



## TECHNICAL MEMORANDUM

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From: Aaron Murphy, P.E.  
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Date: June 19, 2019

**Project Name:** Beaver Creek Road Concept Plan Implementation –  
Zoning and Code Amendments  
**Project No:** 18510.70  
**RE:** Infrastructure Memo

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The City of Oregon City (City) has initiated a project to update the Oregon City Comprehensive Plan Map, Zoning Map and Municipal Code to allow planned housing and mixed-use development to occur in the Beaver Creek Road Concept Plan (BRCP) area. Updates will apply zoning and map designations for properties within the BRCP area.

As part of the BRCP Implementation project, 3J Consulting has been tasked to review the City's water distribution, sanitary sewer and stormwater master plans and comment on the adequacy of current and planned infrastructure to support the number of new dwelling units and employees that are projected in the BRCP and will be formalized through the zone change.

### ***Beaver Creek Road Master Plan***

The Beaver Creek Road Concept Plan (BRCP) is a guide to the creation of a complete and sustainable neighborhood in southeast Oregon City. The plan, adopted in 2008 and again in 2016, provides a framework for urbanization of 453 acres within the urban growth boundary including a diverse mix of uses (an employment campus north of Loder Road, mixed use districts along Beaver Creek Road, and two mixed use neighborhoods), all woven together by open space, trails, a network of green streets, and sustainable development practices. The plan has been carefully crafted to create a multi-use community linking Clackamas Community College, Oregon City High School, and adjacent neighborhoods together.

The BRCP includes Housing and Employment Estimates for the various land use categories:

Land Use Category	Number of Jobs	Number of Dwelling Units
North Employment Campus	3,678	-----
Mixed Employment Village	1,139	-----
Main Street	219	100
West Mixed Use Neighborhood	15	387
East Mixed Use Neighborhood	21	536
<b>Total</b>	<b>5,073</b>	<b>1,023</b>

Updated projections based on land use maps developed for this project to implement the BRCP estimate the number of dwelling units at 1,105 and jobs at 5,734. We do not consider the change reflected in the revisions to be significant and therefore do not impact the findings of this memorandum.

### **Zone Change Criteria**

The relevant criteria (17.68.020) for a zone change are set forth as follows:

*B. That public facilities and services (water, sewer, storm drainage, transportation, schools, police and fire protection) are presently capable of supporting the uses allowed by the zone, or can be made available prior to issuing a certificate of occupancy. Service shall be sufficient to support the range of uses and development allowed by the zone.*

This memorandum reflects a first look at the adequacy of current and planned infrastructure to meet the needs of future development. A more detailed look at existing conditions will be needed at the time of development to identify capital improvements needed to show consistency with the Master Plan.

### **Major Findings**

The Sanitary Sewer (2014), Stormwater (2019 Draft) and Water Distribution (2012) Master Plans were all created subsequent to initial adoption of the Beavercreek Road Concept Plan (2008). Each master plan incorporates the BRCP area into future capital improvement projections, but methodologies vary among plans. This conclusion was confirmed through a conversation with Oregon City Public Works Director, John Lewis.

#### *Sanitary Sewer Master Plan (SSMP)*

Figure 5-8 on page 5-11 of the 2014 Sanitary Sewer Master Plan refers specifically to the projected Housing and Employment Estimates on page 42 of the BRCP.

#### *Stormwater Master Plan (SWMP)*

The Draft 2019 Oregon City Stormwater Master Plan includes the BRCP area, which is part of the Newell Creek Basin, but does not identify any capital improvement projects specifically related to the BRCP. The Plan states that the eventual layout of the stormwater conveyance systems and management facilities will be crafted through the preliminary and final design process for the BRCP area.

#### *Water Distribution Master Plan (WDMP)*

The 2019 Technical Memorandum - Oregon City Water Distribution System Capital Improvement Program Update was prepared to provide an update to the 2012 WDMP, including a list of capital improvements. Page 21 of the memo specifically discusses Beavercreek Road development and defines the City's pressure zones that encompass the BRCP.

#### *Economic, Social, Environmental and Energy (ESEE) Analysis*

The ESEE consequences that can occur within the proposed MUC, NC, CI, R-5 and R-2 zoning will not result in a greater conflict to the Goal 5 resource mapped on the site over the current FU-10 zoning. The change in zoning from FU-10 to MUC, NC, CI, R-5 and R-2 may result in lesser amounts of environmental and energy consequences; however, MUC, NC, CI, R-5 and R-2 has opportunity to provide increased economic and social benefits. Mixed use centers allow City residents to live near their work, which tends to reduce vehicle use, which minimizes potential air, water and energy quality impacts.

The Goal 5 resources mapped on the site is protected under Chapter 17.49 Natural Resource Overlay District of the City's code of ordinances, regardless of site zoning. Chapter 17.49 of Oregon City code is compliant with Metro's Title 3 and 13 lands and the Statewide Planning Goal 5. Therefore, the potential for increased levels of impervious surfaces and vegetation loss associated with MUC, NC, CI, R-5 and R-2 development activities will be protected and if necessary mitigated through local permitting compliant with Chapter 17.49.



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## **Master Plan Summaries**

### ***Sanitary Sewer Master Plan***

A Sanitary Sewer Master Plan (SSMP) was prepared by Brown & Caldwell in November 2014. Section 5.2.3.4 of the SSMP focuses on the BRCP area. Table 5-8 of the SSMP references land use designations and the associated gross areas of the BRCP area to calculate sanitary flows to ultimately size pipe diameters and slopes.

Table 5-9 of the SSMP identifies the BRCP area Estimated Improvement Costs for Capital Improvement Plan (CIP) projects is \$15,580,000. This amount includes a 50% allowance for construction contingencies.

The CIP list specifically related to the BRCP area includes:

- Gravity Sewer Extensions (8"-15")
- Two (2) pump stations and associated force mains (BR-1 & BR-2)

Since the SSMP was published, improvements have been completed according to an email provided by Bob Balgos from the City dated March 25, 2019. These improvements include:

- 12" sanitary sewer extension south along Beavercreek Road near the north-end of the Oregon City High School property boundary.

Also identified in the email, City staff have identified construction proposed in 2019-2020:

- 12" sanitary sewer extension in conjunction with the Villages at Beavercreek Development located opposite Meyers Road on the east side of Beavercreek Road. The extension will be completed from the north-end of the Oregon City High School through the entire frontage of Villages at Beavercreek.

Further assessment of the CIP project amount will be necessary to include:

- Completed infrastructure upgrades such as Capital Improvement Projects (CIP), development etc.
- Anticipated infrastructure upgrades such as CIP projects or development such as Villages at Beavercreek
- Inflation and construction cost increases to current dollars.

### ***Stormwater Master Plan***

Five (5) Stormwater Master Plans (SWMP) were reviewed:

- Drainage Master Plan, OTAK 1988
- South End Basin Master Plan, Kampe Associates, Inc. 1997
- Caulfield Basin Master Plan, Kampe Associates, Inc. 1997
- Park Place Basin Master Plan, Kampe Associates, Inc. 1997
- Draft Oregon City Stormwater Master Plan. Brown and Caldwell, 2019

The BRCP area largely falls within the Newell Creek Basin. The Draft 2019 SWMP does not specifically reference the BRCP area, but the overall assessment does include recommendations for improvements for the Newell Creek Basin. The City's stormwater treatment and detention methods apply for all current and future development of the BRCP area.

Page 2-7 references the Beaver Creek Road Concept Plan and states that the concept plan "outlines basic assumptions for the type and quantities of stormwater infrastructure that may be required to develop the planning area. These assumptions are useful for fiscal planning, but the eventual layout of the stormwater conveyance systems and management facilities will be crafted through the preliminary and final design process for [the BRCP] area."



Low Impact Development (LID) Green Streets are identified for the Beavercreek Road Concept Plan area. The City is currently working on creating green street standards that will be applicable for both the South End and Beavercreek Concept Plan areas. These standards will be based on the identified street sections found in the Concept Plans and are being designed to meet the standards of the draft Storm water Manual. Adoption of these standards will occur in Fall 2019.

### ***Water Distribution Master Plan***

A Water Distribution Master Plan (WDMP) was prepared by West Yost Associates in January 2012. Although the WDMP does not specifically reference the BRCP area, the overall assessment does include recommendations for improvements that includes the UGB boundary that encompasses BRCP.

A Technical Memorandum - Oregon City Water Distribution System Capital Improvement Program Update (TM) was prepared by Murraysmith in March 2019. The TM was prepared to provide an update to the WMP produced in 2012, including a list of capital improvements and updated costs from 2009 to 2018 dollars. Page 21 of the memo specifically discusses BRCP area development and defines the City's pressure zones that encompass this area as Upper Zone and Fairway Downs Zone.

Table 17 of the TM identifies the updated CIP list and cost estimate including the improvements required for the City's Upper and Fairway Downs Zones for the BRCP area. The total estimated cost for CIP projects specific to BRCP area total \$14,018,000.

The CIP project list includes:

- New Upper Zone distribution
- New Fairway Downs distribution
- New PRV between Fairway Downs and Upper Zone
- New Fairway Downs Reservoir
- New Fairway Downs Pump Station
- New Fairway Downs Transmission
- Transfer existing Henrici transmission to Fairway Downs transmission

The City and Clackamas River Water (CRW) share the need to serve current and future customers at adjoining service area boundaries within the BRCP area.

A Technical Memorandum – Clackamas River Water / City of Oregon City Joint Engineering Analysis Water Service Dual Interest Area Technical Analysis (TM2) was prepared by Murraysmith in June 2018. TM2 identifies opportunities for shared infrastructure partnerships which could ultimately provide a more cost-effective solution to both the City and CRW, see Table 3 of TM2.

The City is preparing a concurrent study to ensure the City can serve the BRCP area in the case that the City and CRW are not able to agree on a partnership to serve the area.

### ***Economic, Social, Environmental and Energy (ESEE) Analysis***

As part of a Zone Change analysis, the city requires substantial evidence that the possibility of land use development activities allowed under the new zoning (MUC, NC, CI, R-5 and R-2) will not result in a greater impact on the Goal 5 resources mapped on the site over the existing Future Urban (FU-10) land use development activities.

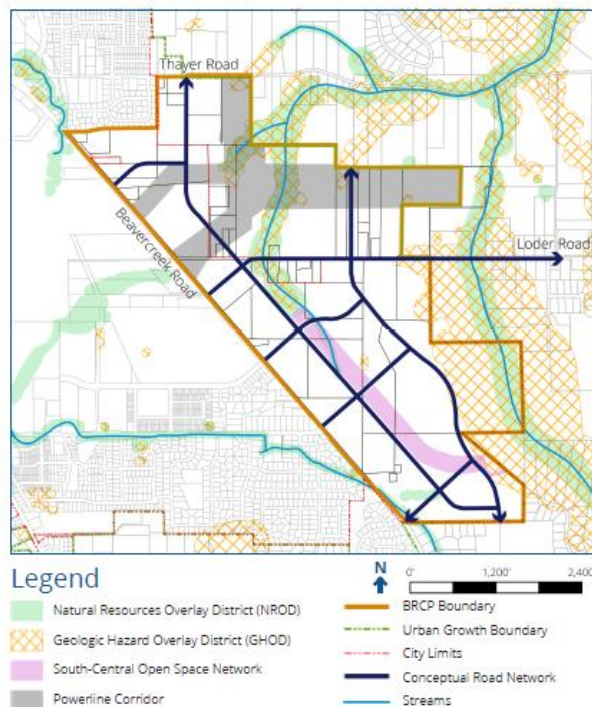
The ESEE analysis involves evaluating the potential tradeoffs associated with different levels of natural resource protection that could be established by the City. As required by the Goal 5 rule (OAR 660-015-0000(5)), the evaluation process involves identifying the consequences of allowing, limiting or prohibiting conflicting uses in areas containing significant natural resources. The rule requires that this analysis be completed before actions are taken to protect or not protect natural resources that are identified in inventory and determined to be significant. Specifically, the rule requires the following steps:



1. Identify conflicting uses – A conflicting use is a land use or activity that may negatively impact natural resources.
2. Determine impact area – The impact area represents the extent to which land uses or activities in areas adjacent to natural resources could negatively impact those resources. The impact area identifies the geographic limits within which to conduct the ESEE analysis.
3. Analyze the ESEE consequences – The ESEE analysis considers the consequences of a decision to either fully protect natural resources; fully allow conflicting uses; or limit the conflicting uses. The analysis looks at the consequences of these options for both development and natural resources.
4. Develop a program – The results of the ESEE analysis are used to generate recommendations or an “ESEE decision.” The ESEE decision sets the direction for how and under what circumstances the local program will protect significant natural resources.

### Beavercreek Road Concept Plan

#### Development Constraints



Based on information provided in Exhibit 3 Economic, Social, Environmental and Energy (ESEE) Phase 1 Analysis of Metro's April 2005 UGB Growth Management Functional Plan ordinance, the section below describes the potential conflicting uses associated with the proposed zone designations could have the greater potential to have an adverse effect on the functions and values of the Goal 5 resource mapped on properties located within the Beavercreek Road Concept Plan area which include Thimble Creek and an unnamed tributary to Thimble Creek. Note the zoning themselves are not conflicting uses.

It is the development activities and other disturbances permitted under the zoning that potentially conflicts with the functions and values associated with the Goal 5 resource. The City of Oregon City developed their Chapter 17.49 Title 13 regulations based on Metro's UGB Management Function Plan. Therefore, the ESEE analysis provided below is consistent with Oregon City's Goal 5 ordinance.

#### Economic Consequences

FU-10 – May provide increased adjacent property value. Large Lots associated with FU 10 zoning will retain more vegetation and tree cover than the new zones associated with the Beavercreek Road Concept Plan activities; however, does not provide an overall economic value to the community.

R-5 & R-2- These medium density and high density zones can provide a response to the known regional problem of limited housing supply and skyrocketing housing prices affecting the Portland Metro Area and Oregon City. There is a mismatch between supply and demand of housing that is leading to limited availability and affordability challenges for many households. Looking at the latest census data, in Oregon City, 71% of residential units are single-family detached homes, dominating the housing market. All other housing types make up 29% of the housing options, combined, ranging from manufactured homes and floating homes to 20-unit apartment complexes.



Housing prices are increasingly unaffordable, which is typically defined as spending more than 35% of household income on housing. Almost 24% of homeowners with a mortgage have unaffordable costs, and over 40% of renters can't afford housing costs. Overall, one in four households are struggling to pay for housing. Single-family detached homes, a traditional free-standing house with a yard and space for 3.2 children, dominate the supply but comes at a high cost that is increasingly out of reach, leading to homelessness in some cases. With smaller households more and more common, the city's needs don't match the homes available. Additional housing choices that include duplexes, tri-plexes, townhomes, apartments and cluster housing can provide alternatives to the predominate single family housing model found in Oregon City.

MUC, NC and CI – Enhances the potential for local economic development. The zone change supports Metro's Growth Concept Plan underlying goals to provide employment, income, and related tax benefits to local community.

Summary: While FU-10 may result in less vegetation removal, the MUC, ND, CI, R-2 and R-5 land uses provides a greater economic benefit to the community through increased housing options, employment and educational opportunities and reduced transportation facilities and utilities. These zones promote more efficient use of land, minimizing urban sprawl.

Therefore, the conflicting uses associated with MUC, NC, CI, R-5 and R-2 development activities provides a greater economic benefit, outweighing the FU-10 conflicting uses.

#### Social Consequences

FU-10 —Goal 5 resource provides natural stress relief to employment occupants. The R-2, R-5, ND, CI and MUC-2 land uses may also provide potential public educational and recreational benefit though passive open space viewing and the ability to dedicate future park space as development occurs within the BRCP area; however, there is a potential to reduce the scenic value.

Summary- Change in conflicting use zoning from FU-10 may provide an increased social benefit to Oregon City.

#### Environmental Consequences

FU-10—Impacts to Goal 5 resources and associated Impact Area (buffer) for FU-10 development may require: removal of native vegetation; non-native landscaping; pesticide and fertilizer use; and pets which tend to degrade habitat and water quality.

MUC, NC, CI, R-5 and R-2 can create larger building footprints than FU-10 which may result in increased vegetation removal; however, MUC, NC and CI offer decreased VMT (vehicle miles traveled) which reduces overall water quality impacts in the local watershed. Minimal light and glare into Goal 5 resource and buffer. Provides overall moderate to high imperviousness, low infrastructure requirements, and low to moderate overall natural landcover.

Summary: Due to smaller development footprints, disturbance activities associated with FU-10 conflicting uses may provide a lesser degree of impact to the Goal 5 resource and associated buffer than MUC, NC, CI, R-5 and R-2 conflicting use development activities. However, MUC, NC, CI, R-5 and R-2 stricter water quality standards, providing potential for overall lesser amounts of impact to the local watershed.

#### Energy Consequences

FU-10- Tends to retain more trees than other zoning, reducing air quality and temperature impacts. However, tends to create more infrastructure (utilities and roads) and greater travel distances which can have a negative energy consequence.

MUC, NC, CI, R-5 and R-2 - Energy efficient zoning because it decreases VMT (vehicle miles traveled) and overall infrastructure requirements. Potential to reduces the amount of overall development through shared



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parking. Shared parking areas have vegetated islands reducing imperviousness and negative energy consequences associated with temperature regulation.

Summary: MUC, NC, CI, R-5 and R-2 conflicting use development activities for energy consequences may result in lesser impact on the Goal 5 resource and associated buffer over FU-10 development activities.

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