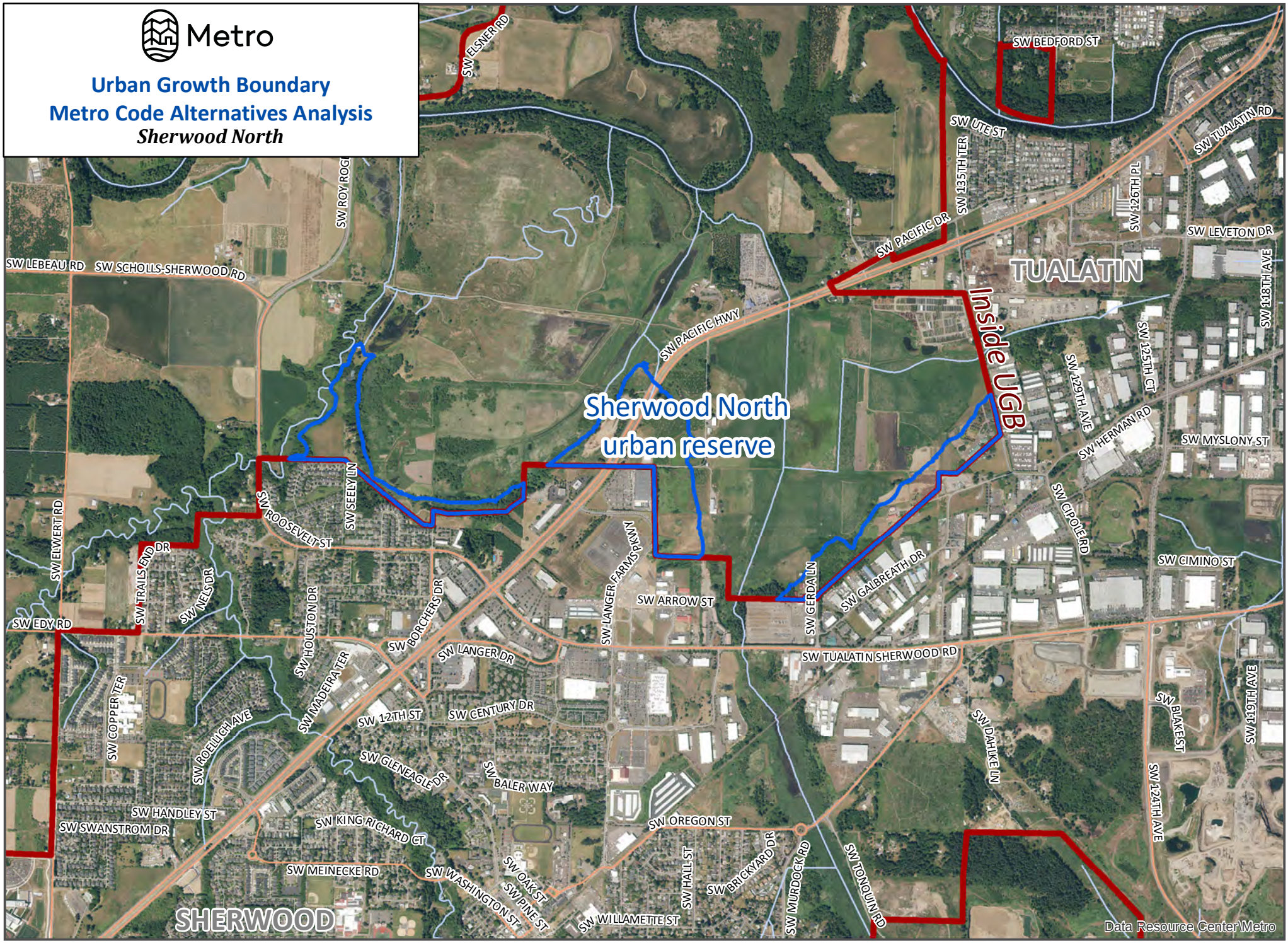
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood North



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SHERWOOD SOUTH URBAN RESERVE AREA

Total Acres	447	Parcel Acres	421
Gross Vacant Buildable Acres	221	Net Vacant Buildable Acres	168

General Description (see attached map)

The Sherwood South Urban Reserve Area is a rectangular shaped area on the south side of Sherwood, south of SW Brookman Road and east of Highway 99W that totals 447 acres in size. The UGB forms the northern boundary and the Clackamas-Washington County line forms the eastern boundary. The area is served by SW Brookman Road, SW Middleton Road and SW Oberst Road. The area contains five streams including the confluence of Goose and Cedar Creeks. The land north of SW Brookman Road was added to the UGB in 2002; only recently has a portion of the area been annexed to the City of Sherwood and currently it is still rural.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the northern border of the reserve area. Along the short eastern edge of the reserve area there is a change in elevation of around 100-feet up to SW Ladd Hill Road, resulting in a small natural feature that provides some transition area between the urban and rural lands. This strip of land includes rural residences on mostly forested lots and the headwaters of a small tributary to Cedar Creek that flows within the reserve area. Along the majority of the southern edge of the reserve area is a significant change in elevation of approximately 800-feet up to SW Parrett Mt. Road. There are a number of rural residences located in this area as well as a significant amount of private open space associated with Parrett Mountain View Estates. The combination of the change in elevation and private open space provides a transition between urban and rural lands using a natural feature. The remaining portion of the southern edge includes the Cedar Creek riparian area and a tributary stream that form a transition area for the remaining rural lands to the south. The 150-240 foot right-of-way of Highway 99W provides a built feature transition area between urban and rural uses along the western edge of the urban reserve area. Therefore, there is a clear transition between urban and rural lands using both natural and built features for the entire urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

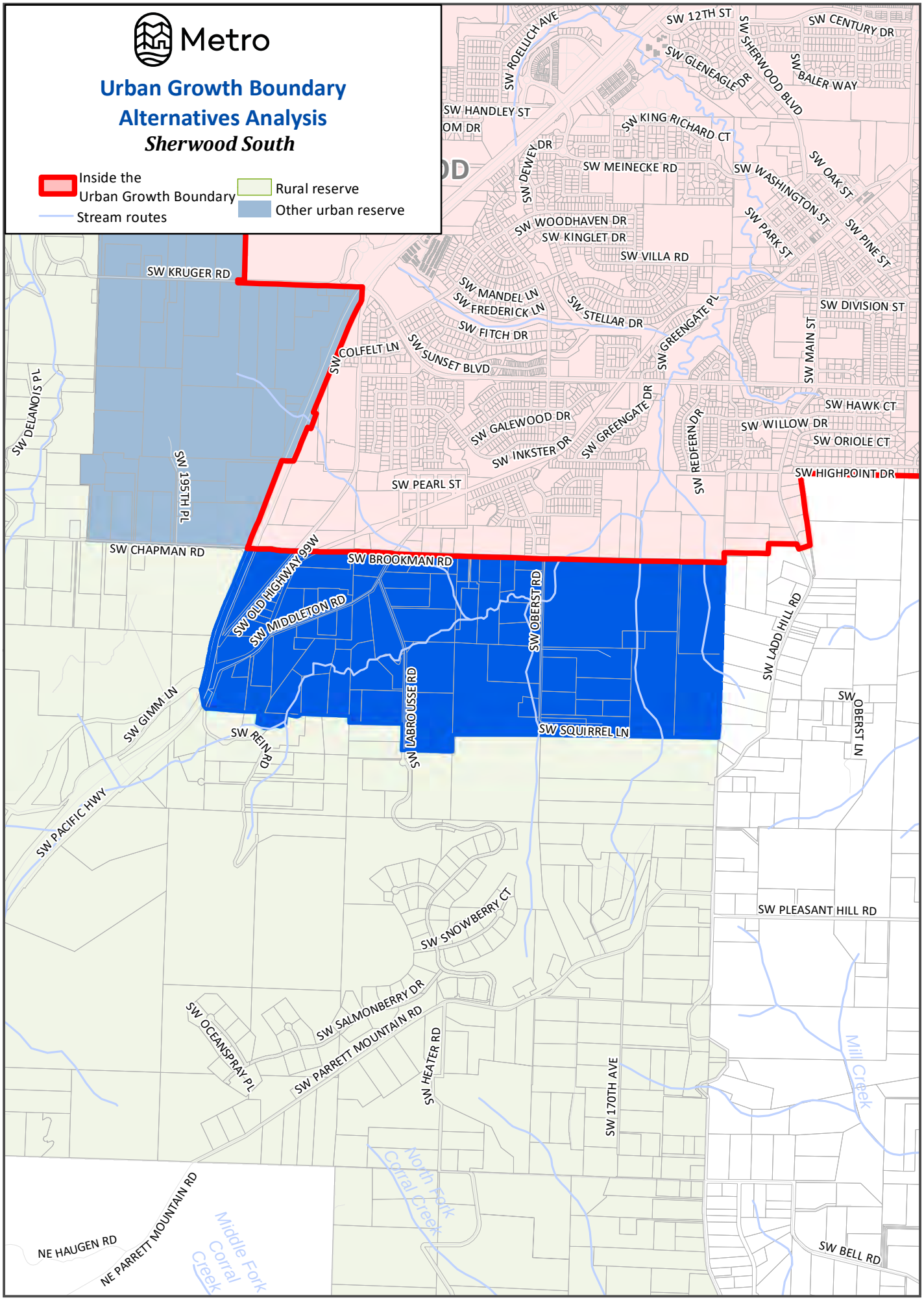
Regionally significant riparian and upland habitat not constrained by steep slopes or in public ownership covers 111 acres mainly along Cedar and Goose Creeks as well as the three smaller tributaries to Cedar Creek. The numerous stream corridors divide the reserve area into small dispersed locations of developable land. The City of Sherwood has adopted riparian habitat protection measures that are in compliance with Metro's Title 13 requirements as part of the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. Steep slopes along portions of the stream corridors will provide some additional protection for some of the habitat; however the need for transportation connections between the dispersed developable areas will result in impacts to a moderate to high amount of significant habitat areas. Overall urbanization can occur with a low to moderate level of avoidance of regionally significant fish and wildlife habitat depending on the number of transportation connections that are made.

Contribution to the purposes of Centers and Corridors

The Sherwood Town Center is the closest 2040 designated center near the reserve area. It is a small Town Center of 88 acres, located to the northeast of the reserve area at the intersection of the Highway 99W and SW Tualatin-Sherwood Road. The center serves the community of Sherwood and the surrounding rural areas at the southwest edge of the region. The land just outside the center contains a significant amount of housing. The reserve area is connected to the center via Highway 99W (approximately 2 miles) and there are currently no transit connections between the two locations. The closest 2040 designated corridor is in the old town portion of Sherwood along SW Railroad Street/SW Oregon Street which is about one mile from the area via SW Ladd Hill Road/SW Main Street. The corridor is developed with small commercial retail and restaurant uses, the Sherwood City Hall, Library, and Center for the Arts in the downtown area and varied employment uses and single-family homes as the corridor extends north along SW Oregon Street.

The City completed a Town Center plan in 2013 that encompassed a larger area than Metro's 2040 designated location. The Langer Drive Commercial District portion of the City's plan most closely resembles the Metro designated area. The Langer portion is envisioned as a walkable and active shopping district complete with more pedestrian oriented buildings. Metro's 2017 State of the Centers Atlas shows a very high job to housing ratio and a very low dwelling units per acre compared to other town centers in the region.

Urbanization of the reserve area would not have a significant impact on the development of the Town Center area as a walkable and active shopping district due to the distance between the two areas. In addition since the Town Center serves all of Sherwood and the nearby rural area it most likely will evolve over time to a more pedestrian friendly shopping district as redevelopment of the existing commercial buildings occurs to meet expectations of existing and future residents. Urbanization of the reserve area will not contribute to the purpose of the corridor as the historic downtown area is thriving as a walkable area with numerous retail and restaurant options and civic uses. In addition the reserve area is too far away over a fairly large hill for easy pedestrian access on a regular basis.



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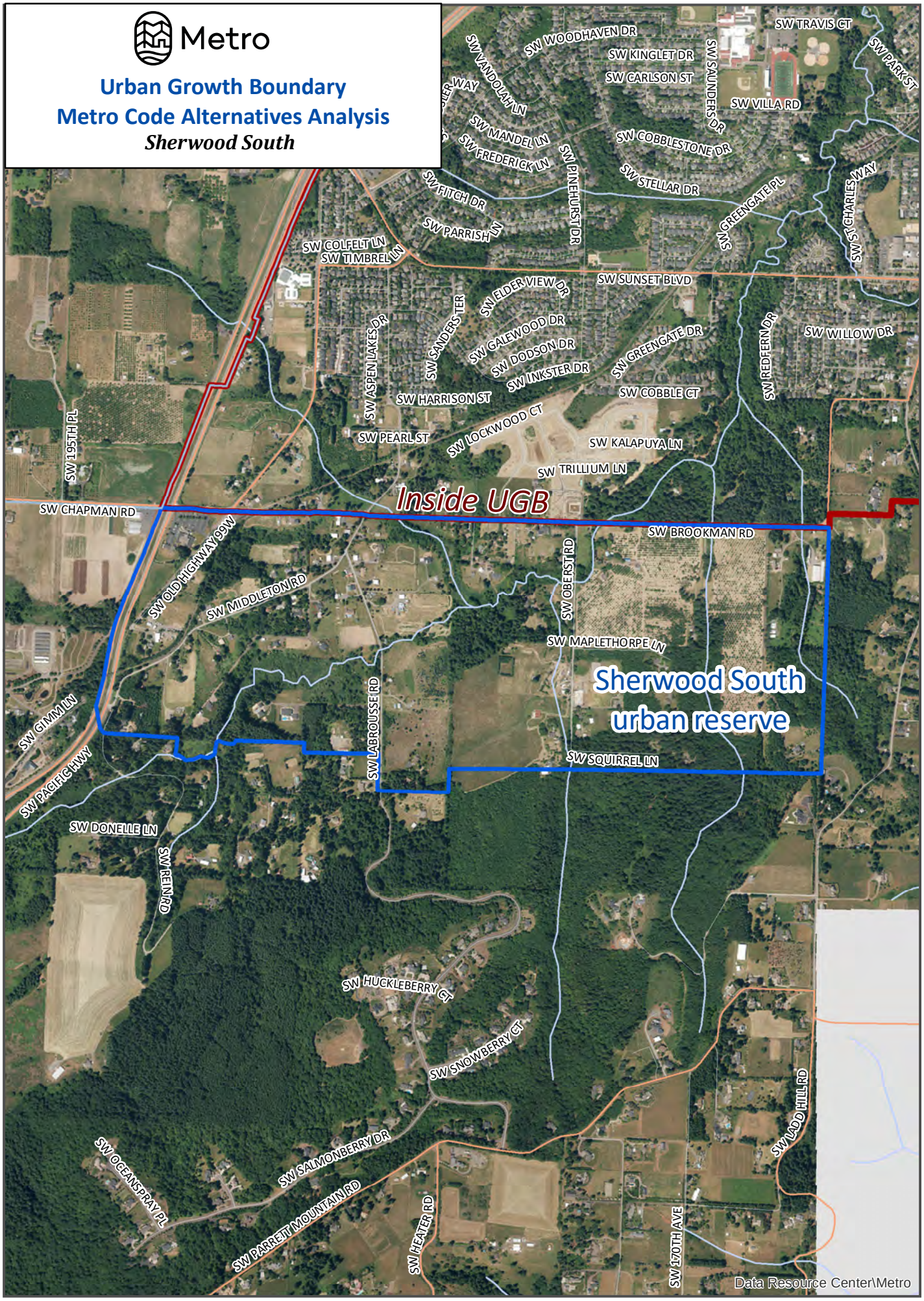
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood South



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SHERWOOD WEST URBAN RESERVE AREA

Total Acres	1,205	Parcel Acres	1,159
Gross Vacant Buildable Acres	811	Net Vacant Buildable Acres	628

General Description (see attached map)

The Sherwood West Urban Reserve Area is a large area on the west side of Sherwood that stretches from SW Scholls Sherwood Road in the north to SW Chapman Road in the south and totals 1,205 acres in size. The UGB forms the eastern boundary with the exception of the very northern portion and rural reserve land borders the remaining three sides. The land generally slopes up from east to west and Chicken Creek flows north diagonally through the middle portion of the area. Access to the area north of Chicken Creek is provided by SW Roy Rogers Road, SW Scholls Sherwood Road and SW Elwert Road. Access to the area south of Chicken Creek is provided by SW Elwert Road, SW Edy Road, SW Kruger Road and SW Chapman Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the majority of the eastern boundary of the urban reserve area, with the exception of the northern portion of the boundary that runs along SW Roy Rogers Road between the city limits and SW Scholls Sherwood Road. There is no natural or built feature along this section of SW Roy Rogers Road or along the northern edge that provides a transition zone. Even assuming SW Scholls Sherwood Road, SW Lebeau Road and SW Roy Rogers Road are developed to urban arterial standards the roads themselves will not provide a clear transition area between urban and rural uses. Additional buffers will need to be incorporated into the planning and design of the urban reserve area along all of these roadways. Chicken Creek and a tributary's riparian corridors provide a natural feature transition area for the majority of the western edge of the reserve area. There is a pocket of rural residences south of SW Edy Road that abuts the reserve area with no transition zone. There is no natural or built feature to the south of the reserve area that provides a transition zone however the equestrian center that is about ¼ mile south of the reserve area functions somewhat as a transition area for the rural uses further south as this large facility is more developed than a typical rural home or farm, while at the same time focusing on a rural use. Additional buffers will need to be incorporated into the planning and design of the urban reserve area along the pocket of rural residences south of SW Edy Road and to a lesser extent along the southern edge. Overall there is a natural features transition area between urban and rural lands for just over half of the urban-rural edge of the reserve area.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

Regionally significant riparian and upland wildlife habitat not constrained by steep slopes or in public ownership covers 229 acres with the vast majority associated with Chicken Creek, which slices diagonally through the center of the reserve area. It appears some of the upland habitat has been removed since the habitat inventory was completed in 2002. A power line parallels the stream corridor through the reserve area. Similarly there is a significant amount of riparian and upland wildlife habitat associated with the West Fork Chicken Creek that flows through two smaller sections of the reserve area. Portions of both stream corridors have adjacent steep slopes, with the larger amount of steep slopes associated with West Fork Chicken Creek. There is a very large block of upland habitat identified in the northern portion of the reserve area associated with forested land that connects to Chicken Creek. There is a smaller amount of riparian and upland wildlife habitat associated with Goose Creek in the southern portion of the reserve area, although it appears that some of the forested upland has been removed since the habitat inventory was completed.

The City of Sherwood has adopted riparian habitat protection measures that are in compliance with Metro's Title 13 requirements as part of the Tualatin Basin Natural Resource Coordinating Committee's protection program. The City will need to develop an upland habitat protection program that also complies with Title 13, which does allow for impacts to habitat areas. The habitat areas associated with West Fork Chicken Creek are less susceptible to impacts from development as they are more isolated and contain more adjacent steep sloped areas. The large block of upland habitat in the northern portion of the area is very susceptible to impacts as its size and central location would inhibit a cohesive development pattern and transportation connections. The power line along Chicken Creek provides some additional level of protection for the habitat resources as development opportunities are limited within the power line easement. In addition the habitat corridor along Chicken Creek ranges in width from 500 feet to well over a 1,000 feet which may limit or nullify transportation connections across the stream due to the long distance. The smaller habitat area associated with Goose Creek is also susceptible to impacts depending on design of the development and transportation connections. Overall most of the regionally significant fish and wildlife habitat area could be avoided however impacts would be expected to the large upland habitat area and possibly the habitat associated with Goose Creek.

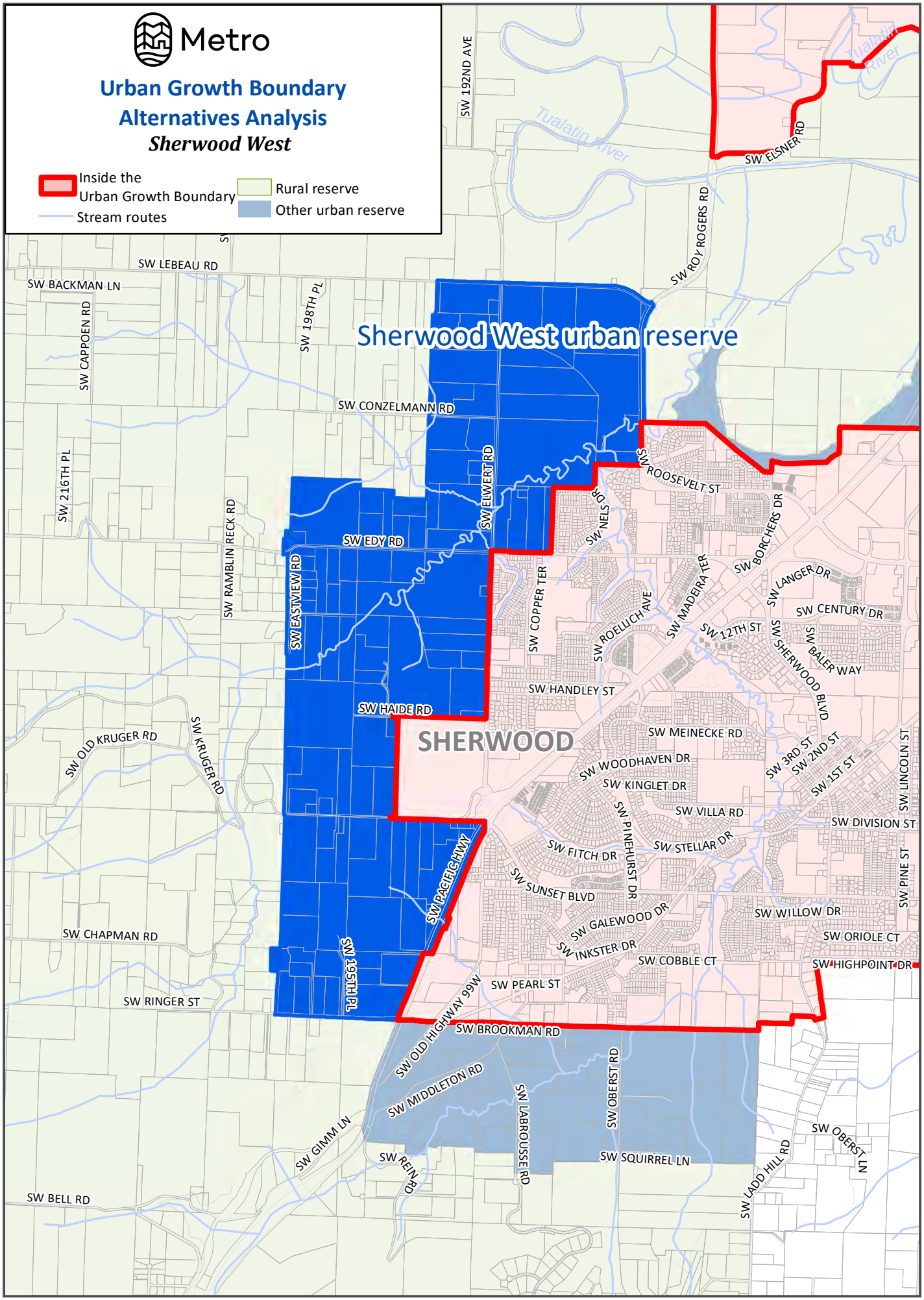
Contribution to the purposes of Centers and Corridors

The Sherwood Town Center is the closest 2040 designated center near the Sherwood West Urban Reserve area. It is a small Town Center of 88 acres, located to the northeast of the reserve area at the intersection of the Highway 99W and SW Tualatin-Sherwood Road. The center serves the

community of Sherwood and the surrounding rural areas at the southwest edge of the region. The land just outside the center contains a significant amount of housing. The reserve area is connected to the center via Highway 99W (approximately 1 mile) and there are currently no transit connections between the two locations. There is a 2040 designated corridor adjacent to the reserve area along SW Edy Road between SW Elwert Road and SW Nursery Way. This very small corridor is less than 2,000 feet in length and contains single-family homes and one parcel that is underdeveloped.

The City completed a Town Center plan in 2013 that encompassed a larger area than Metro's 2040 designated location. The Langer Drive Commercial District portion of the City's plan most closely resembles the Metro designated area. The Langer portion is envisioned as a walkable and active shopping district complete with more pedestrian oriented buildings. Metro's 2017 State of the Centers Atlas shows a very high job to housing ratio and a very low dwelling units per acre compared to other town centers in the region.

Urbanization of the reserve area may contribute to the development of the Town Center area as a walkable and active shopping district due to the large size of the reserve area and the fairly close distance between the two areas. Since the Town Center serves all of Sherwood and the nearby rural area it most likely will evolve over time to a more pedestrian friendly shopping experience as redevelopment of the existing commercial buildings occurs to meet expectations of existing and future residents. Urbanization of the reserve area will not impact the corridor as it is mostly developed with single-family homes. The expectation is the one underdeveloped parcel will also be developed with single-family homes in the future.



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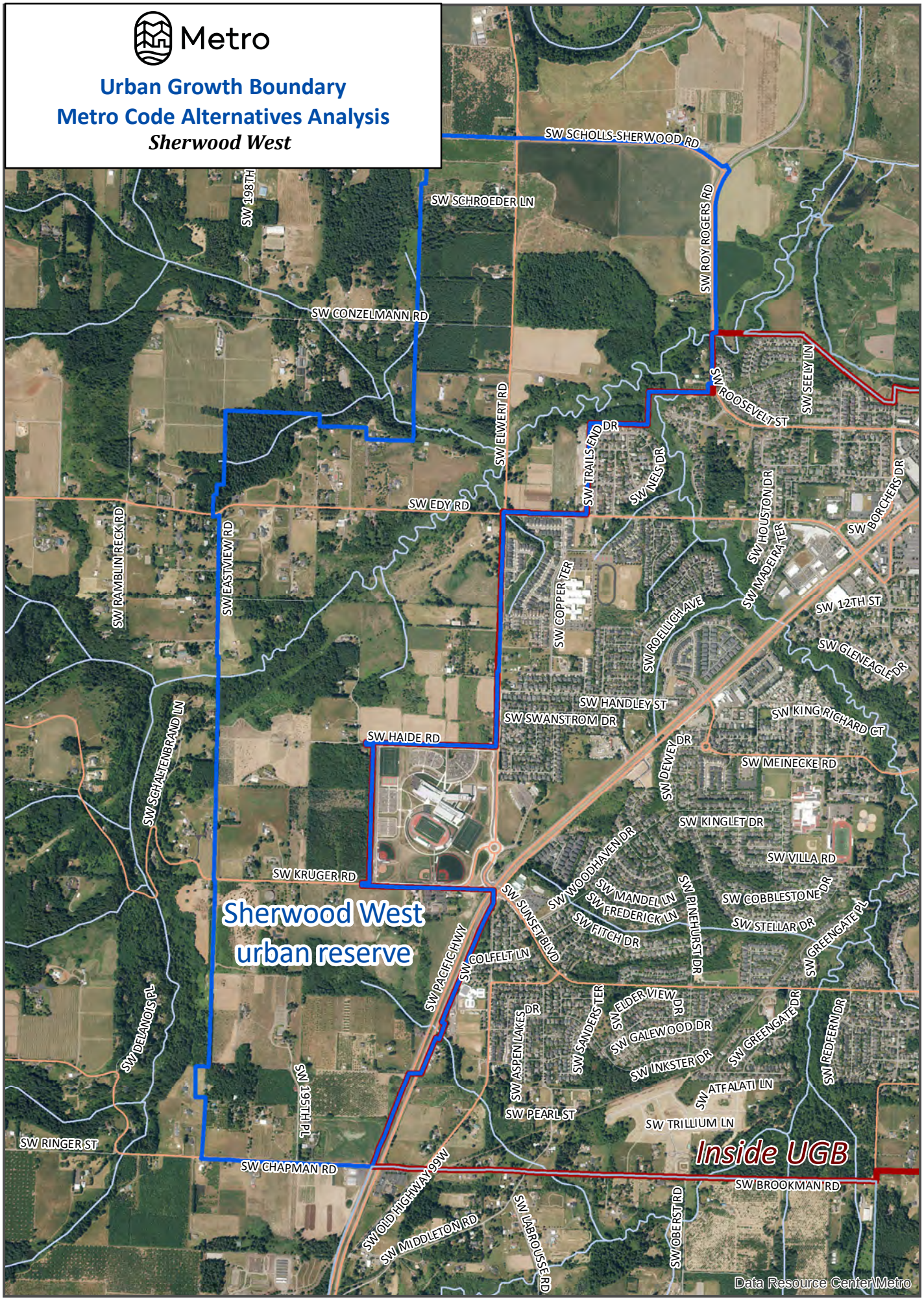
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Sherwood West



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WILSONVILLE SOUTHWEST URBAN RESERVE AREA

Total Acres	67	Parcel Acres	64
Gross Vacant Buildable Acres	27	Net Vacant Buildable Acres	20

General Description (see attached map)

The Wilsonville Southwest Urban Reserve Area is an irregular shaped area on the southwest side of Wilsonville that totals 67 acres in size. The reserve area is on the south side of SW Wilsonville Road and almost extends to the Willamette River. The Graham Oaks Nature Park is directly north of the reserve area, across SW Wilsonville Road. The UGB forms the eastern boundary and the area is served by SW Wilsonville Road.

METRO CODE REQUIREMENTS

Clear transition between urban and rural lands, using natural and built features to mark the transition (see attached aerial photo)

The UGB forms the eastern boundary of the urban reserve area. SW Wilsonville Road forms the edge of the reserve area to the north and west. The Corral Creek and Mill Creek riparian areas on the west side of SW Wilsonville Road provide a natural buffer for the land to the west. Even assuming SW Wilsonville Road is built to an arterial level roadway, the road itself will not provide the needed transition area between urban and rural lands to the north. Additional buffers will need to be incorporated into the planning and design of the reserve area along the northern edge to provide a clear transition from urban to rural uses. The Corral Creek riparian corridor provides a natural transition between urban and rural lands along the southern edge of the reserve area. Overall, more than half of the urban-rural edge has a natural feature that provides a transition between urban and rural lands.

Protection of farmland that is most important for the continuation of commercial agriculture in the region

The urban and rural reserves process designated the most important land for commercial agriculture as rural reserves and the most suitable land for urbanization as urban reserves. Designation of this area as an urban reserve means farmland within this reserve area is not the most important for the continuation of commercial agriculture in the region.

Avoidance of conflict with regionally significant fish and wildlife habitat

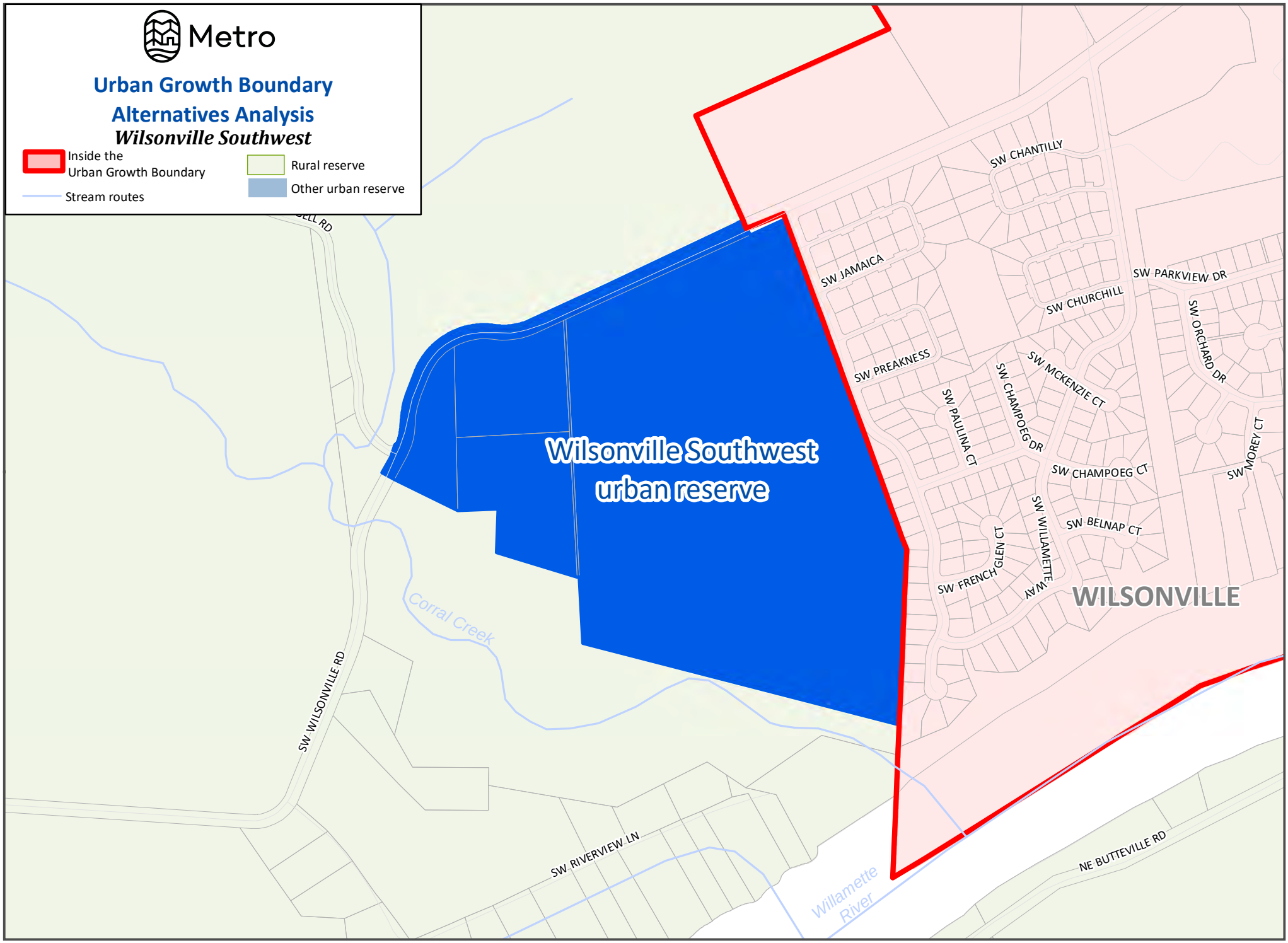
Regionally significant riparian and upland wildlife habitat covers 32 acres not constrained by steep slopes or in public ownership. However, it appears that almost the entire identified upland habitat that totals 28 acres is in agricultural use as filbert orchards. The remaining 4 acres of riparian habitat is associated with Corral Creek along the southern edge of the reserve area. The City of Wilsonville has adopted a riparian habitat protection program that is in substantial compliance with Metro's Title 13 Nature in Neighborhoods regulations. The City will need to develop an upland habitat protection program that also complies with Title 13, depending on the determination of significant upland habitat in the reserve area. Title 13 does allow for impacts to habitat areas. The City's protection program and the location of the habitat on the southern edge of the reserve area combined with some areas of steep slopes above the stream corridor will protect the significant riparian habitat. Overall, future urbanization of the reserve area can occur while avoiding the riparian habitat areas.

Contribution to the purposes of Centers and Corridors

The Wilsonville Town Center is the nearest 2040 center, located to the east of the reserve area. The Town Center is located east of I-5, is about 100 acres in size, and primarily serves the city. The Town Center is located a short distance from the terminus of the WES Commuter Rail line and is linked to the reserve area by SW Wilsonville Road (1.5 miles). SMART, the City of Wilsonville's bus service provides service between the Town Center and the Graham Oak Nature Park which is across SW Wilsonville Road from the reserve area through the Route 4 Wilsonville Road line. There is one 2040 designated corridor in Wilsonville that runs along SW Elligsen Road west of I-5 and then south along SW Parkway Ave, which parallels I-5 on the east, to the Town Center. The corridor is mostly built out with commercial retail or employment uses with some single-family and multi-family residential near the Town Center and is a little over two miles away along SW Wilsonville Road and SW Town Center Loop E.

The City of Wilsonville is currently developing a Town Center Plan that envisions a vibrant walkable destination that inspires people to come together and socialize, shop, live and work. Metro's 2017 State of the Centers Atlas shows a higher than average jobs to housing ratio, fewer people and dwellings per acre than the regional town center average, and high access to parks.

The Wilsonville Southwest urban reserve area was identified by Wilsonville as a location for long-term future urbanization. The City's 20 Year Look process (2007) identified this area for potential residential use. Urbanization of the analysis area will not contribute to the purpose and vision of the Wilsonville Town Center or the corridor due to the distance between the two areas and the minimal amount of new households that would be developed in this very small urban reserve area.



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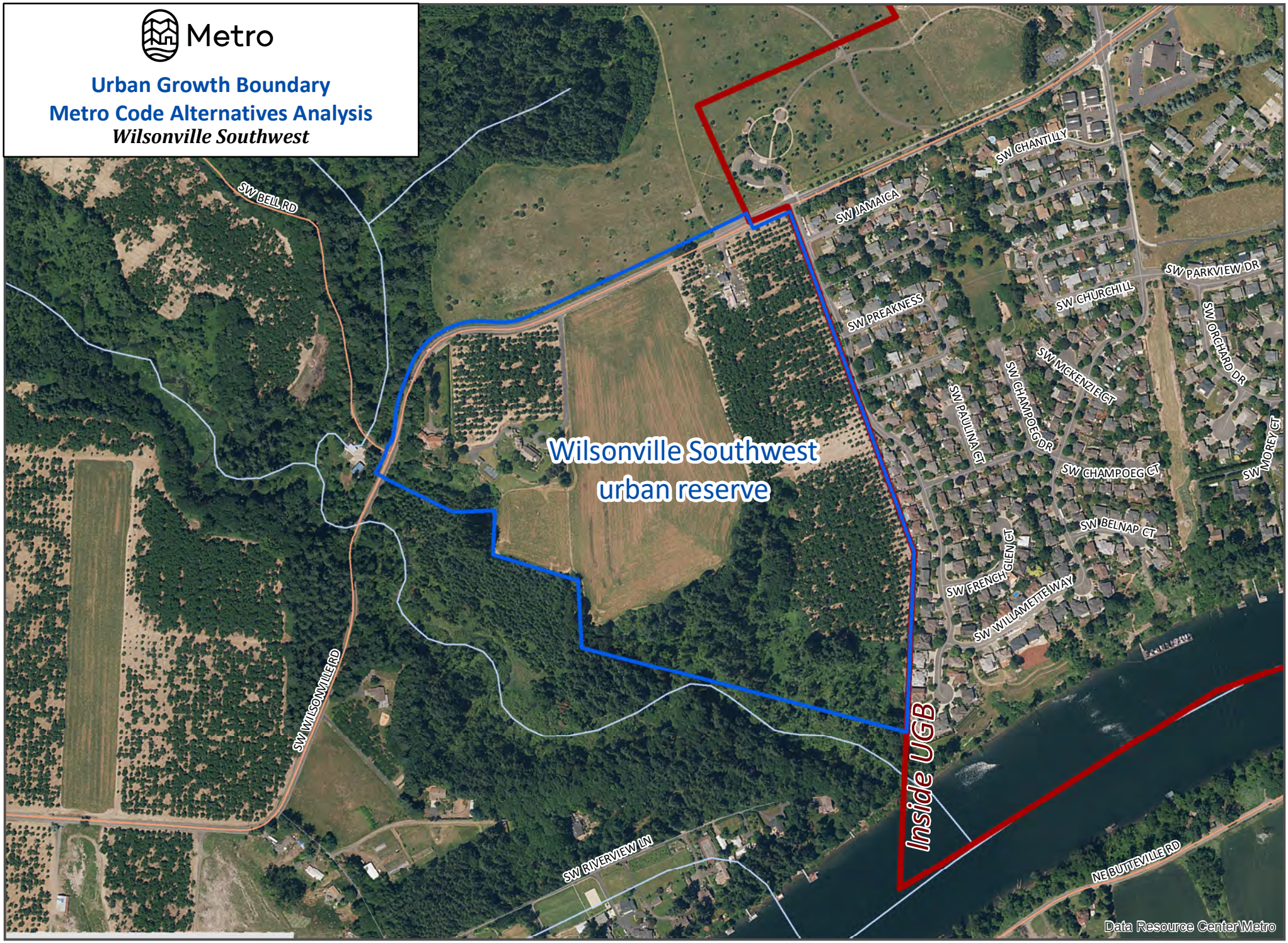
Metro

Urban Growth Boundary
Metro Code Alternatives Analysis
Wilsonville Southwest



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Appendix 3: Metro Code Analysis Results

Metro Code Factors				
Urban Reserve	**Transition between urban and rural lands using natural and built features**	**Protection of farmland for commercial agriculture**	**Avoidance of regionally significant fish and wildlife habitat**	**Contribution to the purposes of Centers and Corridors**
Beaver Creek Bluffs	High	High	Medium	Low
Bendemeer	High	High	Medium	Low
Bethany West	Low	High	Medium-Low	Low
Borland	High	High	Low-Medium	Low
Brookwood Parkway	High	High	High	Low
David Hill	High	High	Medium	Low
Elligsen Road North	Low	High	Low-Medium	Low
Elligsen Road South	Low	High	Medium-Low	Low
Grahams Ferry	Medium	High	High	Low
Gresham East	Medium	High	Medium-Low	Low
Henrici	Medium	High	Medium-High	Low
Holcomb	Medium	High	Medium	Low
Holly Ln/ Newell Creek	High	High	High	Low
I-5 East	Low	High	Low	Low
Maplelane	High	High	Low-Medium	Low
River Terrace South	Low	High	High-Medium	Low
River Terrace West	High	High	Medium	Low
Rosa	Medium	High	Medium-High	Low
Sherwood North	Low	High	Low	Low
Sherwood South	High	High	Low-Medium	Low
Sherwood West	Medium	High	Medium	Low-Medium
Wilsonville Southwest	Medium	High	High	Low

IN CONSIDERATION OF ORDINANCE NO. 23-1488, FOR THE PURPOSE OF AMENDING THE URBAN GROWTH BOUNDARY TO INCLUDE LAND ADJACENT TO THE CITY OF TIGARD IN EXCHANGE FOR REMOVING A SUBSTANTIALLY EQUIVALENT AMOUNT OF LAND IN CLACKAMAS COUNTY

Date: 1/11/23
Departments: Planning, Development and Research
Meeting Date: 1/19/23

Prepared by: Ted Reid, Principal Regional Planner ted.reid@oregonmetro.gov
Presenter(s): Andy Shaw, Ted Reid
Length: 45 minutes

ISSUE STATEMENT
The City of Tigard submitted a proposal for a residential urban growth boundary (UGB) expansion that would add approximately 491 acres to the UGB in a concept-planned area known as River Terrace 2.0. The Metro Council has indicated that it intends to complete a UGB exchange that would maintain the amount of buildable land inside the UGB by adding the River Terrace 2.0 area to the UGB while also removing a comparable amount of buildable land in Clackamas County that has not demonstrated readiness for development.

ACTION REQUESTED
Consider adoption of Ordinance No. 23-1488, which would complete a UGB exchange.

IDENTIFIED POLICY OUTCOMES
The intended outcome of the UGB exchange process is that Metro fulfills its regional urban growth management responsibilities with a continued focus on efficient land use and readiness for urbanization.

POLICY QUESTION(S)
Does the Council wish to complete a UGB exchange to add River Terrace 2.0 to the UGB?

POLICY OPTIONS FOR COUNCIL TO CONSIDER
The Council may consider completing a UGB exchange.

STAFF RECOMMENDATIONS
Staff recommends that the Council adopt Ordinance No. 23-1488.

STRATEGIC CONTEXT & FRAMING COUNCIL DISCUSSION
Background on Tigard expansion proposal
The City of Tigard is a consistent and dependable regional partner in its forward-looking approach to housing planning. Tigard has been at the vanguard of allowing middle housing that serves residents and the region well. Tigard has proposed a well-planned UGB expansion that includes middle housing in the River Terrace 2.0 urban reserve area.

Overview of the UGB exchange process

The UGB exchange would entail adding the River Terrace 2.0 area to the UGB and removing a comparable amount of buildable land in locations that are unlikely to develop as previously expected. This approach is consistent with Metro's focus on city readiness in its growth management decisions. It recognizes that Tigard is ready for growth while some other areas that were added to the UGB in the past have not resulted in housing and may not for decades to come. Ultimately, adding land to the UGB can only help us address our housing shortage if it develops in a thoughtful, predictable way. Tigard has demonstrated that it is ready to develop River Terrace with a mix of middle housing types that makes efficient use of land.

This UGB exchange approach also holds us to the core principle of only adding to the overall size of the UGB when there is a regional need for additional 20-year land supply. This highlights an important distinction that guides our work: the difference between a present day housing shortage and long-term land shortages. State law requires us to focus on the latter when considering whether to add more land to the UGB. Our ability to provide the Council with several possible exchange areas that are inside the UGB but are not progressing towards providing housing emphasizes this need to focus on land readiness.

The exchange process is allowed under state law, but Metro has never used this process. The UGB exchange process has been used successfully in a few other jurisdictions around the state, most recently by the City of Sutherlin in 2018 and the City of Dayton in 2022.

BACKGROUND

At an April 28, 2022 work session, COO Madrigal presented her recommendation to address Tigard's UGB expansion proposal through a UGB exchange. At that work session, Council directed staff to return with a proposed approach to identifying UGB exchange candidates.

Staff presented that proposed approach at a June 14, 2022 work session. This approach included mapping buildable lands in unincorporated areas inside a one-mile buffer within the UGB, followed by consultation with local jurisdictions and special districts. Through that consultation, staff developed its understanding of the planning and development status of these areas. Areas that were further along in their readiness were removed from consideration and areas that lacked readiness were advanced for further discussion.

At a September 15, 2022 work session, Council discussed preliminary UGB exchange candidates and possible considerations for narrowing those options. The Metro Council directed staff to narrow the UGB exchange options as proposed.

Metro's COO presented her recommendations to the Metro Council on October 20, 2022. Concurrently, Metro opened a public comment period on the COO recommendations. To date, Metro has received fewer than 15 written comments. Those comments are varied and do not indicate a consistent theme aside from a general desire for communities to not change (both in areas proposed for removal from the UGB and in the River Terrace 2.0 area). Some commentors

expressed general support for or opposition to the exchange. Some supported removing areas from the UGB. Others were opposed to removing specific areas from the UGB. Finally, some comments expressed opposition to adding River Terrace 2.0 to the UGB.

MPAC recommendation

MPAC has discussed the UGB exchange topic on five occasions over the last few months. At its November 9, 2022 meeting, staff presented a review of the three exchange options from the COO recommendation, summarized through the lens of the previously-discussed considerations (see table below). Options 1, 2, and 3 all include unincorporated land in Clackamas County that was added to the UBG 20 years ago but has not progressed in its readiness for development. All three options include land in the former City of Damascus. Option 3 also includes land in the Park Place area outside of Oregon City.

Consideration	Option 1	Option 2	Option 3
Planning infrastructure and development readiness	Low readiness	Low readiness	Low readiness
Time in UGB	20 years	20 years	20 years
Parcelization	High	High	High
Property owner wishes	Possible interest in removal	Possible interest in removal	Possible interest in removal
Number of areas	1	1	2
Added to UGB for special purpose	No	No	No
Environmental features (e.g., slopes and riparian areas)	Low	Low	Some low, some high
Jurisdiction's position	No city - former Damascus; Clackamas County opposed, particularly along Hwy 212	No city – former Damascus; Clackamas County opposed	Oregon City supportive; No city - former Damascus; Clackamas County opposed

Possible appropriateness for UGB exchange
Less
More

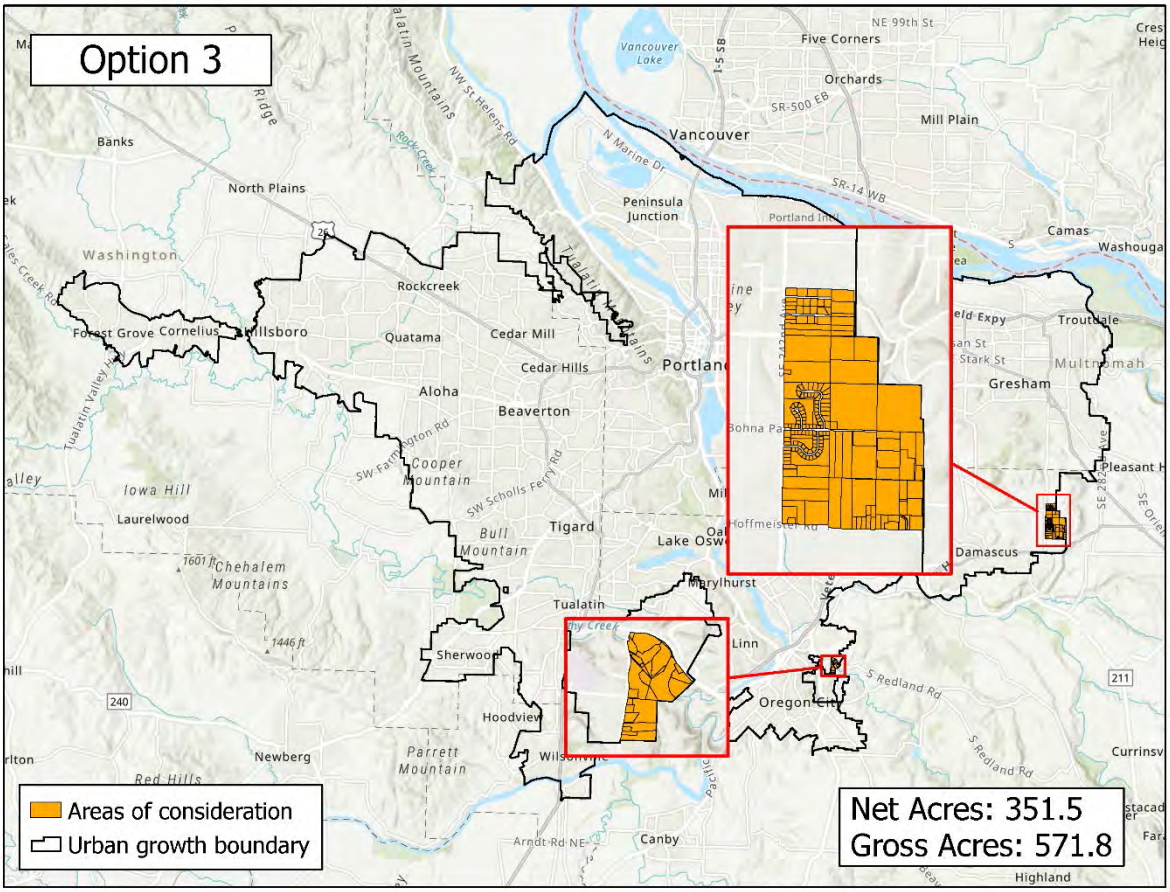
***** *Determinations are somewhat subjective, but attempt to reflect the priorities expressed by policy makers*

On November 9, 2022, MPAC voted on a recommendation to the Metro Council. In that recommendation, a majority of MPAC members expressed a preference for Option 3 (as depicted in the October 13, 2022 COO Recommendation) for completing a UGB exchange that would enable the addition of the River Terrace 2.0 area to the UGB to provide the region with additional housing options.

In the minority, four MPAC members voted in opposition, conveying the opinion that this exchange is generally detrimental to Clackamas County and the concern that the preferences of property owners in the possible exchange areas are not well understood yet.

Metro Council direction

Following MPAC's advice, at its November 22, 2022 work session, the Metro Council directed staff to prepare an ordinance for its consideration that would complete the proposed UGB exchange to add River Terrace 2.0 to the UGB and remove the Option 3 areas as depicted below.



Stakeholder and advisory committee engagement

As listed below, Metro staff and councilors have undertaken significant stakeholder outreach regarding the proposed UGB exchange. Generally, the approach of conducting a UGB exchange has been well-received.

May 18:	Metro Technical Advisory Committee
June 6:	North Clackamas Chamber of Commerce
June 15:	Clackamas County Coordinating Committee (Metro subcommittee)
June 21:	Happy Valley City Council

June 22:	MPAC
June 23:	Gresham Chamber of Commerce
July 20:	Westside Economic Alliance
August 2:	Clackamas County Business Association
August 17:	Metro Technical Advisory Committee
August 24:	MPAC
September 8:	Damascus Community Planning Organization
September 21:	Metro Technical Advisory Committee
September 21:	Clackamas County Board of Commissioners
September 28:	MPAC
October 5:	Oregon City Board of Commissioners
October 13:	Home Building Assoc. of Metropolitan Portland
October 17:	Washington County Coordinating Committee
October 26:	MPAC
November 1:	Washington County Board of Commissioners
November 9:	MPAC
December 1:	Washington County Planning Directors

Public notices

On December 5, 2022, Metro staff sent postcards to all owners of property in the areas proposed for removal from the UGB as well as property owners in the River Terrace 2.0 Urban Reserve. These postcards provided notice of the Metro Council's January 19, 2023 public hearing. Since the Council expressed a desire to keep its exchange options somewhat flexible, owners of additional properties to the south of Hoffmeister Rd. in the former City of Damascus also received postcards notifying them of the proposed UGB exchange. Postcards that went to owners of properties in areas proposed for removal from the UGB also included information about a January 5, 2023 virtual townhall.

On December 28, 2022, Metro staff sent postcards to all residents within one mile of the proposed River Terrace 2.0 UGB expansion area. These postcards notify residents of the availability of a report on the possible impacts of the expansion on existing neighborhoods. This report is required under Metro code. The postcards also provide notice about the Metro Council's January 19, 2023 public hearing.

Townhalls for owners of property in areas proposed for removal from the UGB

Metro staff arranged for and held two townhall meetings. On January 4, 2023, Metro hosted an in-person townhall at the Harmony West campus of Clackamas Community College. Details for the in-person event were not available at the time notice postcards were sent to property owners, but Metro advertised the in-person townhall on its website and through relevant community planning organizations. Not counting Metro staff or Council, three people attended the in-person townhall meeting. Two attendees were Clackamas County commissioners who expressed opposition to land being removed from the UGB in Clackamas County. A third attendee was an employee of the Homebuilding Association of Metropolitan Portland and

expressed the organization's general support for adding River Terrace 2.0 to the UGB through an exchange.

Metro staff held a virtual townhall on the evening of January 5, 2023. This townhall was advertised on postcards sent to owners of property in areas proposed for removal from the UGB. The townhall was also advertised on Metro's website. Approximately 20 people attended the townhall. At the outset of the meeting, attendees were polled to understand who was in attendance. No attendees indicated that they owned property in the areas proposed for removal from the UGB. Attendees asked questions regarding the legal and policy basis for the UGB exchange, implications for possible funding such as transportation and housing funding, and about Metro's efforts to engage Clackamas County. Attendees also asked broader questions about Metro's approach to growth management and the process for local jurisdictions to propose UGB expansions.

ATTACHMENTS
None

[For work session:]

- Is legislation required for Council action? ☒ Yes ☐ No
- If yes, is draft legislation attached? ☒ Yes ☐No
- What other materials are you presenting today? PowerPoint

SUPPLEMENTAL STAFF REPORT

IN CONSIDERATION OF ORDINANCE NO. 23-1488, FOR THE PURPOSE OF AMENDING THE URBAN GROWTH BOUNDARY TO INCLUDE LAND ADJACENT TO THE CITY OF TIGARD IN EXCHANGE FOR REMOVING A SUBSTANTIALLY EQUIVALENT AMOUNT OF LAND IN CLACKAMAS COUNTY

Date: 1/30/2023
Department: Planning, Development and Research
Meeting Date: 2/2/2023

Prepared by: Roger Alfred, 503-797-1532
Presenters: Andy Shaw, Ted Reid, Roger Alfred
Length: 45 minutes

ISSUE STATEMENT

At the Metro Council's January 19, 2023 public hearing on the proposed UGB exchange, the Council received testimony on several different topics including:

- Property owner preferences for whether their property is removed from the UGB.
- Concerns about urban growth and change in the vicinity of the River Terrace 2.0 area.
- Requests for conditions of approval regarding environmental protections related to erosion caused by stormwater runoff in the South Bull Mountain area of Washington County.

This supplemental staff report provides: (1) Metro staff's recommendation to the Council regarding the request by Damascus-area property owner Larry Thompson to not remove his property and adjacent property from the UGB; and (2) discussion of the conditions requested by Tualatin Riverkeepers and 1000 Friends of Oregon and a proposed condition of approval.

STAFF RECOMMENDATIONS

1. Properties proposed for removal from the UGB

As directed by the Metro Council, staff focused on prioritizing areas for removal from the UGB based on their lack of readiness for urbanization. At the January 19 hearing, the Council heard testimony from Larry Thompson, who owns property in the former City of Damascus that is proposed for removal and remains zoned for exclusive farm use (EFU). Mr. Thompson described his desire to have his property remain inside the UGB so that he could develop it at low densities. In a discussion with staff after the hearing, Mr. Thompson indicated that his neighbor to the east would also like their property to remain inside the

UGB (which would be necessary to accomplish Mr. Thompson's request because his property is not adjacent to the existing UGB). Collectively, these properties amount to approximately 80 of the 351 buildable acres proposed for removal from the UGB, and approximately 113 gross acres.

For the following reasons, staff recommends that the Council not make any revisions to the areas already identified (and publicly noticed) for removal from the UGB:

(1) This area has no clear path forward for receiving city governance and infrastructure needed to support development as proposed by Mr. Thompson. The City of Happy Valley has informed Metro that it has no plans to annex lands this far east. This area is also approximately two miles south of the City of Gresham boundary, and is topographically challenging to provide urban services, making planning and annexation of the area unlikely in the next couple of decades.

(2) The 113 acres proposed by Mr. Thompson to remain inside the UGB are currently zoned exclusive farm use (EFU). As a land use policy matter, it makes more sense to remove a large undeveloped block of EFU land from the UGB rather than to remove parcelized rural residential properties, which typically have existing low-density residential development. Because Metro is required by DLCD rules to exchange a substantially equivalent amount of land, if these 113 acres were retained inside the UGB, the Council would be required to remove other property from the UGB in order to make up the difference, and that land would be primarily rural residential.

(3) To provide some flexibility in the case of adjustments to the boundaries of removal areas, Metro staff mailed property owner notices to a larger area than what was being proposed for removal from the UGB. However, given the combined size of Mr. Thompson's and his neighbor's properties, those additional areas that received notice are not large enough to complete the exchange if they were removed from the UGB rather than the property owned by Mr. Thompson and his neighbor. This means that Metro would need to start over with mailed notice to different property owners and hold another first reading and public hearing on the proposed exchange. The notices would need to be mailed at least 35 days before a new public hearing could be held. Staff is also mindful that considering different areas instead of Mr. Thompson and his neighbor could result in different property owners expressing their opposition.

2. Additional conditions of approval for River Terrace 2.0

At the public hearing on January 19, testimony was provided by representatives of Tualatin Riverkeepers and 1000 Friends of Oregon. Those groups are supportive of the proposed exchange but expressed general concerns about environmental impacts from new urban development in the South Bull Mountain area, most notably erosion that is being caused by stormwater runoff. The two groups submitted a joint letter dated January 25, 2023, reiterating their concerns and requesting that the Metro Council add certain conditions of approval to this UGB exchange. It is worth noting that the photos attached to that letter do

not reflect erosion impacts that have resulted from development within the City of Tigard, but instead appear to be from runoff originating on the south slope of Bull Mountain in unincorporated Washington County and possibly from King City.

The concerns raised and proposed conditions generally relate to minimizing erosion from stormwater caused by new development in Washington County, including Kingston Terrace, which is an adjacent area in King City that Metro brought into the UGB in 2018. As such, the "conditions of approval" suggested by the Riverkeepers and 1000 Friends are not so much conditions of approval on this UGB amendment as requests for future regional coordination by Metro of stormwater management in the entire South Bull Mountain Area, including King City and other areas outside of Tigard.

There are two big-picture problems with these requests for new conditions. First, conditions being attached to this specific Metro Council approval are requirements imposed on the City of Tigard, because that is the jurisdiction that is receiving the UGB amendment. The Council may not utilize this ordinance, as requested by Riverkeepers and 1000 Friends, to impose new conditions on King City, or to revisit conditions placed on King City in 2018, or to create a new regional "goal study" work program designed to consider collective impacts from urbanization across recent and future UGB expansion areas.

Second, Clean Water Services (CWS) is the agency with jurisdiction over regional stormwater and erosion issues in Washington County. CWS is very aware that downstream erosion caused by stormwater in the South Bull Mountain area is on the rise and CWS is currently working in coordination with the relevant cities and Washington County on a solution. As described in the attached fact sheet, CWS is currently completing a study of stormwater impacts in the South Bull Mountain area that recognizes a regional stormwater strategy is necessary to reduce downstream impacts. Tigard and King City have been very supportive of the CWS study, which is expected to be complete this spring and will provide recommendations for new construction standards designed to improve regional stormwater management in the area, including the new urban areas being added to the City of Tigard. Any development in the River Terrace 2.0 area will be required to comply with construction and design requirements adopted by CWS in order to help manage stormwater in the area.

To recognize and emphasize this ongoing work, staff recommends the addition of a new condition of approval similar to one requested by the Riverkeepers and 1000 Friends, but focused on future planning by the City of Tigard because that is the jurisdiction subject to this ordinance:

- The city will continue to coordinate with Clean Water Services (CWS) regarding the South Bull Mountain Regional Stormwater and Sanitary System Study; all future development in River Terrace 2.0 and other parts of the city must be consistent with construction and design standards adopted by CWS in order to reduce and mitigate erosion problems caused by stormwater.

More generally, planning for the protection of environmental resources will be an important aspect of the City of Tigard's pending comprehensive planning work for River Terrace 2.0. The city will need to demonstrate compliance with conditions of approval and Metro Urban Growth Management Functional Plan requirements, which include environmental protections. Staff will be engaged throughout that local planning effort to ensure that those expectations are clear.

ATTACHMENT

Clean Water Services fact sheet regarding South Bull Mountain Regional Stormwater and Sanitary System Study

Clean Water Services

SOUTH BULL MOUNTAIN

REGIONAL STORMWATER AND SANITARY SYSTEM STUDY

Mountainside High School construction 2016

Butternut Creek enhancement 2018

Planning Ahead to Support Future Growth

To support thoughtful environmental planning for our region, Clean Water Services will be working with specialized consultants to conduct two parallel regional studies in the South Bull Mountain area: a stormwater and a sanitary system study. As the region develops, careful planning is needed to ensure appropriate infrastructure is in place in each community to protect the environment and serve our growing population.

The studies will analyze technical and on-the-ground data, model alternatives and produce recommendations for effective regional stormwater management and sanitary system design for the future. Clean Water Services is coordinating with local governments and the community on the process. The studies will begin in spring 2022 and be completed in early 2023. The studies' recommendations will influence future stormwater management and sanitary systems and guide future infrastructure development.

Stormwater Study

Stormwater, the runoff from pavement, roofs, construction and other developed areas, is an important issue to manage as communities grow. Due to the complexity of the area's geography and all-encompassing nature of stormwater, a regional stormwater strategy is necessary to provide a more comprehensive approach to stormwater management. The study will provide technical analysis through field work and modeling. This regional strategy will also lay the ground work for better coordination between local governments and with the community.

The stormwater study results will be used to determine what options are feasible for stormwater management in the South Bull Mountain area. Options might include things like water quality facilities such as bioswales, on-site and street-side planters, detention ponds, in-stream resiliency, or a combination of approaches. It will also include recommendations to consider for stream enhancement and retrofits to mitigate existing impacts to local streams, although funding for these will not be identified. We anticipate the study will be complete in late winter 2022, and will provide guidance to local jurisdictions as they plan for future projects. This stormwater study is one element contributing to larger transportation and land use planning processes led by individual cities and counties.

For all new development, Clean Water Services requires adherence to our Design & Construction standards, which were (over)

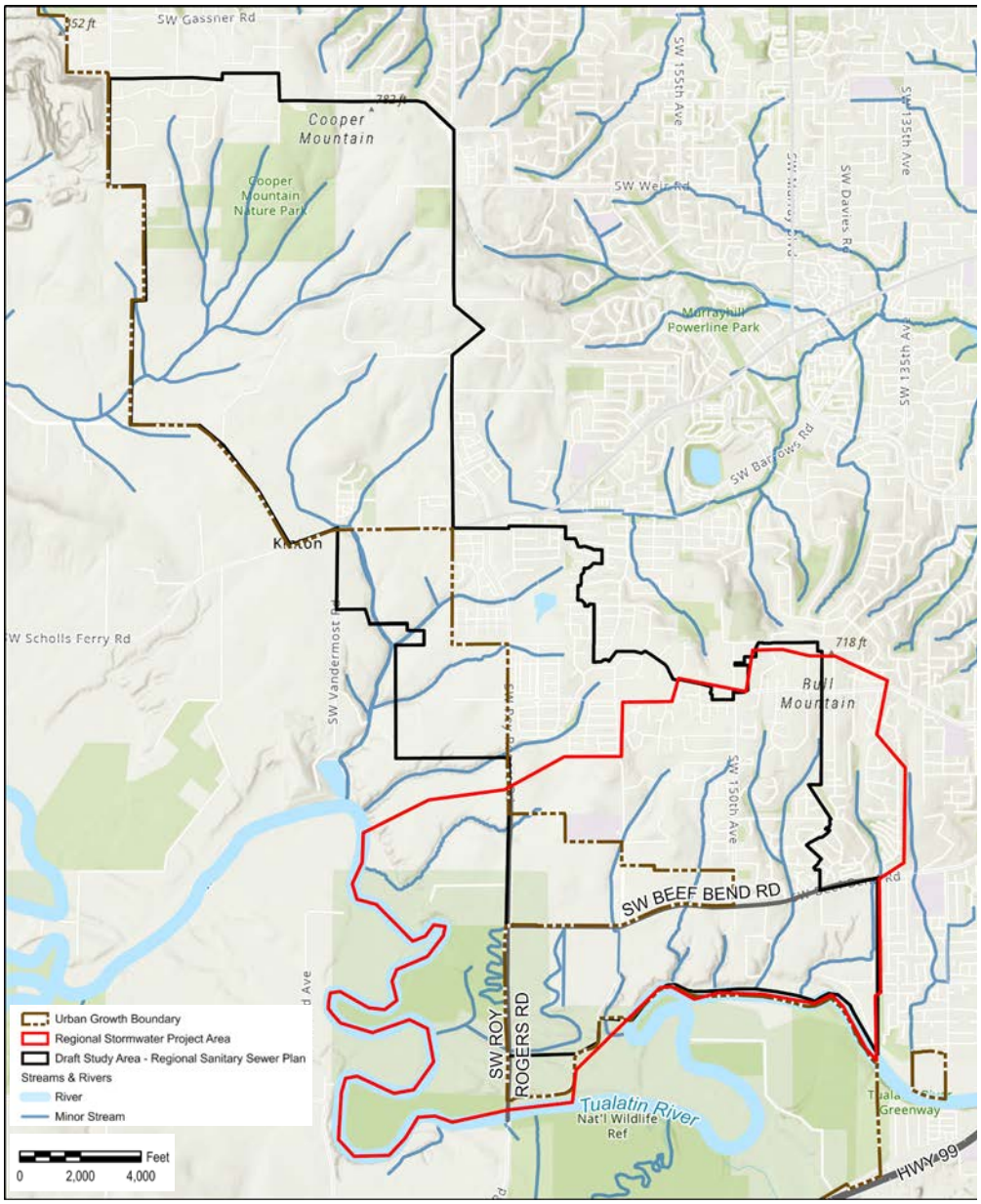
developed to minimize environmental impacts from new construction.

Sanitary System Study

The regional sanitary system study, which covers a slightly different geographic area in order to capture the upstream sanitary drainage basin (including areas served by pump stations), will provide recommendations to manage future regional sanitary needs as this area develops.

The study will analyze areas that are being planned for future development: Two unincorporated areas within Washington County, to the west and south of Bull Mountain; Tigard's future River Terrace West and South Concept Plan (urban reserve area on Tigard's west boundary), and King City's master plan for the Beef Bend South area (also known as Kingston Terrace) as well as conveyance of the new flows from the adjacent Cooper Mountain Tile Flat Planning Area.

The study will integrate local sanitary system planning concepts with existing infrastructure to recommend the best design for an effective system to serve the growing community. It will also consider use of Class A recycled water for certain areas. A cohesive regional sanitary system plan will provide guidance to local jurisdictions and developers as they plan for future projects. We anticipate the study will be complete in early 2023.



Community Engagement

Clean Water Services will engage with the public to provide information and seek input on topics in the studies. Methods will include mailings, personal outreach, open houses and informational materials.

Contact Chris White with questions about the project at 503.681.3669 or southbullmtnplanning@cleanwaterservices.org

Lower Tualatin Pump Station

Everything we do at Clean Water Services aims to protect public health while enhancing the natural environment of the Tualatin River Watershed.

Clean Water Services

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