



Oregon

Kate Brown, Governor

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NOTICE OF ADOPTED CHANGE TO A COMPREHENSIVE PLAN OR LAND USE REGULATION

Date: November 18, 2015
Jurisdiction: City of Cornelius
Local file no.: Ord 2015-06 and 2015-07
DLCD file no.: 002-15

The Department of Land Conservation and Development (DLCD) received the attached notice of adopted amendment to a comprehensive plan or land use regulation on 11/17/2015. A copy of the adopted amendment is available for review at the DLCD office in Salem and the local government office.

Notice of the proposed amendment was submitted to DLCD 46 days prior to the first evidentiary hearing.

Appeal Procedures

Eligibility to appeal this amendment is governed by ORS 197.612, ORS 197.620, and ORS 197.830. Under ORS 197.830(9), a notice of intent to appeal a land use decision to LUBA must be filed no later than 21 days after the date the decision sought to be reviewed became final. If you have questions about the date the decision became final, please contact the jurisdiction that adopted the amendment.

A notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR chapter 661, division 10).

If the amendment is not appealed, it will be deemed acknowledged as set forth in ORS 197.625(1)(a). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

DLCD Contact

If you have questions about this notice, please contact DLCD's Plan Amendment Specialist at 503-934-0017 or plan.amendments@state.or.us



NOTICE OF ADOPTED CHANGE TO A COMPREHENSIVE PLAN OR LAND USE REGULATION

FOR DLCD USE
002-15
File No.: {23993}
Received: 11/17/2015

Local governments are required to send notice of an adopted change to a comprehensive plan or land use regulation **no more than 20 days after the adoption.** (See [OAR 660-018-0040](#)). The rules require that the notice include a completed copy of this form. **This notice form is not for submittal of a completed periodic review task or a plan amendment reviewed in the manner of periodic review.** Use [Form 4](#) for an adopted urban growth boundary including over 50 acres by a city with a population greater than 2,500 within the UGB or an urban growth boundary amendment over 100 acres adopted by a metropolitan service district. Use [Form 5](#) for an adopted urban reserve designation, or amendment to add over 50 acres, by a city with a population greater than 2,500 within the UGB. Use [Form 6](#) with submittal of an adopted periodic review task.

Jurisdiction: City of Cornelius

Local file no.: **Ord 2015-06 and 2015-07**

Date of adoption: 11/16/15

Date sent: 11/17/2015

Was Notice of a Proposed Change (Form 1) submitted to DLCD?

Yes: Date (use the date of last revision if a revised Form 1 was submitted): 8-28-15

No

Is the adopted change different from what was described in the Notice of Proposed Change? Yes No

If yes, describe how the adoption differs from the proposal:

There were minor amendments made to wording of the ordinance based on City Attorney comments and a minor amendment made to the wording of the Exhibit F of each ordinance to provide better clarity. Substantively the there was no difference.

Local contact (name and title): Tim Franz, Associate Planner

Phone: 503 357 3011

E-mail: tfranz@ci.cornelius.or.us

Street address: 1355 Barlow Street

City: Cornelius

Zip: 97113

PLEASE COMPLETE ALL OF THE FOLLOWING SECTIONS THAT APPLY

For a change to comprehensive plan text:

Identify the sections of the plan that were added or amended and which statewide planning goals those sections implement, if any:

The Parks Master Plan (Appendix G), Sanitary Sewer Plan (Appendix H), Water Master Plan (Appendix I), Transportation System Plan (Appendix M) and Storm Drainage/Surface Master Plan (Appendix H) were amended. The amended sections implement Goals 8, 11 and 12.

For a change to a comprehensive plan map:

Identify the former and new map designations and the area affected:

- Change from _____ to _____ acres. A goal exception was required for this change.
- Change from _____ to _____ acres. A goal exception was required for this change.
- Change from _____ to _____ acres. A goal exception was required for this change.
- Change from _____ to _____ acres. A goal exception was required for this change.

Location of affected property (T, R, Sec., TL and address): Too many to list, see attached excel spreadsheet.

The subject property is entirely within an urban growth boundary

The subject property is partially within an urban growth boundary

If the comprehensive plan map change is a UGB amendment including less than 50 acres and/or by a city with a population less than 2,500 in the urban area, indicate the number of acres of the former rural plan designation, by type, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

If the comprehensive plan map change is an urban reserve amendment including less than 50 acres, or establishment or amendment of an urban reserve by a city with a population less than 2,500 in the urban area, indicate the number of acres, by plan designation, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

For a change to the text of an ordinance or code:

Identify the sections of the ordinance or code that were added or amended by title and number:

For a change to a zoning map:

Identify the former and new base zone designations and the area affected:

Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:

Identify additions to or removal from an overlay zone designation and the area affected:

Overlay zone designation:	Acres added:	Acres removed:
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Location of affected property (T, R, Sec., TL and address):

List affected state or federal agencies, local governments and special districts: ODOT, Metro, Clean Water Services, Hillsboro School District, and Forest Grove School District

Identify supplemental information that is included because it may be useful to inform DLCD or members of the public of the effect of the actual change that has been submitted with this Notice of Adopted Change, if any. If the submittal, including supplementary materials, exceeds 100 pages, include a summary of the amendment briefly describing its purpose and requirements.

The comprehensive plan map amendments were not a change from one designation to another, nor were they tied to a UGB expansion or Urban Reserve establishment. The subject properties have never had a comprehensive plan designation within the City of Cornelius. The change does not remove the Washington County Designation.

**ORDINANCE NO. 2015-06
CORNELIUS, OREGON**

AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE SOUTHEAST URBAN GROWTH BOUNDARY IN 2014

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the Metro Urban Growth Boundary for the benefit of the City of Cornelius.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The State of Oregon acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 after its adoption via Ordinance 500.
4. The City of Cornelius Water Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on March 1st 2004 via the adoption of Ordinance 846.
5. The City of Cornelius Sanitary Sewer System Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on September 20th, 2004 via the adoption of Ordinance 853.
6. The City of Cornelius Transportation System Plan (a component of the Comprehensive Plan) was deemed acknowledged on June 20th 2005 via the adoption of Ordinance 860.
7. The City of Cornelius Parks Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to serve the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements are necessary beyond those currently planned for the future and identified within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community relative to the Urban Growth Boundary expansion and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.
13. The 2014 Urban Growth Boundary Findings and Summary dated October 5, 2015 is incorporated via reference as findings in support of this ordinance.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

Section 1. The City of Cornelius Comprehensive Plan Map is amended as outlined in Exhibit A

Section 2. The City of Cornelius Parks Master Plan, Appendix G of the Comprehensive Plan is amended as outlined in Exhibit B.

Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit C

Section 4. The City of Cornelius Water Master Plan, Appendix I of the Comprehensive Plan is amended as outlined in Exhibit D.

Section 5. The City of Cornelius Transportation System Plan, Appendix M of the Comprehensive Plan is amended as outlined in Exhibit E.

Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit F.

Section 7. Prior to annexation of land within the SE UGB each applicant shall complete a wetland determination of the property.

Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of the Tualatin River.

Section 9. Upon adoption by the Cornelius City Council, this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this 16th day of November, 2015.

City of Cornelius, Oregon

By Jeffrey C. Dalin
Jeffrey C. Dalin, Mayor

ATTEST:

By: Debby Roth
Debby Roth, MMC, City Recorder-Treasurer

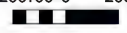
Exhibit A

Comprehensive Plan Map Amendments

**2014 UGB SE Expansion Area
Proposed Zoning Alternative
Draft 5-23-15**




200100 0 200 Feet



Comprehensive Plan / Zoning
Low-density Residential / R-7 (44 Acres)
Medium-density Residential / A-2 (167 Acres)

 TSP Proposed Signal

 TSP Collector Street



Low-density Residential / R-7

Medium-density Residential / A-2

Exhibit B

Amendments to the City of Cornelius Parks Master Plan (Appendix G)



CITY OF CORNELIUS

Amendments to 2009 Parks Master Plan:

Staff is recommending that the City of Cornelius Parks Master Plan be amended as set forth below:

1. Remove the portion of the proposed trail along the Council Creek corridor that coincides with private land ownership as show on attached Map 6.
2. Include the following improvements identified in Council Creek Master Plan as components of the City of Cornelius Parks Master Plan
 - a. The proposed east-west trail alignment along the northern railroad right-of-way as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - b. The proposed North-South trail alignment following 29th Avenue as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - c. Include Trailhead Locations as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - d. Include trail design cross sections as shown on the attached excerpt of the Council Creek Trail Master Plan.
3. Change the planned Community Park in the NE area (CP-1) to a Neighborhood Park (NP)

Exhibit C

Amendments to the City of Cornelius Sanitary Sewer Master Plan (Appendix H)

TECHNICAL MEMORANDUM

Date: August 10, 2015
To: Michael Cerbone, Community Development Director, City of Cornelius
Terry Keyes, City Engineer, City of Cornelius
From: Ken Condit, ^{KC}PE, through Keith Jones, AICP
Project: City of Cornelius Comprehensive Plan Amendment –
Urban Growth Boundary Expansion Areas
Subject: Conceptual Analysis of Wastewater Facilities Extensions

A. EXECUTIVE SUMMARY – KEY FINDINGS

1. Southeast Urban Growth Boundary Expansion Area

- a. The extension of sewer service to the Southeast Urban Growth Boundary (UGB) Expansion Area (South Area) will require a pump station and force main.
- b. A central location for the South-Area pump station appears feasible and offers the most flexibility in developing the layout of the future South-Area collector sewers.
- c. It is preferable to have the wastewater (WW) generated by the new school in the northeast portion of the South Area conveyed by gravity to the new pump station serving the South Area.
- d. Under this concept, only the northwest portion of the South Area will be served by direct, gravity flow to the City's existing sewer system.
- e. The WW generated in the South Area will be conveyed to the City's existing South Trunk Sewer under Ginger Street. The preferred point of connection to the South Trunk is at 20th Avenue and Ginger.

2. South Trunk Sewer Upgrade

- a. Our analysis confirms that the upper reaches of the South Trunk must be increased in size to handle existing and projected peak flows. These sewer reaches extend from Heather Street, through Free Orchards Park to Emerald Loop, and east along Ginger to 23rd Avenue.
- b. Within the scope of this study, we have identified 3,005 linear feet of the South Trunk that needs to be increased in size. The scope of our analysis excluded the South Trunk reaches downstream of Heather.

3. Northeast Urban Growth Boundary Expansion Area

- a. A conceptual sewer layout has been developed for the Northeast Urban Growth Boundary Expansion Area (North Area) to show the feasibility of extending gravity sewer service to the area.
- b. The conceptual layout divides the North Area into four sewer sub-basins that would convey WW to the existing North-South Trunk Sewer and/or the existing Council Creek Trunk Sewer.

B. INTRODUCTION

This technical memorandum describes the results of the analysis we performed to address sanitary sewer service extensions into the areas covered by the recent UGB expansion. The analysis was performed as part of the Comprehensive Planning process that is required for lands within the UGB.

Planning-level concepts have been developed to document the feasibility of providing WW facilities in the UGB expansion areas and connecting these facilities to the existing WW infrastructure. The projected impacts of connecting these service extensions to the City's existing sewer system have also been identified.

Clean Water Services (CWS) will need to conduct a separate facilities planning process to address the projected impacts on downstream WW components owned by that agency.

C. SOUTHEAST UGB EXPANSION AREA SERVICE CONCEPT

1. General Concept

- a. The sewer service concept for the South Area assumes future developments will generally follow existing local topography.
- b. Due to the general topography (sloping down toward the river), most of the South Area cannot be served by gravity sewers that would be tributary to the City’s existing sewer system. Therefore, gravity sewers for the South Area will need to be tributary to a future South Cornelius Pump Station (SCPS).
- c. The force main for the SCPS will discharge WW into the City’s existing South Trunk sewer located under Ginger Street (see Item 5 below for discharge options).
- d. The alignments of future South-Area gravity sewers and the SCPS force main will be affected by development patterns. Alignments shown in our conceptual layout are provided for illustration purposes.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 1,200 DU
 - Projected Institutional (High School) – 2,500 Students
 - Projected Commercial & Industrial – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - I/I contributions from future developments on currently undeveloped land:
 - Near-term I/I Contribution Factor (25 years for PS planning) – 1,650 gpd/acre (gpad)
 - Long-term I/I Contribution Factor (50 years for sewer planning) – 4,000 gpad
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 3,120 People
 - Projected Average WW Production – 209,000 Gallons per Day (gpd)
 - Projected Institutional (High School) – 30,000 gpd (12 gpd/student)
 - Projected Total Average WW Flow – 239,000 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 3.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 720,000 gpd
 - Peak Infiltration/Inflow Allowances
 - Near-term I/I Contribution – 297,000 gpd (1,650 gpad x 180 net acres)
 - Long-term I/I Contribution – 720,000 gpd (4,000 gpad x 180 net acres)
 - Net acreage excludes low-lying land along southerly boundary of South Area and half of school site that is assumed to be playing fields.
 - Projected Peak Flow –
 - Near-term (25-year) Planning for PS Capacity – 1,020,0000 gpd ≈ 710 gallons per minute (gpm)
 - Long-term (50-year) Planning for Sewer Capacity – 1,440,0000 gpd ≈ 1,000 gpm

3. South Cornelius Pump Station

- a. Concept-Level PS Capacity – 750 gpm (Preliminary Projection for Build-Out and Near-term I/D).
- b. Approximate Minimum Elevation for Development – 156-160 feet
- c. Approximate PS Floor Level (Top of Wetwell) – Elevation 154-158 feet
- d. Approximate Sewer Inverts at Wetwell – Elevation 140-142 feet
- e. Potential PS Sites Identified for Planning (see Exhibit 1)
 - Site 1 – Central Location near swale south of 26th Avenue
 - Site 2 – SE Location between 345th Avenue and Tualatin River
 - Site 3 – SW Location near swale outlet to river
- f. Site 1 is identified as the preferred site for planning purposes.
 - The more centralized site offers more flexibility in developing the tributary gravity sewers.
 - The central site helps to limit the maximum depth of the tributary gravity sewers.
 - The other two sites would probably require a lower inlet invert at the PS wetwell.

4. School Site Service Options

- a. Sewer service to the school can be extended from the new South-Area collection system or potentially from the existing City sewer system to the west (see Exhibit 1).
- b. Gravity Flow South: This option would have WW from the school conveyed by gravity into the sewer system for the South Area tributary to the future SCPS.
- c. Gravity Flow West:
 - This option would have WW from the school conveyed by gravity into the City's sewer system at the east end of existing Dogwood Street.
 - Flows through the Dogwood sewer eventually reach the South Trunk Sewer at 23rd Avenue.
 - The ability to serve the school site from Dogwood would depend on the actual location and elevation of the school, as well as the elevation, capacity and accessibility of the existing sewer in Dogwood.
- d. For planning purposes we show the school being served by the future South-Area sewers and SCPS. The reasons for this assumption are described below.
 - This approach provides a more conservative projection for the PS capacity.
 - There are concerns about accessibility for maintenance if sewer service were extended from Dogwood.
 - Because the WW contribution from the school is a small portion of the overall South-Area WW flow, future impacts on the existing South Trunk Sewer would likely be similar for either option.

5. South-Area Connection to City's Existing Sewer System

- a. South-Area WW can be discharged into the existing South Trunk Sewer at either 20th Avenue or Webb/26th Avenue (see Exhibit 1)
- b. It is preferable to connect to the South Trunk Sewer at 20th Avenue because that is further downstream and will not impact the existing pipe between 26th and 20th.
- c. The force main from the SCPS can discharge to a gravity sewer in the South Area that will extend west and then north to the intersection of Ginger and 20th as shown in Exhibit 1. Based on the preliminary projection for the SCPS capacity and minimum sewer slope, this South-Area outlet sewer will need to be 12 inches in diameter.

6. Assumptions for Conceptual Layout

- a. The layout assumes the gravity sewers tributary to the SCPS would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of about 6 feet.

D. IMPACT OF SOUTH AREA ON EXISTING SYSTEM

1. Scope

Our study of downstream impacts from the South Area was limited to an analysis of the effect the projected peak hourly flow from projected development will have on an upper reach of the existing South Trunk Sewer. This section of the existing sewer extends under Ginger Street, Emerald Loop and the Free Orchards City Park to Heather Street, near 15th Avenue (see Exhibit 1).

2. Background

The 2012 CWS West Basin Facilities Plan (WBFP) previously identified capacity deficiencies in most of the South Trunk Sewer and recommended replacement of about 3,800 feet of this upper reach with larger pipe sizes.

3. Purpose

The purpose of our impact analysis is to provide updated recommendations for pipe replacements. The update is based on the peak flow projections we generated from the current land-use plan for the South Area (see Section C above) and more-recent information on I/I contributions provided by CWS.

4. South Trunk Field Survey

A field survey was performed of the manholes along the upper reach of the South Trunk from Heather Street to 26th Avenue. This survey established current data for existing pipe sizes, invert elevations and manhole rim elevations that were used to generate an updated model of this upper reach. The data is shown in Appendix A.

5. South Trunk Analysis

- a. We evaluated the upper reach of the South Trunk by applying estimates of peak WW and infiltration/inflow contributions from currently developed areas and applying the projected near-term and long-term SCPS flow capacities at the preferred discharge point.
- b. We generated flow estimates from existing, tributary developments using criteria for WW generation listed in the WBFP and updated I/I criteria supplied by CWS. These estimates assume no redevelopment will occur in the tributary areas to significantly increase WW flows.
- c. Breakdowns of the estimated flows into the South Trunk are listed in Table 1 (following page) and shown in Exhibit 2. The projected peak WW flows from developed areas are similar to the WBFP, but do not coincide exactly. The projected I/I contributions are lower than the WBFP because CWS identified a lower, per-acre I/I contribution based on more-recent flow data the agency obtained for the South Trunk sub-basin.

6. Results of Analysis

The pipe replacements identified in our planning-level analysis of the South Trunk are listed in Table 2 (following page). The results of our analysis are further described in the following paragraphs.

- a. Our results generally coincide with the recommendations of the WBFP from Heather (MH #20045) upstream to 20th and Ginger (MH #20034). An 18-inch sewer pipe is needed to convey projected peak flows through these segments for both the near-term and long-term I/I contributions from the South Area.

The 18-inch pipe size assumes the existing, inverted siphons in Free Orchards Park will be replaced with straight, gravity sewers that will be laid aboveground across the low-lying swales. These sewers will need to be supported from pedestrian boardwalks or similar structures through these locations.

Pipe bursting could potentially be used to replace the existing buried 12-inch sewer with an 18-inch pipe. However, the existing South Trunk has a fairly shallow depth of burial under Emerald Loop and where Ginger transitions to 18th Avenue. Consequently, surface heaving could be a major concern with pipe bursting in this stretch. Installation methods will need to be further addressed at a later stage of project development.

- b. Our analysis indicates a 12-inch pipe is needed for the pipe reach in Ginger between 20th and 23rd Avenues based on the average slope. This conclusion contrasts with the WBFP recommendation for a 15-inch pipe along this reach. The difference may result from the lower I/I contribution provided by CWS and a shift of the South-Area sewer connection further downstream along the South Trunk.

It should be noted our survey of the MHs along the South Trunk shows one sewer length in this reach, between MHs #20031 and #20032, has a very mild slope of 0.07%. If this pipe were replaced through pipe bursting, it would continue to have a mild slope, which would reduce the pipe capacity and could promote solids deposition. This issue will need to be considered when evaluating installation methods for this reach.

SFR Land Use Factor = 1,200.0 gpad for existing developments (WBFP, TM 2.3, Table 2)										
Peaking Factor = 3.0 (multiplier applied to residential flow)										
Avg. I/I Contribution = 5,150.0 gpad avg. for Basin FG-6 (CWS Input - July 2015)										
Area	Inlet MH#	Acreage	Flows from Currently Developed Areas (gpm)				Future SCPS Flow (gpm)		Cumulative Flows (gpm)	
			Base WW	Peak WW	Peak I/I	Total Peak	Near Term	Long Term	Near Term	Long Term
1	22461	20	17	50	72	122	0	0	122	122
2	20030	85	74	223	304	527	0	0	649	649
3	20034	20	17	50	72	122	750	1,000	1,521	1,771
4	20036	55	46	138	197	335	0	0	1,856	2,106
5	20043	8	7	20	29	49	0	0	1,905	2,155
		188	160	481	672	1,155	750	1,000	1,905	2,155
									2.75 MGD	3.10 MGD

Pipe Reach	Upstrm MH#	Dnstrm MH#	Location	Existing Size (in.)	Proposed Size (in.)	Reach Length (ft)	Approx. Avg. Slope	Pipe Capacity (gpm) ***	
1	20030	20034	23th-20th Ave.	10	12	825	0.25%	775	
2	20034	20036	20th-19th Ave.	12	18	510	0.15%	1,780	
3	20036	20040	19th Ave-Emerald	12	18	805	0.22%	2,150	
4	20040	20043	Emerald-Fawn **	6, 10 & 12	18	420	0.28%	2,425	
5	20043	20045	Fawn-Heather **	6 & 10	18	445	0.34%	2,675	
Total Length - 3,005							Linear Feet		
12" Pipe - 825							Linear Feet		
18" Pipe - 2,180							Linear Feet		
** Free Orchards Park			*** New Pipe w/Max. Depth 80% of Pipe Diameter						

E. NORTH EXPANSION AREA SERVICE CONCEPT**1. General Concept:**

- a. The conceptual sewer layout would provide gravity service to the North Area. The layout is shown in Exhibit 3.
- b. The sewer layout is generally based on current development patterns (layout of lots, streets & railroad) with most sewers following an existing R-O-W.
- c. The gravity sewers would be divided into four separate sub-basins: Northwest, Northeast, Southwest and Southeast.
- d. All four sub-basins would be tributary to the Clean Water Services' Council Creek Trunk Sewer.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 480 DU
 - Projected Commercial – 6 acres
 - Projected Industrial & Institutional – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - Average flow contribution from commercial land – 1,000 gpd/acre (gpad)
 - Long-term I/I contribution from currently undeveloped land – 4,000 gpd/acre (gpad)
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 1,250 People
 - Projected Residential – 83,620 Gallons per Day (gpd)
 - Projected Commercial – 6,000 gpd
 - Projected Total Average WW Flow – 89,620 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 4.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 358,500 gpd
 - Peak Infiltration/Inflow Allowance – 300,000 gpd (4,000 gpad x 75 net acres)
 - Projected Peak Flow – 660,000 gpd \approx 460 gallons per minute (gpm)

3. Sewer Drainage Pattern

- a. NW Sub-basin
 - This sub-basin would drain to the west along the existing ODOT railroad R-O-W.
 - WW flows would discharge into an existing sewer that extends down from the Trailer Park to the existing North-South Trunk Sewer.
 - The east boundary of the NW sub-basin is limited by a highpoint in the RR line between 338th and 341st Avenues. East of this point the RR grade slopes down to Dairy Creek.

- b. NE Sub-basin
 - This sub-basin would serve areas that generally slope to the north and east toward Council Creek or Dairy Creek.
 - WW flows would discharge through a gravity sewer extending across the RR line and north along 334th Avenue to the existing Council Creek Trunk Sewer.
- c. SW Sub-basin
 - This sub-basin would generally drain west to the existing sewer along East Lane just north of Baseline Street. The service concept is laid out to minimize the amount of area served by the SW Sub-basin due to constraints posed by existing utilities in the Baseline R-O-W.
 - The existing sewer extending along Baseline is on the south side of the R-O-W. Gravity sewer service from the area north of Baseline is prevented from discharging into this existing sewer by the 72-inch water transmission main under the north side of Baseline.
 - Existing utilities along the north side of the Baseline R-O-W limit the space that would be available for a new parallel sewer on the north side of Baseline.
 - The mobile home park on East and West Lanes is currently served by existing gravity sewers.
- d. SE Sub-basin
 - This Sub-basin would serve a small area on the south side of Baseline, east of the current City limit.
 - The area would be served by an extension of the existing 8-inch sewer that extends along the south side of Baseline. The Baseline sewer discharges into the north-south trunk sewer.

4. Approximate Peak WW Flow Distribution to Existing Trunk Sewers

- a. Approximate flow to N-S Trunk (NW, SW & SE Sub-basins) – 290,000 gpd (60%)
- b. Approximate flow directly to Council Creek Trunk (NE Sub-basin) – 195,000 gpd (40%)

5. Assumptions for Conceptual Layout

- a. The layout assumes gravity sewers would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of 6 feet and a maximum depth of about 15 feet.

F. IMPACT OF NORTH AREA ON EXISTING SYSTEM

1. City’s Baseline Street Sewer

A small amount of additional WW from projected commercial development in the SE Sub-basin will discharge into the City’s existing sewer along the south side of Baseline. This projected WW contribution will be too minor to impact the existing sewer system.

2. North-South Trunk Sewer

The conceptual layout for the North Area would convey projected flows from the NW and SW Sub-basins into the existing CWS North-South Trunk Sewer. CWS records show this line extending from East Lane, just north of Baseline, up to the Council Creek Trunk Sewer. These records also show the line as an 8-inch pipe with most sections between manholes laid at a slope of 0.4%. The North-South Trunk sewer currently receives flows from collector sewers in Baseline and two other City collector sewers north of Baseline.

If future development is evenly distributed throughout the North Area, the NW and SW Sub-basins could carry more than half the projected flows. Since an 8-inch pipe with a 0.4% slope has a capacity of about 0.5 MGD before surcharging, future flows from the NW and SW Sub-basins could surcharge the line. Future CWS facilities planning efforts will need to model the line to verify whether the North-South Trunk will be adequate.

3. Council Creek Trunk Sewer

The sewer service concept for the North Area results in all future WW flows generated in the area being conveyed to the Council Creek Trunk Sewer. The NE Sub-basin will drain directly to this line and the other sub-basins will be conveyed to this line through the North-South Trunk Sewer.

CWS records show the Council Creek line as a 42-inch pipe between the North-South Trunk and 334th Avenue. This existing 42-inch pipe line would need to be at or very near capacity to be impacted at all by the projected WW flows from the North Area. Future CWS modeling of this line will need to address the potential for any impacts from the North Area.

G. ORDER-OF-MAGNITUDE ESTIMATE OF PROBABLE COST

As part of the comprehensive planning process, we developed estimates of the probable project costs for the SCPS, the associated PS force main and downstream South-Area gravity sewer, and the South Trunk Sewer replacements. We used cost information presented in the WBFPP as the basis for the estimates and then applied an inflation factor based on the 20-City Average Construction Cost Index (CCI) published by Engineering News Record (ENR).

The probable project costs include a 30% allowance for construction contingencies and a 35% allowance for non-construction costs (engineering, environmental and legal services and project administration).

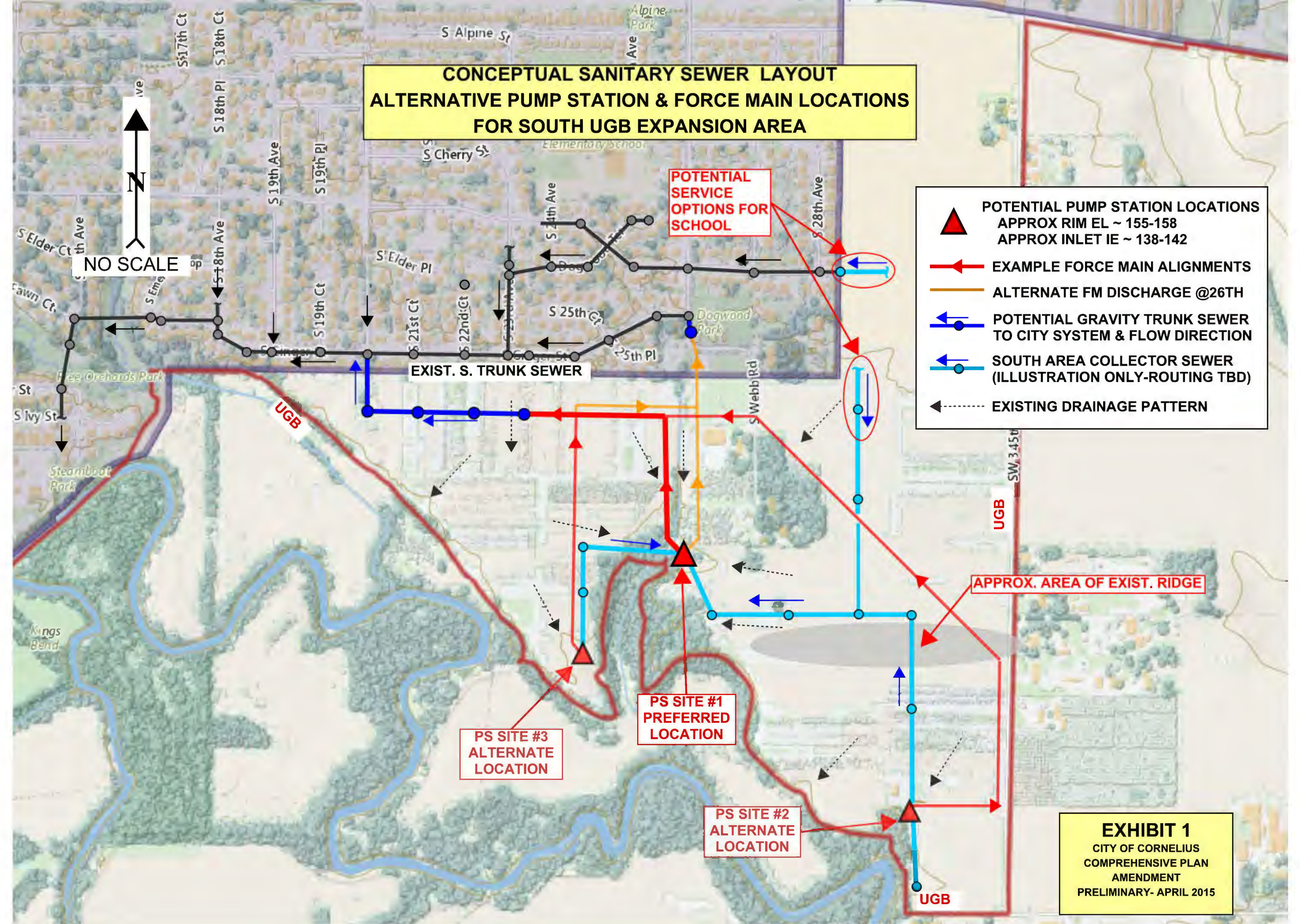
Table 3	
Estimates of Probable Project Costs (July 2015 **)	
Project Description	Probable Cost
750-gpm South Cornelius Pump Station	\$ 880,000
8-inch Force Main & 12-inch Downstream Gravity Sewer	\$ 650,000
South Trunk – Reach 1 Replacement (12-inch Sewer)	\$ 280,000
South Trunk – Reach 2-5 Replacement (18-inch Sewer)	\$ 1,450,000
Total Estimated Probable Project Costs	\$ 3,260,000

** July 2015 ENR CCI = 10,037

The level of detail of these cost estimates is consistent with Estimate Class 4 described by the Association for the Advancement of Cost Engineering International (Recommended Practice #18R-97, Rev. November 2011). Accordingly, the accuracy is anticipated to be within –25% to +35% of the actual cost.

The actual cost of the improvements will depend on project scope, design development, and actual market conditions at bid time. Costs will also depend on specific site conditions and other variable factors. More detailed estimates of the probable costs will need to be prepared as part of further project planning and design efforts.

**CONCEPTUAL SANITARY SEWER LAYOUT
ALTERNATIVE PUMP STATION & FORCE MAIN LOCATIONS
FOR SOUTH UGB EXPANSION AREA**



- POTENTIAL PUMP STATION LOCATIONS**
APPROX RIM EL ~ 155-158
APPROX INLET IE ~ 138-142
- EXAMPLE FORCE MAIN ALIGNMENTS**
- ALTERNATE FM DISCHARGE @26TH**
- POTENTIAL GRAVITY TRUNK SEWER TO CITY SYSTEM & FLOW DIRECTION**
- SOUTH AREA COLLECTOR SEWER (ILLUSTRATION ONLY-ROUTING TBD)**
- EXISTING DRAINAGE PATTERN**

EXHIBIT 1
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

SOUTH TRUNK SEWER EVALUATION ESTIMATED TRIBUTARY AREAS & FLOWS

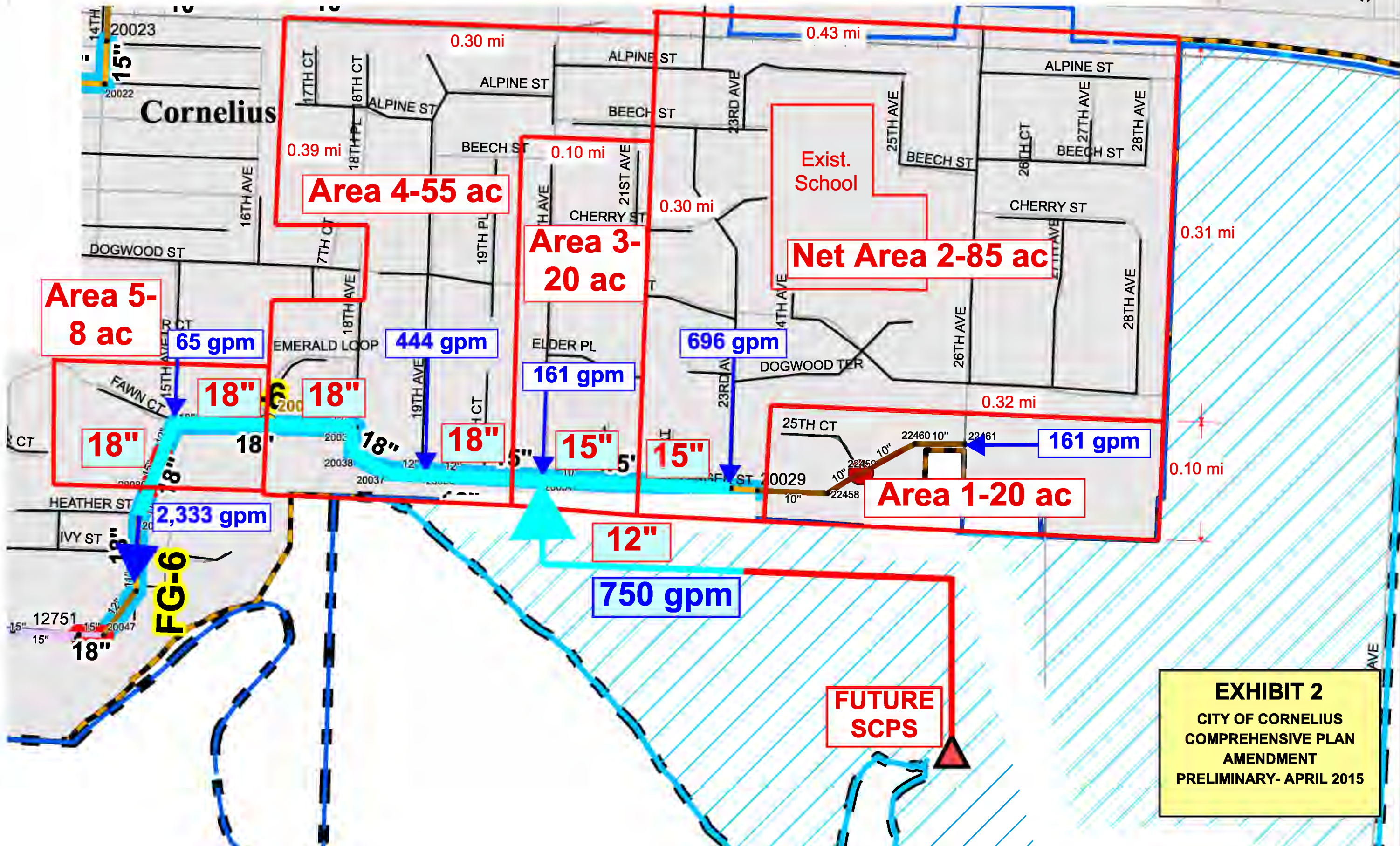
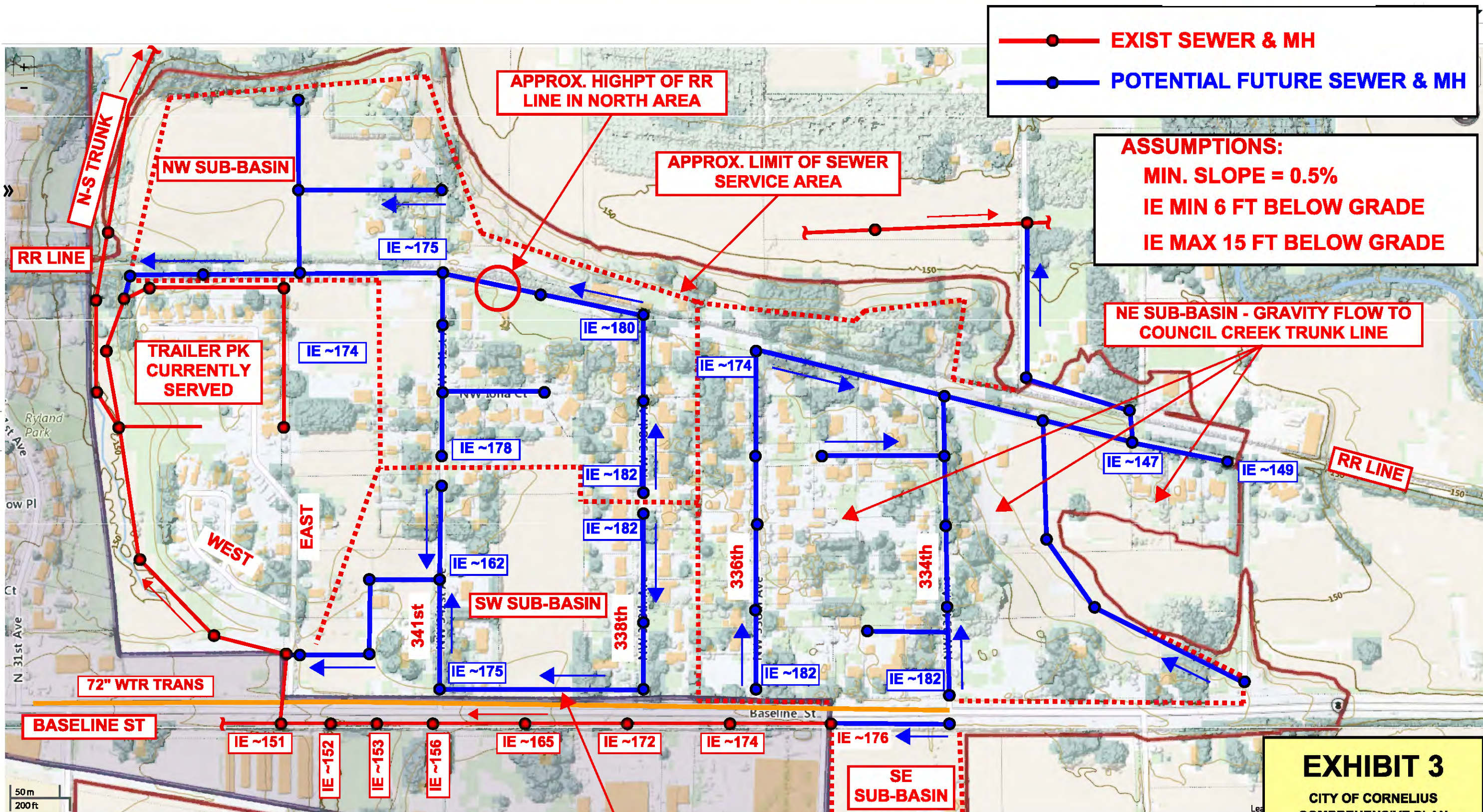


EXHIBIT 2
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

CONCEPTUAL SANITARY SEWER LAYOUT FUTURE SERVICE FOR NORTH UGB EXANSION AREA



—●— **EXIST SEWER & MH**
—●— **POTENTIAL FUTURE SEWER & MH**

ASSUMPTIONS:
 MIN. SLOPE = 0.5%
 IE MIN 6 FT BELOW GRADE
 IE MAX 15 FT BELOW GRADE

NE SUB-BASIN - GRAVITY FLOW TO COUNCIL CREEK TRUNK LINE

50m
200ft

MIN. ALLOWABLE SEWER SLOPES: **
 8" DIA 0.40%
 10" DIA 0.28%
 12" DIA 0.22%
 ** FOR 2.0 FPS VELOCITY

POTENTIAL PARALLEL SEWER IN NEW EASEMENT TO AVOID HWY CROSSINGS & UTILITIES

EXHIBIT 3
 CITY OF CORNELIUS
 COMPREHENSIVE PLAN
 AMENDMENT
 PRELIMINARY- APRIL 2015

APPENDIX A

**City of Cornelius
South Trunk Sewer Survey Data**

Model Pipe#	MH#	Location	Rim Elev	MH Inlet			MH Outlet			Run	Slope (ft/ft)
				Size & Mat'l	Dip	IE	Size & Mat'l	Dip	IE		
6122	22461	26th/Ginger	175.77	10"PVC(S)	10	165.77	10"PVC(W)	10.1	165.67	216.61	0.0028
6124	22460		173.21	10"PVC(E)	8.14	165.07	10"PVC(SW)	8.25	164.96	263.44	0.0022
6090	22459	25th/Ginger	174.91	10"PVC(NE)	10.53	164.38	10"PVC(SW)	10.7	164.21	168.04	0.0035
6088	22458		174.25	10"PVC(NE)	10.62	163.63	10"PVC(W)	10.79	163.46	307.38	0.0034
1	20029		173.35	10"PVC(E)	10.95	162.4	10"CSP(W)	11.05	162.3	108.56	0.0027
2	20030	23rd/Ginger	173.23	10"CSP(E)	11.22	162.01	10"CSP(W)	11.29	161.94	260.11	0.0029
3	20031		174.14	10"CSP(E)	12.95	161.19	10"CSP(W)	13.09	161.05	156.34	0.0007
4	20032		173.21	10"CSP(E)	12.27	160.94	10"CSP(W)	12.39	160.82	122.03	0.0029
5	20033		172.54	10"CSP(E)	12.07	160.47	10"CSP(W)	12.19	160.35	282.94	0.0028
6	20034	20th/Ginger	170.84	10"CSP(E)	11.29	159.55	12"CSP(W)	11.39	159.45	254.93	0.0014
7	20035		168.6	12"CSP(E)	9.5	159.1	12"CSP(W)	9.58	159.02	254.70	0.0017
8	20036	19th/Ginger	166.61	12"CSP(E)	8.03	158.58	12"CSP(W)	8.13	158.48	149.79	0.0019
9	20037		163.79	12"CSP(E)	5.6	158.19	12"CSP(NW)	5.7	158.09	152.39	0.0026
10	20038		162.04	12"CSP(SE)	4.34	157.7	12"CSP(N)	4.4	157.64	118.03	0.0038
11	20039	18th/Emerald	164.47	12"CSP(S)	7.28	157.19	12"CSP(W)	7.35	157.12	383.81	0.0019
12	20040	Emerald	160.72	12"CSP(E)	4.33	156.39	12"CSP(W)	4.38	156.34	22.56	0.0080
	20042	Emerald	161.16	12"CSP(E)	5	156.16	10" ??(W) 10" ??(W)	5.15 4.82	156.01 156.34		
13 & 15	<i>(Ignore MH# 20079 - blowoff)</i>									394.50	0.0023
	20043	15th/Fawn	160.34	10"CSP(E)	5.25	155.09	12"CSP(SW)	5.3	155.04		
14				10"CSP(E)	5.25	155.09				130.08	0.0035
	20044	Sou. of Fawn	159.08	12"CSP(NE)	4.5	154.58	12"CSP(SW) 8"CSP(SW)-??	4.4 NOT SURVEYED	154.68		
213 & 16	<i>(Ignore MH# 20079 - blowoff)</i>									313.56	0.0040
	20045	Heather	157.95	12"CSP(NE) 8"CSP(NE)	4.51 4.55	153.44 153.40	10"CSP(S)	4.53	153.42	(Should be 12" Out?)	
???	64144		160.03	12"CSP(N)	6.98	153.05	12"CSP(S)	7.05	152.98	141.59	0.0026

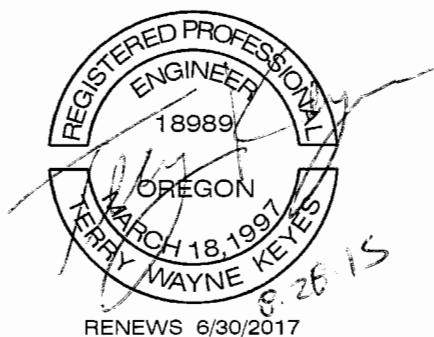
Exhibit D

Amendments to the City of Cornelius Water Master Plan (Appendix I)

Cornelius Urban Growth Boundary Expansion

Water Plan

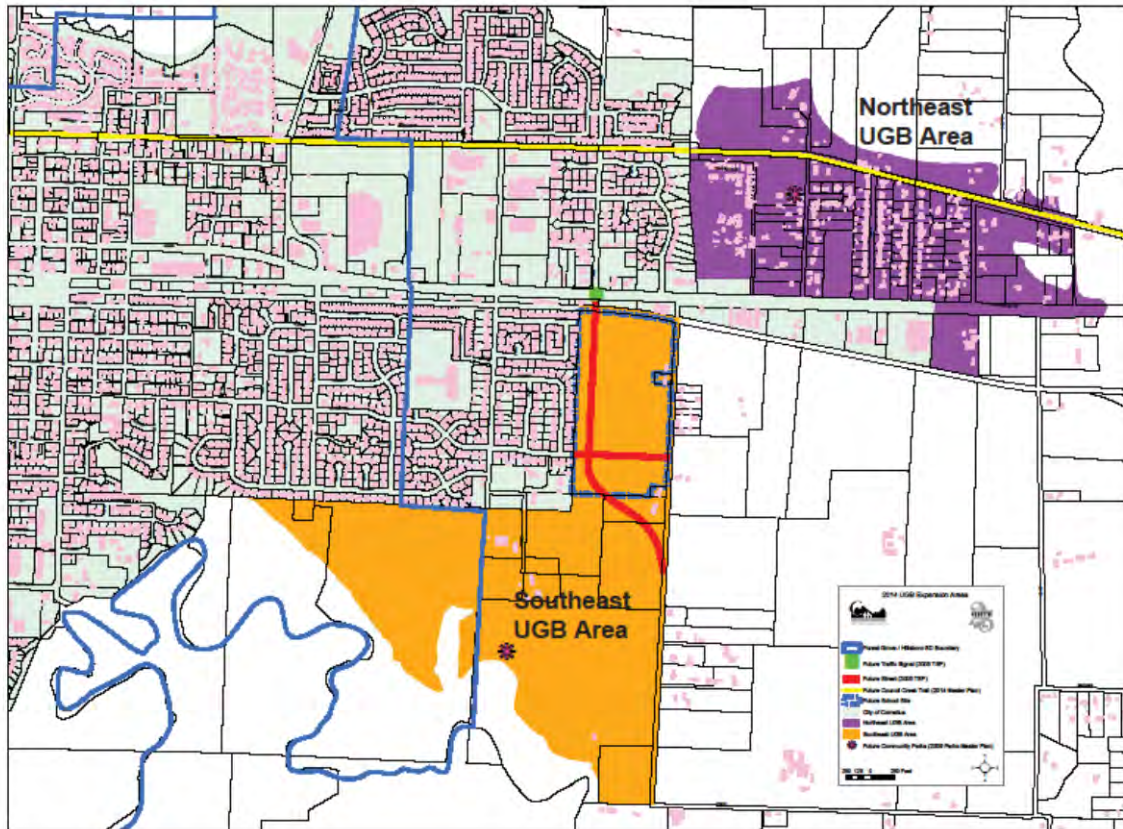
August 28, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



Water Infrastructure – Northeast UGB Area

The City of Hillsboro currently provides water service to the Northeast UGB. Attachment 1 shows the current system. While Hillsboro and Cornelius have had very preliminary talks regarding Cornelius taking over the water system in this area, the City of Cornelius has been cool to the idea because much of the system in the area is undersized and does not meet current standards.

Attachment 2 shows the improvements that are likely needed to bring the water system in this area up to City of Cornelius standards. Most of the improvements involve upgrading the existing lines to 8" and adding fire hydrants. The line on 341st is shown as a 12" line based on the assumption that without a looped system, any significant development north of the railroad will need a 12" line to achieve adequate flow.

The cost of bringing the water infrastructure in this area up to current standards is approximately:

$$4,000 \text{ LF @ } \$130/\text{LF} = \mathbf{\$520,000}$$

This cost cannot be justified based on the limited amount of water user fee revenue the area would produce. Therefore, if the Northeast UGB area is annexed to the City of Cornelius, the annexation will likely occur in small chunks as development occurs. With each annexation, Cornelius will take over the portion of the water system needed to serve that area. The development necessitating the annexation will be primarily responsible for improving the annexed part of the Hillsboro water system to Cornelius standards.

Storage needs for the Northeast UGB area can be easily handled by the City's current 1.5 MG (million-gallons) above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Flow needs for this area can be handled from three sources.

1. 12" Cornelius main line on the north side of Baseline that currently ends at East Lane
2. 12" Cornelius main line on the south side of Baseline that currently ends at the Coastal Farm Store at about 336th Avenue
3. Existing but unused transfer station from the Hillsboro 72" transmission line in Baseline to the Cornelius system at East Lane

In summary, the City of Cornelius can easily serve the Northeast UGB area. The primary concern is the fact that most pipes in this area are substandard. Bringing this area up to current standards is an expensive proposition that is not currently programmed into the Cornelius water rate structure. Therefore, improvements to the water infrastructure in this area will be required at the time of development. Until areas are annexed into the City the system within this area will remain within Hillsboro's service district and will be maintained and operated by Hillsboro.

Water Infrastructure Needs – Southeast UGB Area

The Southeast UGB area represents a clean slate in that the area contains almost no existing water infrastructure. The only public water facility in the area is a 2" plastic line from Baseline south along 345th to serve approximately 8 residents within ¼ mile of Baseline. Since most of these residents are outside the UGB expansion area, the City does not intend to upgrade this 2" plastic line in the foreseeable future. However, the south end of this line may be looped into the new water infrastructure in the UGB area to protect against an emergency such as a line break.

When developed, the Southeast UGB area will be served by 12" mains under the planned collector streets. The collector streets are expected to include: 29th south of Baseline, 26th and 20th south of Ginger, Dogwood east of 28th, and a new east-west collector south of the current city limits that connects 20th, 26th and 29th. All local streets will be underlain with 8" water mains, the minimum standard required by Cornelius.

In addition, to provide adequate flow and pressure to this area at build-out, some improvements in the City's existing water system may be required. The needed improvements will be determined when the City completes its water master plan update later this year. However, the improvements to the existing system that are likely to be needed at full development of the UGB area include:

- 12" line to replace existing 8" line in Dogwood from 18th to 20th
- 12" line to replace 8" line in 20th from Dogwood to Southeast UGB area
- 12" line to replace 8" line in 26th from Dogwood to Southeast UGB area

These improvements are not needed initially, but will be required as the area nears build-out. When the City's water master plan update is completed in late 2015, the amount of development the existing system can support will be determined. For development that occurs before the master plan update is complete, the developer will be responsible for proving that the existing system can provide adequate flow and pressure to the UGB area. If adequate flow and pressure cannot be attained, the developer will need to make the improvements noted above.

Storage needs for the Southeast UGB area can be handled by the City's current 1.5 MG above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Water Infrastructure Costs – Southeast UGB Area

All the new water mains in the Southeast UGB area will be installed and funded by developers. However, the City must pay for oversizing of lines greater than 8" size. In other words, while the developers are responsible for funding the installation of 8" lines under all the streets in this area, the City must fund the additional cost of 12" lines where they are needed. The cost of this upsizing of lines to 12" is estimated to be:

12" oversize cost in UGB area = ~10,000 LF @ \$20/LF = \$200,000

Furthermore, the City must fund improvements to piping outside the UGB area. These improvements are listed above and will cost approximately:

12" replacement lines inside UGB area = ~2,200 LF @ \$140/LF = \$300,000

Water SDCs from the southeast UGB area are expected to be:

1,100 single family residences @ \$3,884 SDC per residence = ~\$4M

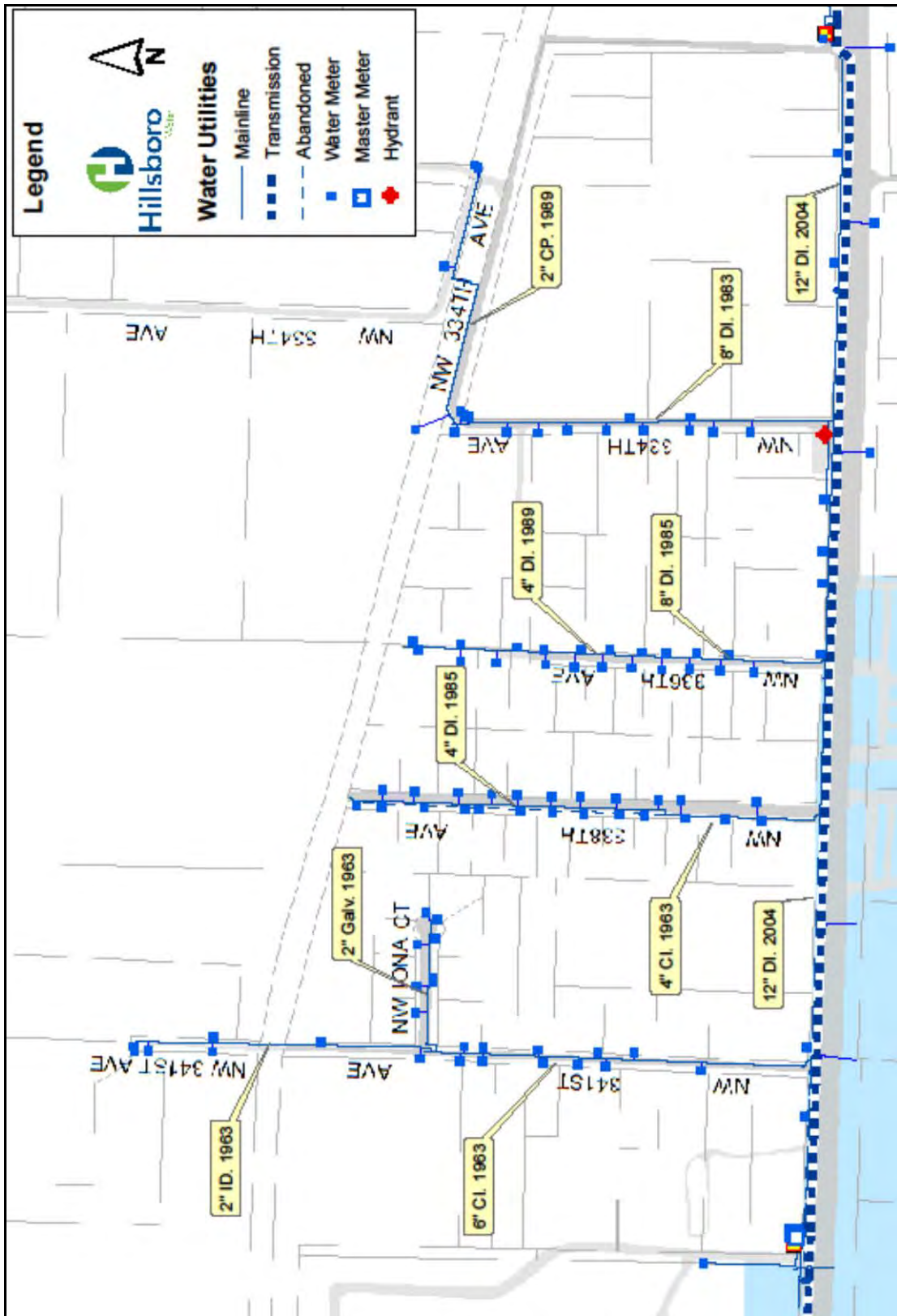
Therefore, the water SDCs captured from the new development in the southeast UGB area are more than adequate to fund the improvements to pipes needed to serve this area.

Recommendations

In the Northeast UGB area, staff recommends the area continue to be served by the City of Hillsboro until parcels are annexed. At the time parcels are annexed into the City of Cornelius, Cornelius should take over the portion of Hillsboro's system needed to serve the annexed parcel. Developers should pay for all improvements needed to bring lines up to City of Cornelius standards.

In the Southeast UGB area, developers should design and install all water mains. The City shall pay for oversizing mains under collectors to 12" from the 8" standard size. The City shall also design, build, and fund improvements necessary to the water mains within the current City boundaries.

Attachment 1 – Hillsboro Water System in Northeast UGB Area



Attachment 2 – Cornelius Water Improvement Needs for Northeast UGB Area

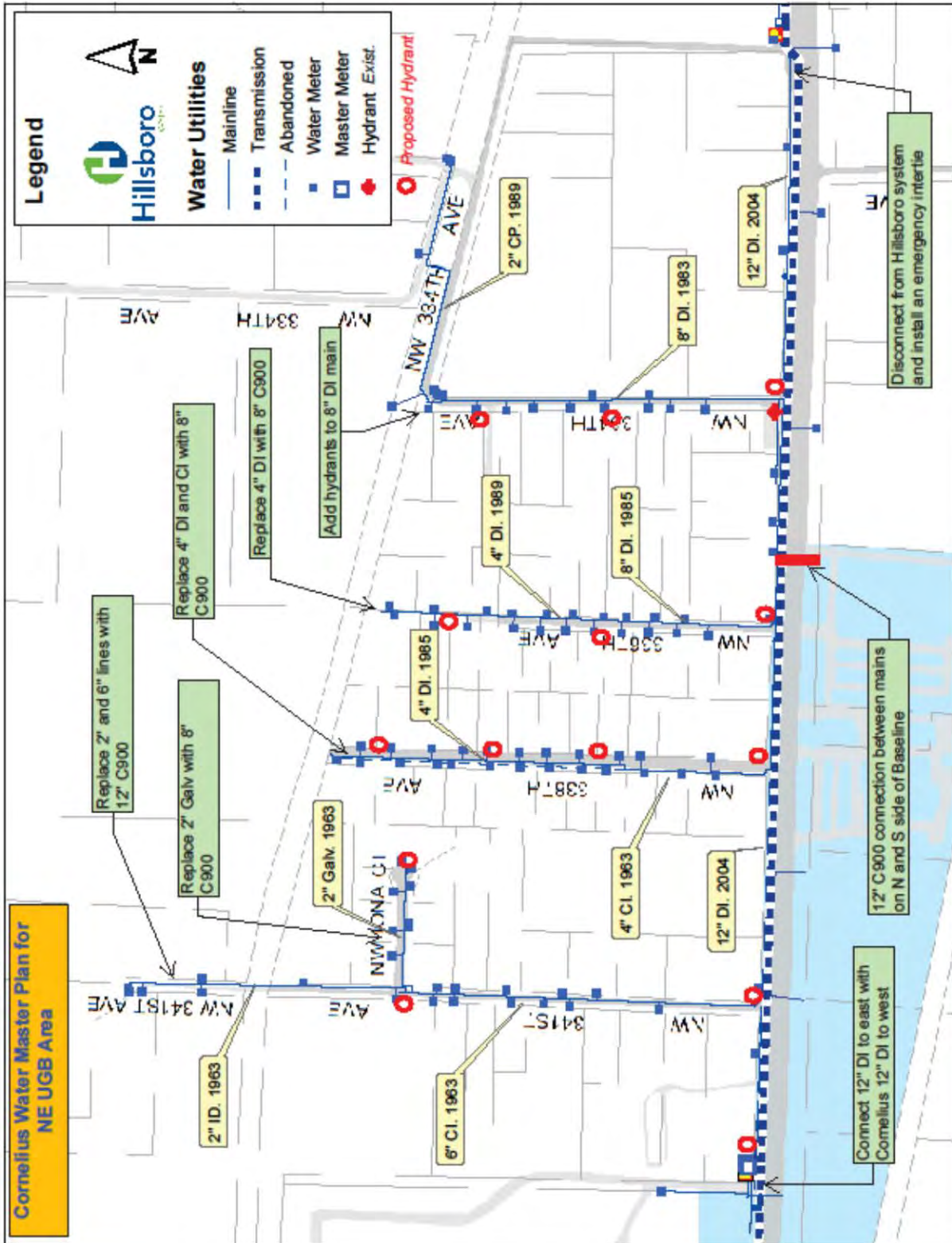


Exhibit E

Amendments to the City of Cornelius Transportation System Plan (Appendix M)

RECOMMENDATIONS

Transportation Planning Rule Findings

The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. Further analysis of Tualatin Valley Highway west of 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety.

Local Improvements

Local roadway projects would be required to support the UGB expansion areas and provide adequate access and internal circulation. Based on the City’s functional classification designations¹³ and the future 2040 PM peak hour volume forecasts, recommended local improvements were identified as shown in Table 11. Planning level cost estimates were developed for each roadway project based on the collector cross-section with parking on both sides of the street (shown in Figure 9). If the collector facilities were constructed with a narrower cross-section (shown in Figures 10 and 11) the costs would be lower.

Table 11: Local Improvements to Support UGB Expansion

Project	Description	Planning Level Cost Estimate
20 th Avenue Extension	Construct a collector facility south of Ginger Street then east to 29 th Avenue extension	\$7,450,000
26 th Avenue Extension	Construct a collector facility south of Ginger Street to the 20 th Avenue extension east-west alignment	\$1,300,000
29 th Avenue Extension	Construct a collector facility south of Tualatin Valley Highway to realignment with 345 th Avenue, install railroad crossing treatments on 29 th Avenue, close railroad crossing on 345 th Avenue	\$6,800,000

¹³ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005, Figure 8-3.



Dogwood Street Extension	Construct a collector facility east to 345 th Avenue (east UGB expansion area boundary)	\$1,600,000
29 th Avenue/Tualatin Valley Highway Signal	Install a traffic signal, interconnect with adjacent railroad crossing	\$600,000

Note: Collector facility cost estimate based on Figure 9 cross-section

The remaining roadways needed to support future development would function as local streets. The preliminary alignment for the recommended collector facilities are shown on Figure 7. These alignments are conceptual and will be refined with further engineering analysis prior to construction.

Policies and Standards

New policies and standards should be adopted to support the UGB expansion areas:

- Development should be limited to 130 residential units connecting to 20th Avenue and 260 residential units connecting to 26th Avenue prior to construction of the 29th Avenue connection to Tualatin Valley Highway. With a roadway connection between 20th and 26th Avenue, a combined development limit of 390 residential units should be applied.
- Roadway and trail cross-sections shown in Figures 9 to 14 should be incorporated into the Cornelius TSP.

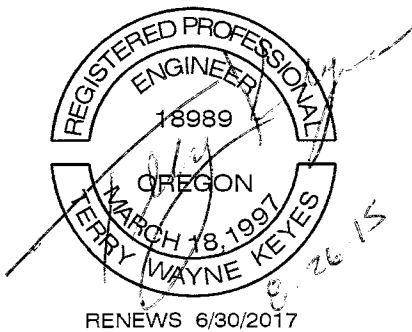
Exhibit F

Amendments to the City of Cornelius Storm Drainage/Surface Water Master Plan (Appendix H)

Cornelius Urban Growth Boundary Expansion

Stormwater Plan

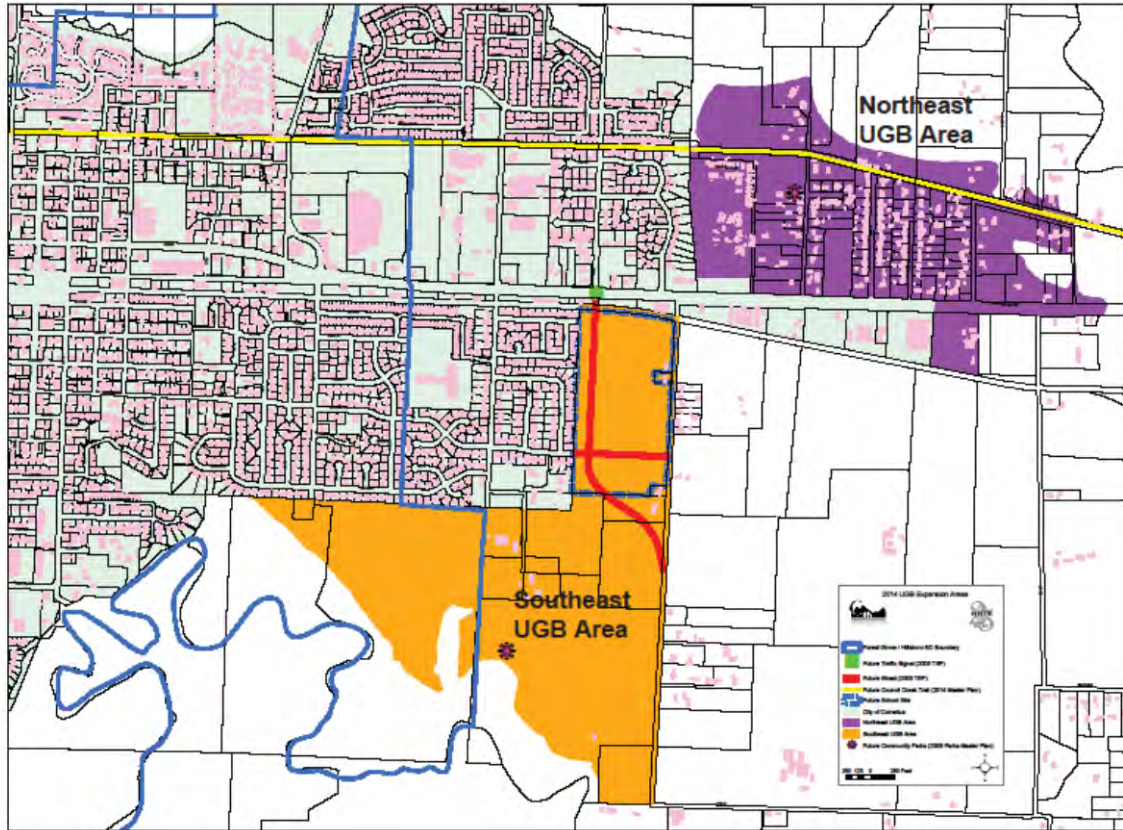
August 26, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



The terrain in these two areas is generally flat. The Northeast area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek.

The Southeast area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River.

Existing Stormwater Facilities

The only existing stormwater facilities in the Northeast UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The stormwater facilities in the Southeast UGB area are limited to the roadside ditches on 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs, these facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards.

Stormwater Standards Overview

Any new development in the UGB expansion areas must at a minimum meet the current *Design and Construction (D&C) Standards for Sanitary Sewer and Surface Water Management* issued by CWS.

Some UGB expansion areas in Washington County, notably Tigard's River Terrace and the unincorporated North Bethany, created additional stormwater standards that go beyond the D&C Standards. In the case of River Terrace, severe erosion in the stream corridors coming off the south side of Bull Mountain necessitated a more stringent approach to stormwater control in the area.

In North Bethany's case, CWS desired to incorporate extensive LIDA (low-impact development practices) into the area and pre-built a number of large regional facilities. This was deemed more desirable to the creation of individual stormwater facilities in each development phase.

One downside of the North Bethany approach is that CWS has had difficulty keeping ahead of development with new facilities. Also, by CWS constructing regional facilities rather than each developer constructing their own facilities, North Bethany has a large stormwater fee or system development charge that is unique in Washington County.

Finally, the D&C Standards issued by CWS are expected to change significantly as a result of a new MS4 permit from the State of Oregon, Department of Environmental Quality (DEQ) to CWS. One change in the new MS4 permit will be an increased level of treatment for stormwater. However, the most significant change in the standards is expected to be a requirement to deal with hydro-modification. Instituting this type of requirement is expected to create the need for very large detention and retention facilities on new development sites.

Cornelius Plan

Because Cornelius does not face the problems Tigard does on Bull Mountain and because the City does not have the staff to plan, design, and build regional facilities, as CWS is doing in North Bethany, Cornelius will require developers to meet the current stormwater standards issued by CWS. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff.

The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight that the City does not have funding to undertake.

Costs

Since developers will be responsible for designing and constructing stormwater facilities in the new UGB areas, the City will incur zero capital costs for these systems. The City will, however, incur, increased maintenance costs long-term, but these costs are funded by monthly stormwater fees payable by the new residents and businesses in the area.

Recommendations

Staff recommends the City use the CWS D&C Standards that are applicable at the time of development to address stormwater issues in the UGB areas. Staff further recommends, the following two conditions be placed on all new development in these areas:

1. Prohibition on the use of proprietary treatment systems for treatment on parts of the system that the City must maintain in the future.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities being used to meet subdivision stormwater quality or quantity requirements.

**ORDINANCE NO. 2015-07
CORNELIUS, OREGON**

AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE NORTHEAST URBAN GROWTH BOUNDARY IN 2014

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the Metro Urban Growth Boundary for the benefit of the City of Cornelius.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The State of Oregon acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 after its adoption via Ordinance 500.
4. The City of Cornelius Water Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on March 1st 2004 via the adoption of Ordinance 846.
5. The City of Cornelius Sanitary Sewer System Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on September 20th, 2004 via the adoption of Ordinance 853.
6. The City of Cornelius Transportation System Plan (a component of the Comprehensive Plan) was deemed acknowledged on June 20th 2005 via the adoption of Ordinance 860.
7. The City of Cornelius Parks Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to serve the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements may be necessary beyond those currently planned for the future and identified within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community relative to the Urban Growth Boundary expansion and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.
13. The 2014 Urban Growth Boundary Findings and Summary dated October 5, 2015 is incorporated via reference as findings in support of this ordinance.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

Section 1. The City of Cornelius Comprehensive Plan Map is amended as outlined in Exhibit A

Section 2. The City of Cornelius Parks Master Plan, Appendix G of the Comprehensive Plan is amended as outlined in Exhibit B.

Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit C

Section 4. The City of Cornelius Water Master Plan, Appendix I of the Comprehensive Plan is amended as outlined in Exhibit D.

Section 5. The City of Cornelius Transportation System Plan, Appendix M of the Comprehensive Plan is amended as outlined in Exhibit E.

Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit F.

Section 7. Prior to annexation of land within the NE UGB each applicant shall complete a wetland determination of the property.

Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of Council Creek and/or its tributaries.

Section 9. Upon adoption by the Cornelius City Council, this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this 16th day of November, 2015.

City of Cornelius, Oregon

By: Jeffrey C. Dalin
Jeffrey C. Dalin, Mayor

ATTEST:

By: Debby Roth
Debby Roth, MMC, City Recorder-Treasurer

Exhibit A

Comprehensive Plan Map Amendments

Exhibit B

Amendments to the City of Cornelius Parks Master Plan (Appendix G)



CITY OF CORNELIUS

Amendments to 2009 Parks Master Plan:

The following amendments are recommended to the 2009 Parks Master Plan, Appendices G of the Comprehensive Plan:

1. Remove the portion of the proposed trail along the Council Creek corridor that coincides with private land ownership as show on attached Map 6.
2. Include the following improvements identified in Council Creek Master Plan as components of the City of Cornelius Parks Master Plan
 - a. The proposed east-west trail alignment along the northern railroad right-of-way as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - b. The proposed North-South trail alignment following 29th Avenue as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - c. Include Trailhead Locations as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - d. Include trail design cross sections as shown on the attached excerpt of the Council Creek Trail Master Plan.
3. Change the planned Community Park in the NE area (CP-1) to a Neighborhood Park (NP)

Exhibit C

Amendments to the City of Cornelius Sanitary Sewer Master Plan (Appendix H)

TECHNICAL MEMORANDUM

Date: August 10, 2015
To: Michael Cerbone, Community Development Director, City of Cornelius
Terry Keyes, City Engineer, City of Cornelius
From: Ken Condit, ^{KC}PE, through Keith Jones, AICP
Project: City of Cornelius Comprehensive Plan Amendment –
Urban Growth Boundary Expansion Areas
Subject: Conceptual Analysis of Wastewater Facilities Extensions

A. EXECUTIVE SUMMARY – KEY FINDINGS

1. Southeast Urban Growth Boundary Expansion Area

- a. The extension of sewer service to the Southeast Urban Growth Boundary (UGB) Expansion Area (South Area) will require a pump station and force main.
- b. A central location for the South-Area pump station appears feasible and offers the most flexibility in developing the layout of the future South-Area collector sewers.
- c. It is preferable to have the wastewater (WW) generated by the new school in the northeast portion of the South Area conveyed by gravity to the new pump station serving the South Area.
- d. Under this concept, only the northwest portion of the South Area will be served by direct, gravity flow to the City's existing sewer system.
- e. The WW generated in the South Area will be conveyed to the City's existing South Trunk Sewer under Ginger Street. The preferred point of connection to the South Trunk is at 20th Avenue and Ginger.

2. South Trunk Sewer Upgrade

- a. Our analysis confirms that the upper reaches of the South Trunk must be increased in size to handle existing and projected peak flows. These sewer reaches extend from Heather Street, through Free Orchards Park to Emerald Loop, and east along Ginger to 23rd Avenue.
- b. Within the scope of this study, we have identified 3,005 linear feet of the South Trunk that needs to be increased in size. The scope of our analysis excluded the South Trunk reaches downstream of Heather.

3. Northeast Urban Growth Boundary Expansion Area

- a. A conceptual sewer layout has been developed for the Northeast Urban Growth Boundary Expansion Area (North Area) to show the feasibility of extending gravity sewer service to the area.
- b. The conceptual layout divides the North Area into four sewer sub-basins that would convey WW to the existing North-South Trunk Sewer and/or the existing Council Creek Trunk Sewer.

B. INTRODUCTION

This technical memorandum describes the results of the analysis we performed to address sanitary sewer service extensions into the areas covered by the recent UGB expansion. The analysis was performed as part of the Comprehensive Planning process that is required for lands within the UGB.

Planning-level concepts have been developed to document the feasibility of providing WW facilities in the UGB expansion areas and connecting these facilities to the existing WW infrastructure. The projected impacts of connecting these service extensions to the City's existing sewer system have also been identified.

Clean Water Services (CWS) will need to conduct a separate facilities planning process to address the projected impacts on downstream WW components owned by that agency.

C. SOUTHEAST UGB EXPANSION AREA SERVICE CONCEPT

1. General Concept

- a. The sewer service concept for the South Area assumes future developments will generally follow existing local topography.
- b. Due to the general topography (sloping down toward the river), most of the South Area cannot be served by gravity sewers that would be tributary to the City's existing sewer system. Therefore, gravity sewers for the South Area will need to be tributary to a future South Cornelius Pump Station (SCPS).
- c. The force main for the SCPS will discharge WW into the City's existing South Trunk sewer located under Ginger Street (see Item 5 below for discharge options).
- d. The alignments of future South-Area gravity sewers and the SCPS force main will be affected by development patterns. Alignments shown in our conceptual layout are provided for illustration purposes.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 1,200 DU
 - Projected Institutional (High School) – 2,500 Students
 - Projected Commercial & Industrial – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - I/I contributions from future developments on currently undeveloped land:
 - Near-term I/I Contribution Factor (25 years for PS planning) – 1,650 gpd/acre (gpad)
 - Long-term I/I Contribution Factor (50 years for sewer planning) – 4,000 gpad
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 3,120 People
 - Projected Average WW Production – 209,000 Gallons per Day (gpd)
 - Projected Institutional (High School) – 30,000 gpd (12 gpd/student)
 - Projected Total Average WW Flow – 239,000 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 3.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 720,000 gpd
 - Peak Infiltration/Inflow Allowances
 - Near-term I/I Contribution – 297,000 gpd (1,650 gpad x 180 net acres)
 - Long-term I/I Contribution – 720,000 gpd (4,000 gpad x 180 net acres)
 - Net acreage excludes low-lying land along southerly boundary of South Area and half of school site that is assumed to be playing fields.
 - Projected Peak Flow –
 - Near-term (25-year) Planning for PS Capacity – 1,020,000 gpd ≈ 710 gallons per minute (gpm)
 - Long-term (50-year) Planning for Sewer Capacity – 1,440,000 gpd ≈ 1,000 gpm

3. South Cornelius Pump Station

- a. Concept-Level PS Capacity – 750 gpm (Preliminary Projection for Build-Out and Near-term I/D).
- b. Approximate Minimum Elevation for Development – 156-160 feet
- c. Approximate PS Floor Level (Top of Wetwell) – Elevation 154-158 feet
- d. Approximate Sewer Inverts at Wetwell – Elevation 140-142 feet
- e. Potential PS Sites Identified for Planning (see Exhibit 1)
 - Site 1 – Central Location near swale south of 26th Avenue
 - Site 2 – SE Location between 345th Avenue and Tualatin River
 - Site 3 – SW Location near swale outlet to river
- f. Site 1 is identified as the preferred site for planning purposes.
 - The more centralized site offers more flexibility in developing the tributary gravity sewers.
 - The central site helps to limit the maximum depth of the tributary gravity sewers.
 - The other two sites would probably require a lower inlet invert at the PS wetwell.

4. School Site Service Options

- a. Sewer service to the school can be extended from the new South-Area collection system or potentially from the existing City sewer system to the west (see Exhibit 1).
- b. Gravity Flow South: This option would have WW from the school conveyed by gravity into the sewer system for the South Area tributary to the future SCPS.
- c. Gravity Flow West:
 - This option would have WW from the school conveyed by gravity into the City's sewer system at the east end of existing Dogwood Street.
 - Flows through the Dogwood sewer eventually reach the South Trunk Sewer at 23rd Avenue.
 - The ability to serve the school site from Dogwood would depend on the actual location and elevation of the school, as well as the elevation, capacity and accessibility of the existing sewer in Dogwood.
- d. For planning purposes we show the school being served by the future South-Area sewers and SCPS. The reasons for this assumption are described below.
 - This approach provides a more conservative projection for the PS capacity.
 - There are concerns about accessibility for maintenance if sewer service were extended from Dogwood.
 - Because the WW contribution from the school is a small portion of the overall South-Area WW flow, future impacts on the existing South Trunk Sewer would likely be similar for either option.

5. South-Area Connection to City's Existing Sewer System

- a. South-Area WW can be discharged into the existing South Trunk Sewer at either 20th Avenue or Webb/26th Avenue (see Exhibit 1)
- b. It is preferable to connect to the South Trunk Sewer at 20th Avenue because that is further downstream and will not impact the existing pipe between 26th and 20th.
- c. The force main from the SCPS can discharge to a gravity sewer in the South Area that will extend west and then north to the intersection of Ginger and 20th as shown in Exhibit 1. Based on the preliminary projection for the SCPS capacity and minimum sewer slope, this South-Area outlet sewer will need to be 12 inches in diameter.

6. Assumptions for Conceptual Layout

- a. The layout assumes the gravity sewers tributary to the SCPS would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of about 6 feet.

D. IMPACT OF SOUTH AREA ON EXISTING SYSTEM

1. Scope

Our study of downstream impacts from the South Area was limited to an analysis of the effect the projected peak hourly flow from projected development will have on an upper reach of the existing South Trunk Sewer. This section of the existing sewer extends under Ginger Street, Emerald Loop and the Free Orchards City Park to Heather Street, near 15th Avenue (see Exhibit 1).

2. Background

The 2012 CWS West Basin Facilities Plan (WBFP) previously identified capacity deficiencies in most of the South Trunk Sewer and recommended replacement of about 3,800 feet of this upper reach with larger pipe sizes.

3. Purpose

The purpose of our impact analysis is to provide updated recommendations for pipe replacements. The update is based on the peak flow projections we generated from the current land-use plan for the South Area (see Section C above) and more-recent information on I/I contributions provided by CWS.

4. South Trunk Field Survey

A field survey was performed of the manholes along the upper reach of the South Trunk from Heather Street to 26th Avenue. This survey established current data for existing pipe sizes, invert elevations and manhole rim elevations that were used to generate an updated model of this upper reach. The data is shown in Appendix A.

5. South Trunk Analysis

- a. We evaluated the upper reach of the South Trunk by applying estimates of peak WW and infiltration/inflow contributions from currently developed areas and applying the projected near-term and long-term SCPS flow capacities at the preferred discharge point.
- b. We generated flow estimates from existing, tributary developments using criteria for WW generation listed in the WBFP and updated I/I criteria supplied by CWS. These estimates assume no redevelopment will occur in the tributary areas to significantly increase WW flows.
- c. Breakdowns of the estimated flows into the South Trunk are listed in Table 1 (following page) and shown in Exhibit 2. The projected peak WW flows from developed areas are similar to the WBFP, but do not coincide exactly. The projected I/I contributions are lower than the WBFP because CWS identified a lower, per-acre I/I contribution based on more-recent flow data the agency obtained for the South Trunk sub-basin.

6. Results of Analysis

The pipe replacements identified in our planning-level analysis of the South Trunk are listed in Table 2 (following page). The results of our analysis are further described in the following paragraphs.

- a. Our results generally coincide with the recommendations of the WBFP from Heather (MH #20045) upstream to 20th and Ginger (MH #20034). An 18-inch sewer pipe is needed to convey projected peak flows through these segments for both the near-term and long-term I/I contributions from the South Area.

The 18-inch pipe size assumes the existing, inverted siphons in Free Orchards Park will be replaced with straight, gravity sewers that will be laid aboveground across the low-lying swales. These sewers will need to be supported from pedestrian boardwalks or similar structures through these locations.

Pipe bursting could potentially be used to replace the existing buried 12-inch sewer with an 18-inch pipe. However, the existing South Trunk has a fairly shallow depth of burial under Emerald Loop and where Ginger transitions to 18th Avenue. Consequently, surface heaving could be a major concern with pipe bursting in this stretch. Installation methods will need to be further addressed at a later stage of project development.

- b. Our analysis indicates a 12-inch pipe is needed for the pipe reach in Ginger between 20th and 23rd Avenues based on the average slope. This conclusion contrasts with the WBFP recommendation for a 15-inch pipe along this reach. The difference may result from the lower I/I contribution provided by CWS and a shift of the South-Area sewer connection further downstream along the South Trunk.

It should be noted our survey of the MHs along the South Trunk shows one sewer length in this reach, between MHs #20031 and #20032, has a very mild slope of 0.07%. If this pipe were replaced through pipe bursting, it would continue to have a mild slope, which would reduce the pipe capacity and could promote solids deposition. This issue will need to be considered when evaluating installation methods for this reach.

SFR Land Use Factor = 1,200.0 gpad for existing developments (WBFP, TM 2.3, Table 2)										
Peaking Factor = 3.0 (multiplier applied to residential flow)										
Avg. I/I Contribution = 5,150.0 gpad avg. for Basin FG-6 (CWS Input - July 2015)										
Area	Inlet MH#	Acreage	Flows from Currently Developed Areas (gpm)				Future SCPS Flow (gpm)		Cumulative Flows (gpm)	
			Base WW	Peak WW	Peak I/I	Total Peak	Near Term	Long Term	Near Term	Long Term
1	22461	20	17	50	72	122	0	0	122	122
2	20030	85	74	223	304	527	0	0	649	649
3	20034	20	17	50	72	122	750	1,000	1,521	1,771
4	20036	55	46	138	197	335	0	0	1,856	2,106
5	20043	8	7	20	29	49	0	0	1,905	2,155
		188	160	481	672	1,155	750	1,000	1,905	2,155
									2.75 MGD	3.10 MGD

Pipe Reach	Upstrm MH#	Dnstrm MH#	Location	Existing Size (in.)	Proposed Size (in.)	Reach Length (ft)	Approx. Avg. Slope	Pipe Capacity (gpm) ***
1	20030	20034	23th-20th Ave.	10	12	825	0.25%	775
2	20034	20036	20th-19th Ave.	12	18	510	0.15%	1,780
3	20036	20040	19th Ave-Emerald	12	18	805	0.22%	2,150
4	20040	20043	Emerald-Fawn **	6, 10 & 12	18	420	0.28%	2,425
5	20043	20045	Fawn-Heather **	6 & 10	18	445	0.34%	2,675
Total Length - 3,005							Linear Feet	
12" Pipe - 825							Linear Feet	
18" Pipe - 2,180							Linear Feet	

** Free Orchards Park *** New Pipe w/Max. Depth 80% of Pipe Diameter

E. NORTH EXPANSION AREA SERVICE CONCEPT**1. General Concept:**

- a. The conceptual sewer layout would provide gravity service to the North Area. The layout is shown in Exhibit 3.
- b. The sewer layout is generally based on current development patterns (layout of lots, streets & railroad) with most sewers following an existing R-O-W.
- c. The gravity sewers would be divided into four separate sub-basins: Northwest, Northeast, Southwest and Southeast.
- d. All four sub-basins would be tributary to the Clean Water Services' Council Creek Trunk Sewer.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 480 DU
 - Projected Commercial – 6 acres
 - Projected Industrial & Institutional – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - Average flow contribution from commercial land – 1,000 gpd/acre (gpad)
 - Long-term I/I contribution from currently undeveloped land – 4,000 gpd/acre (gpad)
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 1,250 People
 - Projected Residential – 83,620 Gallons per Day (gpd)
 - Projected Commercial – 6,000 gpd
 - Projected Total Average WW Flow – 89,620 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 4.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 358,500 gpd
 - Peak Infiltration/Inflow Allowance – 300,000 gpd (4,000 gpad x 75 net acres)
 - Projected Peak Flow – 660,000 gpd \approx 460 gallons per minute (gpm)

3. Sewer Drainage Pattern

- a. NW Sub-basin
 - This sub-basin would drain to the west along the existing ODOT railroad R-O-W.
 - WW flows would discharge into an existing sewer that extends down from the Trailer Park to the existing North-South Trunk Sewer.
 - The east boundary of the NW sub-basin is limited by a highpoint in the RR line between 338th and 341st Avenues. East of this point the RR grade slopes down to Dairy Creek.

- b. NE Sub-basin
 - This sub-basin would serve areas that generally slope to the north and east toward Council Creek or Dairy Creek.
 - WW flows would discharge through a gravity sewer extending across the RR line and north along 334th Avenue to the existing Council Creek Trunk Sewer.
- c. SW Sub-basin
 - This sub-basin would generally drain west to the existing sewer along East Lane just north of Baseline Street. The service concept is laid out to minimize the amount of area served by the SW Sub-basin due to constraints posed by existing utilities in the Baseline R-O-W.
 - The existing sewer extending along Baseline is on the south side of the R-O-W. Gravity sewer service from the area north of Baseline is prevented from discharging into this existing sewer by the 72-inch water transmission main under the north side of Baseline.
 - Existing utilities along the north side of the Baseline R-O-W limit the space that would be available for a new parallel sewer on the north side of Baseline.
 - The mobile home park on East and West Lanes is currently served by existing gravity sewers.
- d. SE Sub-basin
 - This Sub-basin would serve a small area on the south side of Baseline, east of the current City limit.
 - The area would be served by an extension of the existing 8-inch sewer that extends along the south side of Baseline. The Baseline sewer discharges into the north-south trunk sewer.

4. Approximate Peak WW Flow Distribution to Existing Trunk Sewers

- a. Approximate flow to N-S Trunk (NW, SW & SE Sub-basins) – 290,000 gpd (60%)
- b. Approximate flow directly to Council Creek Trunk (NE Sub-basin) – 195,000 gpd (40%)

5. Assumptions for Conceptual Layout

- a. The layout assumes gravity sewers would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of 6 feet and a maximum depth of about 15 feet.

F. IMPACT OF NORTH AREA ON EXISTING SYSTEM

1. City’s Baseline Street Sewer

A small amount of additional WW from projected commercial development in the SE Sub-basin will discharge into the City’s existing sewer along the south side of Baseline. This projected WW contribution will be too minor to impact the existing sewer system.

2. North-South Trunk Sewer

The conceptual layout for the North Area would convey projected flows from the NW and SW Sub-basins into the existing CWS North-South Trunk Sewer. CWS records show this line extending from East Lane, just north of Baseline, up to the Council Creek Trunk Sewer. These records also show the line as an 8-inch pipe with most sections between manholes laid at a slope of 0.4%. The North-South Trunk sewer currently receives flows from collector sewers in Baseline and two other City collector sewers north of Baseline.

If future development is evenly distributed throughout the North Area, the NW and SW Sub-basins could carry more than half the projected flows. Since an 8-inch pipe with a 0.4% slope has a capacity of about 0.5 MGD before surcharging, future flows from the NW and SW Sub-basins could surcharge the line. Future CWS facilities planning efforts will need to model the line to verify whether the North-South Trunk will be adequate.

3. Council Creek Trunk Sewer

The sewer service concept for the North Area results in all future WW flows generated in the area being conveyed to the Council Creek Trunk Sewer. The NE Sub-basin will drain directly to this line and the other sub-basins will be conveyed to this line through the North-South Trunk Sewer.

CWS records show the Council Creek line as a 42-inch pipe between the North-South Trunk and 334th Avenue. This existing 42-inch pipe line would need to be at or very near capacity to be impacted at all by the projected WW flows from the North Area. Future CWS modeling of this line will need to address the potential for any impacts from the North Area.

G. ORDER-OF-MAGNITUDE ESTIMATE OF PROBABLE COST

As part of the comprehensive planning process, we developed estimates of the probable project costs for the SCPS, the associated PS force main and downstream South-Area gravity sewer, and the South Trunk Sewer replacements. We used cost information presented in the WBFPP as the basis for the estimates and then applied an inflation factor based on the 20-City Average Construction Cost Index (CCI) published by Engineering News Record (ENR).

The probable project costs include a 30% allowance for construction contingencies and a 35% allowance for non-construction costs (engineering, environmental and legal services and project administration).

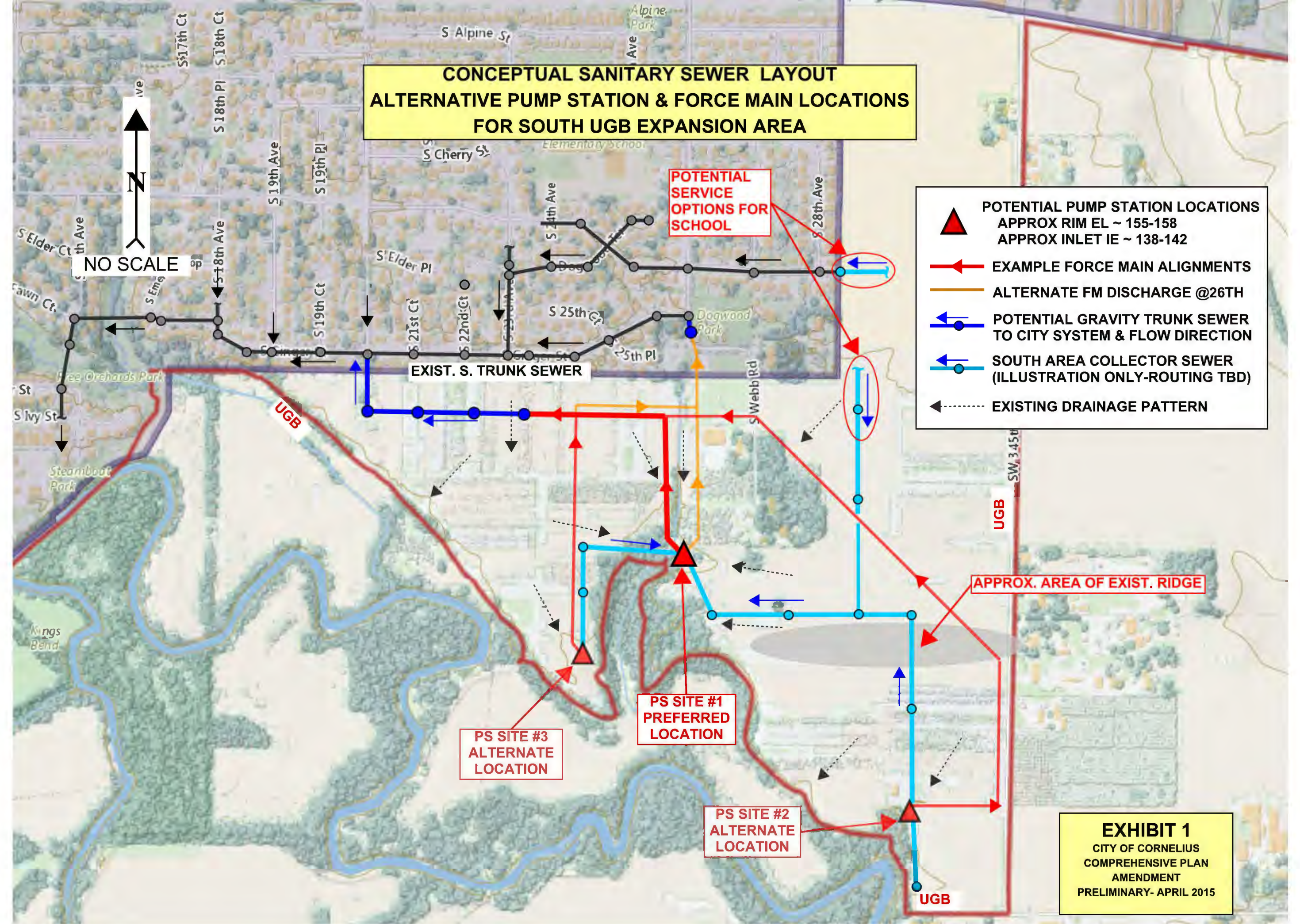
Table 3	
Estimates of Probable Project Costs (July 2015 **)	
Project Description	Probable Cost
750-gpm South Cornelius Pump Station	\$ 880,000
8-inch Force Main & 12-inch Downstream Gravity Sewer	\$ 650,000
South Trunk – Reach 1 Replacement (12-inch Sewer)	\$ 280,000
South Trunk – Reach 2-5 Replacement (18-inch Sewer)	\$ 1,450,000
Total Estimated Probable Project Costs	\$ 3,260,000

** July 2015 ENR CCI = 10,037

The level of detail of these cost estimates is consistent with Estimate Class 4 described by the Association for the Advancement of Cost Engineering International (Recommended Practice #18R-97, Rev. November 2011). Accordingly, the accuracy is anticipated to be within –25% to +35% of the actual cost.

The actual cost of the improvements will depend on project scope, design development, and actual market conditions at bid time. Costs will also depend on specific site conditions and other variable factors. More detailed estimates of the probable costs will need to be prepared as part of further project planning and design efforts.

**CONCEPTUAL SANITARY SEWER LAYOUT
ALTERNATIVE PUMP STATION & FORCE MAIN LOCATIONS
FOR SOUTH UGB EXPANSION AREA**



- POTENTIAL PUMP STATION LOCATIONS**
APPROX RIM EL ~ 155-158
APPROX INLET IE ~ 138-142
- EXAMPLE FORCE MAIN ALIGNMENTS**
- ALTERNATE FM DISCHARGE @26TH**
- POTENTIAL GRAVITY TRUNK SEWER TO CITY SYSTEM & FLOW DIRECTION**
- SOUTH AREA COLLECTOR SEWER (ILLUSTRATION ONLY-ROUTING TBD)**
- EXISTING DRAINAGE PATTERN**

**PS SITE #3
ALTERNATE
LOCATION**

**PS SITE #1
PREFERRED
LOCATION**

**PS SITE #2
ALTERNATE
LOCATION**

EXHIBIT 1
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

**SOUTH TRUNK SEWER EVALUATION
ESTIMATED TRIBUTARY AREAS & FLOWS**

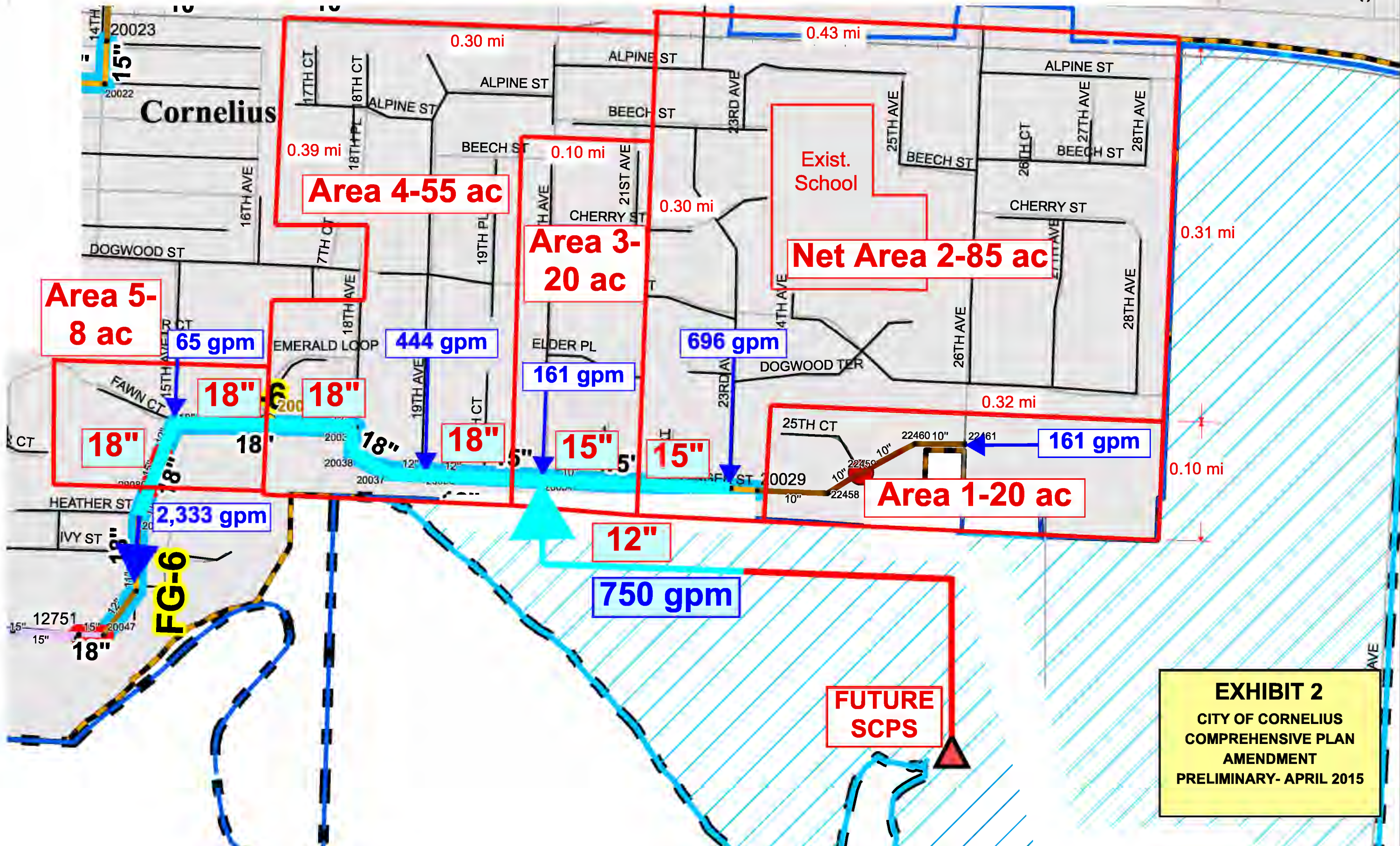
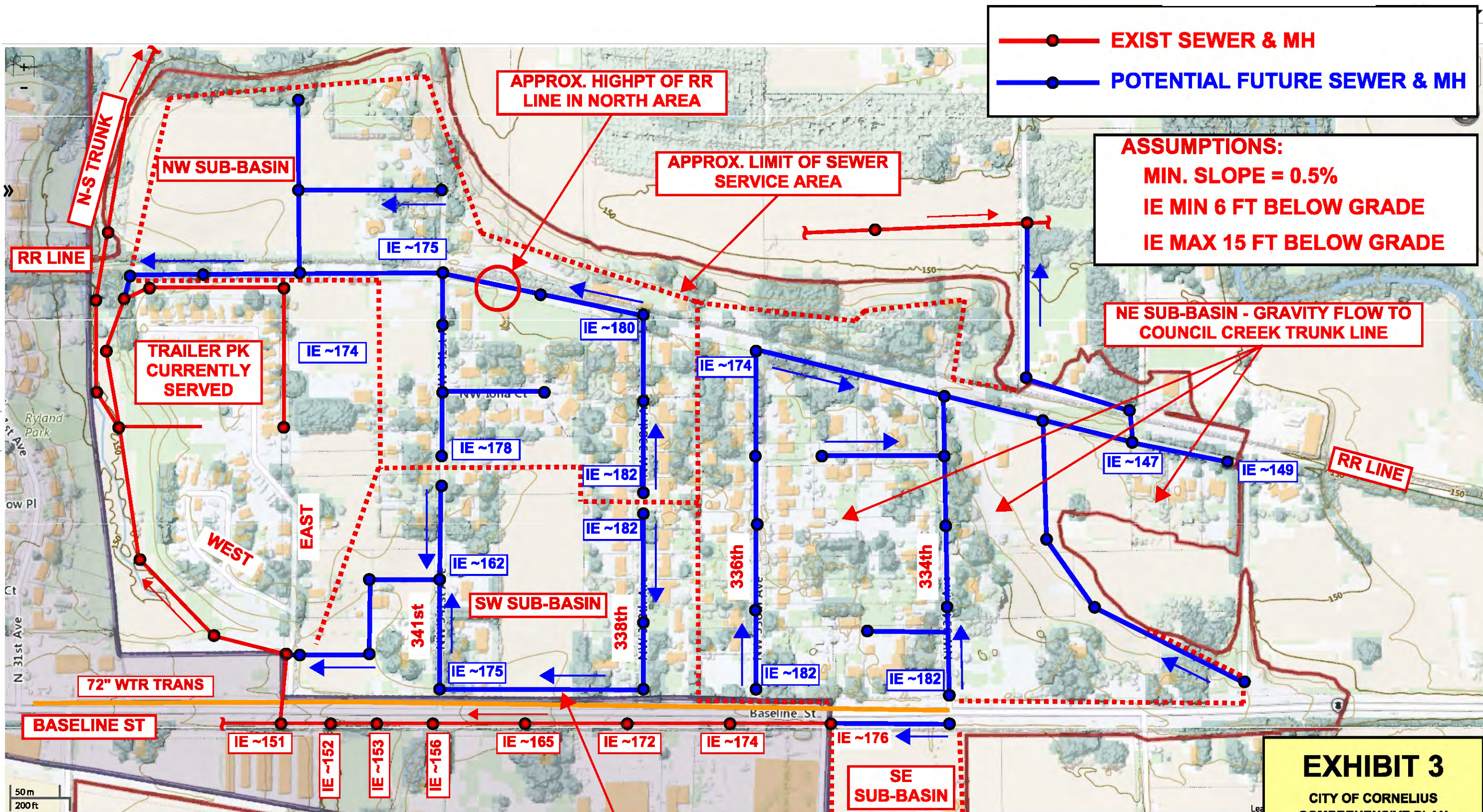


EXHIBIT 2
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

CONCEPTUAL SANITARY SEWER LAYOUT FUTURE SERVICE FOR NORTH UGB EXANSION AREA



—●— **EXIST SEWER & MH**
—●— **POTENTIAL FUTURE SEWER & MH**

ASSUMPTIONS:
 MIN. SLOPE = 0.5%
 IE MIN 6 FT BELOW GRADE
 IE MAX 15 FT BELOW GRADE

NE SUB-BASIN - GRAVITY FLOW TO COUNCIL CREEK TRUNK LINE

MIN. ALLOWABLE SEWER SLOPES: **
 8" DIA 0.40%
 10" DIA 0.28%
 12" DIA 0.22%
 ** FOR 2.0 FPS VELOCITY

POTENTIAL PARALLEL SEWER IN NEW EASEMENT TO AVOID HWY CROSSINGS & UTILITIES

EXHIBIT 3
 CITY OF CORNELIUS
 COMPREHENSIVE PLAN
 AMENDMENT
 PRELIMINARY- APRIL 2015

APPENDIX A

**City of Cornelius
South Trunk Sewer Survey Data**

Model Pipe#	MH#	Location	Rim Elev	MH Inlet			MH Outlet			Run	Slope (ft/ft)
				Size & Mat'l	Dip	IE	Size & Mat'l	Dip	IE		
6122	22461	26th/Ginger	175.77	10"PVC(S)	10	165.77	10"PVC(W)	10.1	165.67	216.61	0.0028
6124	22460		173.21	10"PVC(E)	8.14	165.07	10"PVC(SW)	8.25	164.96	263.44	0.0022
6090	22459	25th/Ginger	174.91	10"PVC(NE)	10.53	164.38	10"PVC(SW)	10.7	164.21	168.04	0.0035
6088	22458		174.25	10"PVC(NE)	10.62	163.63	10"PVC(W)	10.79	163.46	307.38	0.0034
1	20029		173.35	10"PVC(E)	10.95	162.4	10"CSP(W)	11.05	162.3	108.56	0.0027
2	20030	23rd/Ginger	173.23	10"CSP(E)	11.22	162.01	10"CSP(W)	11.29	161.94	260.11	0.0029
3	20031		174.14	10"CSP(E)	12.95	161.19	10"CSP(W)	13.09	161.05	156.34	0.0007
4	20032		173.21	10"CSP(E)	12.27	160.94	10"CSP(W)	12.39	160.82	122.03	0.0029
5	20033		172.54	10"CSP(E)	12.07	160.47	10"CSP(W)	12.19	160.35	282.94	0.0028
6	20034	20th/Ginger	170.84	10"CSP(E)	11.29	159.55	12"CSP(W)	11.39	159.45	254.93	0.0014
7	20035		168.6	12"CSP(E)	9.5	159.1	12"CSP(W)	9.58	159.02	254.70	0.0017
8	20036	19th/Ginger	166.61	12"CSP(E)	8.03	158.58	12"CSP(W)	8.13	158.48	149.79	0.0019
9	20037		163.79	12"CSP(E)	5.6	158.19	12"CSP(NW)	5.7	158.09	152.39	0.0026
10	20038		162.04	12"CSP(SE)	4.34	157.7	12"CSP(N)	4.4	157.64	118.03	0.0038
11	20039	18th/Emerald	164.47	12"CSP(S)	7.28	157.19	12"CSP(W)	7.35	157.12	383.81	0.0019
12	20040	Emerald	160.72	12"CSP(E)	4.33	156.39	12"CSP(W)	4.38	156.34	22.56	0.0080
	20042	Emerald	161.16	12"CSP(E)	5	156.16	10" ??(W) 10" ??(W)	5.15 4.82	156.01 156.34		
13 & 15	<i>(Ignore MH# 20079 - blowoff)</i>									394.50	0.0023
	20043	15th/Fawn	160.34	10"CSP(E)	5.25	155.09	12"CSP(SW)	5.3	155.04		
14				10"CSP(E)	5.25	155.09				130.08	0.0035
	20044	Sou. of Fawn	159.08	12"CSP(NE)	4.5	154.58	12"CSP(SW) 8"CSP(SW)-??	4.4 NOT SURVEYED	154.68		
213 & 16	<i>(Ignore MH# 20079 - blowoff)</i>									313.56	0.0040
	20045	Heather	157.95	12"CSP(NE) 8"CSP(NE)	4.51 4.55	153.44 153.40	10"CSP(S)	4.53	153.42	(Should be 12" Out?)	
???	64144		160.03	12"CSP(N)	6.98	153.05	12"CSP(S)	7.05	152.98	141.59	0.0026

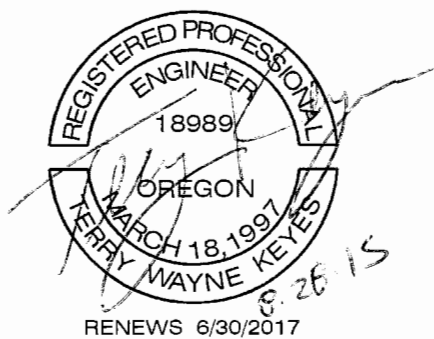
Exhibit D

Amendments to the City of Cornelius Water Master Plan (Appendix I)

Cornelius Urban Growth Boundary Expansion

Water Plan

August 28, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

The cost of bringing the water infrastructure in this area up to current standards is approximately:

4,000 LF @ \$130/LF = **\$520,000**

This cost cannot be justified based on the limited amount of water user fee revenue the area would produce. Therefore, if the Northeast UGB area is annexed to the City of Cornelius, the annexation will likely occur in small chunks as development occurs. With each annexation, Cornelius will take over the portion of the water system needed to serve that area. The development necessitating the annexation will be primarily responsible for improving the annexed part of the Hillsboro water system to Cornelius standards.

Storage needs for the Northeast UGB area can be easily handled by the City's current 1.5 MG (million-gallons) above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Flow needs for this area can be handled from three sources.

1. 12" Cornelius main line on the north side of Baseline that currently ends at East Lane
2. 12" Cornelius main line on the south side of Baseline that currently ends at the Coastal Farm Store at about 336th Avenue
3. Existing but unused transfer station from the Hillsboro 72" transmission line in Baseline to the Cornelius system at East Lane

In summary, the City of Cornelius can easily serve the Northeast UGB area. The primary concern is the fact that most pipes in this area are substandard. Bringing this area up to current standards is an expensive proposition that is not currently programmed into the Cornelius water rate structure. Therefore, improvements to the water infrastructure in this area will be required at the time of development. Until areas are annexed into the City the system within this area will remain within Hillsboro's service district and will be maintained and operated by Hillsboro.

Water Infrastructure Needs – Southeast UGB Area

The Southeast UGB area represents a clean slate in that the area contains almost no existing water infrastructure. The only public water facility in the area is a 2" plastic line from Baseline south along 345th to serve approximately 8 residents within ¼ mile of Baseline. Since most of these residents are outside the UGB expansion area, the City does not intend to upgrade this 2" plastic line in the foreseeable future. However, the south end of this line may be looped into the new water infrastructure in the UGB area to protect against an emergency such as a line break.

When developed, the Southeast UGB area will be served by 12" mains under the planned collector streets. The collector streets are expected to include: 29th south of Baseline, 26th and 20th south of Ginger, Dogwood east of 28th, and a new east-west collector south of the current city limits that connects 20th, 26th and 29th. All local streets will be underlain with 8" water mains, the minimum standard required by Cornelius.

In addition, to provide adequate flow and pressure to this area at build-out, some improvements in the City's existing water system may be required. The needed improvements will be determined when the City completes its water master plan update later this year. However, the improvements to the existing system that are likely to be needed at full development of the UGB area include:

- 12" line to replace existing 8" line in Dogwood from 18th to 20th
- 12" line to replace 8" line in 20th from Dogwood to Southeast UGB area
- 12" line to replace 8" line in 26th from Dogwood to Southeast UGB area

These improvements are not needed initially, but will be required as the area nears build-out. When the City's water master plan update is completed in late 2015, the amount of development the existing system can support will be determined. For development that occurs before the master plan update is complete, the developer will be responsible for proving that the existing system can provide adequate flow and pressure to the UGB area. If adequate flow and pressure cannot be attained, the developer will need to make the improvements noted above.

Storage needs for the Southeast UGB area can be handled by the City's current 1.5 MG above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Water Infrastructure Costs – Southeast UGB Area

All the new water mains in the Southeast UGB area will be installed and funded by developers. However, the City must pay for oversizing of lines greater than 8" size. In other words, while the developers are responsible for funding the installation of 8" lines under all the streets in this area, the City must fund the additional cost of 12" lines where they are needed. The cost of this upsizing of lines to 12" is estimated to be:

12" oversize cost in UGB area = ~10,000 LF @ \$20/LF = \$200,000

Furthermore, the City must fund improvements to piping outside the UGB area. These improvements are listed above and will cost approximately:

12" replacement lines inside UGB area = ~2,200 LF @ \$140/LF = \$300,000

Water SDCs from the southeast UGB area are expected to be:

1,100 single family residences @ \$3,884 SDC per residence = ~\$4M

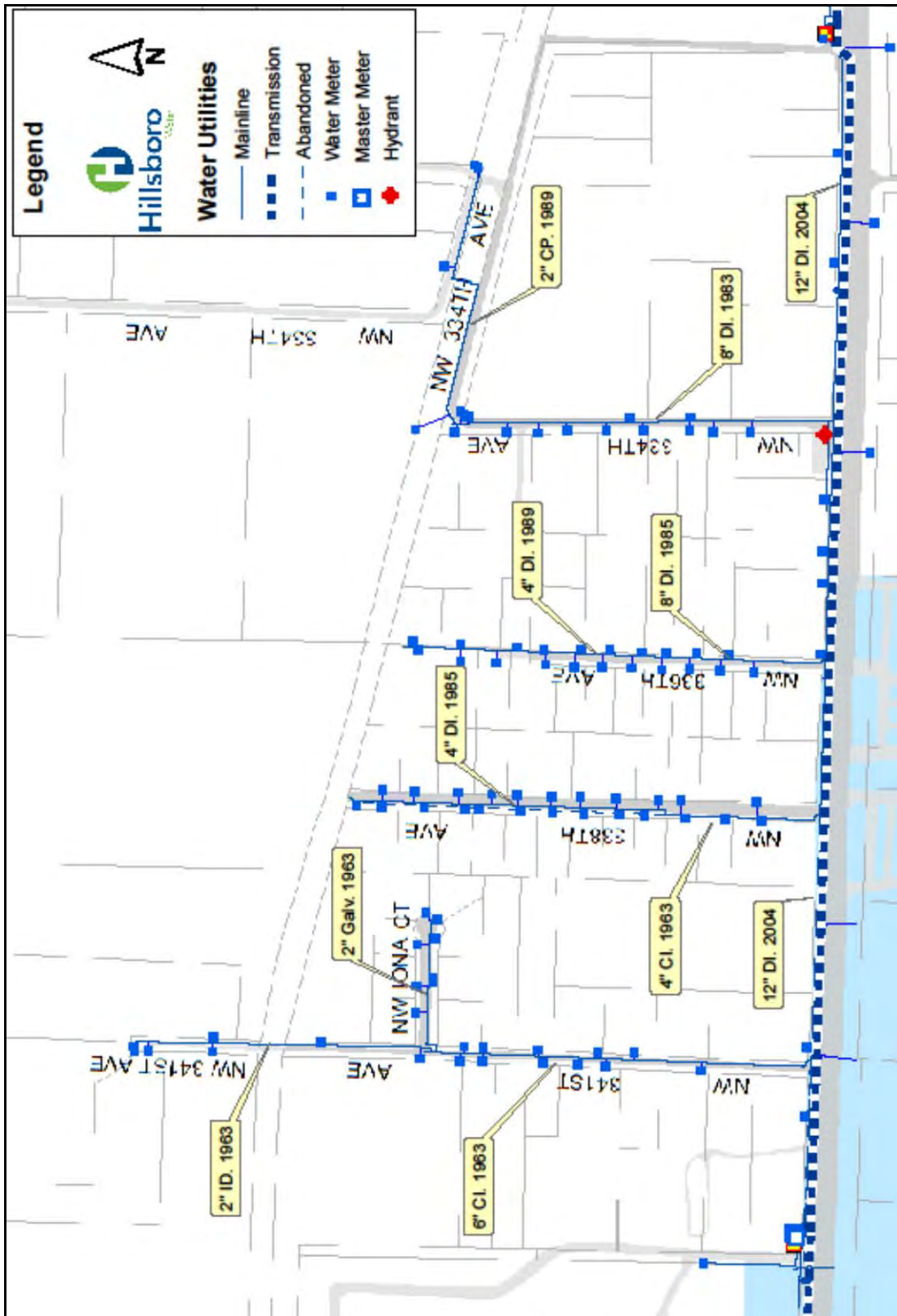
Therefore, the water SDCs captured from the new development in the southeast UGB area are more than adequate to fund the improvements to pipes needed to serve this area.

Recommendations

In the Northeast UGB area, staff recommends the area continue to be served by the City of Hillsboro until parcels are annexed. At the time parcels are annexed into the City of Cornelius, Cornelius should take over the portion of Hillsboro's system needed to serve the annexed parcel. Developers should pay for all improvements needed to bring lines up to City of Cornelius standards.

In the Southeast UGB area, developers should design and install all water mains. The City shall pay for oversizing mains under collectors to 12" from the 8" standard size. The City shall also design, build, and fund improvements necessary to the water mains within the current City boundaries.

Attachment 1 – Hillsboro Water System in Northeast UGB Area



Attachment 2 – Cornelius Water Improvement Needs for Northeast UGB Area

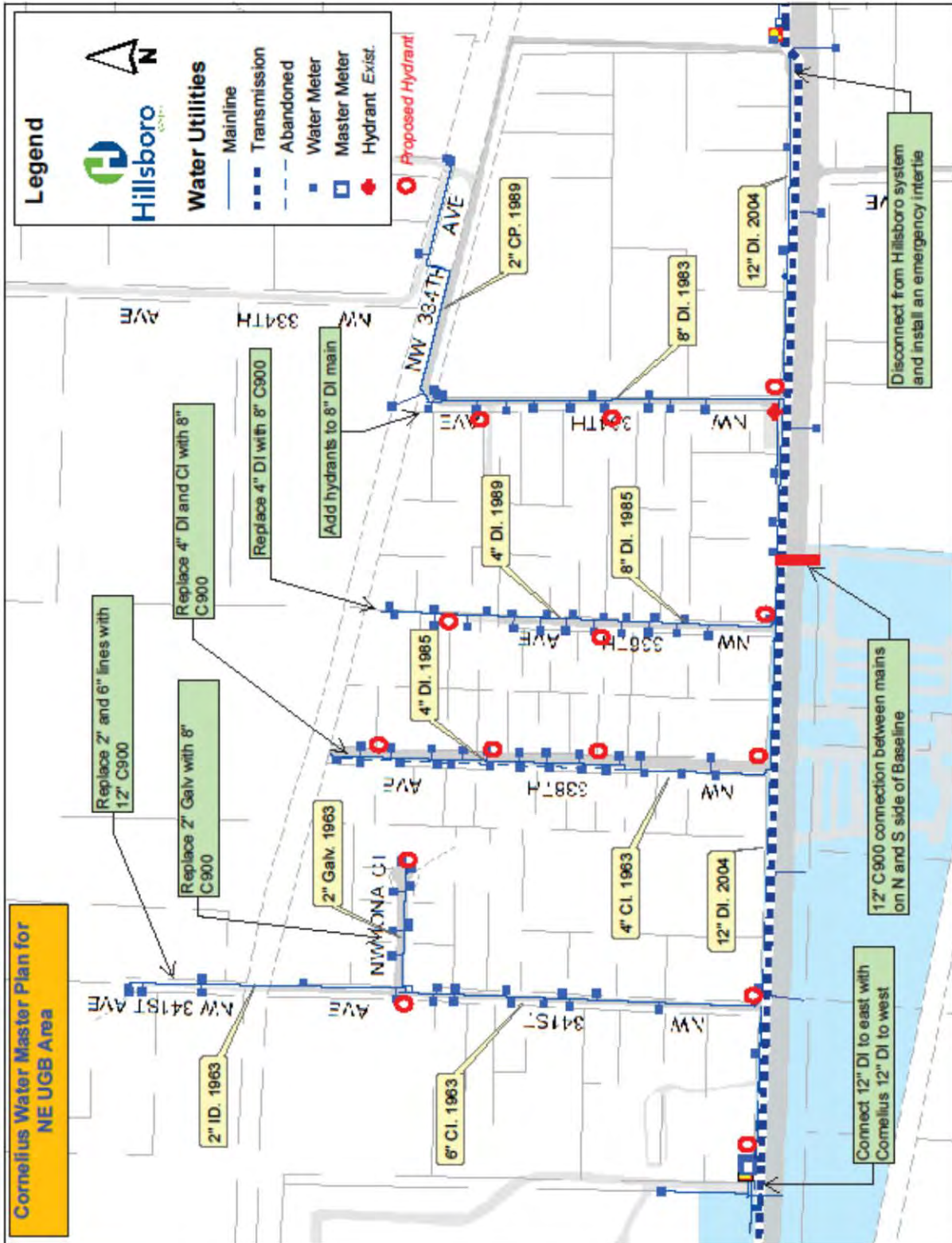


Exhibit E

Amendments to the City of Cornelius Transportation System Plan (Appendix M)

RECOMMENDATIONS

Transportation Planning Rule Findings

The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. Further analysis of Tualatin Valley Highway west of 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety.

Local Improvements

Local roadway projects would be required to support the UGB expansion areas and provide adequate access and internal circulation. Based on the City’s functional classification designations¹³ and the future 2040 PM peak hour volume forecasts, recommended local improvements were identified as shown in Table 11. Planning level cost estimates were developed for each roadway project based on the collector cross-section with parking on both sides of the street (shown in Figure 9). If the collector facilities were constructed with a narrower cross-section (shown in Figures 10 and 11) the costs would be lower.

Table 11: Local Improvements to Support UGB Expansion

Project	Description	Planning Level Cost Estimate
20 th Avenue Extension	Construct a collector facility south of Ginger Street then east to 29 th Avenue extension	\$7,450,000
26 th Avenue Extension	Construct a collector facility south of Ginger Street to the 20 th Avenue extension east-west alignment	\$1,300,000
29 th Avenue Extension	Construct a collector facility south of Tualatin Valley Highway to realignment with 345 th Avenue, install railroad crossing treatments on 29 th Avenue, close railroad crossing on 345 th Avenue	\$6,800,000

¹³ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005, Figure 8-3.



Dogwood Street Extension	Construct a collector facility east to 345 th Avenue (east UGB expansion area boundary)	\$1,600,000
29 th Avenue/Tualatin Valley Highway Signal	Install a traffic signal, interconnect with adjacent railroad crossing	\$600,000

Note: Collector facility cost estimate based on Figure 9 cross-section

The remaining roadways needed to support future development would function as local streets. The preliminary alignment for the recommended collector facilities are shown on Figure 7. These alignments are conceptual and will be refined with further engineering analysis prior to construction.

Policies and Standards

New policies and standards should be adopted to support the UGB expansion areas:

- Development should be limited to 130 residential units connecting to 20th Avenue and 260 residential units connecting to 26th Avenue prior to construction of the 29th Avenue connection to Tualatin Valley Highway. With a roadway connection between 20th and 26th Avenue, a combined development limit of 390 residential units should be applied.
- Roadway and trail cross-sections shown in Figures 9 to 14 should be incorporated into the Cornelius TSP.

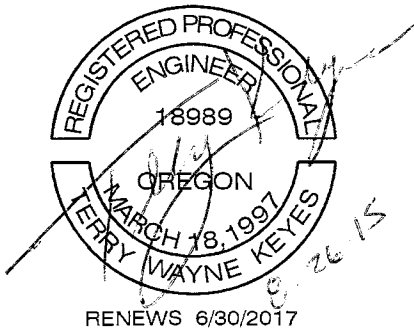
Exhibit F

Amendments to the City of Cornelius Storm Drainage/Surface Water Master Plan (Appendix H)

Cornelius Urban Growth Boundary Expansion

Stormwater Plan

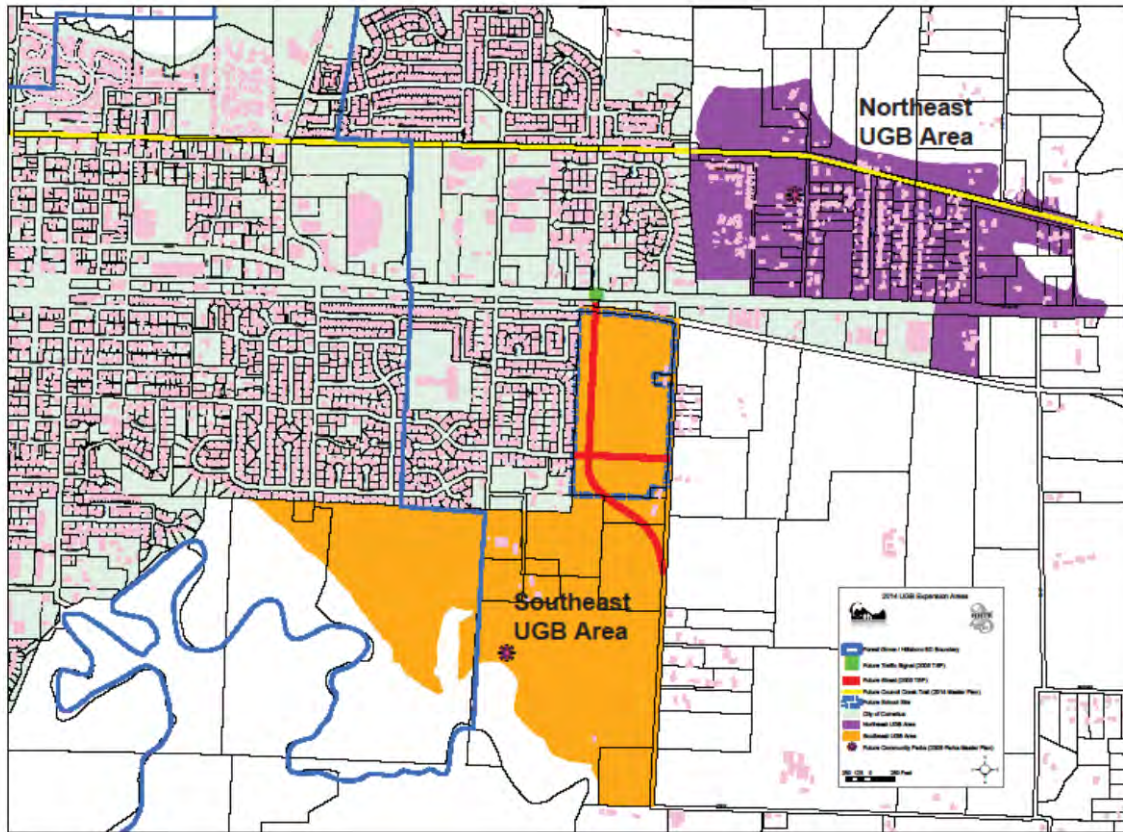
August 26, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



The terrain in these two areas is generally flat. The Northeast area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek.

The Southeast area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River.

Existing Stormwater Facilities

The only existing stormwater facilities in the Northeast UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The stormwater facilities in the Southeast UGB area are limited to the roadside ditches on 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs, these facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards.

Stormwater Standards Overview

Any new development in the UGB expansion areas must at a minimum meet the current *Design and Construction (D&C) Standards for Sanitary Sewer and Surface Water Management* issued by CWS.

Some UGB expansion areas in Washington County, notably Tigard's River Terrace and the unincorporated North Bethany, created additional stormwater standards that go beyond the D&C Standards. In the case of River Terrace, severe erosion in the stream corridors coming off the south side of Bull Mountain necessitated a more stringent approach to stormwater control in the area.

In North Bethany's case, CWS desired to incorporate extensive LIDA (low-impact development practices) into the area and pre-built a number of large regional facilities. This was deemed more desirable to the creation of individual stormwater facilities in each development phase.

One downside of the North Bethany approach is that CWS has had difficulty keeping ahead of development with new facilities. Also, by CWS constructing regional facilities rather than each developer constructing their own facilities, North Bethany has a large stormwater fee or system development charge that is unique in Washington County.

Finally, the D&C Standards issued by CWS are expected to change significantly as a result of a new MS4 permit from the State of Oregon, Department of Environmental Quality (DEQ) to CWS. One change in the new MS4 permit will be an increased level of treatment for stormwater. However, the most significant change in the standards is expected to be a requirement to deal with hydro-modification. Instituting this type of requirement is expected to create the need for very large detention and retention facilities on new development sites.

Cornelius Plan

Because Cornelius does not face the problems Tigard does on Bull Mountain and because the City does not have the staff to plan, design, and build regional facilities, as CWS is doing in North Bethany, Cornelius will require developers to meet the current stormwater standards issued by CWS. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff.

The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight that the City does not have funding to undertake.

Costs

Since developers will be responsible for designing and constructing stormwater facilities in the new UGB areas, the City will incur zero capital costs for these systems. The City will, however, incur, increased maintenance costs long-term, but these costs are funded by monthly stormwater fees payable by the new residents and businesses in the area.

Recommendations

Staff recommends the City use the CWS D&C Standards that are applicable at the time of development to address stormwater issues in the UGB areas. Staff further recommends, the following two conditions be placed on all new development in these areas:

1. Prohibition on the use of proprietary treatment systems for treatment on parts of the system that the City must maintain in the future.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities being used to meet subdivision stormwater quality or quantity requirements.

2014 Urban Growth Boundary Findings & Summary

Cornelius, Oregon

Ordinances 2015-06 and 2015-07

Submitted October 5, 2015

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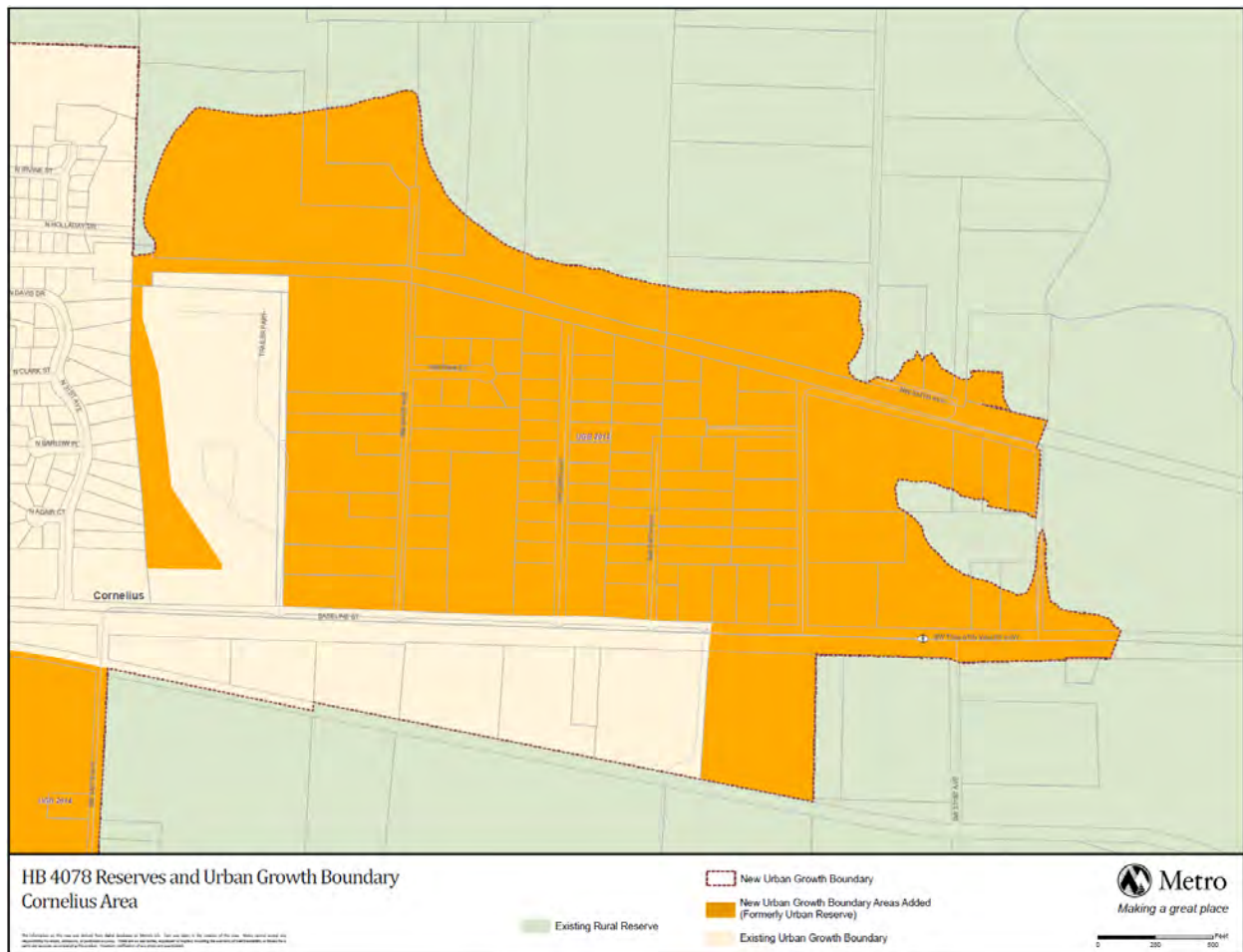
EXHIBITS

- Exhibit A NE UGB Ordinance 2015-07
- Exhibit B SE UGB Ordinance 2015-06
- Exhibit C Public Comments (as of October 1, 2015)
- Exhibit D Summary of Public Survey
- Exhibit E Opportunities and Constraints from Neighborhood Meeting 1
- Exhibit F Neighborhood Meeting 2 Notes
- Exhibit G DKS Transportation Analysis
- Exhibit H Council Creek Trail Master Plan Excerpts
- Exhibit I NE UGB proposed comprehensive plan map designations
- Exhibit J SE UGB proposed comprehensive plan map designations
- Exhibit K Water System Plan
- Exhibit L Sanitary Sewer System Analysis
- Exhibit M Parks Master Plan Exhibit
- Exhibit N Stormwater Plan

SUMMARY OF PROPOSAL

Effective April 1, 2014 approximately 345 acres of land were added to the City of Cornelius Urban Growth Boundary (UGB) as a result of the legislature approving House Bill 4078, often referred to as the “Grand Bargain”. The report and supporting documents are intended to support approval of the City of Cornelius Ordinances 2015-07 (Exhibit A) and 2015-06 (Exhibit B) which seek to adopt comprehensive plan designations for properties added to the UGB in 2014. In addition this report and supporting documents identify the public services necessary to support the urbanization of those properties added to the UGB. The report also supports the adoption of the Council Creek Trail Master Plan as a component of the 2009 Parks Master Plan. Specific services addressed within this report and proposed amendments to the comprehensive plan include transportation (Exhibit G), water (Exhibit K), sanitary sewer (Exhibit L), stormwater (Exhibit N) and parks and recreation (Exhibit H and M).

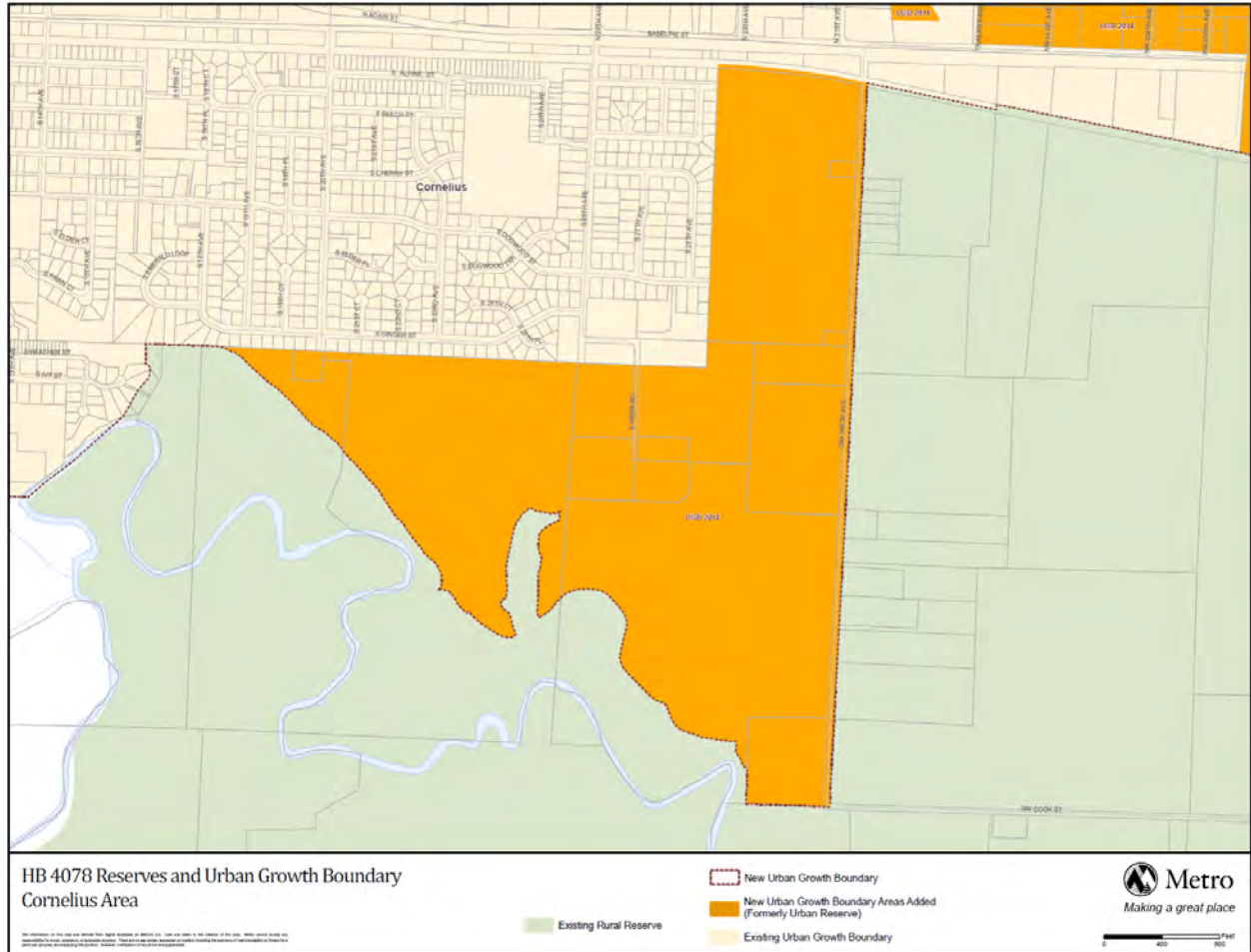
2014 NE URBAN GROWTH BOUNDARY



The NE UGB is comprised of a mixture of lot sizes and existing development. The eastern, western and northern (north of the railroad line) portion of the area are characterized by larger lots with varying potential for additional residential development. The central portion of the area is characterized by individual lots that are developed to very low density urban standards, these areas are unlikely to redevelop in the future at a higher density. The area is currently served with water by the City of Hillsboro, although much of the system is undersized and/or not

developed to City standards. The existing roadways provide for vehicle travel lanes, the streets are not developed to City standards. All of this area is located north of State Highway 8 (TV Highway) with the exception on one lot located south of the Highway. The City identified trails and a future community park within the City of Cornelius Parks Master Plan (see Exhibit M).

2014 SE URBAN GROWTH BOUNDARY



The SE UGB is comprised of a mixture of lot sizes and existing development. The area UGB area is not currently served by water or sanitary sewer service. The only existing roadway within the area is SW 345th Avenue which serves as the eastern border for the new UGB. The City has three (3) collector roadways that are stubbed to the new UGB. These roadways are S. 20th Avenue, S. 26th Avenue, and S. Dogwood Street. South Alpine Street also stubs into the SE UGB and is designated a local street. Most of this area is located below the existing sanitary sewer collection system within the City. The City identified trails and a future community park within the City of Cornelius Parks Master Plan (see Exhibit M).

PUBLIC ENGAGEMENT

The City worked closely with Harper Houf Peterson Righellis (HHPR) to design and implement the public engagement process for the project. The process included three (3) basic approaches to gathering information and engaging the community in the process. The first was a series of stakeholder surveys that were conducted with residents, property owners and service providers within the 2014 UGB area. The second approach was a community survey that was available online and as a hardcopy. The City hosted three (3) neighborhood meetings during the process to share information and solicit feedback. The City also appointed a Technical Advisory Committee (TAC) to assist staff with reviewing information and forming the recommendation that is contained within this report. More detailed information is available below about each of the processes. All of the comments received by the City throughout the process (as of 10-01-15) are included as Exhibit C of this report. The City also hosted a webpage that provided information about the process, upcoming meetings, and provided draft exhibits and reports for stakeholders to access. Notices for public meetings were posted at City Hall, the Public Works Building, and within the Forest Grove News Times. Articles were included about the meetings and survey within the Cornelius Gazette, a monthly paper distributed to residents in English and Spanish with their water bills. Notice of meetings was also provided on the City's reader board attached to the east side of the Cornelius Council Chambers along N. Adair Street. Staff also reached out to the Oregonian and Forest Grove News Times to encourage the papers to write articles about the meetings. Throughout the process the City maintained a mailing list of interested parties and provided mailed notice regarding meeting content, times and dates.

STAKEHOLDER INTERVIEWS

City staff conducted face to face interviews with property owners and service providers within both the NE and SE UGB areas. The goal of these interviews was to provide a forum for the City to collect information first hand from the residents, property owners and service providers. Staff spoke with Forest Grove School District, Hillsboro School District, the Oregon Department of Transportation, Clean Water Services, Metro, Washington County, Centro Cultural, as well as several property owners in the NE and SE UGB areas.

COMMUNITY SURVEY

HHPR prepared a community survey designed to solicit feedback from the community. The survey was available on-line, interested parties were mailed notice of the survey and opportunity was provided for people to fill out a hardcopy if they were unable to gain access to the internet. The survey was completed by 46 people, 28 of the respondents self-identified as being from the NE UGB, 6 self-identified as being from the SE UGB area, and 7 declined to disclose. This is not a statistically valid survey, it was utilized as another forum to provide the community the opportunity to provide input into the process, especially for those who were not able to make the neighborhood meetings. A summary of the responses is included as Exhibit D to this report.

In general the respondents from the NE area valued new parks, walking paths and biking paths less than those in SE. Approximately 2/3rds of the respondents did not want additional commercial services and most of the respondents favored a pattern of residential development utilizing larger lots with less common open space.

TECHNICAL ADVISORY COMMITTEE

The City formed a Technical Advisory Committee (TAC) to assist with review of the technical studies. The TAC was comprised of City Staff, a Planning Commission member, property owners from both the NE and SE UGB as well as professional staff from Clean Water Services (CWS),

Metro, Oregon Department of Transportation (ODOT) and Washington County. All meetings were open to the public and notice was mailed to interested parties, citizens were in attendance at all the meetings listening to the discussion.

The first TAC meeting was held on February 25, 2015. At the meeting the consultant team presented information about existing conditions, initial technical findings regarding the sanitary sewer system, a summary of information received from the stakeholder interviews and information received from the first neighborhood meeting. The intent of the meeting was to discuss the opportunities and constraints and to solicit guidance in the development of preliminary recommendations.

The second TAC meeting was held on April 23, 2015. At the meeting the consultant team summarized the feedback received at the second neighborhood meeting and presented preliminary recommendations for comprehensive plan map amendments. The intent of the meeting was to solicit input to refine the recommendations for the comprehensive plan map amendments.

The third TAC meeting was held on June 17, 2015. At the meeting the consultant team presented the draft findings from the technical memorandums as well as the proposed comprehensive plan map amendments. The intent of the meeting was to solicit input and identify any revisions that may be necessary prior to public hearings and adoption.

NEIGHBORHOOD REVIEW MEETING #1

The first Neighborhood Meeting was held on January 8, 2015. The goal of the meeting was to provide a forum for the community to share information, ask questions and voice concerns about the planning process. Staff began the meeting by providing an overview of the process that was utilized to add lands to the UGB in 2014. Staff detailed the process and expected timeline for the project and provided information about how stakeholders could be involved in the process moving forward. Staff facilitated an exercise to identify opportunities and constraints that would be used to guide the process (Exhibit E). Staff provided an opportunity for community members to ask questions. Approximately 71 people attended the meeting based on signatures collected on the sign in sheets.

NEIGHBORHOOD REVIEW MEETING #2

The second Neighborhood Meeting was held on March 18, 2015. The goal of the meeting was to provide a forum for the community to finalize the opportunities and constraints for the planning project. At the meeting the consultant team and city staff provided a summary of the stakeholder interviews, the first TAC meeting as well as the results of the community survey. At the meeting an overview of each area was provided including information about what potential zoning and associated comprehensive plan designations could be applied. Specific information was also provided about existing planned improvements within the City's parks master plan and transportation system plan. DKS provided an overview of the existing conditions for the transportation system. Summary notes from the meeting are included as Exhibit F. Approximately 51 people attended the meeting based on signatures collected on the sign in sheets.

NEIGHBORHOOD REVIEW MEETING #3

The third Neighborhood Meeting was held on May 20, 2015. The goal of the meeting was to provide a forum for the community to review the proposed comprehensive plan amendments, ask questions and provide feedback about the amendments. People were encouraged to submit

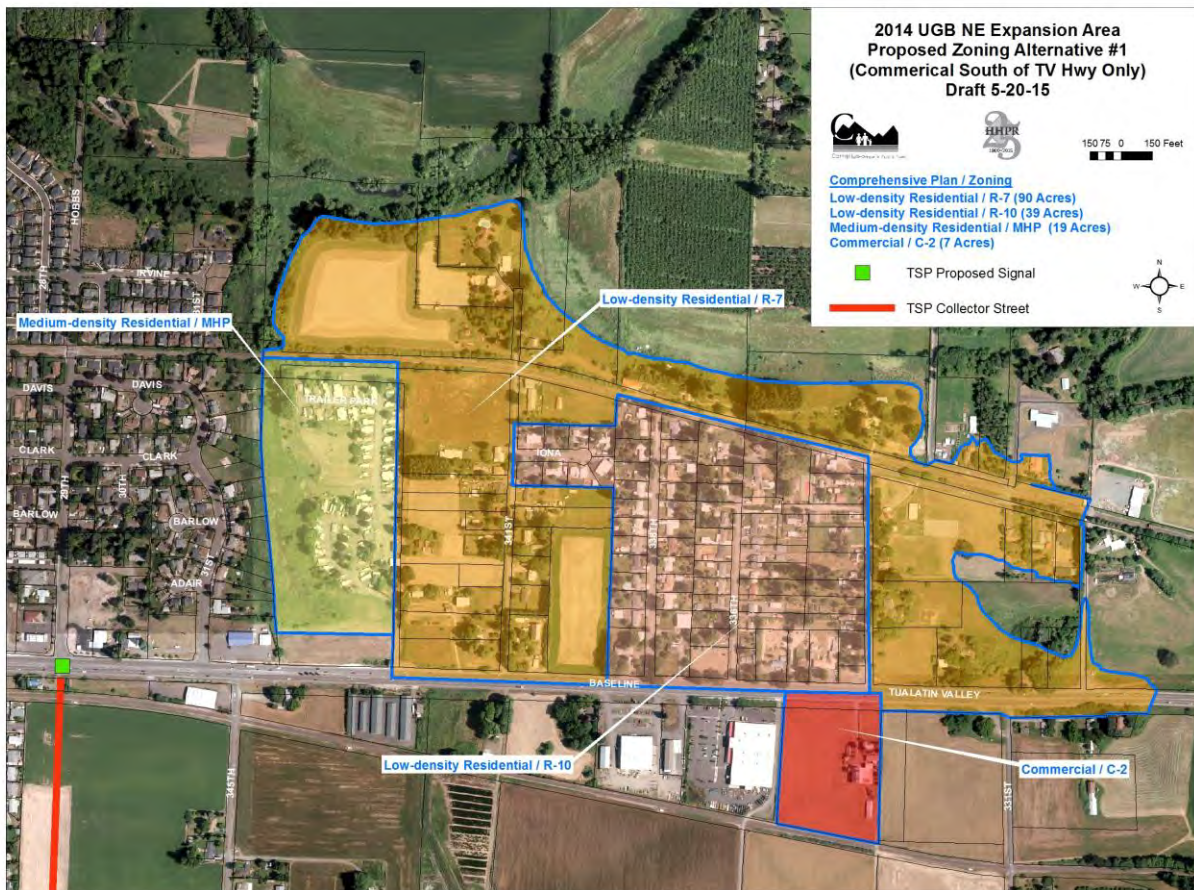
formal letters to the City, those responses are included within Exhibit C. Approximately 39 people attended the meeting based on sign in sheets collected.

COMPREHENSIVE PLAN MAP DESIGNATIONS (LAND USE)

The City is proposing to adopt comprehensive plan map designations for the properties that were added to the UGB in 2014. The adoption of the comprehensive plan designations will not directly affect the properties within the 2014 UGB at this time as those properties are still located within Washington County's jurisdiction. The zoning and corresponding rules and regulations that currently exist on the properties as administered by Washington County will remain until those properties are annexed into the City of Cornelius. The proposed comprehensive plan map land use designations will guide how the properties will be zoned upon annexation to the City. Since some of the comprehensive plan map designations can be implemented by more than one zone Exhibit I and Exhibit J attached to this report include the proposed comprehensive plan map designations and corresponding zoning to be applied when the properties are annexed.

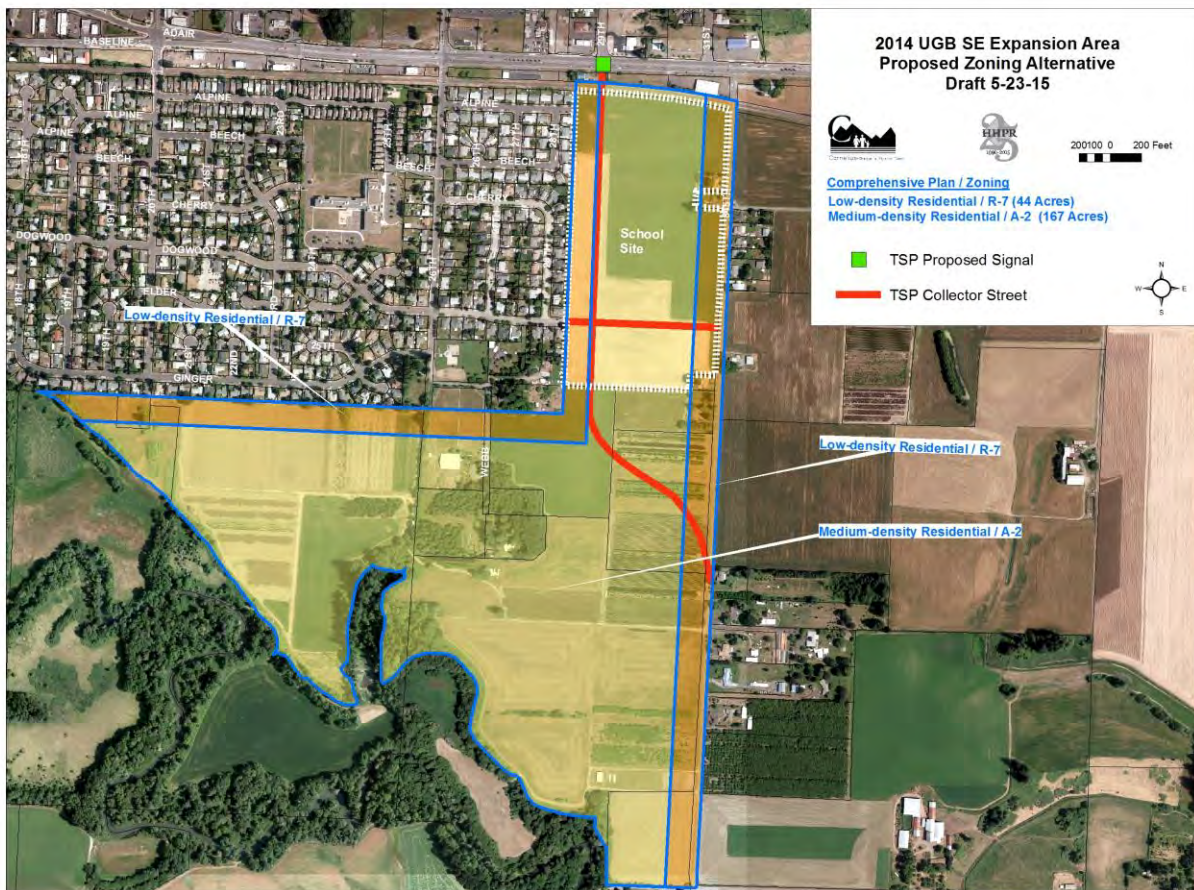
2014 NE UGB

The 2014 NE UGB is proposed to be designated primarily residential on the comprehensive plan map, the one exception is a parcel of land that is located south of the TV Highway just east of the Coastal Farms store, this parcel is proposed to be designated commercial and will be zoned Highway Commercial (C-2) when it is annexed into the City. The existing manufactured home park along the western edge of the 2014 NE UGB is proposed to be designated Medium-density Residential and will be zoned Manufactured Home Park (MHP) upon annexation to reflect the existing use of the property. The remaining land within the 2014 NE UGB is proposed to be designated Low-density Residential and will be zoned either R-7 or R-10 as detailed within Exhibit I.



2014 SE UGB

The 2014 SE UGB is proposed to be designated a mix of Low- and Medium-density Residential on the comprehensive plan map. Low-density Residential is proposed to be designated along the existing City Limits and along SW 345th Avenue for a width of 150 feet. This area would be zoned R-7 upon annexation. The intent of this zoning is to match the existing development pattern within the City and to provide a transition of density from the new 2014 SE UGB to the existing farmland to east of SW 345th Avenue. The remaining land within the 2014 SE UGB is proposed to be designated Medium-density Residential and will be zoned A-2 which is the City's multi-family zone. It is important to note that the A-2 zone permits a range of housing types beyond multi-family including attached single family and detached single family development. See Exhibit J for more detail and the location and extent of the proposed comprehensive plan designations.



UTILITIES FOR 2014 URBAN GROWTH BOUNDARY

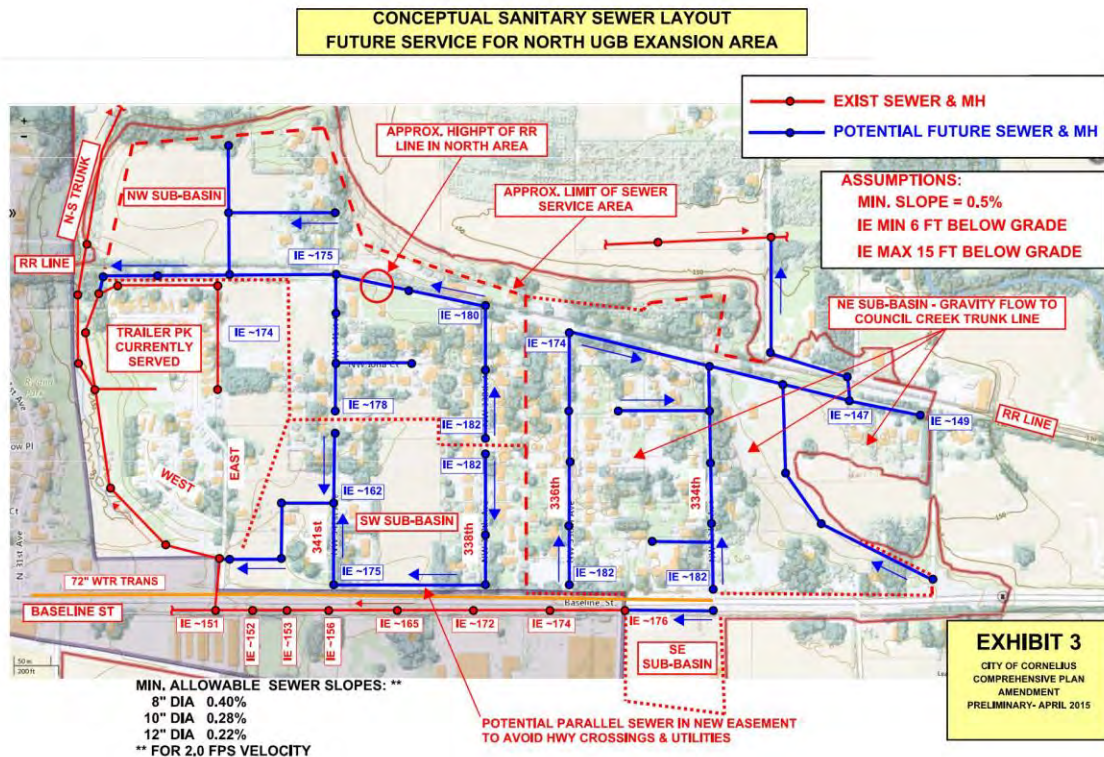
In order to allow for annexation of lands added to the UGB in 2014, the City must identify how these properties can address stormwater requirements, be served with sanitary sewer service, water service, and how properties are accessed and what public improvements are necessary to support development.

SANITARY SEWER SYSTEM

CWS operates the sanitary sewer treatment plants within Washington County. Based on coordination with CWS there is adequate capacity within their treatment and regional conveyance facilities to accommodate the projected growth of the NE and SE UGB areas. HHPR prepared a technical memorandum (Exhibits L) identifying the improvements to the local conveyance system that will be necessary to support the development of the NE and SE UGB areas. The City is seeking to amend the Cornelius Sanitary Sewer Master Plan (Appendices H of the Cornelius Comprehensive Plan). Each of the improvements identified as necessary are summarized below and detailed within Exhibit L.

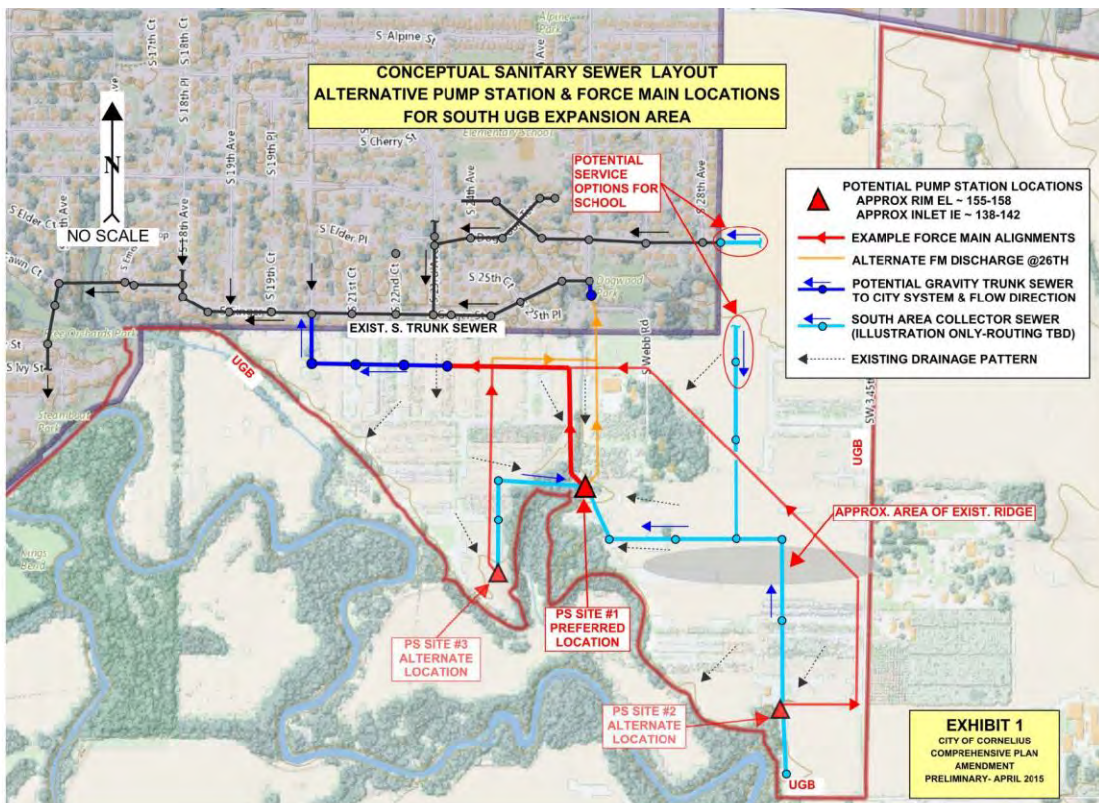
NE UGB Sanitary Sewer

The NE UGB can be served with sanitary sewer service via the extension of the existing gravity sewer system that is located to the north and south of the area. The conceptual layout set forth in Exhibit L identifies four (4) sewer sub-basins that would convey the wastewater to the existing sanitary line that services the mobile home park or the Council Creek Trunk Sewer which is located north of the UGB. Detailed information concerning the proposed flows and capacity of existing facilities is provided within the technical memorandum included within Exhibit L.



SE UGB Sanitary Sewer

A portion of the SE area located along the western edge can be served with sanitary sewer via the extension of the existing gravity sewer system that is located within S. Ginger Street. The majority of the SE UGB will require the construction of a pump station and force main (pressurized sanitary sewer line) to provide sanitary sewer service. The point of connection to the existing system will be at S. 20th Avenue and S. Ginger Street. Approximately 3,005 linear feet of existing sanitary sewer line will need to be increased in size in order to provide sanitary sewer service for the full build out of the SE UGB. Detailed information concerning the proposed flows and capacity of existing facilities is provided within the technical memorandum included within Exhibit L.



WATER SYSTEM

The City of Cornelius purchases bulk water from the City of Hillsboro and operates and maintains a water distribution system within City Limits. There is a 72" water main that is located within the TV Highway that provides water to the City. The City currently operates a 2 million gallon storage reservoir within the City and is in the process of designing and constructing an Aquifer Storage and Recharge (ASR) system that will allow the City to store approximately 50 million gallons of water. The water supply and storage system is adequate to provide for the development of the 2014 UGB. More detailed information concerning the water system is provided in a technical memorandum included within Exhibit K. The proposed water distribution system is described in more detail below for each of the two areas.

NE UGB Water

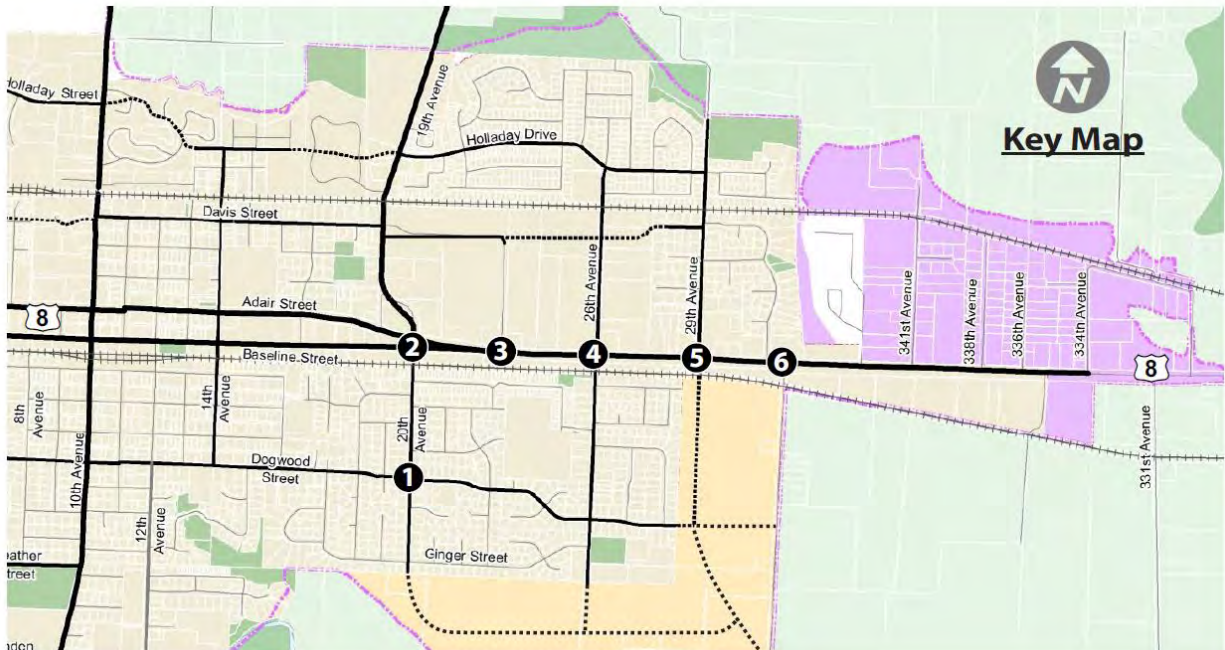
The NE UGB currently is served with municipal water service by the City of Hillsboro, this system was in place prior to the establishment of the City of Cornelius UGB. The existing system does not meet City standards, many of the pipes are undersized and not constructed to City standards. This area of the UGB will continue to be served by the City of Hillsboro. As properties are annexed into the City and developed, existing distribution lines will be required to be improved to meet City standards. The City will only accept lines and assume responsibility for maintenance when the lines are brought up to City standards. The existing lines within NW 341st Avenue will be replaced with a 12 inch line. The remaining lines within NW 338th, 336th, and 334th will be replaced with 8 inch lines. More detailed information concerning the water system is provided in technical memorandum included within Exhibit K.

SE UGB Water

There is no water system that currently serves the SE UGB, however, there are existing water lines within S. 20th Ave., S. 26th Ave, S Dogwood St., and S. Alpine St. The proposed water system to serve the SE UGB will be extended from this existing system within the new roadways that will provide vehicular access to the SE UGB. All lines within the SE UGB will be designed and constructed to City standards, a minimum of 8 inch in size. New lines proposed to be constructed within Collector roadways will be required to be 12 inches in size. More detailed information concerning the water system is provided in the technical memorandum included within Exhibit K.

TRANSPORTATION SYSTEM

Staff is proposing amendments to the Transportation System Plan (TSP) in order to ensure the existing and planned transportation system is adequate to meet the anticipated development of the NE and SE UGB's. The City contracted with DKS and Associates, a transportation engineering and planning consultant to assist with analyzing the transportation system and potential impacts associated with development of the additional land added to the City's UGB in 2014. The graphic below shows the six (6) intersections that were studied as part of the analysis. DKS worked closely with City staff, ODOT staff and County staff to scope the proposed transportation analysis which is included within Exhibit G.



SE UGB Transportation System

The graphic above depicts the additional improvements necessary (beyond those projects identified within the City's TSP) to support the build out of the SE UGB. Specifically the proposed collectors are shown depicted as dashed lines. During the planning process City staff expressed concern regarding the timing of the S. 29th Avenue intersection and corridor improvement. Based on the analysis conducted by DKS intended to alleviate staff's concerns and achieve livability goals, city staff is recommending that development connecting to S. 20th Avenue should be limited to 130 residential units and development connecting to 26th Avenue should be limited to 260 residential units prior to construction of the 29th Avenue connection to Tualatin Valley Highway. If development constructs a roadway connection within the southeast area between S. 20th and S. 26th Avenues, then a combined development limit of 390 residential units could be applied. More detail concerning the transportation analysis is presented within Exhibit G.

NE UGB Transportation System

The NE UGB is primarily developed with low density residential uses, there is an existing street network within the area, however, streets are not improved to City standards. City staff and the consultant team examined opportunities for proposing an east-west roadway to provide more

connectivity in the area. It was determined that this type of improvement was not necessary given the relatively low density of residential development proposed within the area and the existing residents desire to maintain their existing development pattern. The proposed commercially designated parcel south of the TV Highway was analyzed using both the Metro Regional Travel Demand Model as well as the Institute of Transportation Engineers (ITE) trip generation approach due to concerns raised by community members. Utilizing the ITE approach, the reasonable worst case development expected to be constructed on the property may result in a volume to capacity (v/c) ratio greater than the ODOT performance standard of 0.99 at the driveway intersection on the highway. This estimated v/c ratio would be determined by the Transportation Planning Rule to be a “significant effect”. The analysis completed by DKS notes the potential for localized traffic impacts at the commercial development driveway and recommends the upcoming Transportation System Plan update scheduled to begin in the first quarter of 2016 look at options to address access, capacity and safety needs along the TV Highway corridor. Based on how the property develops, a number of solutions could be implemented to address this concern including but not limited to the following:

1. If the proposed development of the property warrants a signal and is approved by ODOT, one could be installed to mitigate the impact at the driveway.
2. If the proposed development does not meet warrants for a signal, the proposed development could be limited to right-in/right-out access or a similar access management solution designed to mitigate the impacts.
3. The proposed development could work with adjacent properties to provide for a frontage connection south of TV Highway and install a signal at the existing Coastal Farms driveway. This option would require ODOT approval and cooperation from Coastal Farms as well as the intervening property owner who has a driveway just to the west of the subject property.

Any development on the property that results in more than 200 vehicular trips per day will trigger the need to complete a Traffic Impact Analysis (TIA) as part of the land use review process for the City as detailed in 18.143.030 of the Cornelius City Code. Section 18.143.030(C) provides the City Engineer additional discretion to require a TIA even when proposed development results in less than 200 vehicle trips per day. In addition, the TV Highway is Oregon State Highway 8 which is an ODOT facility. Development of the subject property will require the applicant to obtain approval from ODOT prior to development, at which time ODOT can also require a TIA.

STORMWATER MANAGEMENT

The terrain in NE and SE UGB area is generally flat. The NE area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the NE UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek. The only existing stormwater facilities in the NE UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The SE area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where S. 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River. The stormwater facilities in the SE UGB area are limited to the roadside ditches on SW 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs with these areas, the existing facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff. The existing topography of the two UGB areas do not dictate the need to be creative, thus the development of the UGB's will be afforded flexibility in how the stormwater systems are designed and constructed provided those facilities meet CWS standards. The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot Low Impact Development Approach (LIDA) facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight.

PARKS AND OPEN SPACE

The 2009 City of Cornelius Parks Master Plan provided for new improvements within both the NE and SE UGB prior to those lands being included within the UGB (see Exhibit M). The proposed amendments to the Parks Master Plan include removing some proposed trails that are located outside of the UGB, adopting the Council Creek Trail Master Plan, and reducing the size of a planned park (see Exhibit M). The City of Cornelius has had plans for a trail along Council Creek since the 2009 Parks Master Plan was established. The associated adoption of the Council Creek Trail Master Plan (Exhibit H) will relocate the proposed trail from along the creek corridor to within the existing railroad right-of-way that bisects the NE UGB. The Council Creek Trail Master Plan also calls for a north-south trail connection to connect in with a planned trail system along the Tualatin River. The Council Creek Trail Master Plan identifies the preferred alignment for the trail, estimated costs and associated trailhead locations to provide access to the trail. This plan and associated alignment was arrived at after a detailed public study was completed in conjunction with the Cities of Banks, Forest Grove, and Hillsboro as well as Washington County. A complete copy of the plan is available on the City's web site, hard copies are available for review at the planning department. A summary of the proposed changes to the parks master plan is included within Exhibit A and Exhibit B.

NE UGB Parks and Open Space

The proposed amendments for the NE UGB include changing the proposed Community Park (CP-1) to a Neighborhood Park (NP), this is proposed in light of the relatively low residential density proposed within the NE UGB. Staff is also recommending removing the proposed section of trail along Council Creek that is proposed on private property (see Exhibit M). This proposed for two reasons:

1. The property owners have clearly communicated their desire to not have the trail; and
2. The area where the trail is proposed is highly unlikely to ever be included within the City's UGB.

SE UGB Parks and Open Space

Within the SE UGB the proposed amendments to the Parks Master Plan are solely related to adopting the Council Creek Trail Master Plan (Exhibit H). Specifically the proposed adoption identifies an alignment for a trail connecting the Council Creek Trail to the planned trail network proposed within the SE UGB and along the Tualatin River.

SCHOOLS

The City of Cornelius is within both the Forest Grove School District (FGSD) as well as the Hillsboro School District (HSD). The vast majority of the SE UGB area is within the HSD with a small portion of the western edge located within the FGSD. All of the NE UGB is located within the HSD. Staff coordinated with both school districts during the planning process to determine if there was need for additional land to support new facilities to accommodate the development of the 2014 UGB.

The FGSD noted that they had adequate capacity within the existing facilities to accommodate the expected increase from development of the SE UGB. The HSD owns a 41 acre property located in the SE UGB which can be utilized to accommodate future facilities (see Exhibit J).

NATURAL RESOURCES

The City works closely with CWS to protect natural resources located within and adjacent the UGB. Those areas that have or are reasonably likely to have Goal 5 resources have the Natural Resource Overlay (NRO) applied at the time of annexation and are subject to the provisions of Chapter 18.95 of the Cornelius City Code. Furthermore, the City works closely with CWS, requiring applicants to obtain a Service Provider Letter (SPL) prior to deeming a development application complete and initiating review. This process assures that Goal 5 resources are identified as to their quantity, quality and location prior to development occurring. If there is the need to impact a resource for a transportation facility or other need, this process assures that any temporary or permanent impacts are quantified and mitigated.

The NE UGB is bounded to the north by the Council Creek and its associate floodplain and to the west by a tributary of Council Creek. These areas are protected Goal 5 resources. The SE area is bounded to the south by the Tualatin River and its associated floodplain, these are protected Goal 5 resources. Prior to annexation property owners will be required to submit a wetland determination completed by qualified professional in order to ascertain the potential presence of wetlands. If potential wetland resources are identified during the annexation process, prior to development of a site the applicant will be required to submit a wetland delineation that has been concurred with by the Oregon Department of State Lands.

OREGON STATEWIDE PLANNING GOALS

Goal 1: Citizen Involvement

To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Finding: The City has an acknowledged comprehensive plan and municipal code that has been found to be in compliance with Goal 1. The City conducted extensive outreach throughout the planning process with the goal of engaging as much of the citizenry as possible. The City exceeded the state and local requirements for notice and made all meetings open to public review including the TAC meetings. The City is proposing to host public hearings at the planning commission and city council as part of the adoption of the proposed amendments. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 1.

Goal 2: Land Use Planning

To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base of such decisions and actions.

Finding: The City has an acknowledged comprehensive plan and municipal code that has been found to be in compliance with Goal 2. The City has provided the proper notice as required by the comprehensive plan and Cornelius City Code. Affected governmental agencies have been engaged in the development of the comprehensive plan amendments and/or provided notice of the proposed amendments consistent with the intent of this goal. The proposed amendments do not seek any exceptions to Statewide Planning Goals. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 2.

Goal 3: Agricultural Lands

To preserve and maintain agricultural lands.

Finding: No goal exception is requested or required to Goal 3. The lands that are the subject of the proposed comprehensive plan amendments were included within the City of Cornelius UGB in 2014 as a result of a legislative action. The proposed amendments to the comprehensive plan map took into account the existence of farm land adjacent to the UGB and proposed to use low density residential zones, natural resource areas and existing transportation facilities to buffer the adjacent farm lands from the urbanizable land within the UGB consistent with the intent of this goal. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 3.

Goal 4: Forest Lands

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Finding: The proposed amendments do not impact existing forest land and are therefore consistent with statewide planning goal 4.

Goal 5: Natural Resources, Scenic and Historic Resources, and Open Space

To protect natural resources and conserve scenic and historic areas and open spaces.

Finding: The proposed amendments concern the 345 acres that was added to the City's UGB in 2014 including amending the comprehensive plan map to designate these properties appropriately for future development. The proposed amendments include changes to the City's utility master plans, transportation system plan and parks master plan to identify improvements necessary to support the development of these new lands. The City has designated Council Creek, the Tualatin River and their associated tributaries as Goal 5 resources within the comprehensive plan and enacted a Natural Resource Overlay (NRO) zone to protect the resources. The City works closely with CWS to administer the natural resource protections within the community and there is a development process in place to ensure that these resources will be protected and when appropriate enhanced. The proposed ordinances (Exhibit A and B) dictate that prior to annexation wetland determination completed by a qualified professional in order to ascertain the potential presence of wetlands. If potential wetland resources are identified during the annexation process, prior to development of a site the applicant will be required to submit a wetland delineation that has been concurred with by the Oregon Department of State Lands.

No scenic or historic resources were identified within the 2014 UGB planning process, accordingly no resources are proposed to be added to the City's inventory. New parks are identified for development within the UGB and open space areas are planned for preservation within the parks master plan consistent with the intent of this goal. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 5.

Goal 6: Air, Water and Land Resources Quality

To maintain and improve the quality of the air, water and land resources of the state.

Finding: The City has demonstrated how sanitary sewer and stormwater services can be provided to support development of the 2014 UGB. Council Creek, the Tualatin River and their associated tributaries are identified as Goal 5 resources within the comprehensive plan. Future development will need to comply with the provisions of the City's Natural Resource Overlay (NRO) as well as the requirements

administered in part by CWS. These process will assure that development that occurs within the 2014 UGB does not degrade the water quality of the adjacent resources, in fact CWS and NRO requirements will mandate improvements to the existing vegetated corridor associated with these resources resulting in a net increase in the quality of the resources consistent with the intent of this goal. The City's TSP will guide development of lands within the UGB resulting in an interconnected transportation system that provides for all modes of travel, including increased pedestrian and bicycle connections and facilities. The comprehensive plan amendments and Cornelius City Code will result in efficient development of the land within the 2014 UGB reducing the need to extend the UGB in the future consistent with the intent of this goal. Based on the information contained within this report and fact and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 6.

Goal 7: Areas Subject to Natural Hazards

To protect people and property from natural hazards.

Finding: The 2014 UGB was delineated in part based upon the Federal Emergency Management Agency (FEMA) mapped floodplains associated with Council Creek, the Tualatin River and their associated tributaries. The result is that those areas mapped within the 100 year floodplain for these resources have been left out of the UGB, thus not permitting future urban development within the floodplains, one of the areas subject to natural hazards within western Washington County. The City of Cornelius Comprehensive Plan, the Cornelius City Code, the International Building Code and the International Fire Code all work together to ensure that future development within the 2014 UGB will be designed, permitted and constructed consistent with statewide planning goal 7.

Goal 8: Recreational Needs

To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Finding: Both the NE 2014 UGB and SE 2014 UGB areas were considered when the City of Cornelius developed the 2009 City of Cornelius Parks Master Plan. The proposed amendments to the parks master plan seek to add the Council Creek Trail Master Plan resulting in a planned facility that will provide additional recreation opportunities for the immediate community as well visitors and guests. The proposed amendment to reduce the planned park from a Community Park to a Neighborhood Park within the NE UGB area reflects the low-density residential development that is proposed to occur within this area. The proposal to remove a planned aspirational pathway that is located outside of the UGB on private land reflects the fact that this area is unlikely to ever be included within the UGB as well as the fact the property owners do not want it there. The proposed amendments to the parks master plan better reflect the needs of the community and are therefore consistent with statewide planning goal 8.

Goal 9: Economic Development

To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Finding: The City is located within the Metro Regional Boundary and is therefore not required to comply with statewide planning goal 9. As a member of Metro, the entire housing and employment needs of the area are collectively examined and guided to the benefit of the region as a whole. As such the City does not have an acknowledged Economic Opportunity Analysis. The City is proposing to designate a parcel in the NE UGB south of the TV Highway as commercial. This site is situated adjacent existing commercial development, and it is of adequate size and configuration to permit highway commercial development. This property will provide the opportunity for future commercial development and corresponding employment consistent with the intent of this goal.

Additional areas within the NE UGB north of the TV Highway were requested to be designated commercial by a group of property owners. This was analyzed during the planning process, City Staff ultimately decided that these areas were not appropriate for commercial designation for a variety of reasons: the City already has existing vacant commercial property within the downtown and along the TV Highway corridor; there are significant amounts of commercial land within the City that are currently underutilized such as the Grande Foods site and Fred Meyer site; and the NE UGB (north of the highway) is already parcelized and developed as low-density residential. The proposed amendments are consistent with statewide goal 9.

Goal 10: Housing

To provide for the housing needs of citizens of the state.

Finding: Similar to goal 9, the City does not need to demonstrate compliance with statewide planning goal 10 as it is located within Metro. The vast majority of the land include within the 2014 UGB is proposed to be designated low- or medium-density residential, the only exception is the approximately 7 acre parcel located in the NE UGB south of the TV Highway that is proposed to be designated commercial due its location and size.

Later on in this report are findings that detail how the proposed comprehensive plan amendments comply with Metropolitan Housing Rule, exceeding the minimum density dictated by the state of Oregon for the City of Cornelius. As noted previously the City has an adequate supply of commercially designated land within the community that is either vacant or underdeveloped. The City also has good supply of industrial land that is either vacant or underdeveloped. The majority of the existing industrial land is located within two distinct areas of the community. The first is located in the NW corner of the City, the second is located in the SE corner of the City. These areas are ideally situated within the community to take advantage of access to Highway 26 and avoid potential conflicts between industrial and non-industrial uses.

The NE UGB is already committed to low-density residential development. While there are some larger parcels that could be developed with a commercial or

industrial use, these parcels are either located too far from the highway corridor, oriented awkwardly and/or are surrounded by existing residential development. Accordingly the NE UGB is proposed to be designated primarily low-density residential. The existing manufactured home park is proposed to be designated medium-density residential to reflect the existing development and is proposed to be zone Manufactured Home Park upon annexation.

The SE UGB is comprised mostly of vacant large lots that are used for agricultural purposes. This area is relatively flat and could be developed with commercial and/or industrial uses. The question is whether this area is appropriate for this type of development and whether the City needs additional industrial and/or commercial land. Staff concluded that the location of the SE UGB was not appropriate for commercial and industrial development due to its distance from the TV Highway and Highway 26 corridors. There was also concern regarding the compatibility with existing development within the City. The city currently has a limited amount of developable residential land and Staff determined the SE UGB area was most appropriately designated as residential. The proposed mixture of low- and medium-density residential provides opportunities for a range of housing options while still maintaining compatibility with adjacent urban development and rural farm practices. The proposed amendments provide for a range of housing development to meet the City's needs consistent with the intent of statewide goal 10.

Goal 11: Public Facilities and Services

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Finding: The proposed comprehensive plan amendments are intended to guide the future development of land added to the UGB in 2014. Statewide goal 11 mandates that Cities plan for public facilities and services necessary to support the intended development. The proposed water, sewer, storm and transportation related amendments were sized to accommodate the level of development anticipated from the proposed comprehensive plan amendments. The transportation system plan is proposed to be amended to identify improvements necessary to mitigate the impacts associated with the reasonably worst case development scenario. Likewise the parks, water and sanitary sewer master plans are proposed to be amended to include improvements that are necessary to support the full build out of the UGB. By identifying these improvements and associated costs the City can plan for the provision of these services including but not limited to updating the City's corresponding system development charges (SDC's) to assure that adequate revenue is collected to provide for the improvements needed within the UGB.

Identifying the correct improvements and determining when the improvements will need to occur provides the City the ability to effectively manage future annexations and development requests and ensure that services are available in a timely manner. Knowing the ultimate sanitary sewer and or water improvement that is necessary for the full build out of the UGB also allows the City to provide services efficiently, reducing the need to replace facilities in the future to accommodate

continued development. This process also provides the community the ability to understand the actual costs of providing the services to determine if alternative funding mechanisms such as supplemental SDC's or tax increment financing are necessary to support service delivery.

The proposed comprehensive plan amendments anticipate the level of development that could occur within the UGB given the proposed comprehensive plan designation and corresponding zoning upon annexation. The amendments identify improvements necessary to support the development of the UGB. The process provides the City, the development community and residents an understanding of what improvements will need to occur, as well as, when and how those improvements will occur. The proposed amendments to the comprehensive plan are consistent with consistent with statewide goal 11.

Goal 12: Transportation

To provide and encourage a safe, convenient and economic transportation system

Finding: The City contracted with DKS and Associates to prepare a transportation analysis to determine the improvements necessary to provide for the development of the new lands added to the UGB in 2014. DKS analyzed the vehicular, pedestrian, bicyclist and transit system within their transportation analysis. The analysis contained with Exhibit G identifies specific improvements necessary to mitigate the effects of the full build out of the UGB as well as recommendations for how to manage the development of the UGB to minimize impacts on existing development. Within this report are detailed findings demonstrating how the proposed comprehensive plan and comprehensive plan map amendments comply with the applicable transportation requirements of the state (Transportation Planning Rule) as well as the region (Metro). The transportation system that will serve the NE UGB utilizes existing roadways to accommodate the projected development of the area. As properties are annexed and proposed for development frontage and corridor improvements will be required as part of the land use review process. No new transportation facilities are planned for outside of the existing UGB. The proposed amendments address the requirements of statewide planning goal 12.

Goal 13: Energy Conservation

To conserve energy.

Finding: The intent of this goal is to promote development and utilization of land within the UGB that conserves energy. Many of the specific implementation measures are targeted at code requirements that implement the comprehensive plan, such as lot size, building height, setbacks, and access to light, wind and air. The City is not proposing to alter the Cornelius City Code which has been acknowledged to be consistent with goal 13. This goal can be considered as part of the decision on what comprehensive plan designation to apply within the UGB, balanced of course with the other statewide planning goals. The proposed designation within the SE and NE area were arrived at after balancing the desires of the community, the

needs of the City and the requirements put in place by the state, region and the City.

While the NE UGB could have been proposed to be designated a higher residential density, this would have been inconsistent with the existing development pattern, as proposed, the designations will allow for additional density while respecting the existing low density residential development pattern.

The proposed designation within the SE area have been designed to respect existing development while also providing the opportunity for higher density consistent with the intent of this goal. Services for water, stormwater, and sanitary sewer will be designed and located to maximize the efficient delivery of these services thereby reducing the cost to construct and maintain resulting in less consumption of energy. Similarly the transportation system will be designed and constructed to provide for direct connections and minimize out-of-direction travel. New facilities for pedestrians and bicyclist will be incorporated as part of the design providing for non-motorized connections to the existing City Limits and transit stops along the TV Highway. Therefore the proposed comprehensive plan amendments are consistent with statewide planning goal 13.

Goal 14: Urbanization

To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Finding: The primary purpose of goal 14 is to establish and manage urban growth boundaries within the state of Oregon. The proposed comprehensive plan amendments do not result in the establishment of a new UGB, nor do the amendments propose to alter the City of Cornelius UGB. The proposed comprehensive plan amendments will result in applying comprehensive plan map designations to land that was included within the UGB in 2014. The proposed designations include commercial, low-density residential and medium-density residential.

The majority of the NE UGB is already committed to urban level development as witnessed by the zoning and development pattern that exists. The proposed comprehensive plan amendments will allow for future development of the majority of this area as low-density residential, respecting the existing development pattern and the wishes of the citizens who reside there. One parcel located south TV Highway is proposed to be designated commercial to reflect the existing development pattern along the south side of the highway. One parcel located along the western edge of the area is proposed to be designated medium-density residential to reflect existing development which is a mobile home park, this property would be zoned Mobile Home Park (MHP) upon annexation.

The majority of the SE area is currently undeveloped and is characterized by rural residential development on large lots and farming activities. The majority of this area is proposed to be designated medium-density residential, with two specific

areas proposed to be designated low-density residential. Along the east of the SE UGB the low-density residential is proposed to serve as a buffer along with SW 345th Avenue between existing farmlands to the east. Similar the proposed amendments identify a buffer of low-density residential along the southern and eastern boundary of the existing City Limits, this is to ensure that development adjacent the existing City Limits keeps in scale with existing development. The proposed land use pattern within the SE UGB allows for efficient use of the land consistent with the intent of this goal while also respecting existing farm practices and existing development within the City.

The proposed amendments do not propose to establish or alter a UGB. The proposed amendments do identify and plan for the provision of urban services necessary to support development of the subject areas and allow for future annexation into the City. These amendments do propose to apply comprehensive plan designations and urban services that will result in efficient development, while at the same time respecting the transition of the UGB and the redevelopment of areas that are already committed to low density residential. The proposed amendments are therefore consistent with statewide planning goal 14.

Goal 15: Willamette River Greenway

To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: The City of Cornelius is not located along the Willamette River. The proposed comprehensive plan amendments do impact the Willamette River Greenway, therefore, the goal 15 is not applicable to this review.

Goal 16: Estuarine Resources

To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Finding: The City of Cornelius is not located on the coast, there are no estuarine resources associated with the proposed comprehensive plan amendments, therefore, goal 16 is not applicable to this review

Goal 17: Coastal Shorelands

To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Finding: The City of Cornelius is not located on the coast, there are no coastal shorelands associated with the proposed comprehensive plan amendments, therefore, goal 17 is not applicable to this review

Goal 18: Beaches and Dunes

To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Finding: The City of Cornelius is not located on the coast, there are no beach or dune resources associated with the proposed comprehensive plan amendments, therefore, goal 18 is not applicable to this review

Goal 19: Ocean Resources

To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Finding: The City of Cornelius is not located on the coast, there are no ocean resources associated with the proposed comprehensive plan amendments, therefore, goal 19 is not applicable to this review.

METRO TITLE 11 ANALYSIS

3.07.1120 PLANNING FOR AREAS ADDED TO THE UGB

A. The county or city responsible for comprehensive planning of an area, as specified by the intergovernmental agreement adopted pursuant to section 3.07.1110C(7) or the ordinance that added the area to the UGB, shall adopt comprehensive plan provisions and land use regulations for the area to address the requirements of subsection C by the date specified by the ordinance or by section 3.07.1455B(4) of this chapter.

Finding: The subject properties were added to the City of Cornelius Urban Growth Boundary (UGB) by the State of Oregon by House Bill 4078. The City is therefore responsible for the comprehensive planning of the area. The City is proposing to adopt amendments to the Cornelius Comprehensive Plan to provide guidance on how the properties can be developed and served upon annexation into the City. The proposed comprehensive plan amendments are consistent with this provision.

B. If the concept plan developed for the area pursuant to section 3.07.1110 assigns planning responsibility to more than one city or county, the responsible local governments shall provide for concurrent consideration and adoption of proposed comprehensive plan provisions unless the ordinance adding the area to the UGB provides otherwise.

Finding: There is no corresponding concept plan for the subject properties. As noted above the areas were added into the City's UGB through a state legislative action (HB 4078). The responsible local government is the City of Cornelius. The City of Cornelius is proposing specific comprehensive plan amendments to provide

guidance on how the properties can be developed and served upon annexation into the City. The proposed comprehensive plan amendments are consistent with this provision.

C. Comprehensive plan provisions for the area shall include:

1. Specific plan designation boundaries derived from and generally consistent with the boundaries of design type designations assigned by the Metro Council in the ordinance adding the area to the UGB;

Finding: The two areas, referred to as the 2014 SE UGB and 2014 NE UGB were defined by Metro (see Exhibits I and J) after the passage of House Bill 4078. The City is proposing specific amendments to the comprehensive plan to guide future development of these areas. In addition, the City is also proposing to acknowledge the Council Creek Regional Trail Plan (Exhibit H) as a component of the 2009 City of Cornelius Parks Master Plan (component of the comprehensive plan). Both the CCRTTP and 2014 UGB amendments are intended to guide future development within the City of Cornelius UGB consistent with the intent of this criterion.

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

Finding: Once the proposed amendments are completed and in effect, the City can process annexations from the 2014 UGB areas, provided each property meets the City's annexation requirements detailed on Page 16 of the Comprehensive Plan. Upon annexation the City will apply the appropriate zoning, including the Natural Resource Overlay (NRO) zone for those properties that adjacent Council Creek, the Tualatin River and the associated tributaries.

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

Finding: Section 3.07.1455B(2) relates to a conditions of approval that are typically placed on properties during "concept planning" prior to inclusion within the UGB. As noted above the properties were added to the UGB through a legislative process at the state level. No specific requirements or conditions of approval were placed on the UGB expansion at that time. No specific conditions of approval were placed on the UGB expansion by the Metro Council. Therefore the criterion identified above is not applicable to this review.

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

Finding: Detailed findings demonstrating conformance with Title 7 are provided below with this report.

5. Provision for the amount of land and improvements needed, if any, for public school facilities sufficient to serve the area added to the UGB in coordination with affected school districts. This Effective 09/10/14 3.07 - 64 of 129 requirement includes consideration of any school facility plan prepared in accordance with ORS 195.110;

Finding: The City is served by two school districts, the Hillsboro School District (HSD) and Forest Grove School District (FGSD). The City worked closely with both districts to determine if there was the need for additional school property at the beginning of the planning process. The majority of the area added to the UGB in 2014 is within the HSD, with a small portion in the southwest area of the UGB located within the FGSD.

The HSD owns approximately 41 acres within the 2014 SE UGB area. This area is of sufficient size to accommodate a High School, Middle School, Elementary School or a combination Middle/Elementary School. Based on interviews with HSD staff, the district does not need additional land to support the anticipated growth. The FGSD has existing capacity within their district to be able serve their portion of the 2014 SE UGB. Schools are permitted as a conditional use in the R-7, R-10, and A-2 zones. The proposed amendments account for the future needs of the HSD and FGSD consistent with this criterion.

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

Finding: The City of Cornelius is the park provider for our UGB. The proposed amendments to the UGB include revisions to the 2009 City of Cornelius Parks Master Plan. The revised plan calls for a Neighborhood Park in the 2014 NE UGB as well as several linear open space areas that will provide connections to the Tualatin River and Council Creek corridors. The proposed amendments also provide for the formal acknowledgement of the Council Creek Region Trail Plan as a component of the comprehensive plan.

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

Finding: The majority of the area brought into the UGB in 2014 is intended for residential development. The City contracted with DKS and Associates to analyze the transportation system. Exhibit G is a technical memorandum that identifies the approximate location of new collector roadways and intersection improvements that will be necessary to support the development of both areas added to the UGB, this serves as the conceptual street plan required. The design and location of local streets will be determined at the time of development. City Staff will require designs that are consistent with Title 17 (Subdivision Ordinance) and 18.143 of the Cornelius City Code which mandate compliance with Title 1 of Section 3.08.110 of the Regional Transportation Functional Plan.

Specifically all sidewalks constructed within the new UGB areas will be a minimum of five (5) feet in width. The City does permit and encourage local streets to be constructed with pavement widths less than 28 feet in width. City standards require street trees located within a landscape planter area that is a minimum of five (5) feet in width. City standards permit the use of traffic calming devices such as speed bumps, curb extensions and chicanes. At the time of development these standards will be assured consistent this requirement.

8. Provision for the financing of local and state public facilities and services; and

Finding: The proposed comprehensive plan amendments include revisions to the City's parks, utility and transportation master plans to support the proposed comprehensive plan map designations within Exhibit I and J. For each new facility required to serve the new UGB appropriate funding has been identified. Due to the size and scale of the infrastructure necessary to support development of the 2014 UGB no supplemental SDC's or alternative funding mechanisms are necessary. A combination of existing SDC's and development exactions will suffice to ensure that improvements can be completed when they are needed. The City has been working diligently with CWS and Washington County to ensure that key infrastructure improvements are identified within the appropriate capital improvement plans to ensure these improvements are SDC creditable. The two largest improvements; 1.) The sanitary sewer pump station for the SE UGB, and 2.) The 29th Street intersection and corridor extension are both SDC creditable. In fact the 29th Street project has been identified within the City's TSP since 2005. The remaining improvements including the extension of the sanitary system, extension of the water system, development of the stormwater system, and development of the parks system will be completed through a combination of development exactions and utilizing funds collected through SDC's. The proposed comprehensive plan amendments have considered the need for financing and determined adequate measures exist to provide for the identified services consistent with this requirement.

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

Finding: The City does not have any state highway interchanges or planned interchanges located within the UGB. Therefore the proposed amendments to the comprehensive plan are consistent with this requirement.

D. The county or city responsible for comprehensive planning of an area shall submit to Metro a determination of the residential capacity of any area zoned to allow dwelling units, using the method in section 3.07.120, within 30 days after adoption of new land use regulations for the area.

Finding: The City shall comply with this requirement, detailed findings demonstrating compliance with the applicable portions of Title 7 are set forth below.

TITLE 7: HOUSING CHOICE

3.07.730 REQUIREMENTS FOR COMPREHENSIVE PLAN AND IMPLEMENTING ORDINANCE CHANGES

Cities and counties within the Metro region shall ensure that their comprehensive plans and implementing ordinances:

- A. Include strategies to ensure a diverse range of housing types within their jurisdictional boundaries.

Finding: The proposed amendments do not include changes to the implementing ordinance. The Cornelius City Code has previously been acknowledged by the state of Oregon. The City provides the opportunity for a diverse range of housing within each of our residential zones. The proposed comprehensive plan amendments result in a mixture of low- and medium-density residential land that can accommodate wide range of housing options including apartments, attached single family housing, accessory dwellings, and detached single family housing. The City's Planned Unit Development ordinance permits flexibility in housing type, lot size, setbacks and many other development standards. The City recently approved a nonprofit low-income housing tax exemption (Section 3.35 of the Cornelius City Code) to encourage the development of affordable housing within the community. The minimum density requirements of the implementing zones will also assure a diverse range of housing types is provided within the community. The proposed amendments to the comprehensive plan do not seek to alter any of these strategies, rather the amendments seek to allow for the development of additional residential development within the community via the adoption of amendments to the utility master plans and the comprehensive plan map consistent with this section of Title 7.

- B. Include in their plans actions and implementation measures designed to maintain the existing supply of affordable housing as well as increase the opportunities for new dispersed affordable housing within their boundaries.

Finding: The City is not proposing to amend any of the implementing ordinances for the comprehensive plan. However, the City did adopt a nonprofit corporation low-income housing tax exemption (Chapter 3.35 of the Cornelius City Code) in an effort to increase the provision of affordable housing within the community. The City is proposing to designate a mix of low- and medium-density residential land on the comprehensive plan map that would provide the opportunity for additional affordable housing to be developed within the community.

All of the City's residential zones permit the development of accessory dwellings. The SE UGB in particular will have a significant amount of medium-density designated land that will ultimately be zoned A-2, Multi-family upon annexation into the City. The A-2 zone allows for a wide range of housing types including apartments, townhomes, attached single family and detached single family homes. The minimum lot size for a single family detached home in the A-2 is 3,100 sq. ft. and it is 3,000 sq. ft. for attached products. The smaller lot size allows for a more affordable home by reducing the size of the lot of, thereby reducing the cost of the home. The R-7 zone allows for attached and detached single family homes.

The proposed amendments would not limit or reduce the City's ability to maintain and/or increase the affordable housing supplied within the community. In contrast the proposed amendments would provide additional land where a variety of new housing could be constructed consistent with the intent of this section of Title 7.

C. Include plan policies, actions, and implementation measures aimed at increasing opportunities for households of all income levels to live within their individual jurisdictions in affordable housing.

Finding: As detailed above the City is not proposing to remove and/or alter any policies or implementing measures. The City has measures in place to promote the provision of affordable housing within the community. The City is lacking land available for development of affordable housing. The proposed amendments to the comprehensive plan would result in plan designations that would be supportive of this section of Title 7 by providing additional land within the City's residential inventory that could be developed with affordable housing opportunities in the future.

METROPOLITAN HOUSING RULE

660-007-0035

MINIMUM RESIDENTIAL DENSITY ALLOCATION FOR NEW CONSTRUCTION

The following standards shall apply to those jurisdictions which provide the opportunity for at least 50 percent of new residential units to be attached single family housing or multiple family housing:

(1) The Cities of Cornelius, Durham, Fairview, Happy Valley and Sherwood must provide for an overall density of six or more dwelling units per net buildable acre. These are relatively small cities with some growth potential (i.e. with a regionally coordinated population projection of less than 8,000 persons for the active planning area).

Finding: The City of Cornelius allows for attached single family housing in the R-10, R-7 and A-2 zones providing the opportunity for approximately 95 percent of new residential units within the 2014 UGB to be attached single family or multiple family. The only zone that precludes attached single family housing is the Manufactured Home Park (MHP) zone. Therefore, the City of Cornelius minimum overall density shall be six dwelling units per net developable acre. The Cornelius City Code and/or Comprehensive Plan define the net buildable acres for each zone. The City is proposing to designate 173 acres of low-density residential (R-7 and R-10) and 186 acres of medium-density residential (A-2 and MHP) resulting in an average minimum density of 7.36 dwelling units per net acre for the planning areas. The proposed comprehensive plan amendments exceed the standard.

	Minimum Net Density	Acreage	Percent of Area	Min. Density as a % Area
Residential R-7	4	134	37.33%	1.49
Residential R-10	3	39	10.86%	0.33
Residential A-2	11	167	46.52%	5.12
Residential MHP	8	19	5.29%	0.42
				7.36

OREGON TRANSPORTATION PLANNING RULE

660-012-0060

PLAN AND LAND USE REGULATION AMENDMENTS

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

Finding: In support of the proposed comprehensive plan map amendments the City engaged DKS and Associates to analyze the transportation system and provide a formal recommendation to ensure that the proposed comprehensive plan map amendments (Exhibits I and J) comply with the Oregon Transportation Planning Rule (OAR 660-012-0060). DKS coordinated with ODOT and Washington County prior to conducting the study to identify the appropriate scope of work to complete this review. DKS's analysis is included within Exhibit G of this report. The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. DKS did suggest that further analysis of Tualatin Valley Highway west of SW 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety. City staff have included this recommendation within the scope of work for the upcoming TSP update.

CORNELIUS COMPREHENSIVE PLAN

CONTINUING INVOLVEMENT IN LAND USE PLANNING

Amending the Plan

It is the City's intent to give the citizens and affected governmental units' ample opportunity to review and comment on any proposed plan changes. There are several types of amendments that may occur over time. They include:

- Periodic Review, as required by state law, every 7-10 years.
- Plan Text amendments, which alter the policies of the plan.
- Plan Map amendments, which alter the land use designation and/or density of a specific property or group of properties.
- Amendments may be major or minor in nature:
 - * Major amendments (Legislative) include land use changes that have widespread and significant impact beyond the immediate area or an individual parcel. These include quantitative changes producing large volumes of traffic; qualitative changes in the character of the land use itself such as conversion of residential to industrial use; or spatial changes that affect large areas or many different ownerships. A complete rethinking of the plan and the needs of the public may be necessary before major amendments are approved.
 - * Minor amendments (Quasi-judicial) have little significance beyond the immediate area of the change. Their evaluation will be based on special studies or other information which justifies the public need for the change.

Procedures

Amendments may be initiated by the City Council, Planning Commission, city staff, or a 11 property owner, or group of owners. The amendment shall be initiated through a formal application process. All amendments shall include specific recommendations or requests from the applicant, supported by factual documentation as to why the amendment is necessary and appropriate. A staff report shall be prepared and presented to the Planning Commission.

Finding: The City Council initiated the amendments that are the subject of this report.

Public hearings shall be held before any amendment is approved. There shall first be a review by the Planning Commission, which may also include informal public meetings or workshops, but shall conclude in a public hearing. The Commission shall make a formal recommendation to the City Council. The City Council shall then also hold a public hearing before making a final decision to amend the Plan. Any amendment shall be adopted by ordinance.

Finding: The planning commission is scheduled to hold a public hearing on October 13th and the City Council is scheduled to host a public hearing in November. The proposed amendments are contained within Ordinance 2015-06 and 2015-07. The proposed amendments are consistent with this section of the comprehensive plan.

Notice of Amendments

For minor amendments (quasi-judicial) applying to individual parcels or small local areas a public hearing on the proposed change will be held, and at least 20 working days of notice prior to the hearing will be given to all owners, including the subject site, and within 250 feet of a specific property boundary for which a change is proposed.

Finding: The proposed package of amendments is not quasi-judicial, the amendments encompass approximately 345 acres and numerous property owners. The notice requirement detailed above is not applicable to this review.

For major amendments (legislative) applying to large areas or effecting general policies of the plan notice shall be given to all property owners within the City limits by publication in a newspaper of general circulation in the City. Such notice shall be provided, at least 20 days prior to the first hearing.

Finding: The City posted notice of the first hearing 21 days prior to the first hearing before the planning commission in the Forest Grove News Times. Notice was posted on September 23rd, 2015 for the October 13th, 2015 hearing. As detailed above the City also provided direct mailed notice to those interested parties who participated in the planning process. The proposed amendments exceed the minimum notice requirement set forth above.

For all amendments notice shall be provided to interested and effected public agencies, with specific notice to METRO and DLCD, at least 45 days prior to the first hearing, as provided under ORS 197.610 and OAR Chapter 660, Division 18.

Finding: The City provided notice to affected agencies pursuant to ORS 197.610.

Criteria

The following criteria shall be used to establish whether or not a plan amendment or change is justified. An amendment need not satisfy each and every one of the criteria, but the city must conclude that at least some of the criteria have been reasonably addressed.

- The fact that an applicant owns the land for which the change is being sought is not in itself sufficient justification for the change or amendment.

Finding: The proposed comprehensive plan amendments were initiated by the City Council and not specifically proposed by an individual property owner.

- The proposed change or amendment must meet a public need. Such need must be documented by appropriate facts and evidence and should extend from the statewide planning goals, METRO 2040, or the city own comprehensive plan.

Finding: The public need that proposed amendments are meeting has been documented throughout this report. The proposed amendments are intended to guide the development of approximately 345 acres that was added to the City's UGB in 2014. There is a lack of residential land available for development within the City without the proposed amendments, areas added to the UGB in 2014 will be unable to annex into the City and meet the demand for residential development within the community.

- The amendment is necessary to conform with current state law or regional 12 policy, which requires local compliance.

Finding: The amendments proposed are not necessary to comply with current state law or regional 12 policy. The amendments are necessary to provide guidance for the development of land that was added to the UGB in 2014. Failure to approve the amendments will prevent property located within the new UGB from being able to annex to the City and develop. There is a demonstrated need for the additional land to provide new housing opportunities for the community.

- The amendment is necessary to implement the adopted vision for the community, or to respond to unanticipated local circumstances.

Finding: The proposed amendments are necessary to allow for annexation and development of land added to the City's UGB in 2014. The community has sought to include portions of these lands within UGB for some time, this desire is reflected in the City's current TSP which identifies improvements within the SE UGB as well as the City's parks master plan which identifies improvements within both the NE and SE UGB. Both of these plans were adopted and acknowledged as part of the City's comprehensive plan reflecting the community's vision for these areas. Without approval of the proposed comprehensive plan amendments the vision articulated within the plan cannot be realized. The amendments are also necessary to respond to an unanticipated local circumstance that resulted from addition of land to the City's UGB in 2014 as approved by the state legislature and signed into law by the governor. The proposal is consistent with these criteria.

- The proposed change or amendment must be in conformance with the unamended goals and policies of the Comprehensive Plan, as well as being consistent with state and regional policies.

Finding: This report has documented how the proposed amendments are consistent with the statewide planning goals, the applicable provisions of the Metro's policy, the applicable Oregon administrative rules as well as the applicable portions of the City's comprehensive plan and the Cornelius City Code.

- The amendment must meet the standards and requirements of the zone in which it is located, or proposed to be located.

Finding: The proposed comprehensive plan amendments provide comprehensive plan map designations for properties added to the UGB in 2014. The proposed amendments also adopt amendments to the City's parks and utility master plans (components of the comprehensive plan) intended to provide services to and guide the development of these newly added lands. Zoning will be applied to each individual property as part of the annexation process under a separate land use action.

CHAPTER V HOUSING

Goal: *To provide for the housing needs of the prospective as well as the present Cornelius citizens*

Policies:

1. Ensure that adequate land is available for both single family and multi-family housing
2. Promote and encourage housing types and densities throughout town, available at various prices and rents, to households of all incomes, age, sex and race.
3. Promote and encourage open spaces and buffers in new subdivisions and other housing developments.
4. Develop strategies for promoting higher end housing options.

Finding: The proposed amendments to the comprehensive plan and map primarily provide for the housing needs of the community ensuring that adequate land is available for both single and multi-family development. Approximately 173 acres of low-density residential land (R-7 and R-10) and 186 acres of medium-density residential land (A-2 and MHP) are proposed to be designated within the 2014 UGB, resulting in the application of all the existing zones as part the amendments. The diversity of proposed map designations will promote the development of a mix of housing types and densities providing a range of rents and prices. The proposed map amendments within the SE UGB include a transition in density with respect to the existing City Limits and UGB which effectively buffers the new development from existing housing developments to ensure compatibility. The proposed amendments are consistent with Chapter V of the comprehensive plan.

CHAPTER VIII PUBLIC FACILITIES AND SERVICES

Goal: *To plan and develop the necessary recreational, transportation, and public facility systems and services to meet the needs of the Cornelius residents.*

Policies:

1. The City shall coordinate with the school districts for efficient expansion or development of new schools and facilities.
2. The City shall provide opportunities in the zoning code for alternative and private schools.
3. The City shall encourage development of local recreation options.
4. The City shall continue to maintain an adequate water supply and to improve the overall water distribution system.
5. The City shall coordinate with USA, Metro, and Washington County on the planning management of sewage and solid waste.

Finding: Both the Forest Grove and Hillsboro school districts were engaged in the planning process at the onset as part of the stakeholder interviews. The Community Development Director currently and historically has been an active member of the Hillsboro School District’s Long Range Planning Committee, attending monthly meetings and providing updates on new development and long range planning projects in the City. The proposed amendments include new trail improvements that will result in recreation opportunities within the community when developed. The proposed amendments to the comprehensive plan include analysis of the City’s water system and identify improvements necessary to support development of the 2014 UGB. Metro, CWS (formerly USA) and Washington County were all engaged in the planning process as members of the Technical Advisory Committee. The proposed comprehensive plan and map amendments are consistent with Chapter VIII of the comprehensive plan.

CHAPTER IX TRANSPORTATION SYSTEM PLAN

Goals:

1. Provide public street standards that recognize the multi-purpose nature of the street right-of-way (utilities, vehicles, pedestrians).

Finding: The proposed amendments to the parks master plan to include the Council Creek Trail and the proposed amendments to the Transportation System Plan (TSP) both include roadway cross sections for the new UGB. These proposed cross section accommodate utilities, vehicles, pedestrians and bicyclists. The proposed comprehensive plan amendments are consistent with Goal 1 of Chapter IX of the comprehensive plan.

2. Provide transportation facilities that through design and location enhance the livability of Cornelius.

Finding: The proposed amendments to the TSP include the location of new collector roadways as well as a recommendation to maintain livability within adjacent neighborhoods as the SE UGB builds out. The new collector roadway system when developed will not only provide new opportunities for ingress and egress to the SE UGB area for new residents, it will also provide an alternate route for existing residents to be able to access the Highway to travel eastbound and a route for residents traveling westbound on the Highway to access their homes. The new collector system will also include provisions for bicyclists and pedestrians, providing alternative options for existing and new residents. The proposed roadway cross sections intended to accommodate the north-south component of the Council Creek Trail through the SE UGB will also enhance the livability for existing and new residents by providing a safe and efficient connection to a planned east-west trail (Council Creek Regional Trail) which will provide opportunities for recreation and non-motorized commuting when completed. The recommended “trigger” for when the 29th Street corridor and intersection improvement need to be completed as part of the TSP amendments seeks to allow for the development of the SE UGB while also retaining current livability standards for those who live along the S 20th Avenue and S 26th Avenue corridors. The

proposed comprehensive plan amendments area consistent with Goal 2 of Chapter IX of the comprehensive plan.

3. Provide connectivity to each area of the City.

Finding: The proposed amendments include new roads and trails designed to provide good connectivity to the 2014 UGB areas. The proposed amendments to the parks master plan to adopt the Council Creek Trail alignment will provide opportunities to increase pedestrian and bicycle connectivity throughout the community. As each individual property annexes and develops, City Staff will review the proposals and make sure that the connectivity standards articulated within the City's TSP and subdivision ordinance (Title 17 of the Cornelius City Code) and Chapter 18.143 of the Cornelius City Code (Transportation Facilities) are adhered to. The proposed amendments will result in increased connectivity throughout the community and the existing development standards will ensure that appropriate connections are required as properties develop consistent with the intent of this goal of Chapter IX of the comprehensive plan.

4. Develop a safe, complete and efficient transportation system that provides multi-modal access.

Finding: The proposed amendments to the TSP and parks master plan include new trails and road cross sections that will provide for increased multi-modal access to and from the areas added to the UGB in 2014. The proposed collector roadway system in the SE UGB will provide for safe and efficient access for all modes of travel. The proposed comprehensive plan amendments are consistent with goal 4 of Chapter IX of the comprehensive plan.

5. Establish rights-of-way at the time of development and where appropriate officially secure them by dedication of the property.

Finding: The proposed amendments to the TSP and parks master plan identify future right-of-ways (ROWs) that will need to be secured in the future. Identifying these ROWs now and including them within the comprehensive plan provides City Staff the opportunity to secure them at the time of development when appropriate. The proposed comprehensive plan amendments are consistent with goal 5 of Chapter IX of the comprehensive plan.

6. Continue to coordinate with ODOT, Washington County, and adjacent property owners towards the goal of funding all planned improvements along the highway. Such improvements will not only improve multi-modal circulation, but will also substantially enhance the visual quality of the most visible features in Cornelius. This in turn will improve the commercial market environment.

Finding: The proposed amendments do not include any new planned improvements along the highway. This is in part because the existing TSP already includes the 29th Street Intersection and Corridor improvement. The proposed adoption of the

Council Creek Trail will result in a new improvement that will cross the highway. Both ODOT and Washington County were engaged in the UGB planning process as well as the Council Creek Regional Trail process from the onset as members of the Technical Advisory Committee. The City closely coordinates with Washington County on an on-going basis regarding future transportation improvements and updates to the City and County's TSP. Therefore the proposed comprehensive plan amendments are consistent with goal 6 of Chapter IX of the comprehensive plan.

7. Work for the development of a strong north-to-south transportation link to its primary trade area.

Finding: This goal is not applicable to this review as there is not negative impact associated with the proposed comprehensive plan and map amendments that would inhibit the City from developing the transportation link provided above.

8. Continue to explore mechanism to enhance the multi-modal access and circulation throughout the community.

Finding: The proposed amendments include improvements/facilities that will improve the multi-modal access throughout the community. The new collector roadway system and Council Creek Trail will provide new bike and pedestrian improvements that will increase multi-modal circulation throughout the community when completed. The proposed comprehensive plan amendments are consistent with goal 8 of Chapter IX of the comprehensive plan.

9. Coordinate with Tri-Met to continue enhancements at bus stops to provide a more attractive environment for transit users.

Finding: The proposed amendments will not affect the City's ability to continue to coordinate with TriMet to enhance existing bus stops within the community.

10. Update its Transportation System Plan (TSP)

Finding: The proposed amendments include an update to the Transportation System Plan to address the needs of land added to the UGB in 2014 consistent with the intent of this goal.

CORNELIUS COMMUNITY CODE

18.15.030 NOTICE.

(D) Legislative Hearings. A legislative hearing before the planning commission or city council shall be provided in the following manner:

- (1) Notice shall be published in a newspaper of general circulation within the city at least 20 days prior to the initial hearing before the planning commission and city council.

Finding: Notice was published in the Forest Grove New Times 21 days prior to the public hearing before the planning commission. Notice for the City Council public hearing will comply with this provision.

- (2) Notice shall be provided to all affected agencies and organizations recognized in the comprehensive plan and any person or entity requesting notice.

Finding: The City has maintained a list of interested persons throughout the planning process and has provided written notice of the proposed amendments to the affected agencies as well as interested parties consistent with this requirement.

- (3) Notice shall include:

- (a) The time, date and location of the hearing.
- (b) A summary of the proposed amendments.
- (c) A statement that a copy of the proposed amendments are available for review or to purchase a copy.

Finding: The notice mailed and posted included the time, date and location of the hearing as well as a summary of the proposed amendments. The notice also included a statement noting that the proposed amendments are available for review or purchase. The City will also post this report and the proposed ordinances to the City web page for review as well a minimum of seven (7) days prior to the hearing.

CHAPTER 18.130 COMPREHENSIVE PLAN

(D) Approval Criteria. No comprehensive plan amendment shall be approved unless findings are made to support the following conclusions demonstrating conformance to state and local law.

- (1) The proposed plan and amendments shall conform to the requirements of the Oregon Statewide Planning Goals, and applicable administrative rules of the State Land Conservation and Development Commission.

Finding: Findings demonstrating conformance with the applicable Statewide Planning Goals and applicable Oregon Administrative Rule are detailed above within this report.

(2) The proposed amendments shall comply with all other applicable laws, rules and regulations of the state, city and other governmental agencies having jurisdiction over land use regulation within the city.

Finding: The City has closely coordinated with affected agencies and service providers during the development of the proposed amendments. There is no known violation of any City, State, Federal or Regional laws or rules that would result from approval of the proposed amendments to the comprehensive plan.

(3) The proposed amendment shall address the criteria identified in Chapter 1 of the city comprehensive plan.

Finding: Findings demonstrating conformance with the criteria identified within Chapter 1 of the comprehensive plan are set forth above within this report.

(E) Amendment Procedures.

(1) An amendment to the text or the map of the comprehensive plan may be initiated by the council, the planning commission or by application of a property owner, or his or her authorized agent.

Finding: The proposed amendments were initiated by the City Council.

(2) Application for amendment by a property owner or his or her authorized agent shall be filed on forms prescribed by the community development director and available from the community development department. The application shall be accompanied by a fee for related services incurred by the city in the processing of the application.

Finding: The proposed amendments were initiated by the City Council.

(3) The fees and deposits to be paid by the applicant requesting an amendment to the text or land use map of the comprehensive plan may be established or amended by resolution of the council.

Finding: The proposed amendments were initiated by the City Council. The City Council understands this authority and will take it under advisement if and when they seek to amend the land use fees for the City of Cornelius.

(F) Public Hearing.

(1) Before taking final action on a proposed amendment to the comprehensive plan, the planning commission shall hold a public hearing. After the public hearing before the planning commission, the council shall hold a public hearing to consider the written report and recommendation of the planning commission relative to the proposed amendment to the comprehensive plan. Notice of the time, place and purpose of the public hearing shall be given in accordance with the requirements of CCC 18.15.030.

Finding: The Planning Commission has a public hearing scheduled for October 13th, 2015 to provide for interested parties to participate in the process. Formal responses to CCC 18.15.030 are provided above.

(2) The planning commission and the council may recess their hearing in order to obtain additional information or to provide for further notice of the proceedings. Upon recessing, the planning commission or the council shall announce the time and date when the hearing will be resumed. Any continued public hearing must be to a date certain and be not more than 40 days from the date on which the meeting was continued. The hearing before the council shall be not more than 40 days after the written report and recommendation of the planning commission is filed with the community development director.

Finding: The Planning Commission and City Council will follow the rules detailed above as public hearings are conducted through the process.

STAFF RECOMMENDATION

Based on the findings and facts contained within this report and the attached supporting documents the Community Development Director recommends the Planning Commission formally recommend to the Cornelius City Council approval of Ordinance 2015-06 and 2015-07 to amend the City of Cornelius Comprehensive Plan to allow for annexation and development of those lands added into the City of Cornelius Urban Growth Boundary in 2014.

Respectfully,



Michael Cerbone, AICP
Community Development Director
City of Cornelius, Oregon

2014 Urban Growth Boundary Findings & Summary

Cornelius, Oregon

Ordinances 2015-06 and 2015-07

Submitted October 5, 2015

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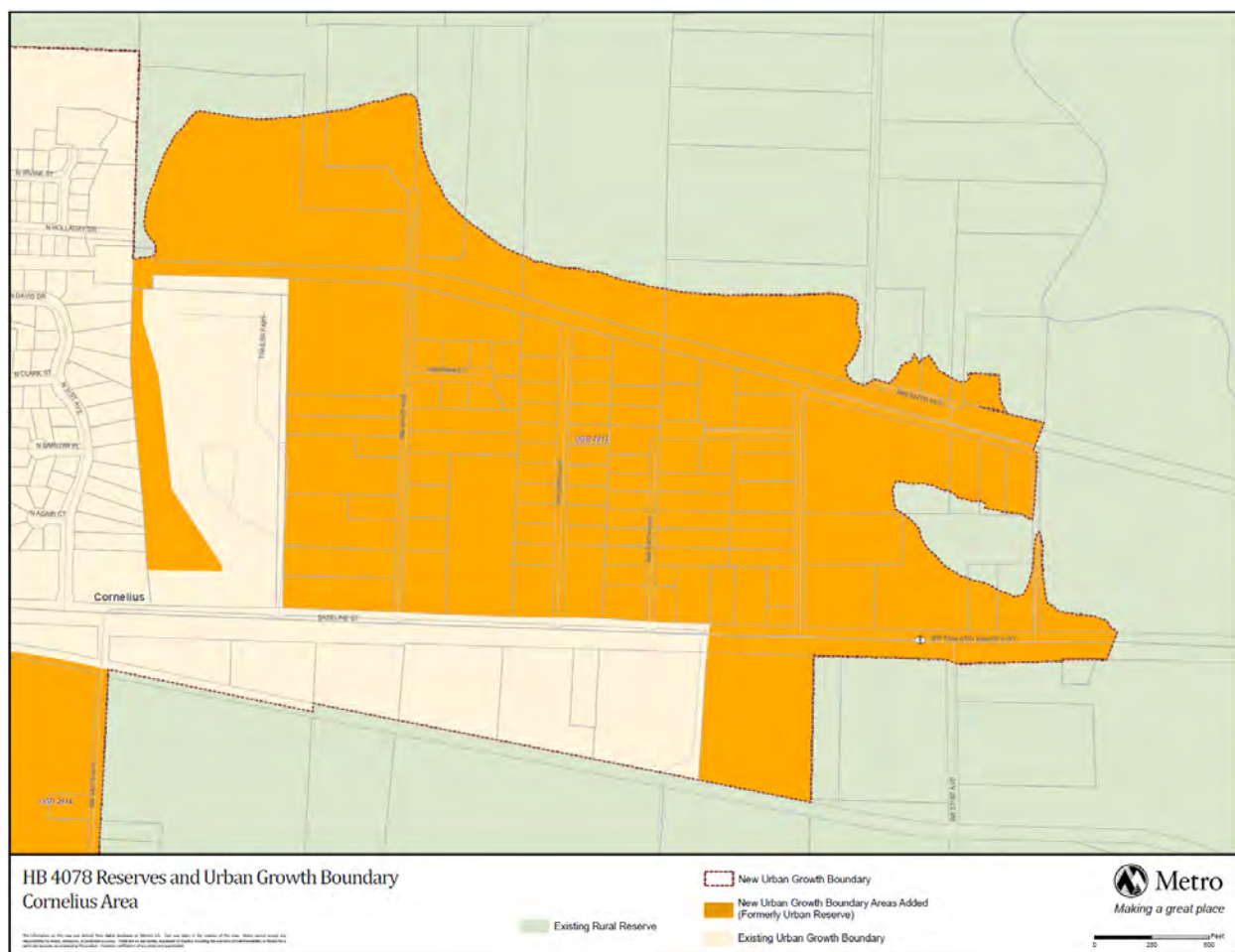
EXHIBITS

- Exhibit A NE UGB Ordinance 2015-07
- Exhibit B SE UGB Ordinance 2015-06
- Exhibit C Public Comments (as of October 1, 2015)
- Exhibit D Summary of Public Survey
- Exhibit E Opportunities and Constraints from Neighborhood Meeting 1
- Exhibit F Neighborhood Meeting 2 Notes
- Exhibit G DKS Transportation Analysis
- Exhibit H Council Creek Trail Master Plan Excerpts
- Exhibit I NE UGB proposed comprehensive plan map designations
- Exhibit J SE UGB proposed comprehensive plan map designations
- Exhibit K Water System Plan
- Exhibit L Sanitary Sewer System Analysis
- Exhibit M Parks Master Plan Exhibit
- Exhibit N Stormwater Plan

SUMMARY OF PROPOSAL

Effective April 1, 2014 approximately 345 acres of land were added to the City of Cornelius Urban Growth Boundary (UGB) as a result of the legislature approving House Bill 4078, often referred to as the "Grand Bargain". The report and supporting documents are intended to support approval of the City of Cornelius Ordinances 2015-07 (Exhibit A) and 2015-06 (Exhibit B) which seek to adopt comprehensive plan designations for properties added to the UGB in 2014. In addition this report and supporting documents identify the public services necessary to support the urbanization of those properties added to the UGB. The report also supports the adoption of the Council Creek Trail Master Plan as a component of the 2009 Parks Master Plan. Specific services addressed within this report and proposed amendments to the comprehensive plan include transportation (Exhibit G), water (Exhibit K), sanitary sewer (Exhibit L), stormwater (Exhibit N) and parks and recreation (Exhibit H and M).

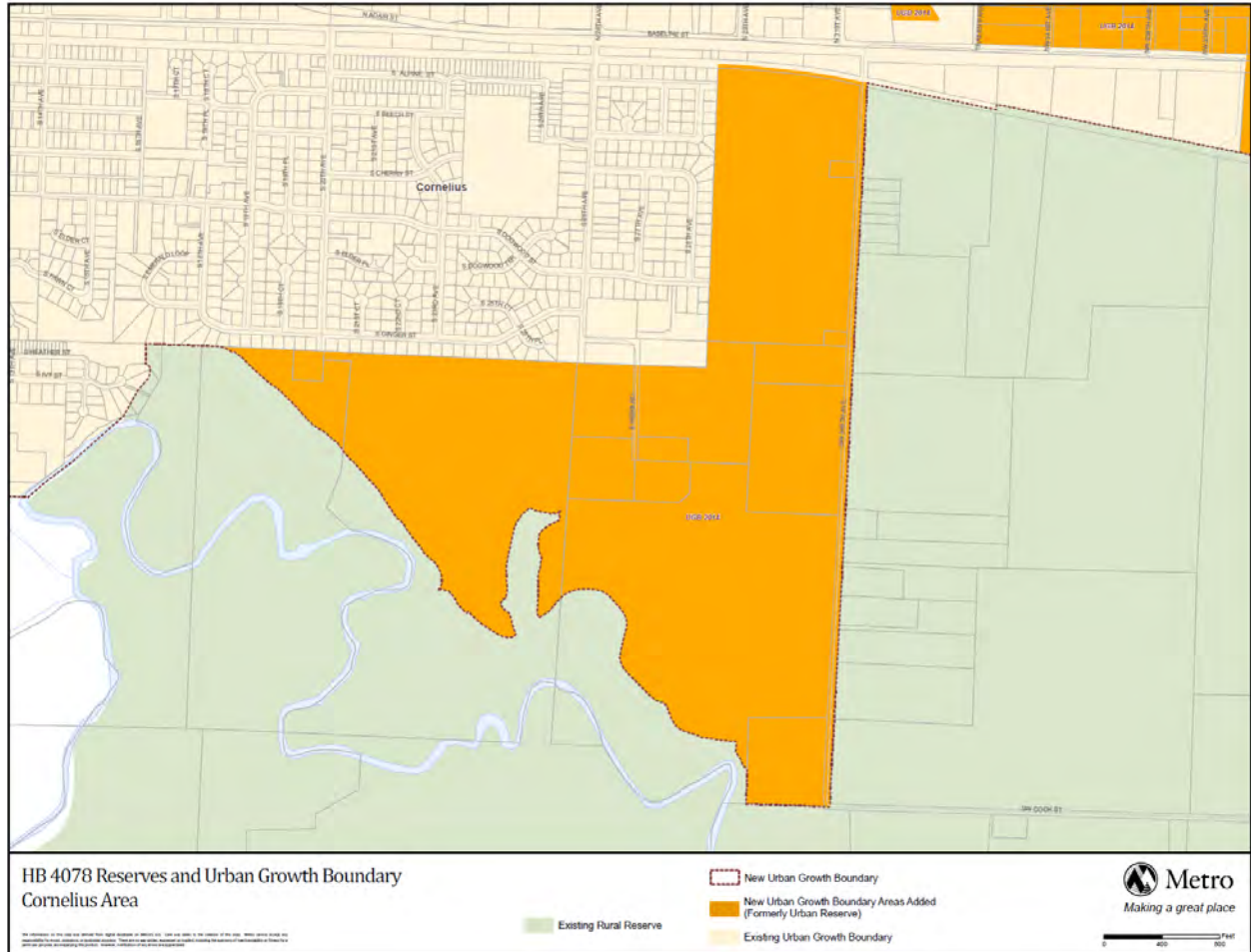
2014 NE URBAN GROWTH BOUNDARY



The NE UGB is comprised of a mixture of lot sizes and existing development. The eastern, western and northern (north of the railroad line) portion of the area are characterized by larger lots with varying potential for additional residential development. The central portion of the area is characterized by individual lots that are developed to very low density urban standards, these areas are unlikely to redevelop in the future at a higher density. The area is currently served with water by the City of Hillsboro, although much of the system is undersized and/or not

developed to City standards. The existing roadways provide for vehicle travel lanes, the streets are not developed to City standards. All of this area is located north of State Highway 8 (TV Highway) with the exception on one lot located south of the Highway. The City identified trails and a future community park within the City of Cornelius Parks Master Plan (see Exhibit M).

2014 SE URBAN GROWTH BOUNDARY



The SE UGB is comprised of a mixture of lot sizes and existing development. The area UGB area is not currently served by water or sanitary sewer service. The only existing roadway within the area is SW 345th Avenue which serves as the eastern border for the new UGB. The City has three (3) collector roadways that are stubbed to the new UGB. These roadways are S. 20th Avenue, S. 26th Avenue, and S. Dogwood Street. South Alpine Street also stubs into the SE UGB and is designated a local street. Most of this area is located below the existing sanitary sewer collection system within the City. The City identified trails and a future community park within the City of Cornelius Parks Master Plan (see Exhibit M).

PUBLIC ENGAGEMENT

The City worked closely with Harper Houf Peterson Righellis (HHPR) to design and implement the public engagement process for the project. The process included three (3) basic approaches to gathering information and engaging the community in the process. The first was a series of stakeholder surveys that were conducted with residents, property owners and service providers within the 2014 UGB area. The second approach was a community survey that was available online and as a hardcopy. The City hosted three (3) neighborhood meetings during the process to share information and solicit feedback. The City also appointed a Technical Advisory Committee (TAC) to assist staff with reviewing information and forming the recommendation that is contained within this report. More detailed information is available below about each of the processes. All of the comments received by the City throughout the process (as of 10-01-15) are included as Exhibit C of this report. The City also hosted a webpage that provided information about the process, upcoming meetings, and provided draft exhibits and reports for stakeholders to access. Notices for public meetings were posted at City Hall, the Public Works Building, and within the Forest Grove News Times. Articles were included about the meetings and survey within the Cornelius Gazette, a monthly paper distributed to residents in English and Spanish with their water bills. Notice of meetings was also provided on the City's reader board attached to the east side of the Cornelius Council Chambers along N. Adair Street. Staff also reached out to the Oregonian and Forest Grove News Times to encourage the papers to write articles about the meetings. Throughout the process the City maintained a mailing list of interested parties and provided mailed notice regarding meeting content, times and dates.

STAKEHOLDER INTERVIEWS

City staff conducted face to face interviews with property owners and service providers within both the NE and SE UGB areas. The goal of these interviews was to provide a forum for the City to collect information first hand from the residents, property owners and service providers. Staff spoke with Forest Grove School District, Hillsboro School District, the Oregon Department of Transportation, Clean Water Services, Metro, Washington County, Centro Cultural, as well as several property owners in the NE and SE UGB areas.

COMMUNITY SURVEY

HHPR prepared a community survey designed to solicit feedback from the community. The survey was available on-line, interested parties were mailed notice of the survey and opportunity was provided for people to fill out a hardcopy if they were unable to gain access to the internet. The survey was completed by 46 people, 28 of the respondents self-identified as being from the NE UGB, 6 self-identified as being from the SE UGB area, and 7 declined to disclose. This is not a statistically valid survey, it was utilized as another forum to provide the community the opportunity to provide input into the process, especially for those who were not able to make the neighborhood meetings. A summary of the responses is included as Exhibit D to this report.

In general the respondents from the NE area valued new parks, walking paths and biking paths less than those in SE. Approximately 2/3rds of the respondents did not want additional commercial services and most of the respondents favored a pattern of residential development utilizing larger lots with less common open space.

TECHNICAL ADVISORY COMMITTEE

The City formed a Technical Advisory Committee (TAC) to assist with review of the technical studies. The TAC was comprised of City Staff, a Planning Commission member, property owners from both the NE and SE UGB as well as professional staff from Clean Water Services (CWS),

Metro, Oregon Department of Transportation (ODOT) and Washington County. All meetings were open to the public and notice was mailed to interested parties, citizens were in attendance at all the meetings listening to the discussion.

The first TAC meeting was held on February 25, 2015. At the meeting the consultant team presented information about existing conditions, initial technical findings regarding the sanitary sewer system, a summary of information received from the stakeholder interviews and information received from the first neighborhood meeting. The intent of the meeting was to discuss the opportunities and constraints and to solicit guidance in the development of preliminary recommendations.

The second TAC meeting was held on April 23, 2015. At the meeting the consultant team summarized the feedback received at the second neighborhood meeting and presented preliminary recommendations for comprehensive plan map amendments. The intent of the meeting was to solicit input to refine the recommendations for the comprehensive plan map amendments.

The third TAC meeting was held on June 17, 2015. At the meeting the consultant team presented the draft findings from the technical memorandums as well as the proposed comprehensive plan map amendments. The intent of the meeting was to solicit input and identify any revisions that may be necessary prior to public hearings and adoption.

NEIGHBORHOOD REVIEW MEETING #1

The first Neighborhood Meeting was held on January 8, 2015. The goal of the meeting was to provide a forum for the community to share information, ask questions and voice concerns about the planning process. Staff began the meeting by providing an overview of the process that was utilized to add lands to the UGB in 2014. Staff detailed the process and expected timeline for the project and provided information about how stakeholders could be involved in the process moving forward. Staff facilitated an exercise to identify opportunities and constraints that would be used to guide the process (Exhibit E). Staff provided an opportunity for community members to ask questions. Approximately 71 people attended the meeting based on signatures collected on the sign in sheets.

NEIGHBORHOOD REVIEW MEETING #2

The second Neighborhood Meeting was held on March 18, 2015. The goal of the meeting was to provide a forum for the community to finalize the opportunities and constraints for the planning project. At the meeting the consultant team and city staff provided a summary of the stakeholder interviews, the first TAC meeting as well as the results of the community survey. At the meeting an overview of each area was provided including information about what potential zoning and associated comprehensive plan designations could be applied. Specific information was also provided about existing planned improvements within the City's parks master plan and transportation system plan. DKS provided an overview of the existing conditions for the transportation system. Summary notes from the meeting are included as Exhibit F. Approximately 51 people attended the meeting based on signatures collected on the sign in sheets.

NEIGHBORHOOD REVIEW MEETING #3

The third Neighborhood Meeting was held on May 20, 2015. The goal of the meeting was to provide a forum for the community to review the proposed comprehensive plan amendments, ask questions and provide feedback about the amendments. People were encouraged to submit

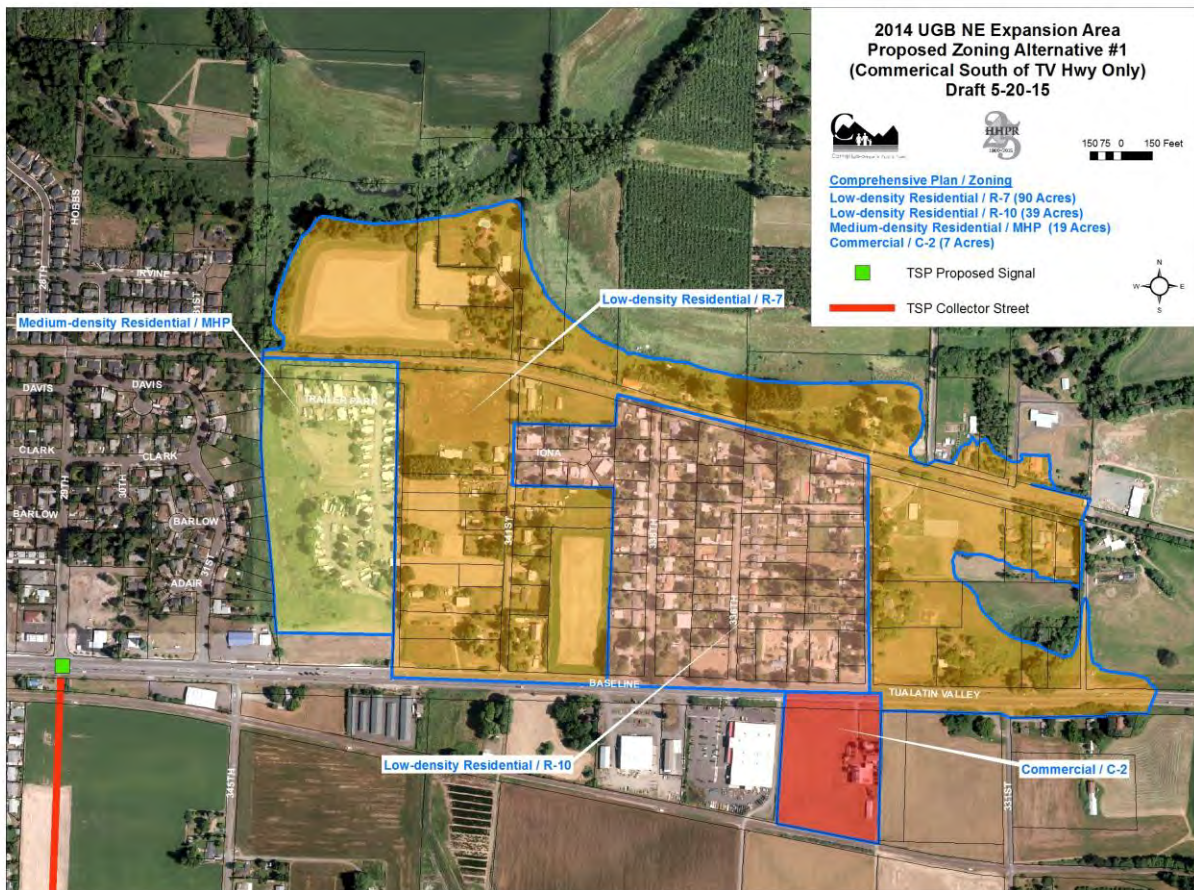
formal letters to the City, those responses are included within Exhibit C. Approximately 39 people attended the meeting based on sign in sheets collected.

COMPREHENSIVE PLAN MAP DESIGNATIONS (LAND USE)

The City is proposing to adopt comprehensive plan map designations for the properties that were added to the UGB in 2014. The adoption of the comprehensive plan designations will not directly affect the properties within the 2014 UGB at this time as those properties are still located within Washington County's jurisdiction. The zoning and corresponding rules and regulations that currently exist on the properties as administered by Washington County will remain until those properties are annexed into the City of Cornelius. The proposed comprehensive plan map land use designations will guide how the properties will be zoned upon annexation to the City. Since some of the comprehensive plan map designations can be implemented by more than one zone Exhibit I and Exhibit J attached to this report include the proposed comprehensive plan map designations and corresponding zoning to be applied when the properties are annexed.

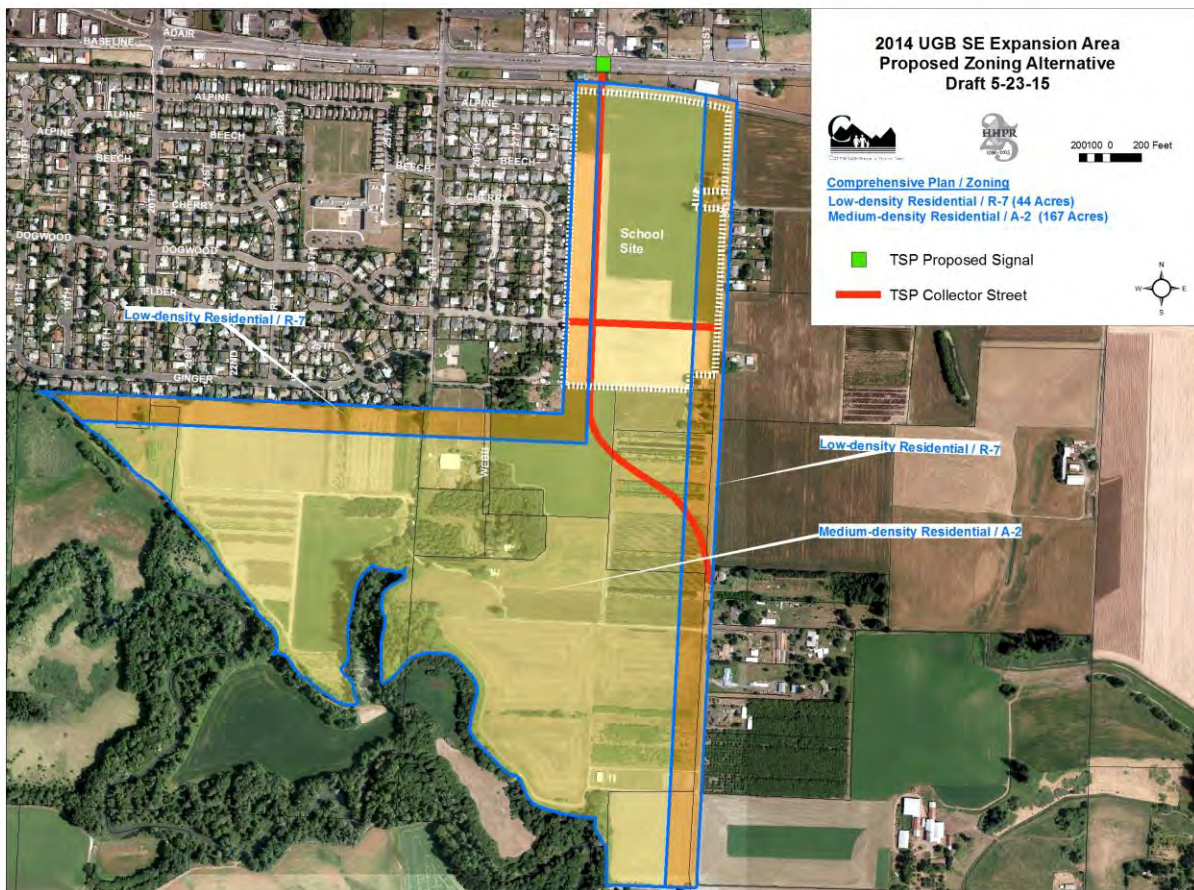
2014 NE UGB

The 2014 NE UGB is proposed to be designated primarily residential on the comprehensive plan map, the one exception is a parcel of land that is located south of the TV Highway just east of the Coastal Farms store, this parcel is proposed to be designated commercial and will be zoned Highway Commercial (C-2) when it is annexed into the City. The existing manufactured home park along the western edge of the 2014 NE UGB is proposed to be designated Medium-density Residential and will be zoned Manufactured Home Park (MHP) upon annexation to reflect the existing use of the property. The remaining land within the 2014 NE UGB is proposed to be designated Low-density Residential and will be zoned either R-7 or R-10 as detailed within Exhibit I.



2014 SE UGB

The 2014 SE UGB is proposed to be designated a mix of Low- and Medium-density Residential on the comprehensive plan map. Low-density Residential is proposed to be designated along the existing City Limits and along SW 345th Avenue for a width of 150 feet. This area would be zoned R-7 upon annexation. The intent of this zoning is to match the existing development pattern within the City and to provide a transition of density from the new 2014 SE UGB to the existing farmland to east of SW 345th Avenue. The remaining land within the 2014 SE UGB is proposed to be designated Medium-density Residential and will be zoned A-2 which is the City's multi-family zone. It is important to note that the A-2 zone permits a range of housing types beyond multi-family including attached single family and detached single family development. See Exhibit J for more detail and the location and extent of the proposed comprehensive plan designations.



UTILITIES FOR 2014 URBAN GROWTH BOUNDARY

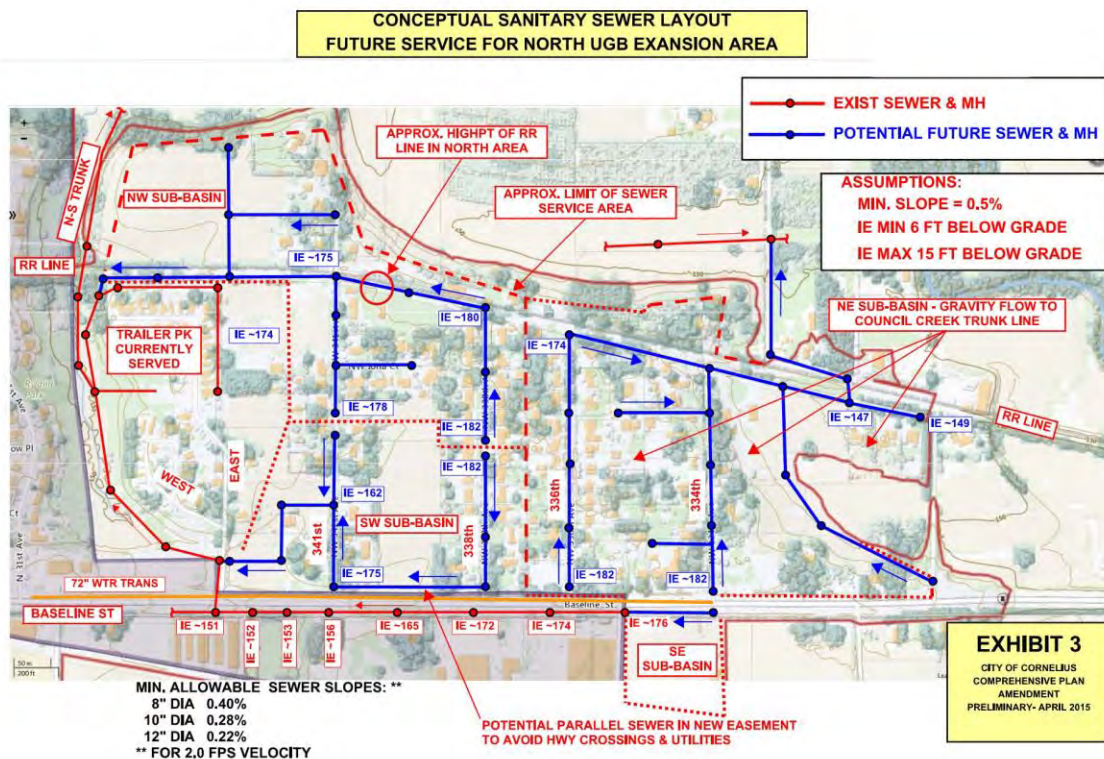
In order to allow for annexation of lands added to the UGB in 2014, the City must identify how these properties can address stormwater requirements, be served with sanitary sewer service, water service, and how properties are accessed and what public improvements are necessary to support development.

SANITARY SEWER SYSTEM

CWS operates the sanitary sewer treatment plants within Washington County. Based on coordination with CWS there is adequate capacity within their treatment and regional conveyance facilities to accommodate the projected growth of the NE and SE UGB areas. HHPR prepared a technical memorandum (Exhibits L) identifying the improvements to the local conveyance system that will be necessary to support the development of the NE and SE UGB areas. The City is seeking to amend the Cornelius Sanitary Sewer Master Plan (Appendices H of the Cornelius Comprehensive Plan). Each of the improvements identified as necessary are summarized below and detailed within Exhibit L.

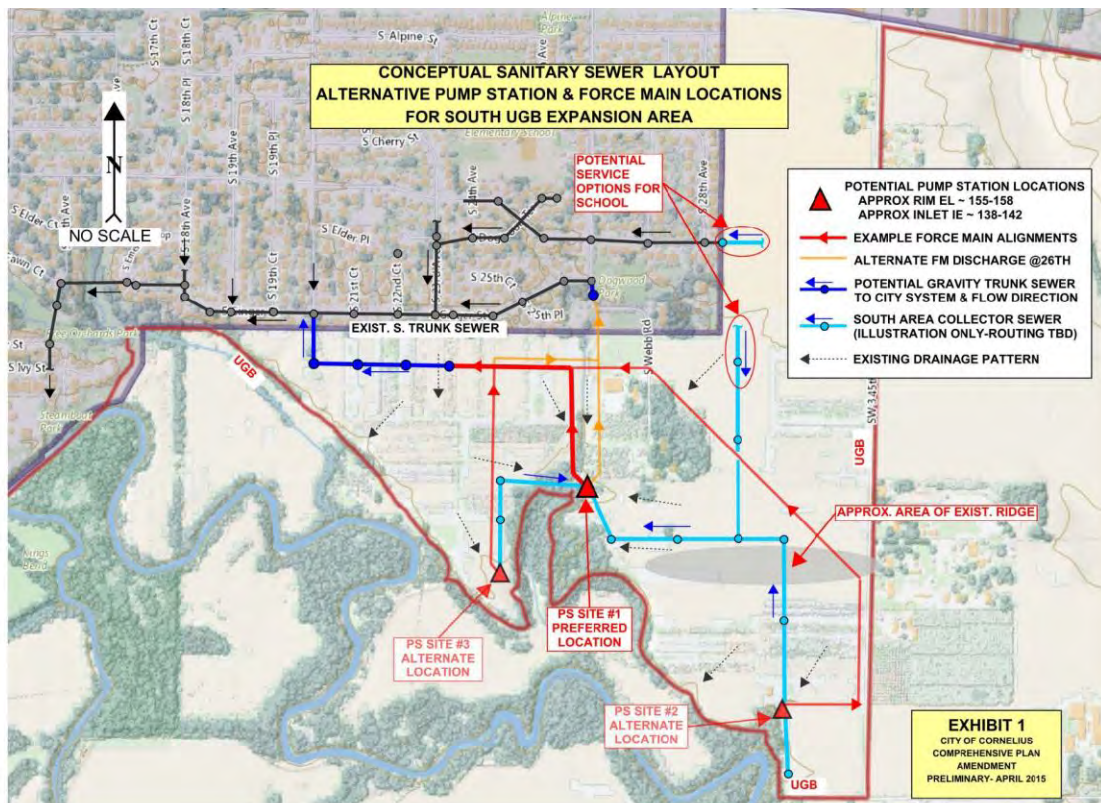
NE UGB Sanitary Sewer

The NE UGB can be served with sanitary sewer service via the extension of the existing gravity sewer system that is located to the north and south of the area. The conceptual layout set forth in Exhibit L identifies four (4) sewer sub-basins that would convey the wastewater to the existing sanitary line that services the mobile home park or the Council Creek Trunk Sewer which is located north of the UGB. Detailed information concerning the proposed flows and capacity of existing facilities is provided within the technical memorandum included within Exhibit L.



SE UGB Sanitary Sewer

A portion of the SE area located along the western edge can be served with sanitary sewer via the extension of the existing gravity sewer system that is located within S. Ginger Street. The majority of the SE UGB will require the construction of a pump station and force main (pressurized sanitary sewer line) to provide sanitary sewer service. The point of connection to the existing system will be at S. 20th Avenue and S. Ginger Street. Approximately 3,005 linear feet of existing sanitary sewer line will need to be increased in size in order to provide sanitary sewer service for the full build out of the SE UGB. Detailed information concerning the proposed flows and capacity of existing facilities is provided within the technical memorandum included within Exhibit L.



WATER SYSTEM

The City of Cornelius purchases bulk water from the City of Hillsboro and operates and maintains a water distribution system within City Limits. There is a 72" water main that is located within the TV Highway that provides water to the City. The City currently operates a 2 million gallon storage reservoir within the City and is in the process of designing and constructing an Aquifer Storage and Recharge (ASR) system that will allow the City to store approximately 50 million gallons of water. The water supply and storage system is adequate to provide for the development of the 2014 UGB. More detailed information concerning the water system is provided in a technical memorandum included within Exhibit K. The proposed water distribution system is described in more detail below for each of the two areas.

NE UGB Water

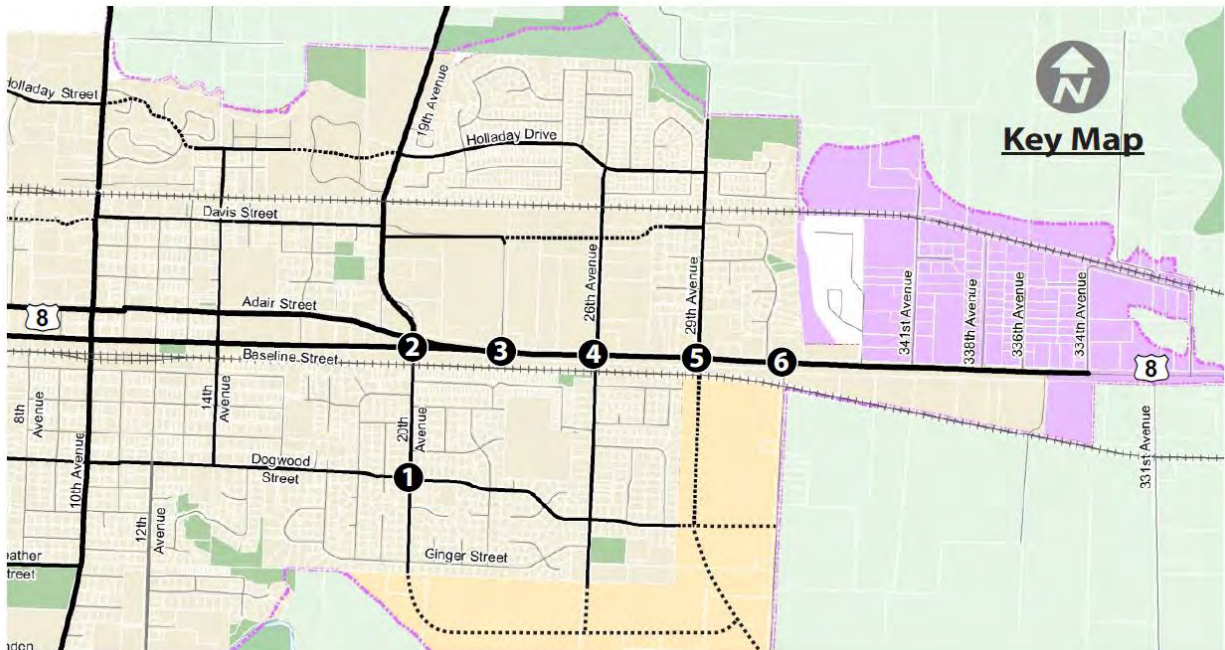
The NE UGB currently is served with municipal water service by the City of Hillsboro, this system was in place prior to the establishment of the City of Cornelius UGB. The existing system does not meet City standards, many of the pipes are undersized and not constructed to City standards. This area of the UGB will continue to be served by the City of Hillsboro. As properties are annexed into the City and developed, existing distribution lines will be required to be improved to meet City standards. The City will only accept lines and assume responsibility for maintenance when the lines are brought up to City standards. The existing lines within NW 341st Avenue will be replaced with a 12 inch line. The remaining lines within NW 338th, 336th, and 334th will be replaced with 8 inch lines. More detailed information concerning the water system is provided in technical memorandum included within Exhibit K.

SE UGB Water

There is no water system that currently serves the SE UGB, however, there are existing water lines within S. 20th Ave., S. 26th Ave, S Dogwood St., and S. Alpine St. The proposed water system to serve the SE UGB will be extended from this existing system within the new roadways that will provide vehicular access to the SE UGB. All lines within the SE UGB will be designed and constructed to City standards, a minimum of 8 inch in size. New lines proposed to be constructed within Collector roadways will be required to be 12 inches in size. More detailed information concerning the water system is provided in the technical memorandum included within Exhibit K.

TRANSPORTATION SYSTEM

Staff is proposing amendments to the Transportation System Plan (TSP) in order to ensure the existing and planned transportation system is adequate to meet the anticipated development of the NE and SE UGB's. The City contracted with DKS and Associates, a transportation engineering and planning consultant to assist with analyzing the transportation system and potential impacts associated with development of the additional land added to the City's UGB in 2014. The graphic below shows the six (6) intersections that were studied as part of the analysis. DKS worked closely with City staff, ODOT staff and County staff to scope the proposed transportation analysis which is included within Exhibit G.



SE UGB Transportation System

The graphic above depicts the additional improvements necessary (beyond those projects identified within the City's TSP) to support the build out of the SE UGB. Specifically the proposed collectors are shown depicted as dashed lines. During the planning process City staff expressed concern regarding the timing of the S. 29th Avenue intersection and corridor improvement. Based on the analysis conducted by DKS intended to alleviate staff's concerns and achieve livability goals, city staff is recommending that development connecting to S. 20th Avenue should be limited to 130 residential units and development connecting to 26th Avenue should be limited to 260 residential units prior to construction of the 29th Avenue connection to Tualatin Valley Highway. If development constructs a roadway connection within the southeast area between S. 20th and S. 26th Avenues, then a combined development limit of 390 residential units could be applied. More detail concerning the transportation analysis is presented within Exhibit G.

NE UGB Transportation System

The NE UGB is primarily developed with low density residential uses, there is an existing street network within the area, however, streets are not improved to City standards. City staff and the consultant team examined opportunities for proposing an east-west roadway to provide more

connectivity in the area. It was determined that this type of improvement was not necessary given the relatively low density of residential development proposed within the area and the existing residents desire to maintain their existing development pattern. The proposed commercially designated parcel south of the TV Highway was analyzed using both the Metro Regional Travel Demand Model as well as the Institute of Transportation Engineers (ITE) trip generation approach due to concerns raised by community members. Utilizing the ITE approach, the reasonable worst case development expected to be constructed on the property may result in a volume to capacity (v/c) ratio greater than the ODOT performance standard of 0.99 at the driveway intersection on the highway. This estimated v/c ratio would be determined by the Transportation Planning Rule to be a “significant effect”. The analysis completed by DKS notes the potential for localized traffic impacts at the commercial development driveway and recommends the upcoming Transportation System Plan update scheduled to begin in the first quarter of 2016 look at options to address access, capacity and safety needs along the TV Highway corridor. Based on how the property develops, a number of solutions could be implemented to address this concern including but not limited to the following:

1. If the proposed development of the property warrants a signal and is approved by ODOT, one could be installed to mitigate the impact at the driveway.
2. If the proposed development does not meet warrants for a signal, the proposed development could be limited to right-in/right-out access or a similar access management solution designed to mitigate the impacts.
3. The proposed development could work with adjacent properties to provide for a frontage connection south of TV Highway and install a signal at the existing Coastal Farms driveway. This option would require ODOT approval and cooperation from Coastal Farms as well as the intervening property owner who has a driveway just to the west of the subject property.

Any development on the property that results in more than 200 vehicular trips per day will trigger the need to complete a Traffic Impact Analysis (TIA) as part of the land use review process for the City as detailed in 18.143.030 of the Cornelius City Code. Section 18.143.030(C) provides the City Engineer additional discretion to require a TIA even when proposed development results in less than 200 vehicle trips per day. In addition, the TV Highway is Oregon State Highway 8 which is an ODOT facility. Development of the subject property will require the applicant to obtain approval from ODOT prior to development, at which time ODOT can also require a TIA.

STORMWATER MANAGEMENT

The terrain in NE and SE UGB area is generally flat. The NE area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the NE UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek. The only existing stormwater facilities in the NE UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The SE area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where S. 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River. The stormwater facilities in the SE UGB area are limited to the roadside ditches on SW 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs with these areas, the existing facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff. The existing topography of the two UGB areas do not dictate the need to be creative, thus the development of the UGB's will be afforded flexibility in how the stormwater systems are designed and constructed provided those facilities meet CWS standards. The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot Low Impact Development Approach (LIDA) facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight.

PARKS AND OPEN SPACE

The 2009 City of Cornelius Parks Master Plan provided for new improvements within both the NE and SE UGB prior to those lands being included within the UGB (see Exhibit M). The proposed amendments to the Parks Master Plan include removing some proposed trails that are located outside of the UGB, adopting the Council Creek Trail Master Plan, and reducing the size of a planned park (see Exhibit M). The City of Cornelius has had plans for a trail along Council Creek since the 2009 Parks Master Plan was established. The associated adoption of the Council Creek Trail Master Plan (Exhibit H) will relocate the proposed trail from along the creek corridor to within the existing railroad right-of-way that bisects the NE UGB. The Council Creek Trail Master Plan also calls for a north-south trail connection to connect in with a planned trail system along the Tualatin River. The Council Creek Trail Master Plan identifies the preferred alignment for the trail, estimated costs and associated trailhead locations to provide access to the trail. This plan and associated alignment was arrived at after a detailed public study was completed in conjunction with the Cities of Banks, Forest Grove, and Hillsboro as well as Washington County. A complete copy of the plan is available on the City's web site, hard copies are available for review at the planning department. A summary of the proposed changes to the parks master plan is included within Exhibit A and Exhibit B.

NE UGB Parks and Open Space

The proposed amendments for the NE UGB include changing the proposed Community Park (CP-1) to a Neighborhood Park (NP), this is proposed in light of the relatively low residential density proposed within the NE UGB. Staff is also recommending removing the proposed section of trail along Council Creek that is proposed on private property (see Exhibit M). This proposed for two reasons:

1. The property owners have clearly communicated their desire to not have the trail; and
2. The area where the trail is proposed is highly unlikely to ever be included within the City's UGB.

SE UGB Parks and Open Space

Within the SE UGB the proposed amendments to the Parks Master Plan are solely related to adopting the Council Creek Trail Master Plan (Exhibit H). Specifically the proposed adoption identifies an alignment for a trail connecting the Council Creek Trail to the planned trail network proposed within the SE UGB and along the Tualatin River.

SCHOOLS

The City of Cornelius is within both the Forest Grove School District (FGSD) as well as the Hillsboro School District (HSD). The vast majority of the SE UGB area is within the HSD with a small portion of the western edge located within the FGSD. All of the NE UGB is located within the HSD. Staff coordinated with both school districts during the planning process to determine if there was need for additional land to support new facilities to accommodate the development of the 2014 UGB.

The FGSD noted that they had adequate capacity within the existing facilities to accommodate the expected increase from development of the SE UGB. The HSD owns a 41 acre property located in the SE UGB which can be utilized to accommodate future facilities (see Exhibit J).

NATURAL RESOURCES

The City works closely with CWS to protect natural resources located within and adjacent the UGB. Those areas that have or are reasonably likely to have Goal 5 resources have the Natural Resource Overlay (NRO) applied at the time of annexation and are subject to the provisions of Chapter 18.95 of the Cornelius City Code. Furthermore, the City works closely with CWS, requiring applicants to obtain a Service Provider Letter (SPL) prior to deeming a development application complete and initiating review. This process assures that Goal 5 resources are identified as to their quantity, quality and location prior to development occurring. If there is the need to impact a resource for a transportation facility or other need, this process assures that any temporary or permanent impacts are quantified and mitigated.

The NE UGB is bounded to the north by the Council Creek and its associate floodplain and to the west by a tributary of Council Creek. These areas are protected Goal 5 resources. The SE area is bounded to the south by the Tualatin River and its associated floodplain, these are protected Goal 5 resources. Prior to annexation property owners will be required to submit a wetland determination completed by qualified professional in order to ascertain the potential presence of wetlands. If potential wetland resources are identified during the annexation process, prior to development of a site the applicant will be required to submit a wetland delineation that has been concurred with by the Oregon Department of State Lands.

OREGON STATEWIDE PLANNING GOALS

Goal 1: Citizen Involvement

To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Finding: The City has an acknowledged comprehensive plan and municipal code that has been found to be in compliance with Goal 1. The City conducted extensive outreach throughout the planning process with the goal of engaging as much of the citizenry as possible. The City exceeded the state and local requirements for notice and made all meetings open to public review including the TAC meetings. The City is proposing to host public hearings at the planning commission and city council as part of the adoption of the proposed amendments. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 1.

Goal 2: Land Use Planning

To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base of such decisions and actions.

Finding: The City has an acknowledged comprehensive plan and municipal code that has been found to be in compliance with Goal 2. The City has provided the proper notice as required by the comprehensive plan and Cornelius City Code. Affected governmental agencies have been engaged in the development of the comprehensive plan amendments and/or provided notice of the proposed amendments consistent with the intent of this goal. The proposed amendments do not seek any exceptions to Statewide Planning Goals. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 2.

Goal 3: Agricultural Lands

To preserve and maintain agricultural lands.

Finding: No goal exception is requested or required to Goal 3. The lands that are the subject of the proposed comprehensive plan amendments were included within the City of Cornelius UGB in 2014 as a result of a legislative action. The proposed amendments to the comprehensive plan map took into account the existence of farm land adjacent to the UGB and proposed to use low density residential zones, natural resource areas and existing transportation facilities to buffer the adjacent farm lands from the urbanizable land within the UGB consistent with the intent of this goal. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 3.

Goal 4: Forest Lands

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Finding: The proposed amendments do not impact existing forest land and are therefore consistent with statewide planning goal 4.

Goal 5: Natural Resources, Scenic and Historic Resources, and Open Space

To protect natural resources and conserve scenic and historic areas and open spaces.

Finding: The proposed amendments concern the 345 acres that was added to the City's UGB in 2014 including amending the comprehensive plan map to designate these properties appropriately for future development. The proposed amendments include changes to the City's utility master plans, transportation system plan and parks master plan to identify improvements necessary to support the development of these new lands. The City has designated Council Creek, the Tualatin River and their associated tributaries as Goal 5 resources within the comprehensive plan and enacted a Natural Resource Overlay (NRO) zone to protect the resources. The City works closely with CWS to administer the natural resource protections within the community and there is a development process in place to ensure that these resources will be protected and when appropriate enhanced. The proposed ordinances (Exhibit A and B) dictate that prior to annexation wetland determination completed by a qualified professional in order to ascertain the potential presence of wetlands. If potential wetland resources are identified during the annexation process, prior to development of a site the applicant will be required to submit a wetland delineation that has been concurred with by the Oregon Department of State Lands.

No scenic or historic resources were identified within the 2014 UGB planning process, accordingly no resources are proposed to be added to the City's inventory. New parks are identified for development within the UGB and open space areas are planned for preservation within the parks master plan consistent with the intent of this goal. Based on the information contained within this report and facts and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 5.

Goal 6: Air, Water and Land Resources Quality

To maintain and improve the quality of the air, water and land resources of the state.

Finding: The City has demonstrated how sanitary sewer and stormwater services can be provided to support development of the 2014 UGB. Council Creek, the Tualatin River and their associated tributaries are identified as Goal 5 resources within the comprehensive plan. Future development will need to comply with the provisions of the City's Natural Resource Overlay (NRO) as well as the requirements

administered in part by CWS. These process will assure that development that occurs within the 2014 UGB does not degrade the water quality of the adjacent resources, in fact CWS and NRO requirements will mandate improvements to the existing vegetated corridor associated with these resources resulting in a net increase in the quality of the resources consistent with the intent of this goal. The City's TSP will guide development of lands within the UGB resulting in an interconnected transportation system that provides for all modes of travel, including increased pedestrian and bicycle connections and facilities. The comprehensive plan amendments and Cornelius City Code will result in efficient development of the land within the 2014 UGB reducing the need to extend the UGB in the future consistent with the intent of this goal. Based on the information contained within this report and fact and findings in support of the proposed comprehensive plan amendments the City has conducted the planning process in compliance with statewide planning goal 6.

Goal 7: Areas Subject to Natural Hazards

To protect people and property from natural hazards.

Finding: The 2014 UGB was delineated in part based upon the Federal Emergency Management Agency (FEMA) mapped floodplains associated with Council Creek, the Tualatin River and their associated tributaries. The result is that those areas mapped within the 100 year floodplain for these resources have been left out of the UGB, thus not permitting future urban development within the floodplains, one of the areas subject to natural hazards within western Washington County. The City of Cornelius Comprehensive Plan, the Cornelius City Code, the International Building Code and the International Fire Code all work together to ensure that future development within the 2014 UGB will be designed, permitted and constructed consistent with statewide planning goal 7.

Goal 8: Recreational Needs

To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Finding: Both the NE 2014 UGB and SE 2014 UGB areas were considered when the City of Cornelius developed the 2009 City of Cornelius Parks Master Plan. The proposed amendments to the parks master plan seek to add the Council Creek Trail Master Plan resulting in a planned facility that will provide additional recreation opportunities for the immediate community as well visitors and guests. The proposed amendment to reduce the planned park from a Community Park to a Neighborhood Park within the NE UGB area reflects the low-density residential development that is proposed to occur within this area. The proposal to remove a planned aspirational pathway that is located outside of the UGB on private land reflects the fact that this area is unlikely to ever be included within the UGB as well as the fact the property owners do not want it there. The proposed amendments to the parks master plan better reflect the needs of the community and are therefore consistent with statewide planning goal 8.

Goal 9: Economic Development

To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Finding: The City is located within the Metro Regional Boundary and is therefore not required to comply with statewide planning goal 9. As a member of Metro, the entire housing and employment needs of the area are collectively examined and guided to the benefit of the region as a whole. As such the City does not have an acknowledged Economic Opportunity Analysis. The City is proposing to designate a parcel in the NE UGB south of the TV Highway as commercial. This site is situated adjacent existing commercial development, and it is of adequate size and configuration to permit highway commercial development. This property will provide the opportunity for future commercial development and corresponding employment consistent with the intent of this goal.

Additional areas within the NE UGB north of the TV Highway were requested to be designated commercial by a group of property owners. This was analyzed during the planning process, City Staff ultimately decided that these areas were not appropriate for commercial designation for a variety of reasons: the City already has existing vacant commercial property within the downtown and along the TV Highway corridor; there are significant amounts of commercial land within the City that are currently underutilized such as the Grande Foods site and Fred Meyer site; and the NE UGB (north of the highway) is already parcelized and developed as low-density residential. The proposed amendments are consistent with statewide goal 9.

Goal 10: Housing

To provide for the housing needs of citizens of the state.

Finding: Similar to goal 9, the City does not need to demonstrate compliance with statewide planning goal 10 as it is located within Metro. The vast majority of the land include within the 2014 UGB is proposed to be designated low- or medium-density residential, the only exception is the approximately 7 acre parcel located in the NE UGB south of the TV Highway that is proposed to be designated commercial due its location and size.

Later on in this report are findings that detail how the proposed comprehensive plan amendments comply with Metropolitan Housing Rule, exceeding the minimum density dictated by the state of Oregon for the City of Cornelius. As noted previously the City has an adequate supply of commercially designated land within the community that is either vacant or underdeveloped. The City also has good supply of industrial land that is either vacant or underdeveloped. The majority of the existing industrial land is located within two distinct areas of the community. The first is located in the NW corner of the City, the second is located in the SE corner of the City. These areas are ideally situated within the community to take advantage of access to Highway 26 and avoid potential conflicts between industrial and non-industrial uses.

The NE UGB is already committed to low-density residential development. While there are some larger parcels that could be developed with a commercial or

industrial use, these parcels are either located too far from the highway corridor, oriented awkwardly and/or are surrounded by existing residential development. Accordingly the NE UGB is proposed to be designated primarily low-density residential. The existing manufactured home park is proposed to be designated medium-density residential to reflect the existing development and is proposed to be zone Manufactured Home Park upon annexation.

The SE UGB is comprised mostly of vacant large lots that are used for agricultural purposes. This area is relatively flat and could be developed with commercial and/or industrial uses. The question is whether this area is appropriate for this type of development and whether the City needs additional industrial and/or commercial land. Staff concluded that the location of the SE UGB was not appropriate for commercial and industrial development due to its distance from the TV Highway and Highway 26 corridors. There was also concern regarding the compatibility with existing development within the City. The city currently has a limited amount of developable residential land and Staff determined the SE UGB area was most appropriately designated as residential. The proposed mixture of low- and medium-density residential provides opportunities for a range of housing options while still maintaining compatibility with adjacent urban development and rural farm practices. The proposed amendments provide for a range of housing development to meet the City's needs consistent with the intent of statewide goal 10.

Goal 11: Public Facilities and Services

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Finding: The proposed comprehensive plan amendments are intended to guide the future development of land added to the UGB in 2014. Statewide goal 11 mandates that Cities plan for public facilities and services necessary to support the intended development. The proposed water, sewer, storm and transportation related amendments were sized to accommodate the level of development anticipated from the proposed comprehensive plan amendments. The transportation system plan is proposed to be amended to identify improvements necessary to mitigate the impacts associated with the reasonably worst case development scenario. Likewise the parks, water and sanitary sewer master plans are proposed to be amended to include improvements that are necessary to support the full build out of the UGB. By identifying these improvements and associated costs the City can plan for the provision of these services including but not limited to updating the City's corresponding system development charges (SDC's) to assure that adequate revenue is collected to provide for the improvements needed within the UGB.

Identifying the correct improvements and determining when the improvements will need to occur provides the City the ability to effectively manage future annexations and development requests and ensure that services are available in a timely manner. Knowing the ultimate sanitary sewer and or water improvement that is necessary for the full build out of the UGB also allows the City to provide services efficiently, reducing the need to replace facilities in the future to accommodate

continued development. This process also provides the community the ability to understand the actual costs of providing the services to determine if alternative funding mechanisms such as supplemental SDC's or tax increment financing are necessary to support service delivery.

The proposed comprehensive plan amendments anticipate the level of development that could occur within the UGB given the proposed comprehensive plan designation and corresponding zoning upon annexation. The amendments identify improvements necessary to support the development of the UGB. The process provides the City, the development community and residents an understanding of what improvements will need to occur, as well as, when and how those improvements will occur. The proposed amendments to the comprehensive plan are consistent with consistent with statewide goal 11.

Goal 12: Transportation

To provide and encourage a safe, convenient and economic transportation system

Finding: The City contracted with DKS and Associates to prepare a transportation analysis to determine the improvements necessary to provide for the development of the new lands added to the UGB in 2014. DKS analyzed the vehicular, pedestrian, bicyclist and transit system within their transportation analysis. The analysis contained with Exhibit G identifies specific improvements necessary to mitigate the effects of the full build out of the UGB as well as recommendations for how to manage the development of the UGB to minimize impacts on existing development. Within this report are detailed findings demonstrating how the proposed comprehensive plan and comprehensive plan map amendments comply with the applicable transportation requirements of the state (Transportation Planning Rule) as well as the region (Metro). The transportation system that will serve the NE UGB utilizes existing roadways to accommodate the projected development of the area. As properties are annexed and proposed for development frontage and corridor improvements will be required as part of the land use review process. No new transportation facilities are planned for outside of the existing UGB. The proposed amendments address the requirements of statewide planning goal 12.

Goal 13: Energy Conservation

To conserve energy.

Finding: The intent of this goal is to promote development and utilization of land within the UGB that conserves energy. Many of the specific implementation measures are targeted at code requirements that implement the comprehensive plan, such as lot size, building height, setbacks, and access to light, wind and air. The City is not proposing to alter the Cornelius City Code which has been acknowledged to be consistent with goal 13. This goal can be considered as part of the decision on what comprehensive plan designation to apply within the UGB, balanced of course with the other statewide planning goals. The proposed designation within the SE and NE area were arrived at after balancing the desires of the community, the

needs of the City and the requirements put in place by the state, region and the City.

While the NE UGB could have been proposed to be designated a higher residential density, this would have been inconsistent with the existing development pattern, as proposed, the designations will allow for additional density while respecting the existing low density residential development pattern.

The proposed designation within the SE area have been designed to respect existing development while also providing the opportunity for higher density consistent with the intent of this goal. Services for water, stormwater, and sanitary sewer will be designed and located to maximize the efficient delivery of these services thereby reducing the cost to construct and maintain resulting in less consumption of energy. Similarly the transportation system will be designed and constructed to provide for direct connections and minimize out-of-direction travel. New facilities for pedestrians and bicyclist will be incorporated as part of the design providing for non-motorized connections to the existing City Limits and transit stops along the TV Highway. Therefore the proposed comprehensive plan amendments are consistent with statewide planning goal 13.

Goal 14: Urbanization

To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Finding: The primary purpose of goal 14 is to establish and manage urban growth boundaries within the state of Oregon. The proposed comprehensive plan amendments do not result in the establishment of a new UGB, nor do the amendments propose to alter the City of Cornelius UGB. The proposed comprehensive plan amendments will result in applying comprehensive plan map designations to land that was included within the UGB in 2014. The proposed designations include commercial, low-density residential and medium-density residential.

The majority of the NE UGB is already committed to urban level development as witnessed by the zoning and development pattern that exists. The proposed comprehensive plan amendments will allow for future development of the majority of this area as low-density residential, respecting the existing development pattern and the wishes of the citizens who reside there. One parcel located south TV Highway is proposed to be designated commercial to reflect the existing development pattern along the south side of the highway. One parcel located along the western edge of the area is proposed to be designated medium-density residential to reflect existing development which is a mobile home park, this property would be zoned Mobile Home Park (MHP) upon annexation.

The majority of the SE area is currently undeveloped and is characterized by rural residential development on large lots and farming activities. The majority of this area is proposed to be designated medium-density residential, with two specific

areas proposed to be designated low-density residential. Along the east of the SE UGB the low-density residential is proposed to serve as a buffer along with SW 345th Avenue between existing farmlands to the east. Similar the proposed amendments identify a buffer of low-density residential along the southern and eastern boundary of the existing City Limits, this is to ensure that development adjacent the existing City Limits keeps in scale with existing development. The proposed land use pattern within the SE UGB allows for efficient use of the land consistent with the intent of this goal while also respecting existing farm practices and existing development within the City.

The proposed amendments do not propose to establish or alter a UGB. The proposed amendments do identify and plan for the provision of urban services necessary to support development of the subject areas and allow for future annexation into the City. These amendments do propose to apply comprehensive plan designations and urban services that will result in efficient development, while at the same time respecting the transition of the UGB and the redevelopment of areas that are already committed to low density residential. The proposed amendments are therefore consistent with statewide planning goal 14.

Goal 15: Willamette River Greenway

To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: The City of Cornelius is not located along the Willamette River. The proposed comprehensive plan amendments do impact the Willamette River Greenway, therefore, the goal 15 is not applicable to this review.

Goal 16: Estuarine Resources

To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Finding: The City of Cornelius is not located on the coast, there are no estuarine resources associated with the proposed comprehensive plan amendments, therefore, goal 16 is not applicable to this review

Goal 17: Coastal Shorelands

To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Finding: The City of Cornelius is not located on the coast, there are no coastal shorelands associated with the proposed comprehensive plan amendments, therefore, goal 17 is not applicable to this review

Goal 18: Beaches and Dunes

To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Finding: The City of Cornelius is not located on the coast, there are no beach or dune resources associated with the proposed comprehensive plan amendments, therefore, goal 18 is not applicable to this review

Goal 19: Ocean Resources

To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Finding: The City of Cornelius is not located on the coast, there are no ocean resources associated with the proposed comprehensive plan amendments, therefore, goal 19 is not applicable to this review.

METRO TITLE 11 ANALYSIS

3.07.1120 PLANNING FOR AREAS ADDED TO THE UGB

A. The county or city responsible for comprehensive planning of an area, as specified by the intergovernmental agreement adopted pursuant to section 3.07.1110C(7) or the ordinance that added the area to the UGB, shall adopt comprehensive plan provisions and land use regulations for the area to address the requirements of subsection C by the date specified by the ordinance or by section 3.07.1455B(4) of this chapter.

Finding: The subject properties were added to the City of Cornelius Urban Growth Boundary (UGB) by the State of Oregon by House Bill 4078. The City is therefore responsible for the comprehensive planning of the area. The City is proposing to adopt amendments to the Cornelius Comprehensive Plan to provide guidance on how the properties can be developed and served upon annexation into the City. The proposed comprehensive plan amendments are consistent with this provision.

B. If the concept plan developed for the area pursuant to section 3.07.1110 assigns planning responsibility to more than one city or county, the responsible local governments shall provide for concurrent consideration and adoption of proposed comprehensive plan provisions unless the ordinance adding the area to the UGB provides otherwise.

Finding: There is no corresponding concept plan for the subject properties. As noted above the areas were added into the City's UGB through a state legislative action (HB 4078). The responsible local government is the City of Cornelius. The City of Cornelius is proposing specific comprehensive plan amendments to provide

guidance on how the properties can be developed and served upon annexation into the City. The proposed comprehensive plan amendments are consistent with this provision.

C. Comprehensive plan provisions for the area shall include:

1. Specific plan designation boundaries derived from and generally consistent with the boundaries of design type designations assigned by the Metro Council in the ordinance adding the area to the UGB;

Finding: The two areas, referred to as the 2014 SE UGB and 2014 NE UGB were defined by Metro (see Exhibits I and J) after the passage of House Bill 4078. The City is proposing specific amendments to the comprehensive plan to guide future development of these areas. In addition, the City is also proposing to acknowledge the Council Creek Regional Trail Plan (Exhibit H) as a component of the 2009 City of Cornelius Parks Master Plan (component of the comprehensive plan). Both the CCRTTP and 2014 UGB amendments are intended to guide future development within the City of Cornelius UGB consistent with the intent of this criterion.

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

Finding: Once the proposed amendments are completed and in effect, the City can process annexations from the 2014 UGB areas, provided each property meets the City's annexation requirements detailed on Page 16 of the Comprehensive Plan. Upon annexation the City will apply the appropriate zoning, including the Natural Resource Overlay (NRO) zone for those properties that adjacent Council Creek, the Tualatin River and the associated tributaries.

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

Finding: Section 3.07.1455B(2) relates to a conditions of approval that are typically placed on properties during "concept planning" prior to inclusion within the UGB. As noted above the properties were added to the UGB through a legislative process at the state level. No specific requirements or conditions of approval were placed on the UGB expansion at that time. No specific conditions of approval were placed on the UGB expansion by the Metro Council. Therefore the criterion identified above is not applicable to this review.

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

Finding: Detailed findings demonstrating conformance with Title 7 are provided below with this report.

5. Provision for the amount of land and improvements needed, if any, for public school facilities sufficient to serve the area added to the UGB in coordination with affected school districts. This Effective 09/10/14 3.07 - 64 of 129 requirement includes consideration of any school facility plan prepared in accordance with ORS 195.110;

Finding: The City is served by two school districts, the Hillsboro School District (HSD) and Forest Grove School District (FGSD). The City worked closely with both districts to determine if there was the need for additional school property at the beginning of the planning process. The majority of the area added to the UGB in 2014 is within the HSD, with a small portion in the southwest area of the UGB located within the FGSD.

The HSD owns approximately 41 acres within the 2014 SE UGB area. This area is of sufficient size to accommodate a High School, Middle School, Elementary School or a combination Middle/Elementary School. Based on interviews with HSD staff, the district does not need additional land to support the anticipated growth. The FGSD has existing capacity within their district to be able serve their portion of the 2014 SE UGB. Schools are permitted as a conditional use in the R-7, R-10, and A-2 zones. The proposed amendments account for the future needs of the HSD and FGSD consistent with this criterion.

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

Finding: The City of Cornelius is the park provider for our UGB. The proposed amendments to the UGB include revisions to the 2009 City of Cornelius Parks Master Plan. The revised plan calls for a Neighborhood Park in the 2014 NE UGB as well as several linear open space areas that will provide connections to the Tualatin River and Council Creek corridors. The proposed amendments also provide for the formal acknowledgement of the Council Creek Region Trail Plan as a component of the comprehensive plan.

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

Finding: The majority of the area brought into the UGB in 2014 is intended for residential development. The City contracted with DKS and Associates to analyze the transportation system. Exhibit G is a technical memorandum that identifies the approximate location of new collector roadways and intersection improvements that will be necessary to support the development of both areas added to the UGB, this serves as the conceptual street plan required. The design and location of local streets will be determined at the time of development. City Staff will require designs that are consistent with Title 17 (Subdivision Ordinance) and 18.143 of the Cornelius City Code which mandate compliance with Title 1 of Section 3.08.110 of the Regional Transportation Functional Plan.

Specifically all sidewalks constructed within the new UGB areas will be a minimum of five (5) feet in width. The City does permit and encourage local streets to be constructed with pavement widths less than 28 feet in width. City standards require street trees located within a landscape planter area that is a minimum of five (5) feet in width. City standards permit the use of traffic calming devices such as speed bumps, curb extensions and chicanes. At the time of development these standards will be assured consistent this requirement.

8. Provision for the financing of local and state public facilities and services; and

Finding: The proposed comprehensive plan amendments include revisions to the City's parks, utility and transportation master plans to support the proposed comprehensive plan map designations within Exhibit I and J. For each new facility required to serve the new UGB appropriate funding has been identified. Due to the size and scale of the infrastructure necessary to support development of the 2014 UGB no supplemental SDC's or alternative funding mechanisms are necessary. A combination of existing SDC's and development exactions will suffice to ensure that improvements can be completed when they are needed. The City has been working diligently with CWS and Washington County to ensure that key infrastructure improvements are identified within the appropriate capital improvement plans to ensure these improvements are SDC creditable. The two largest improvements; 1.) The sanitary sewer pump station for the SE UGB, and 2.) The 29th Street intersection and corridor extension are both SDC creditable. In fact the 29th Street project has been identified within the City's TSP since 2005. The remaining improvements including the extension of the sanitary system, extension of the water system, development of the stormwater system, and development of the parks system will be completed through a combination of development exactions and utilizing funds collected through SDC's. The proposed comprehensive plan amendments have considered the need for financing and determined adequate measures exist to provide for the identified services consistent with this requirement.

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

Finding: The City does not have any state highway interchanges or planned interchanges located within the UGB. Therefore the proposed amendments to the comprehensive plan are consistent with this requirement.

D. The county or city responsible for comprehensive planning of an area shall submit to Metro a determination of the residential capacity of any area zoned to allow dwelling units, using the method in section 3.07.120, within 30 days after adoption of new land use regulations for the area.

Finding: The City shall comply with this requirement, detailed findings demonstrating compliance with the applicable portions of Title 7 are set forth below.

TITLE 7: HOUSING CHOICE

3.07.730 REQUIREMENTS FOR COMPREHENSIVE PLAN AND IMPLEMENTING ORDINANCE CHANGES

Cities and counties within the Metro region shall ensure that their comprehensive plans and implementing ordinances:

A. Include strategies to ensure a diverse range of housing types within their jurisdictional boundaries.

Finding: The proposed amendments do not include changes to the implementing ordinance. The Cornelius City Code has previously been acknowledged by the state of Oregon. The City provides the opportunity for a diverse range of housing within each of our residential zones. The proposed comprehensive plan amendments result in a mixture of low- and medium-density residential land that can accommodate wide range of housing options including apartments, attached single family housing, accessory dwellings, and detached single family housing. The City's Planned Unit Development ordinance permits flexibility in housing type, lot size, setbacks and many other development standards. The City recently approved a nonprofit low-income housing tax exemption (Section 3.35 of the Cornelius City Code) to encourage the development of affordable housing within the community. The minimum density requirements of the implementing zones will also assure a diverse range of housing types is provided within the community. The proposed amendments to the comprehensive plan do not seek to alter any of these strategies, rather the amendments seek to allow for the development of additional residential development within the community via the adoption of amendments to the utility master plans and the comprehensive plan map consistent with this section of Title 7.

B. Include in their plans actions and implementation measures designed to maintain the existing supply of affordable housing as well as increase the opportunities for new dispersed affordable housing within their boundaries.

Finding: The City is not proposing to amend any of the implementing ordinances for the comprehensive plan. However, the City did adopt a nonprofit corporation low-income housing tax exemption (Chapter 3.35 of the Cornelius City Code) in an effort to increase the provision of affordable housing within the community. The City is proposing to designate a mix of low- and medium-density residential land on the comprehensive plan map that would provide the opportunity for additional affordable housing to be developed within the community.

All of the City's residential zones permit the development of accessory dwellings. The SE UGB in particular will have a significant amount of medium-density designated land that will ultimately be zoned A-2, Multi-family upon annexation into the City. The A-2 zone allows for a wide range of housing types including apartments, townhomes, attached single family and detached single family homes. The minimum lot size for a single family detached home in the A-2 is 3,100 sq. ft. and it is 3,000 sq. ft. for attached products. The smaller lot size allows for a more affordable home by reducing the size of the lot of, thereby reducing the cost of the home. The R-7 zone allows for attached and detached single family homes.

The proposed amendments would not limit or reduce the City's ability to maintain and/or increase the affordable housing supplied within the community. In contrast the proposed amendments would provide additional land where a variety of new housing could be constructed consistent with the intent of this section of Title 7.

C. Include plan policies, actions, and implementation measures aimed at increasing opportunities for households of all income levels to live within their individual jurisdictions in affordable housing.

Finding: As detailed above the City is not proposing to remove and/or alter any policies or implementing measures. The City has measures in place to promote the provision of affordable housing within the community. The City is lacking land available for development of affordable housing. The proposed amendments to the comprehensive plan would result in plan designations that would be supportive of this section of Title 7 by providing additional land within the City's residential inventory that could be developed with affordable housing opportunities in the future.

METROPOLITAN HOUSING RULE

660-007-0035

MINIMUM RESIDENTIAL DENSITY ALLOCATION FOR NEW CONSTRUCTION

The following standards shall apply to those jurisdictions which provide the opportunity for at least 50 percent of new residential units to be attached single family housing or multiple family housing:

(1) The Cities of Cornelius, Durham, Fairview, Happy Valley and Sherwood must provide for an overall density of six or more dwelling units per net buildable acre. These are relatively small cities with some growth potential (i.e. with a regionally coordinated population projection of less than 8,000 persons for the active planning area).

Finding: The City of Cornelius allows for attached single family housing in the R-10, R-7 and A-2 zones providing the opportunity for approximately 95 percent of new residential units within the 2014 UGB to be attached single family or multiple family. The only zone that precludes attached single family housing is the Manufactured Home Park (MHP) zone. Therefore, the City of Cornelius minimum overall density shall be six dwelling units per net developable acre. The Cornelius City Code and/or Comprehensive Plan define the net buildable acres for each zone. The City is proposing to designate 173 acres of low-density residential (R-7 and R-10) and 186 acres of medium-density residential (A-2 and MHP) resulting in an average minimum density of 7.36 dwelling units per net acre for the planning areas. The proposed comprehensive plan amendments exceed the standard.

	Minimum Net Density	Acreage	Percent of Area	Min. Density as a % Area
Residential R-7	4	134	37.33%	1.49
Residential R-10	3	39	10.86%	0.33
Residential A-2	11	167	46.52%	5.12
Residential MHP	8	19	5.29%	0.42
				7.36

OREGON TRANSPORTATION PLANNING RULE

660-012-0060

PLAN AND LAND USE REGULATION AMENDMENTS

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

Finding: In support of the proposed comprehensive plan map amendments the City engaged DKS and Associates to analyze the transportation system and provide a formal recommendation to ensure that the proposed comprehensive plan map amendments (Exhibits I and J) comply with the Oregon Transportation Planning Rule (OAR 660-012-0060). DKS coordinated with ODOT and Washington County prior to conducting the study to identify the appropriate scope of work to complete this review. DKS's analysis is included within Exhibit G of this report. The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. DKS did suggest that further analysis of Tualatin Valley Highway west of SW 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety. City staff have included this recommendation within the scope of work for the upcoming TSP update.

CORNELIUS COMPREHENSIVE PLAN

CONTINUING INVOLVEMENT IN LAND USE PLANNING

Amending the Plan

It is the City's intent to give the citizens and affected governmental units' ample opportunity to review and comment on any proposed plan changes. There are several types of amendments that may occur over time. They include:

- Periodic Review, as required by state law, every 7-10 years.
- Plan Text amendments, which alter the policies of the plan.
- Plan Map amendments, which alter the land use designation and/or density of a specific property or group of properties.
- Amendments may be major or minor in nature:
 - * Major amendments (Legislative) include land use changes that have widespread and significant impact beyond the immediate area or an individual parcel. These include quantitative changes producing large volumes of traffic; qualitative changes in the character of the land use itself such as conversion of residential to industrial use; or spatial changes that affect large areas or many different ownerships. A complete rethinking of the plan and the needs of the public may be necessary before major amendments are approved.
 - * Minor amendments (Quasi-judicial) have little significance beyond the immediate area of the change. Their evaluation will be based on special studies or other information which justifies the public need for the change.

Procedures

Amendments may be initiated by the City Council, Planning Commission, city staff, or a 11 property owner, or group of owners. The amendment shall be initiated through a formal application process. All amendments shall include specific recommendations or requests from the applicant, supported by factual documentation as to why the amendment is necessary and appropriate. A staff report shall be prepared and presented to the Planning Commission.

Finding: The City Council initiated the amendments that are the subject of this report.

Public hearings shall be held before any amendment is approved. There shall first be a review by the Planning Commission, which may also include informal public meetings or workshops, but shall conclude in a public hearing. The Commission shall make a formal recommendation to the City Council. The City Council shall then also hold a public hearing before making a final decision to amend the Plan. Any amendment shall be adopted by ordinance.

Finding: The planning commission is scheduled to hold a public hearing on October 13th and the City Council is scheduled to host a public hearing in November. The proposed amendments are contained within Ordinance 2015-06 and 2015-07. The proposed amendments are consistent with this section of the comprehensive plan.

Notice of Amendments

For minor amendments (quasi-judicial) applying to individual parcels or small local areas a public hearing on the proposed change will be held, and at least 20 working days of notice prior to the hearing will be given to all owners, including the subject site, and within 250 feet of a specific property boundary for which a change is proposed.

Finding: The proposed package of amendments is not quasi-judicial, the amendments encompass approximately 345 acres and numerous property owners. The notice requirement detailed above is not applicable to this review.

For major amendments (legislative) applying to large areas or effecting general policies of the plan notice shall be given to all property owners within the City limits by publication in a newspaper of general circulation in the City. Such notice shall be provided, at least 20 days prior to the first hearing.

Finding: The City posted notice of the first hearing 21 days prior to the first hearing before the planning commission in the Forest Grove News Times. Notice was posted on September 23rd, 2015 for the October 13th, 2015 hearing. As detailed above the City also provided direct mailed notice to those interested parties who participated in the planning process. The proposed amendments exceed the minimum notice requirement set forth above.

For all amendments notice shall be provided to interested and effected public agencies, with specific notice to METRO and DLCD, at least 45 days prior to the first hearing, as provided under ORS 197.610 and OAR Chapter 660, Division 18.

Finding: The City provided notice to affected agencies pursuant to ORS 197.610.

Criteria

The following criteria shall be used to establish whether or not a plan amendment or change is justified. An amendment need not satisfy each and every one of the criteria, but the city must conclude that at least some of the criteria have been reasonably addressed.

- The fact that an applicant owns the land for which the change is being sought is not in itself sufficient justification for the change or amendment.

Finding: The proposed comprehensive plan amendments were initiated by the City Council and not specifically proposed by an individual property owner.

- The proposed change or amendment must meet a public need. Such need must be documented by appropriate facts and evidence and should extend from the statewide planning goals, METRO 2040, or the city own comprehensive plan.

Finding: The public need that proposed amendments are meeting has been documented throughout this report. The proposed amendments are intended to guide the development of approximately 345 acres that was added to the City's UGB in 2014. There is a lack of residential land available for development within the City without the proposed amendments, areas added to the UGB in 2014 will be unable to annex into the City and meet the demand for residential development within the community.

- The amendment is necessary to conform with current state law or regional 12 policy, which requires local compliance.

Finding: The amendments proposed are not necessary to comply with current state law or regional 12 policy. The amendments are necessary to provide guidance for the development of land that was added to the UGB in 2014. Failure to approve the amendments will prevent property located within the new UGB from being able to annex to the City and develop. There is a demonstrated need for the additional land to provide new housing opportunities for the community.

- The amendment is necessary to implement the adopted vision for the community, or to respond to unanticipated local circumstances.

Finding: The proposed amendments are necessary to allow for annexation and development of land added to the City's UGB in 2014. The community has sought to include portions of these lands within UGB for some time, this desire is reflected in the City's current TSP which identifies improvements within the SE UGB as well as the City's parks master plan which identifies improvements within both the NE and SE UGB. Both of these plans were adopted and acknowledged as part of the City's comprehensive plan reflecting the community's vision for these areas. Without approval of the proposed comprehensive plan amendments the vision articulated within the plan cannot be realized. The amendments are also necessary to respond to an unanticipated local circumstance that resulted from addition of land to the City's UGB in 2014 as approved by the state legislature and signed into law by the governor. The proposal is consistent with these criteria.

- The proposed change or amendment must be in conformance with the unamended goals and policies of the Comprehensive Plan, as well as being consistent with state and regional policies.

Finding: This report has documented how the proposed amendments are consistent with the statewide planning goals, the applicable provisions of the Metro's policy, the applicable Oregon administrative rules as well as the applicable portions of the City's comprehensive plan and the Cornelius City Code.

- The amendment must meet the standards and requirements of the zone in which it is located, or proposed to be located.

Finding: The proposed comprehensive plan amendments provide comprehensive plan map designations for properties added to the UGB in 2014. The proposed amendments also adopt amendments to the City’s parks and utility master plans (components of the comprehensive plan) intended to provide services to and guide the development of these newly added lands. Zoning will be applied to each individual property as part of the annexation process under a separate land use action.

CHAPTER V HOUSING

Goal: *To provide for the housing needs of the prospective as well as the present Cornelius citizens*

Policies:

1. Ensure that adequate land is available for both single family and multi-family housing
2. Promote and encourage housing types and densities throughout town, available at various prices and rents, to households of all incomes, age, sex and race.
3. Promote and encourage open spaces and buffers in new subdivisions and other housing developments.
4. Develop strategies for promoting higher end housing options.

Finding: The proposed amendments to the comprehensive plan and map primarily provide for the housing needs of the community ensuring that adequate land is available for both single and multi-family development. Approximately 173 acres of low-density residential land (R-7 and R-10) and 186 acres of medium-density residential land (A-2 and MHP) are proposed to be designated within the 2014 UGB, resulting in the application of all the existing zones as part the amendments. The diversity of proposed map designations will promote the development of a mix of housing types and densities providing a range of rents and prices. The proposed map amendments within the SE UGB include a transition in density with respect to the existing City Limits and UGB which effectively buffers the new development from existing housing developments to ensure compatibility. The proposed amendments are consistent with Chapter V of the comprehensive plan.

CHAPTER VIII PUBLIC FACILITIES AND SERVICES

Goal: *To plan and develop the necessary recreational, transportation, and public facility systems and services to meet the needs of the Cornelius residents.*

Policies:

1. The City shall coordinate with the school districts for efficient expansion or development of new schools and facilities.
2. The City shall provide opportunities in the zoning code for alternative and private schools.
3. The City shall encourage development of local recreation options.
4. The City shall continue to maintain an adequate water supply and to improve the overall water distribution system.
5. The City shall coordinate with USA, Metro, and Washington County on the planning management of sewage and solid waste.

Finding: Both the Forest Grove and Hillsboro school districts were engaged in the planning process at the onset as part of the stakeholder interviews. The Community Development Director currently and historically has been an active member of the Hillsboro School District’s Long Range Planning Committee, attending monthly meetings and providing updates on new development and long range planning projects in the City. The proposed amendments include new trail improvements that will result in recreation opportunities within the community when developed. The proposed amendments to the comprehensive plan include analysis of the City’s water system and identify improvements necessary to support development of the 2014 UGB. Metro, CWS (formerly USA) and Washington County were all engaged in the planning process as members of the Technical Advisory Committee. The proposed comprehensive plan and map amendments are consistent with Chapter VIII of the comprehensive plan.

CHAPTER IX TRANSPORTATION SYSTEM PLAN

Goals:

1. Provide public street standards that recognize the multi-purpose nature of the street right-of-way (utilities, vehicles, pedestrians).

Finding: The proposed amendments to the parks master plan to include the Council Creek Trail and the proposed amendments to the Transportation System Plan (TSP) both include roadway cross sections for the new UGB. These proposed cross section accommodate utilities, vehicles, pedestrians and bicyclists. The proposed comprehensive plan amendments are consistent with Goal 1 of Chapter IX of the comprehensive plan.

2. Provide transportation facilities that through design and location enhance the livability of Cornelius.

Finding: The proposed amendments to the TSP include the location of new collector roadways as well as a recommendation to maintain livability within adjacent neighborhoods as the SE UGB builds out. The new collector roadway system when developed will not only provide new opportunities for ingress and egress to the SE UGB area for new residents, it will also provide an alternate route for existing residents to be able to access the Highway to travel eastbound and a route for residents traveling westbound on the Highway to access their homes. The new collector system will also include provisions for bicyclists and pedestrians, providing alternative options for existing and new residents. The proposed roadway cross sections intended to accommodate the north-south component of the Council Creek Trail through the SE UGB will also enhance the livability for existing and new residents by providing a safe and efficient connection to a planned east-west trail (Council Creek Regional Trail) which will provide opportunities for recreation and non-motorized commuting when completed. The recommended “trigger” for when the 29th Street corridor and intersection improvement need to be completed as part of the TSP amendments seeks to allow for the development of the SE UGB while also retaining current livability standards for those who live along the S 20th Avenue and S 26th Avenue corridors. The

proposed comprehensive plan amendments area consistent with Goal 2 of Chapter IX of the comprehensive plan.

3. Provide connectivity to each area of the City.

Finding: The proposed amendments include new roads and trails designed to provide good connectivity to the 2014 UGB areas. The proposed amendments to the parks master plan to adopt the Council Creek Trail alignment will provide opportunities to increase pedestrian and bicycle connectivity throughout the community. As each individual property annexes and develops, City Staff will review the proposals and make sure that the connectivity standards articulated within the City's TSP and subdivision ordinance (Title 17 of the Cornelius City Code) and Chapter 18.143 of the Cornelius City Code (Transportation Facilities) are adhered to. The proposed amendments will result in increased connectivity throughout the community and the existing development standards will ensure that appropriate connections are required as properties develop consistent with the intent of this goal of Chapter IX of the comprehensive plan.

4. Develop a safe, complete and efficient transportation system that provides multi-modal access.

Finding: The proposed amendments to the TSP and parks master plan include new trails and road cross sections that will provide for increased multi-modal access to and from the areas added to the UGB in 2014. The proposed collector roadway system in the SE UGB will provide for safe and efficient access for all modes of travel. The proposed comprehensive plan amendments are consistent with goal 4 of Chapter IX of the comprehensive plan.

5. Establish rights-of-way at the time of development and where appropriate officially secure them by dedication of the property.

Finding: The proposed amendments to the TSP and parks master plan identify future right-of-ways (ROWs) that will need to be secured in the future. Identifying these ROWs now and including them within the comprehensive plan provides City Staff the opportunity to secure them at the time of development when appropriate. The proposed comprehensive plan amendments are consistent with goal 5 of Chapter IX of the comprehensive plan.

6. Continue to coordinate with ODOT, Washington County, and adjacent property owners towards the goal of funding all planned improvements along the highway. Such improvements will not only improve multi-modal circulation, but will also substantially enhance the visual quality of the most visible features in Cornelius. This in turn will improve the commercial market environment.

Finding: The proposed amendments do not include any new planned improvements along the highway. This is in part because the existing TSP already includes the 29th Street Intersection and Corridor improvement. The proposed adoption of the

Council Creek Trail will result in a new improvement that will cross the highway. Both ODOT and Washington County were engaged in the UGB planning process as well as the Council Creek Regional Trail process from the onset as members of the Technical Advisory Committee. The City closely coordinates with Washington County on an on-going basis regarding future transportation improvements and updates to the City and County's TSP. Therefore the proposed comprehensive plan amendments are consistent with goal 6 of Chapter IX of the comprehensive plan.

7. Work for the development of a strong north-to-south transportation link to its primary trade area.

Finding: This goal is not applicable to this review as there is not negative impact associated with the proposed comprehensive plan and map amendments that would inhibit the City from developing the transportation link provided above.

8. Continue to explore mechanism to enhance the multi-modal access and circulation throughout the community.

Finding: The proposed amendments include improvements/facilities that will improve the multi-modal access throughout the community. The new collector roadway system and Council Creek Trail will provide new bike and pedestrian improvements that will increase multi-modal circulation throughout the community when completed. The proposed comprehensive plan amendments are consistent with goal 8 of Chapter IX of the comprehensive plan.

9. Coordinate with Tri-Met to continue enhancements at bus stops to provide a more attractive environment for transit users.

Finding: The proposed amendments will not affect the City's ability to continue to coordinate with TriMet to enhance existing bus stops within the community.

10. Update its Transportation System Plan (TSP)

Finding: The proposed amendments include an update to the Transportation System Plan to address the needs of land added to the UGB in 2014 consistent with the intent of this goal.

CORNELIUS COMMUNITY CODE

18.15.030 NOTICE.

(D) Legislative Hearings. A legislative hearing before the planning commission or city council shall be provided in the following manner:

- (1) Notice shall be published in a newspaper of general circulation within the city at least 20 days prior to the initial hearing before the planning commission and city council.

Finding: Notice was published in the Forest Grove New Times 21 days prior to the public hearing before the planning commission. Notice for the City Council public hearing will comply with this provision.

- (2) Notice shall be provided to all affected agencies and organizations recognized in the comprehensive plan and any person or entity requesting notice.

Finding: The City has maintained a list of interested persons throughout the planning process and has provided written notice of the proposed amendments to the affected agencies as well as interested parties consistent with this requirement.

- (3) Notice shall include:

- (a) The time, date and location of the hearing.
- (b) A summary of the proposed amendments.
- (c) A statement that a copy of the proposed amendments are available for review or to purchase a copy.

Finding: The notice mailed and posted included the time, date and location of the hearing as well as a summary of the proposed amendments. The notice also included a statement noting that the proposed amendments are available for review or purchase. The City will also post this report and the proposed ordinances to the City web page for review as well a minimum of seven (7) days prior to the hearing.

CHAPTER 18.130 COMPREHENSIVE PLAN

(D) Approval Criteria. No comprehensive plan amendment shall be approved unless findings are made to support the following conclusions demonstrating conformance to state and local law.

- (1) The proposed plan and amendments shall conform to the requirements of the Oregon Statewide Planning Goals, and applicable administrative rules of the State Land Conservation and Development Commission.

Finding: Findings demonstrating conformance with the applicable Statewide Planning Goals and applicable Oregon Administrative Rule are detailed above within this report.

(2) The proposed amendments shall comply with all other applicable laws, rules and regulations of the state, city and other governmental agencies having jurisdiction over land use regulation within the city.

Finding: The City has closely coordinated with affected agencies and service providers during the development of the proposed amendments. There is no known violation of any City, State, Federal or Regional laws or rules that would result from approval of the proposed amendments to the comprehensive plan.

(3) The proposed amendment shall address the criteria identified in Chapter 1 of the city comprehensive plan.

Finding: Findings demonstrating conformance with the criteria identified within Chapter 1 of the comprehensive plan are set forth above within this report.

(E) Amendment Procedures.

(1) An amendment to the text or the map of the comprehensive plan may be initiated by the council, the planning commission or by application of a property owner, or his or her authorized agent.

Finding: The proposed amendments were initiated by the City Council.

(2) Application for amendment by a property owner or his or her authorized agent shall be filed on forms prescribed by the community development director and available from the community development department. The application shall be accompanied by a fee for related services incurred by the city in the processing of the application.

Finding: The proposed amendments were initiated by the City Council.

(3) The fees and deposits to be paid by the applicant requesting an amendment to the text or land use map of the comprehensive plan may be established or amended by resolution of the council.

Finding: The proposed amendments were initiated by the City Council. The City Council understands this authority and will take it under advisement if and when they seek to amend the land use fees for the City of Cornelius.

(F) Public Hearing.

(1) Before taking final action on a proposed amendment to the comprehensive plan, the planning commission shall hold a public hearing. After the public hearing before the planning commission, the council shall hold a public hearing to consider the written report and recommendation of the planning commission relative to the proposed amendment to the comprehensive plan. Notice of the time, place and purpose of the public hearing shall be given in accordance with the requirements of CCC 18.15.030.

Finding: The Planning Commission has a public hearing scheduled for October 13th, 2015 to provide for interested parties to participate in the process. Formal responses to CCC 18.15.030 are provided above.

(2) The planning commission and the council may recess their hearing in order to obtain additional information or to provide for further notice of the proceedings. Upon recessing, the planning commission or the council shall announce the time and date when the hearing will be resumed. Any continued public hearing must be to a date certain and be not more than 40 days from the date on which the meeting was continued. The hearing before the council shall be not more than 40 days after the written report and recommendation of the planning commission is filed with the community development director.

Finding: The Planning Commission and City Council will follow the rules detailed above as public hearings are conducted through the process.

STAFF RECOMMENDATION

Based on the findings and facts contained within this report and the attached supporting documents the Community Development Director recommends the Planning Commission formally recommend to the Cornelius City Council approval of Ordinance 2015-06 and 2015-07 to amend the City of Cornelius Comprehensive Plan to allow for annexation and development of those lands added into the City of Cornelius Urban Growth Boundary in 2014.

Respectfully,



Michael Cerbone, AICP
Community Development Director
City of Cornelius, Oregon

**ORDINANCE NO. 2015-07
CORNELIUS, OREGON**

AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE NORTHEAST URBAN GROWTH BOUNDARY IN 2014

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the City of Cornelius Urban Growth Boundary.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The City acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 via the adoption of Ordinance 500.
4. The City acknowledged the City of Cornelius Water Master Plan as a component of the Comprehensive Plan on March 1st 2004 via the adoption of Ordinance 846.
5. The City acknowledged City of Cornelius Sanitary Sewer System Master Plan as a component of the Comprehensive Plan on September 20th, 2004 via the adoption of Ordinance 853.
6. The City acknowledged City of Cornelius Transportation System Plan as a component of the Comprehensive Plan on June 20th 2005 via the adoption of Ordinance 860.
7. The City acknowledged City of Cornelius Parks Master Plan as a component of the Comprehensive Plan on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to service the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements may be necessary beyond those currently planned for within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

Section 1. The City of Cornelius Comprehensive Plan Map is hereby amended as outlined in Exhibit A

Section 2. The City of Cornelius Parks Master Plan, Appendices G of the Comprehensive Plan is hereby amended as outlined in Exhibit B.

Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendices H of the Comprehensive Plan is hereby amended as outlined in Exhibit C

Section 4. The City of Cornelius Water Master Plan, Appendices I of the Comprehensive Plan is hereby amended as outlined in Exhibit D.

Section 5. The City of Cornelius Transportation System Plan, Appendices M of the Comprehensive Plan is hereby amended as outlined in Exhibit E.

Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendices H of the Comprehensive Plan is hereby amended as outlined in Exhibit F.

Section 7. Prior to annexation of land within the NE UGB the applicant shall complete a wetland determination of the property.

Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of Council Creek and/or its tributaries.

Section 9. Upon adoption by the Cornelius City Council this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this ___ day of _____, 2015.

City of Cornelius, Oregon

By: _____
Jeffrey C. Dalin, Mayor

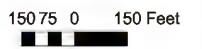
ATTEST:

By: _____
Debby Roth, MMC, City Recorder-Treasurer

Exhibit A

Comprehensive Plan Map Amendments

2014 UGB NE Expansion Area
Proposed Zoning Alternative #1
(Commercial South of TV Hwy Only)
Draft 5-20-15



- Comprehensive Plan / Zoning
- Low-density Residential / R-7 (90 Acres)
- Low-density Residential / R-10 (39 Acres)
- Medium-density Residential / MHP (19 Acres)
- Commercial / C-2 (7 Acres)

- TSP Proposed Signal
- TSP Collector Street

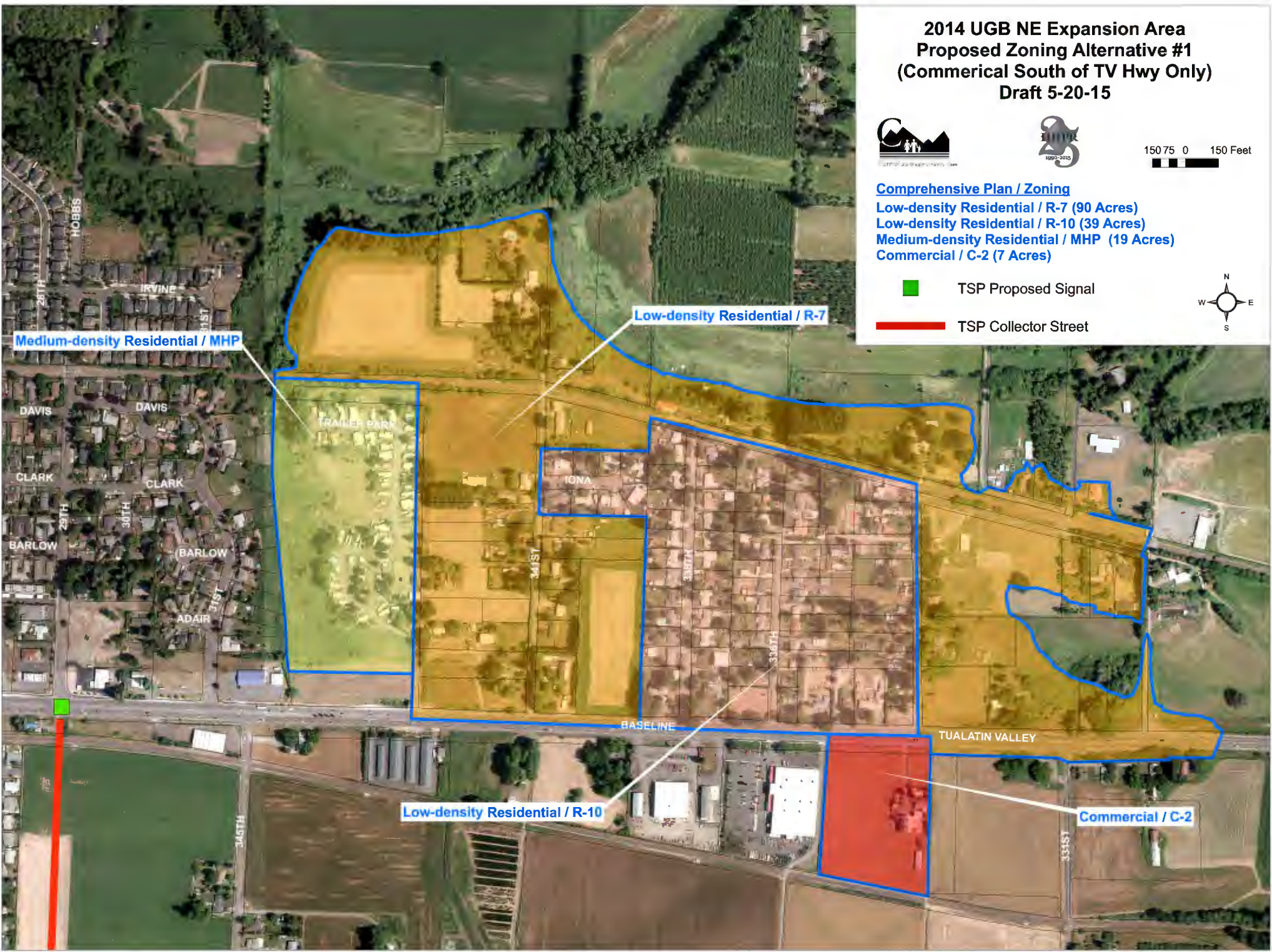
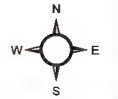


Exhibit B

Amendments to the City of Cornelius Parks Master Plan (Appendices G)



CITY OF CORNELIUS

Amendments to 2009 Parks Master Plan:

The following amendments are recommended to the 2009 Parks Master Plan, Appendices G of the Comprehensive Plan:

1. Remove the portion of the proposed trail along the Council Creek corridor that coincides with private land ownership as show on attached Map 6.
2. Include the following improvements identified in Council Creek Master Plan as components of the City of Cornelius Parks Master Plan
 - a. The proposed east-west trail alignment along the northern railroad right-of-way as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - b. The proposed North-South trail alignment following 29th Avenue as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - c. Include Trailhead Locations as shown on Council Creek Regional Trail Master Plan Segment 5 Jobs Ditch
 - d. Include trail design cross sections as shown on the attached excerpt of the Council Creek Trail Master Plan.
3. Change the planned Community Park in the NE area (CP-1) to a Neighborhood Park (NP)

Exhibit C

Amendments to the City of Cornelius Sanitary Sewer Master Plan (Appendices H)

TECHNICAL MEMORANDUM

Date: August 10, 2015
To: Michael Cerbone, Community Development Director, City of Cornelius
Terry Keyes, City Engineer, City of Cornelius
From: Ken Condit, ^{KC}PE, through Keith Jones, AICP
Project: City of Cornelius Comprehensive Plan Amendment –
Urban Growth Boundary Expansion Areas
Subject: Conceptual Analysis of Wastewater Facilities Extensions

A. EXECUTIVE SUMMARY – KEY FINDINGS

1. Southeast Urban Growth Boundary Expansion Area

- a. The extension of sewer service to the Southeast Urban Growth Boundary (UGB) Expansion Area (South Area) will require a pump station and force main.
- b. A central location for the South-Area pump station appears feasible and offers the most flexibility in developing the layout of the future South-Area collector sewers.
- c. It is preferable to have the wastewater (WW) generated by the new school in the northeast portion of the South Area conveyed by gravity to the new pump station serving the South Area.
- d. Under this concept, only the northwest portion of the South Area will be served by direct, gravity flow to the City's existing sewer system.
- e. The WW generated in the South Area will be conveyed to the City's existing South Trunk Sewer under Ginger Street. The preferred point of connection to the South Trunk is at 20th Avenue and Ginger.

2. South Trunk Sewer Upgrade

- a. Our analysis confirms that the upper reaches of the South Trunk must be increased in size to handle existing and projected peak flows. These sewer reaches extend from Heather Street, through Free Orchards Park to Emerald Loop, and east along Ginger to 23rd Avenue.
- b. Within the scope of this study, we have identified 3,005 linear feet of the South Trunk that needs to be increased in size. The scope of our analysis excluded the South Trunk reaches downstream of Heather.

3. Northeast Urban Growth Boundary Expansion Area

- a. A conceptual sewer layout has been developed for the Northeast Urban Growth Boundary Expansion Area (North Area) to show the feasibility of extending gravity sewer service to the area.
- b. The conceptual layout divides the North Area into four sewer sub-basins that would convey WW to the existing North-South Trunk Sewer and/or the existing Council Creek Trunk Sewer.

B. INTRODUCTION

This technical memorandum describes the results of the analysis we performed to address sanitary sewer service extensions into the areas covered by the recent UGB expansion. The analysis was performed as part of the Comprehensive Planning process that is required for lands within the UGB.

Planning-level concepts have been developed to document the feasibility of providing WW facilities in the UGB expansion areas and connecting these facilities to the existing WW infrastructure. The projected impacts of connecting these service extensions to the City's existing sewer system have also been identified.

Clean Water Services (CWS) will need to conduct a separate facilities planning process to address the projected impacts on downstream WW components owned by that agency.

C. SOUTHEAST UGB EXPANSION AREA SERVICE CONCEPT

1. General Concept

- a. The sewer service concept for the South Area assumes future developments will generally follow existing local topography.
- b. Due to the general topography (sloping down toward the river), most of the South Area cannot be served by gravity sewers that would be tributary to the City’s existing sewer system. Therefore, gravity sewers for the South Area will need to be tributary to a future South Cornelius Pump Station (SCPS).
- c. The force main for the SCPS will discharge WW into the City’s existing South Trunk sewer located under Ginger Street (see Item 5 below for discharge options).
- d. The alignments of future South-Area gravity sewers and the SCPS force main will be affected by development patterns. Alignments shown in our conceptual layout are provided for illustration purposes.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 1,200 DU
 - Projected Institutional (High School) – 2,500 Students
 - Projected Commercial & Industrial – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - I/I contributions from future developments on currently undeveloped land:
 - Near-term I/I Contribution Factor (25 years for PS planning) – 1,650 gpd/acre (gpad)
 - Long-term I/I Contribution Factor (50 years for sewer planning) – 4,000 gpad
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 3,120 People
 - Projected Average WW Production – 209,000 Gallons per Day (gpd)
 - Projected Institutional (High School) – 30,000 gpd (12 gpd/student)
 - Projected Total Average WW Flow – 239,000 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 3.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 720,000 gpd
 - Peak Infiltration/Inflow Allowances
 - Near-term I/I Contribution – 297,000 gpd (1,650 gpad x 180 net acres)
 - Long-term I/I Contribution – 720,000 gpd (4,000 gpad x 180 net acres)
 - Net acreage excludes low-lying land along southerly boundary of South Area and half of school site that is assumed to be playing fields.
 - Projected Peak Flow –
 - Near-term (25-year) Planning for PS Capacity – 1,020,0000 gpd ≈ 710 gallons per minute (gpm)
 - Long-term (50-year) Planning for Sewer Capacity – 1,440,0000 gpd ≈ 1,000 gpm

3. South Cornelius Pump Station

- a. Concept-Level PS Capacity – 750 gpm (Preliminary Projection for Build-Out and Near-term I/D).
- b. Approximate Minimum Elevation for Development – 156-160 feet
- c. Approximate PS Floor Level (Top of Wetwell) – Elevation 154-158 feet
- d. Approximate Sewer Inverts at Wetwell – Elevation 140-142 feet
- e. Potential PS Sites Identified for Planning (see Exhibit 1)
 - Site 1 – Central Location near swale south of 26th Avenue
 - Site 2 – SE Location between 345th Avenue and Tualatin River
 - Site 3 – SW Location near swale outlet to river
- f. Site 1 is identified as the preferred site for planning purposes.
 - The more centralized site offers more flexibility in developing the tributary gravity sewers.
 - The central site helps to limit the maximum depth of the tributary gravity sewers.
 - The other two sites would probably require a lower inlet invert at the PS wetwell.

4. School Site Service Options

- a. Sewer service to the school can be extended from the new South-Area collection system or potentially from the existing City sewer system to the west (see Exhibit 1).
- b. Gravity Flow South: This option would have WW from the school conveyed by gravity into the sewer system for the South Area tributary to the future SCPS.
- c. Gravity Flow West:
 - This option would have WW from the school conveyed by gravity into the City's sewer system at the east end of existing Dogwood Street.
 - Flows through the Dogwood sewer eventually reach the South Trunk Sewer at 23rd Avenue.
 - The ability to serve the school site from Dogwood would depend on the actual location and elevation of the school, as well as the elevation, capacity and accessibility of the existing sewer in Dogwood.
- d. For planning purposes we show the school being served by the future South-Area sewers and SCPS. The reasons for this assumption are described below.
 - This approach provides a more conservative projection for the PS capacity.
 - There are concerns about accessibility for maintenance if sewer service were extended from Dogwood.
 - Because the WW contribution from the school is a small portion of the overall South-Area WW flow, future impacts on the existing South Trunk Sewer would likely be similar for either option.

5. South-Area Connection to City's Existing Sewer System

- a. South-Area WW can be discharged into the existing South Trunk Sewer at either 20th Avenue or Webb/26th Avenue (see Exhibit 1)
- b. It is preferable to connect to the South Trunk Sewer at 20th Avenue because that is further downstream and will not impact the existing pipe between 26th and 20th.
- c. The force main from the SCPS can discharge to a gravity sewer in the South Area that will extend west and then north to the intersection of Ginger and 20th as shown in Exhibit 1. Based on the preliminary projection for the SCPS capacity and minimum sewer slope, this South-Area outlet sewer will need to be 12 inches in diameter.

6. Assumptions for Conceptual Layout

- a. The layout assumes the gravity sewers tributary to the SCPS would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of about 6 feet.

D. IMPACT OF SOUTH AREA ON EXISTING SYSTEM

1. Scope

Our study of downstream impacts from the South Area was limited to an analysis of the effect the projected peak hourly flow from projected development will have on an upper reach of the existing South Trunk Sewer. This section of the existing sewer extends under Ginger Street, Emerald Loop and the Free Orchards City Park to Heather Street, near 15th Avenue (see Exhibit 1).

2. Background

The 2012 CWS West Basin Facilities Plan (WBFP) previously identified capacity deficiencies in most of the South Trunk Sewer and recommended replacement of about 3,800 feet of this upper reach with larger pipe sizes.

3. Purpose

The purpose of our impact analysis is to provide updated recommendations for pipe replacements. The update is based on the peak flow projections we generated from the current land-use plan for the South Area (see Section C above) and more-recent information on I/I contributions provided by CWS.

4. South Trunk Field Survey

A field survey was performed of the manholes along the upper reach of the South Trunk from Heather Street to 26th Avenue. This survey established current data for existing pipe sizes, invert elevations and manhole rim elevations that were used to generate an updated model of this upper reach. The data is shown in Appendix A.

5. South Trunk Analysis

- a. We evaluated the upper reach of the South Trunk by applying estimates of peak WW and infiltration/inflow contributions from currently developed areas and applying the projected near-term and long-term SCPS flow capacities at the preferred discharge point.
- b. We generated flow estimates from existing, tributary developments using criteria for WW generation listed in the WBFP and updated I/I criteria supplied by CWS. These estimates assume no redevelopment will occur in the tributary areas to significantly increase WW flows.
- c. Breakdowns of the estimated flows into the South Trunk are listed in Table 1 (following page) and shown in Exhibit 2. The projected peak WW flows from developed areas are similar to the WBFP, but do not coincide exactly. The projected I/I contributions are lower than the WBFP because CWS identified a lower, per-acre I/I contribution based on more-recent flow data the agency obtained for the South Trunk sub-basin.

6. Results of Analysis

The pipe replacements identified in our planning-level analysis of the South Trunk are listed in Table 2 (following page). The results of our analysis are further described in the following paragraphs.

- a. Our results generally coincide with the recommendations of the WBFP from Heather (MH #20045) upstream to 20th and Ginger (MH #20034). An 18-inch sewer pipe is needed to convey projected peak flows through these segments for both the near-term and long-term I/I contributions from the South Area.

The 18-inch pipe size assumes the existing, inverted siphons in Free Orchards Park will be replaced with straight, gravity sewers that will be laid aboveground across the low-lying swales. These sewers will need to be supported from pedestrian boardwalks or similar structures through these locations.

Pipe bursting could potentially be used to replace the existing buried 12-inch sewer with an 18-inch pipe. However, the existing South Trunk has a fairly shallow depth of burial under Emerald Loop and where Ginger transitions to 18th Avenue. Consequently, surface heaving could be a major concern with pipe bursting in this stretch. Installation methods will need to be further addressed at a later stage of project development.

- b. Our analysis indicates a 12-inch pipe is needed for the pipe reach in Ginger between 20th and 23rd Avenues based on the average slope. This conclusion contrasts with the WBFP recommendation for a 15-inch pipe along this reach. The difference may result from the lower I/I contribution provided by CWS and a shift of the South-Area sewer connection further downstream along the South Trunk.

It should be noted our survey of the MHs along the South Trunk shows one sewer length in this reach, between MHs #20031 and #20032, has a very mild slope of 0.07%. If this pipe were replaced through pipe bursting, it would continue to have a mild slope, which would reduce the pipe capacity and could promote solids deposition. This issue will need to be considered when evaluating installation methods for this reach.

SFR Land Use Factor = 1,200.0 gpad for existing developments (WBFP, TM 2.3, Table 2)										
Peaking Factor = 3.0 (multiplier applied to residential flow)										
Avg. I/I Contribution = 5,150.0 gpad avg. for Basin FG-6 (CWS Input - July 2015)										
Area	Inlet MH#	Acreage	Flows from Currently Developed Areas (gpm)				Future SCPS Flow (gpm)		Cumulative Flows (gpm)	
			Base WW	Peak WW	Peak I/I	Total Peak	Near Term	Long Term	Near Term	Long Term
1	22461	20	17	50	72	122	0	0	122	122
2	20030	85	74	223	304	527	0	0	649	649
3	20034	20	17	50	72	122	750	1,000	1,521	1,771
4	20036	55	46	138	197	335	0	0	1,856	2,106
5	20043	8	7	20	29	49	0	0	1,905	2,155
		188	160	481	672	1,155	750	1,000	1,905	2,155
									2.75 MGD	3.10 MGD

Pipe Reach	Upstrm MH#	Dnstrm MH#	Location	Existing Size (in.)	Proposed Size (in.)	Reach Length (ft)	Approx. Avg. Slope	Pipe Capacity (gpm) ***
1	20030	20034	23th-20th Ave.	10	12	825	0.25%	775
2	20034	20036	20th-19th Ave.	12	18	510	0.15%	1,780
3	20036	20040	19th Ave-Emerald	12	18	805	0.22%	2,150
4	20040	20043	Emerald-Fawn **	6, 10 & 12	18	420	0.28%	2,425
5	20043	20045	Fawn-Heather **	6 & 10	18	445	0.34%	2,675
Total Length - 3,005							Linear Feet	
12" Pipe - 825							Linear Feet	
18" Pipe - 2,180							Linear Feet	

** Free Orchards Park *** New Pipe w/Max. Depth 80% of Pipe Diameter

E. NORTH EXPANSION AREA SERVICE CONCEPT**1. General Concept:**

- a. The conceptual sewer layout would provide gravity service to the North Area. The layout is shown in Exhibit 3.
- b. The sewer layout is generally based on current development patterns (layout of lots, streets & railroad) with most sewers following an existing R-O-W.
- c. The gravity sewers would be divided into four separate sub-basins: Northwest, Northeast, Southwest and Southeast.
- d. All four sub-basins would be tributary to the Clean Water Services' Council Creek Trunk Sewer.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 480 DU
 - Projected Commercial – 6 acres
 - Projected Industrial & Institutional – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - Average flow contribution from commercial land – 1,000 gpd/acre (gpad)
 - Long-term I/I contribution from currently undeveloped land – 4,000 gpd/acre (gpad)
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 1,250 People
 - Projected Residential – 83,620 Gallons per Day (gpd)
 - Projected Commercial – 6,000 gpd
 - Projected Total Average WW Flow – 89,620 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 4.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 358,500 gpd
 - Peak Infiltration/Inflow Allowance – 300,000 gpd (4,000 gpad x 75 net acres)
 - Projected Peak Flow – 660,000 gpd \approx 460 gallons per minute (gpm)

3. Sewer Drainage Pattern

- a. NW Sub-basin
 - This sub-basin would drain to the west along the existing ODOT railroad R-O-W.
 - WW flows would discharge into an existing sewer that extends down from the Trailer Park to the existing North-South Trunk Sewer.
 - The east boundary of the NW sub-basin is limited by a highpoint in the RR line between 338th and 341st Avenues. East of this point the RR grade slopes down to Dairy Creek.

- b. NE Sub-basin
 - This sub-basin would serve areas that generally slope to the north and east toward Council Creek or Dairy Creek.
 - WW flows would discharge through a gravity sewer extending across the RR line and north along 334th Avenue to the existing Council Creek Trunk Sewer.
- c. SW Sub-basin
 - This sub-basin would generally drain west to the existing sewer along East Lane just north of Baseline Street. The service concept is laid out to minimize the amount of area served by the SW Sub-basin due to constraints posed by existing utilities in the Baseline R-O-W.
 - The existing sewer extending along Baseline is on the south side of the R-O-W. Gravity sewer service from the area north of Baseline is prevented from discharging into this existing sewer by the 72-inch water transmission main under the north side of Baseline.
 - Existing utilities along the north side of the Baseline R-O-W limit the space that would be available for a new parallel sewer on the north side of Baseline.
 - The mobile home park on East and West Lanes is currently served by existing gravity sewers.
- d. SE Sub-basin
 - This Sub-basin would serve a small area on the south side of Baseline, east of the current City limit.
 - The area would be served by an extension of the existing 8-inch sewer that extends along the south side of Baseline. The Baseline sewer discharges into the north-south trunk sewer.

4. Approximate Peak WW Flow Distribution to Existing Trunk Sewers

- a. Approximate flow to N-S Trunk (NW, SW & SE Sub-basins) – 290,000 gpd (60%)
- b. Approximate flow directly to Council Creek Trunk (NE Sub-basin) – 195,000 gpd (40%)

5. Assumptions for Conceptual Layout

- a. The layout assumes gravity sewers would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of 6 feet and a maximum depth of about 15 feet.

F. IMPACT OF NORTH AREA ON EXISTING SYSTEM

1. City’s Baseline Street Sewer

A small amount of additional WW from projected commercial development in the SE Sub-basin will discharge into the City’s existing sewer along the south side of Baseline. This projected WW contribution will be too minor to impact the existing sewer system.

2. North-South Trunk Sewer

The conceptual layout for the North Area would convey projected flows from the NW and SW Sub-basins into the existing CWS North-South Trunk Sewer. CWS records show this line extending from East Lane, just north of Baseline, up to the Council Creek Trunk Sewer. These records also show the line as an 8-inch pipe with most sections between manholes laid at a slope of 0.4%. The North-South Trunk sewer currently receives flows from collector sewers in Baseline and two other City collector sewers north of Baseline.

If future development is evenly distributed throughout the North Area, the NW and SW Sub-basins could carry more than half the projected flows. Since an 8-inch pipe with a 0.4% slope has a capacity of about 0.5 MGD before surcharging, future flows from the NW and SW Sub-basins could surcharge the line. Future CWS facilities planning efforts will need to model the line to verify whether the North-South Trunk will be adequate.

3. Council Creek Trunk Sewer

The sewer service concept for the North Area results in all future WW flows generated in the area being conveyed to the Council Creek Trunk Sewer. The NE Sub-basin will drain directly to this line and the other sub-basins will be conveyed to this line through the North-South Trunk Sewer.

CWS records show the Council Creek line as a 42-inch pipe between the North-South Trunk and 334th Avenue. This existing 42-inch pipe line would need to be at or very near capacity to be impacted at all by the projected WW flows from the North Area. Future CWS modeling of this line will need to address the potential for any impacts from the North Area.

G. ORDER-OF-MAGNITUDE ESTIMATE OF PROBABLE COST

As part of the comprehensive planning process, we developed estimates of the probable project costs for the SCPS, the associated PS force main and downstream South-Area gravity sewer, and the South Trunk Sewer replacements. We used cost information presented in the WBFPP as the basis for the estimates and then applied an inflation factor based on the 20-City Average Construction Cost Index (CCI) published by Engineering News Record (ENR).

The probable project costs include a 30% allowance for construction contingencies and a 35% allowance for non-construction costs (engineering, environmental and legal services and project administration).

Table 3	
Estimates of Probable Project Costs (July 2015 **)	
Project Description	Probable Cost
750-gpm South Cornelius Pump Station	\$ 880,000
8-inch Force Main & 12-inch Downstream Gravity Sewer	\$ 650,000
South Trunk – Reach 1 Replacement (12-inch Sewer)	\$ 280,000
South Trunk – Reach 2-5 Replacement (18-inch Sewer)	\$ 1,450,000
Total Estimated Probable Project Costs	\$ 3,260,000

** July 2015 ENR CCI = 10,037

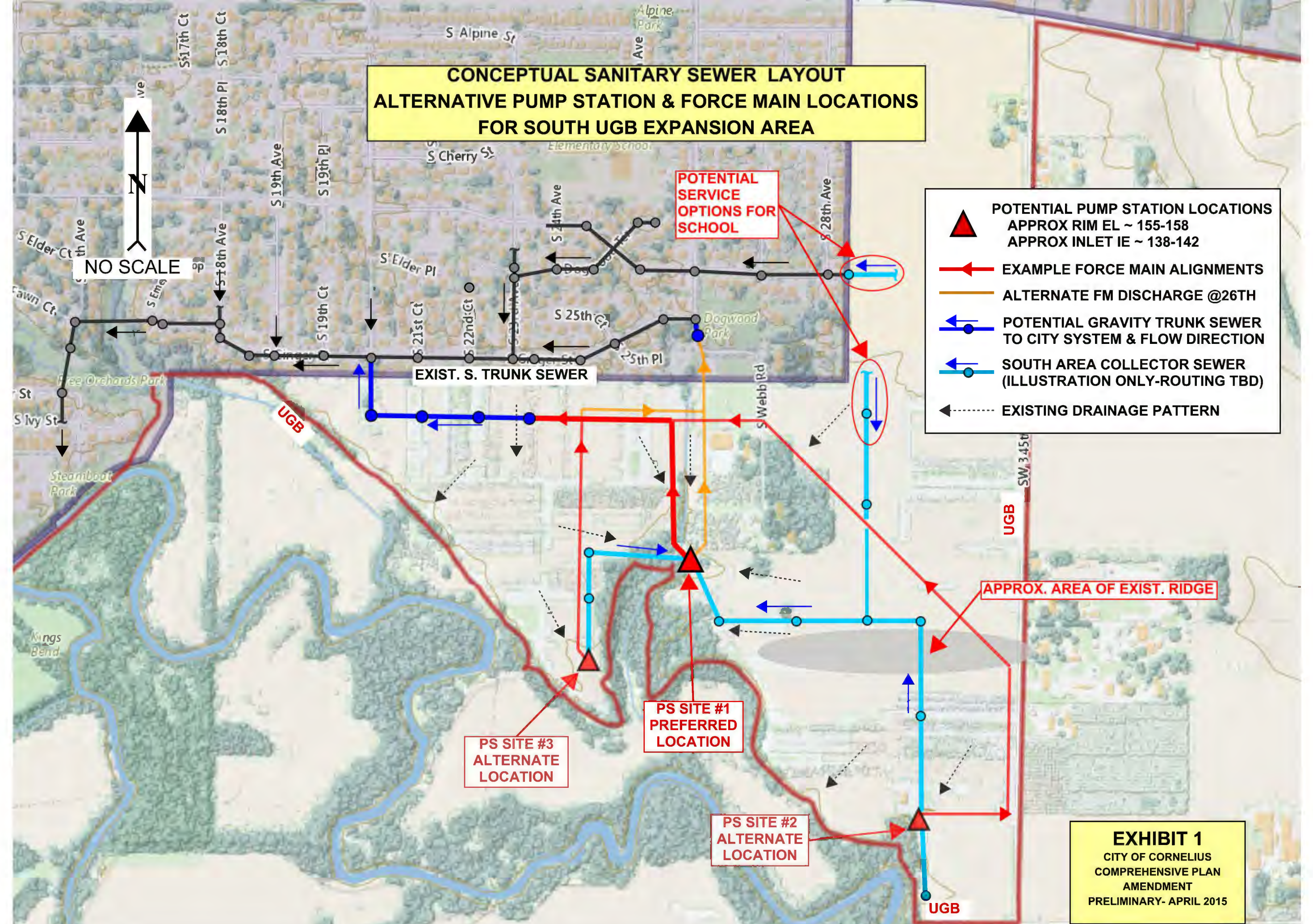
The level of detail of these cost estimates is consistent with Estimate Class 4 described by the Association for the Advancement of Cost Engineering International (Recommended Practice #18R-97, Rev. November 2011). Accordingly, the accuracy is anticipated to be within –25% to +35% of the actual cost.

The actual cost of the improvements will depend on project scope, design development, and actual market conditions at bid time. Costs will also depend on specific site conditions and other variable factors. More detailed estimates of the probable costs will need to be prepared as part of further project planning and design efforts.

**CONCEPTUAL SANITARY SEWER LAYOUT
ALTERNATIVE PUMP STATION & FORCE MAIN LOCATIONS
FOR SOUTH UGB EXPANSION AREA**



NO SCALE



- POTENTIAL PUMP STATION LOCATIONS**
APPROX RIM EL ~ 155-158
APPROX INLET IE ~ 138-142
- EXAMPLE FORCE MAIN ALIGNMENTS**
- ALTERNATE FM DISCHARGE @26TH**
- POTENTIAL GRAVITY TRUNK SEWER TO CITY SYSTEM & FLOW DIRECTION**
- SOUTH AREA COLLECTOR SEWER (ILLUSTRATION ONLY-ROUTING TBD)**
- EXISTING DRAINAGE PATTERN**

**PS SITE #3
ALTERNATE
LOCATION**

**PS SITE #1
PREFERRED
LOCATION**

**PS SITE #2
ALTERNATE
LOCATION**

EXHIBIT 1
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

**SOUTH TRUNK SEWER EVALUATION
ESTIMATED TRIBUTARY AREAS & FLOWS**

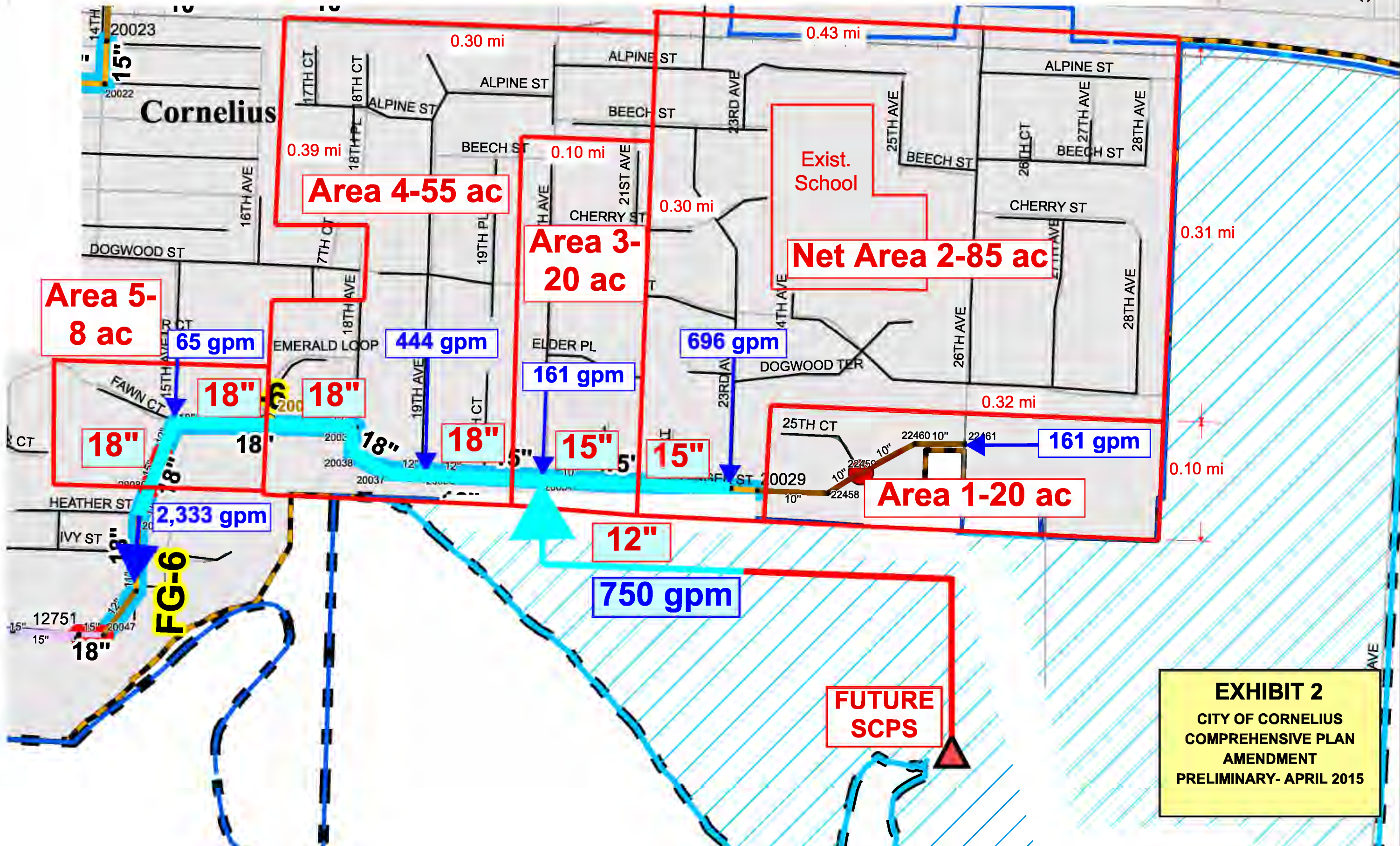
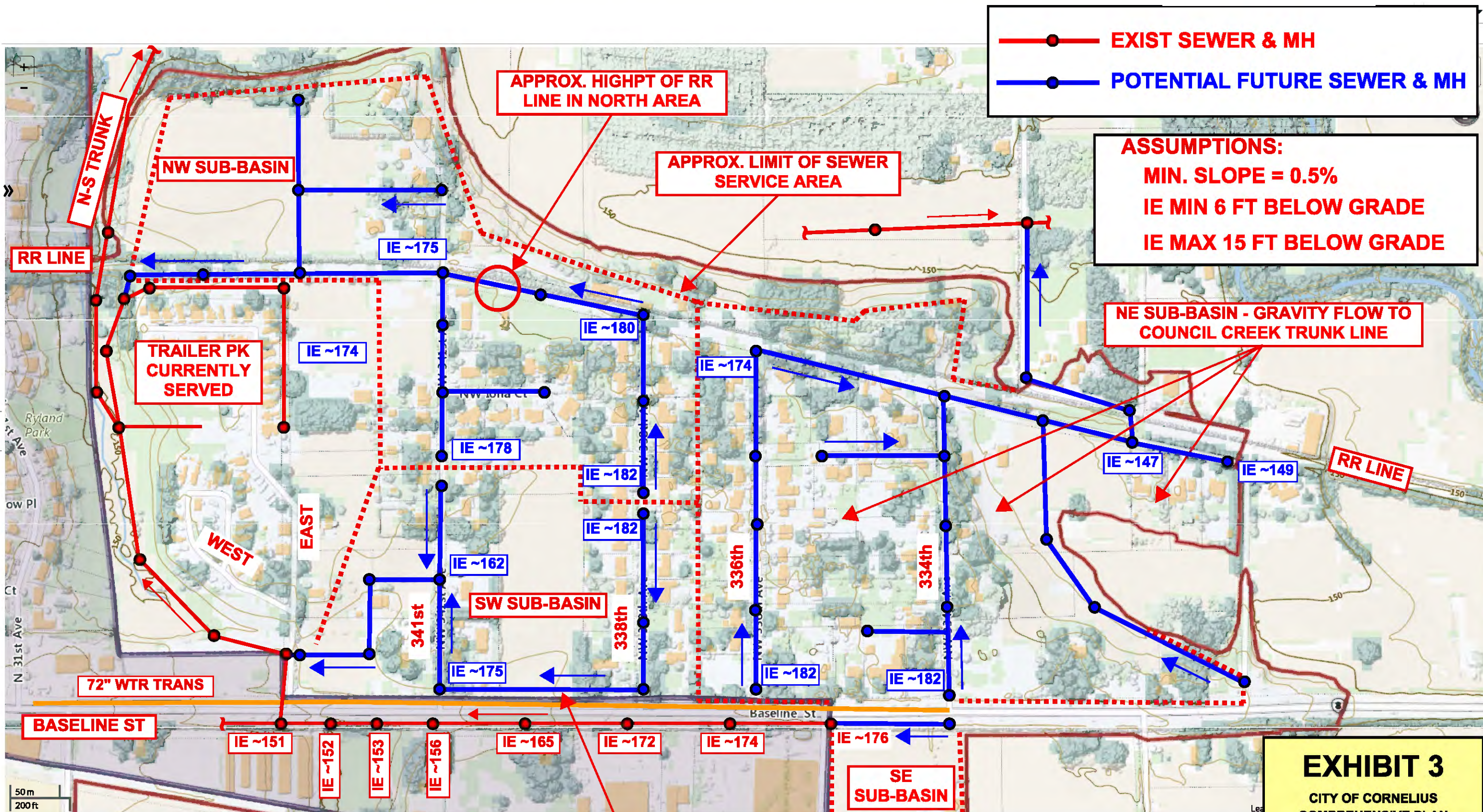


EXHIBIT 2
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

CONCEPTUAL SANITARY SEWER LAYOUT FUTURE SERVICE FOR NORTH UGB EXANSION AREA



—●— **EXIST SEWER & MH**
—●— **POTENTIAL FUTURE SEWER & MH**

ASSUMPTIONS:
 MIN. SLOPE = 0.5%
 IE MIN 6 FT BELOW GRADE
 IE MAX 15 FT BELOW GRADE

NE SUB-BASIN - GRAVITY FLOW TO COUNCIL CREEK TRUNK LINE

TRAILER PK CURRENTLY SERVED

APPROX. HIGHPT OF RR LINE IN NORTH AREA

APPROX. LIMIT OF SEWER SERVICE AREA

MIN. ALLOWABLE SEWER SLOPES: **
 8" DIA 0.40%
 10" DIA 0.28%
 12" DIA 0.22%
 ** FOR 2.0 FPS VELOCITY

POTENTIAL PARALLEL SEWER IN NEW EASEMENT TO AVOID HWY CROSSINGS & UTILITIES

EXHIBIT 3
 CITY OF CORNELIUS
 COMPREHENSIVE PLAN
 AMENDMENT
 PRELIMINARY- APRIL 2015

APPENDIX A

**City of Cornelius
South Trunk Sewer Survey Data**

Model Pipe#	MH#	Location	Rim Elev	MH Inlet			MH Outlet			Run	Slope (ft/ft)
				Size & Mat'l	Dip	IE	Size & Mat'l	Dip	IE		
6122	22461	26th/Ginger	175.77	10"PVC(S)	10	165.77	10"PVC(W)	10.1	165.67	216.61	0.0028
6124	22460		173.21	10"PVC(E)	8.14	165.07	10"PVC(SW)	8.25	164.96	263.44	0.0022
6090	22459	25th/Ginger	174.91	10"PVC(NE)	10.53	164.38	10"PVC(SW)	10.7	164.21	168.04	0.0035
6088	22458		174.25	10"PVC(NE)	10.62	163.63	10"PVC(W)	10.79	163.46	307.38	0.0034
1	20029		173.35	10"PVC(E)	10.95	162.4	10"CSP(W)	11.05	162.3	108.56	0.0027
2	20030	23rd/Ginger	173.23	10"CSP(E)	11.22	162.01	10"CSP(W)	11.29	161.94	260.11	0.0029
3	20031		174.14	10"CSP(E)	12.95	161.19	10"CSP(W)	13.09	161.05	156.34	0.0007
4	20032		173.21	10"CSP(E)	12.27	160.94	10"CSP(W)	12.39	160.82	122.03	0.0029
5	20033		172.54	10"CSP(E)	12.07	160.47	10"CSP(W)	12.19	160.35	282.94	0.0028
6	20034	20th/Ginger	170.84	10"CSP(E)	11.29	159.55	12"CSP(W)	11.39	159.45	254.93	0.0014
7	20035		168.6	12"CSP(E)	9.5	159.1	12"CSP(W)	9.58	159.02	254.70	0.0017
8	20036	19th/Ginger	166.61	12"CSP(E)	8.03	158.58	12"CSP(W)	8.13	158.48	149.79	0.0019
9	20037		163.79	12"CSP(E)	5.6	158.19	12"CSP(NW)	5.7	158.09	152.39	0.0026
10	20038		162.04	12"CSP(SE)	4.34	157.7	12"CSP(N)	4.4	157.64	118.03	0.0038
11	20039	18th/Emerald	164.47	12"CSP(S)	7.28	157.19	12"CSP(W)	7.35	157.12	383.81	0.0019
12	20040	Emerald	160.72	12"CSP(E)	4.33	156.39	12"CSP(W)	4.38	156.34	22.56	0.0080
	20042	Emerald	161.16	12"CSP(E)	5	156.16	10" ??(W) 10" ??(W)	5.15 4.82	156.01 156.34		
13 & 15	<i>(Ignore MH# 20079 - blowoff)</i>									394.50	0.0023
	20043	15th/Fawn	160.34	10"CSP(E)	5.25	155.09	12"CSP(SW)	5.3	155.04		
14				10"CSP(E)	5.25	155.09				130.08	0.0035
	20044	Sou. of Fawn	159.08	12"CSP(NE)	4.5	154.58	12"CSP(SW) 8"CSP(SW)-??	4.4 NOT SURVEYED	154.68		
213 & 16	<i>(Ignore MH# 20079 - blowoff)</i>									313.56	0.0040
	20045	Heather	157.95	12"CSP(NE) 8"CSP(NE)	4.51 4.55	153.44 153.40	10"CSP(S)	4.53	153.42	(Should be 12" Out?)	
???	64144		160.03	12"CSP(N)	6.98	153.05	12"CSP(S)	7.05	152.98	141.59	0.0026

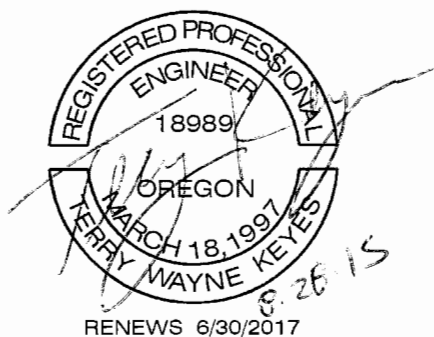
Exhibit D

Amendments to the City of Cornelius Water Master Plan (Appendices I)

Cornelius Urban Growth Boundary Expansion

Water Plan

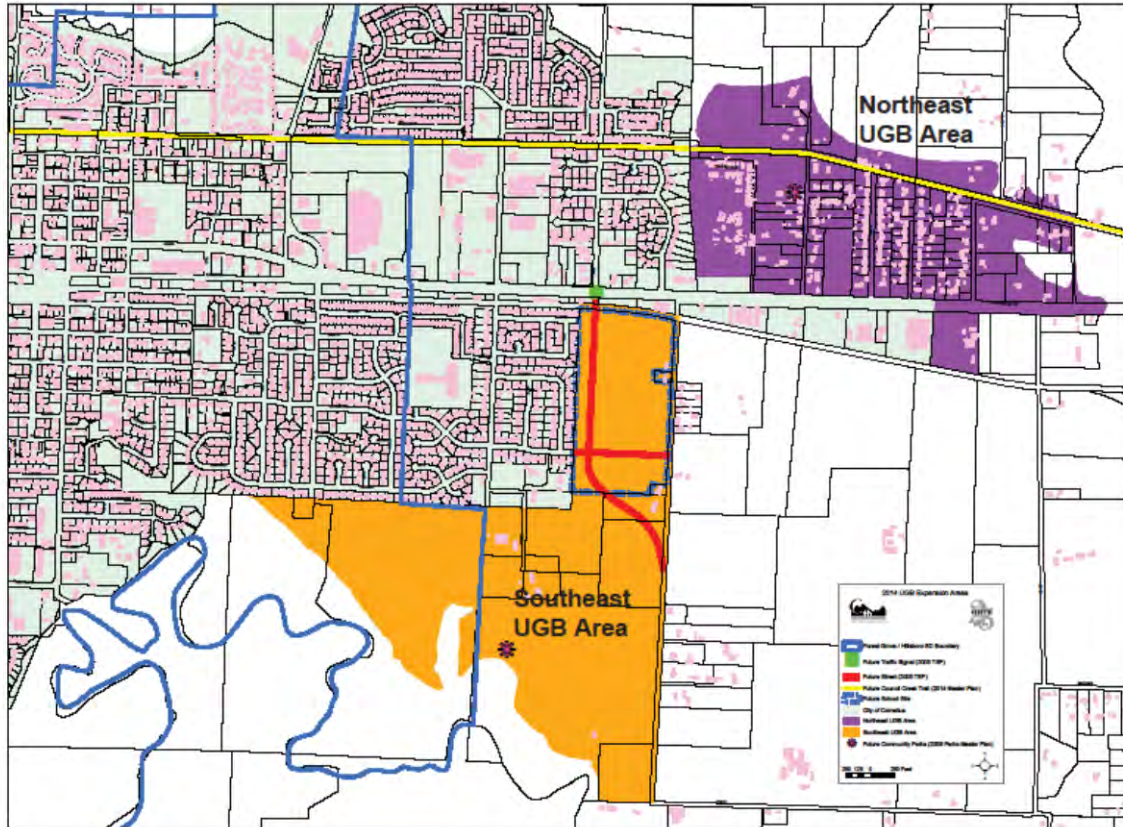
August 28, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



Water Infrastructure – Northeast UGB Area

The City of Hillsboro currently provides water service to the Northeast UGB. Attachment 1 shows the current system. While Hillsboro and Cornelius have had very preliminary talks regarding Cornelius taking over the water system in this area, the City of Cornelius has been cool to the idea because much of the system in the area is undersized and does not meet current standards.

Attachment 2 shows the improvements that are likely needed to bring the water system in this area up to City of Cornelius standards. Most of the improvements involve upgrading the existing lines to 8" and adding fire hydrants. The line on 341st is shown as a 12" line based on the assumption that without a looped system, any significant development north of the railroad will need a 12" line to achieve adequate flow.

The cost of bringing the water infrastructure in this area up to current standards is approximately:

$$4,000 \text{ LF @ } \$130/\text{LF} = \mathbf{\$520,000}$$

This cost cannot be justified based on the limited amount of water user fee revenue the area would produce. Therefore, if the Northeast UGB area is annexed to the City of Cornelius, the annexation will likely occur in small chunks as development occurs. With each annexation, Cornelius will take over the portion of the water system needed to serve that area. The development necessitating the annexation will be primarily responsible for improving the annexed part of the Hillsboro water system to Cornelius standards.

Storage needs for the Northeast UGB area can be easily handled by the City's current 1.5 MG (million-gallons) above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Flow needs for this area can be handled from three sources.

1. 12" Cornelius main line on the north side of Baseline that currently ends at East Lane
2. 12" Cornelius main line on the south side of Baseline that currently ends at the Coastal Farm Store at about 336th Avenue
3. Existing but unused transfer station from the Hillsboro 72" transmission line in Baseline to the Cornelius system at East Lane

In summary, the City of Cornelius can easily serve the Northeast UGB area. The primary concern is the fact that most pipes in this area are substandard. Bringing this area up to current standards is an expensive proposition that is not currently programmed into the Cornelius water rate structure. Therefore, improvements to the water infrastructure in this area will be required at the time of development. Until areas are annexed into the City the system within this area will remain within Hillsboro's service district and will be maintained and operated by Hillsboro.

Water Infrastructure Needs – Southeast UGB Area

The Southeast UGB area represents a clean slate in that the area contains almost no existing water infrastructure. The only public water facility in the area is a 2" plastic line from Baseline south along 345th to serve approximately 8 residents within ¼ mile of Baseline. Since most of these residents are outside the UGB expansion area, the City does not intend to upgrade this 2" plastic line in the foreseeable future. However, the south end of this line may be looped into the new water infrastructure in the UGB area to protect against an emergency such as a line break.

When developed, the Southeast UGB area will be served by 12" mains under the planned collector streets. The collector streets are expected to include: 29th south of Baseline, 26th and 20th south of Ginger, Dogwood east of 28th, and a new east-west collector south of the current city limits that connects 20th, 26th and 29th. All local streets will be underlain with 8" water mains, the minimum standard required by Cornelius.

In addition, to provide adequate flow and pressure to this area at build-out, some improvements in the City's existing water system may be required. The needed improvements will be determined when the City completes its water master plan update later this year. However, the improvements to the existing system that are likely to be needed at full development of the UGB area include:

- 12" line to replace existing 8" line in Dogwood from 18th to 20th
- 12" line to replace 8" line in 20th from Dogwood to Southeast UGB area
- 12" line to replace 8" line in 26th from Dogwood to Southeast UGB area

These improvements are not needed initially, but will be required as the area nears build-out. When the City's water master plan update is completed in late 2015, the amount of development the existing system can support will be determined. For development that occurs before the master plan update is complete, the developer will be responsible for proving that the existing system can provide adequate flow and pressure to the UGB area. If adequate flow and pressure cannot be attained, the developer will need to make the improvements noted above.

Storage needs for the Southeast UGB area can be handled by the City's current 1.5 MG above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Water Infrastructure Costs – Southeast UGB Area

All the new water mains in the Southeast UGB area will be installed and funded by developers. However, the City must pay for oversizing of lines greater than 8" size. In other words, while the developers are responsible for funding the installation of 8" lines under all the streets in this area, the City must fund the additional cost of 12" lines where they are needed. The cost of this upsizing of lines to 12" is estimated to be:

12" oversize cost in UGB area = ~10,000 LF @ \$20/LF = \$200,000

Furthermore, the City must fund improvements to piping outside the UGB area. These improvements are listed above and will cost approximately:

12" replacement lines inside UGB area = ~2,200 LF @ \$140/LF = \$300,000

Water SDCs from the southeast UGB area are expected to be:

1,100 single family residences @ \$3,884 SDC per residence = ~\$4M

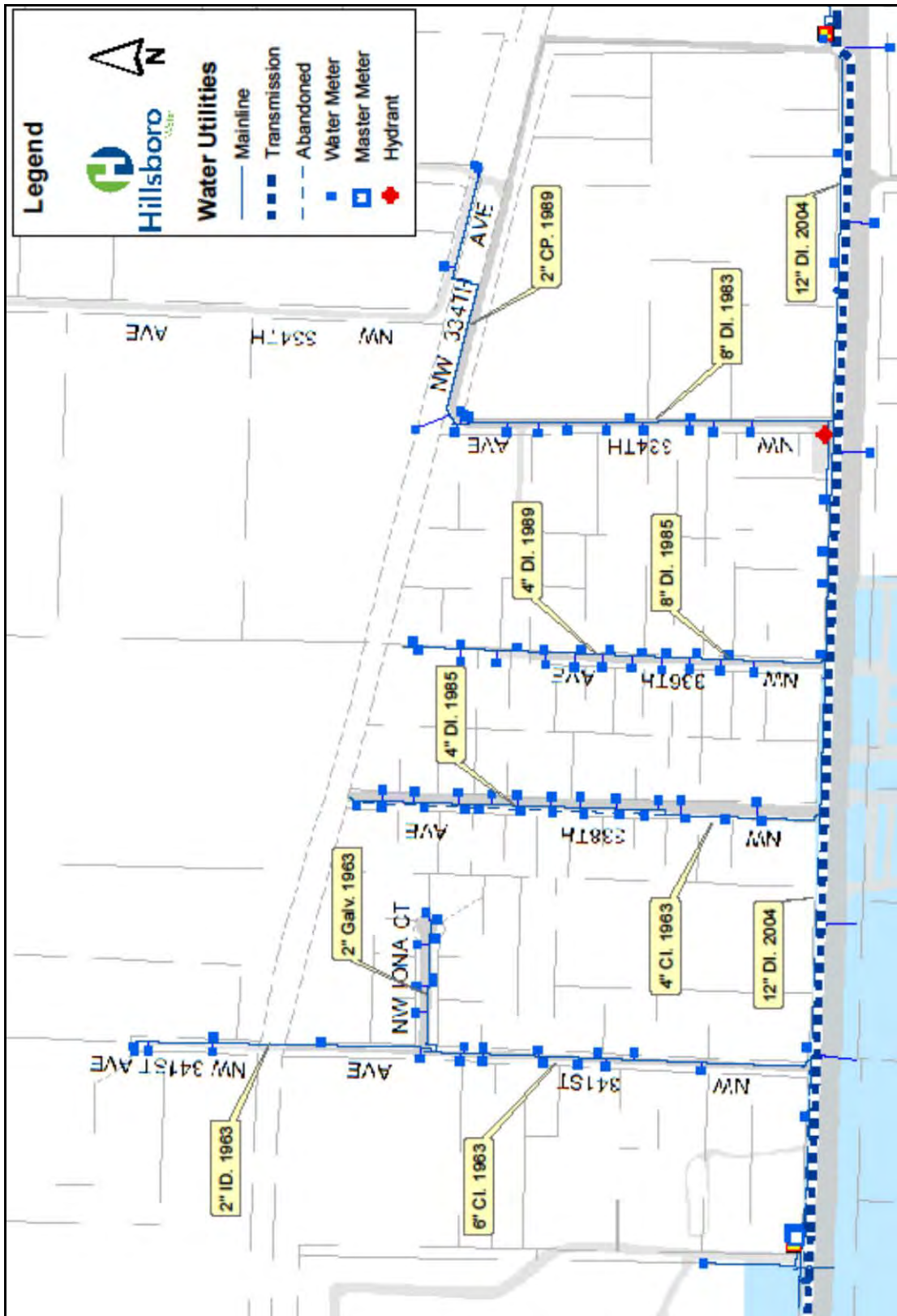
Therefore, the water SDCs captured from the new development in the southeast UGB area are more than adequate to fund the improvements to pipes needed to serve this area.

Recommendations

In the Northeast UGB area, staff recommends the area continue to be served by the City of Hillsboro until parcels are annexed. At the time parcels are annexed into the City of Cornelius, Cornelius should take over the portion of Hillsboro's system needed to serve the annexed parcel. Developers should pay for all improvements needed to bring lines up to City of Cornelius standards.

In the Southeast UGB area, developers should design and install all water mains. The City shall pay for oversizing mains under collectors to 12" from the 8" standard size. The City shall also design, build, and fund improvements necessary to the water mains within the current City boundaries.

Attachment 1 – Hillsboro Water System in Northeast UGB Area



Attachment 2 – Cornelius Water Improvement Needs for Northeast UGB Area

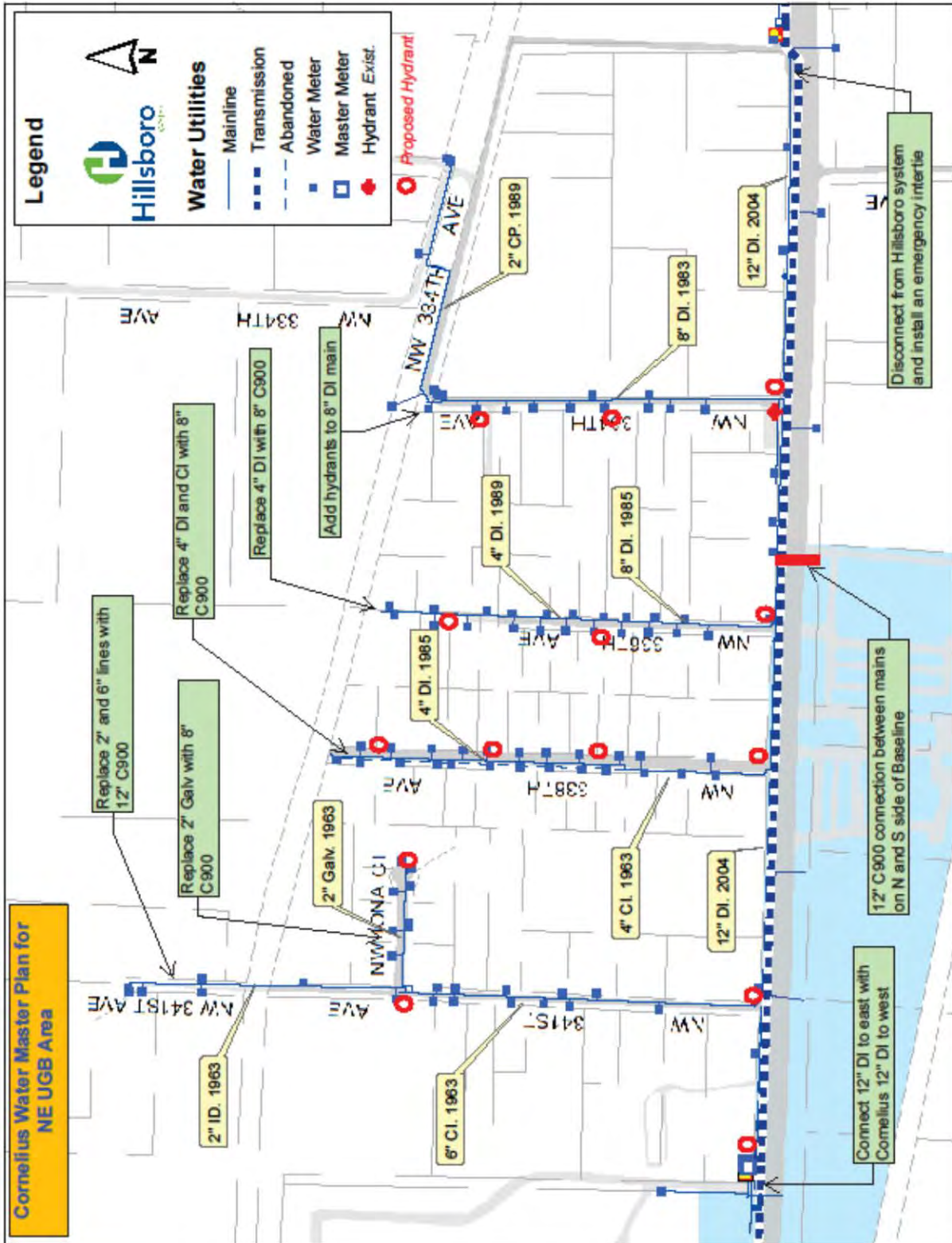


Exhibit E

Amendments to the City of Cornelius Transportation System Plan (Appendices M)

RECOMMENDATIONS

Transportation Planning Rule Findings

The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. Further analysis of Tualatin Valley Highway west of 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety.

Local Improvements

Local roadway projects would be required to support the UGB expansion areas and provide adequate access and internal circulation. Based on the City’s functional classification designations¹³ and the future 2040 PM peak hour volume forecasts, recommended local improvements were identified as shown in Table 11. Planning level cost estimates were developed for each roadway project based on the collector cross-section with parking on both sides of the street (shown in Figure 9). If the collector facilities were constructed with a narrower cross-section (shown in Figures 10 and 11) the costs would be lower.

Table 11: Local Improvements to Support UGB Expansion

Project	Description	Planning Level Cost Estimate
20 th Avenue Extension	Construct a collector facility south of Ginger Street then east to 29 th Avenue extension	\$7,450,000
26 th Avenue Extension	Construct a collector facility south of Ginger Street to the 20 th Avenue extension east-west alignment	\$1,300,000
29 th Avenue Extension	Construct a collector facility south of Tualatin Valley Highway to realignment with 345 th Avenue, install railroad crossing treatments on 29 th Avenue, close railroad crossing on 345 th Avenue	\$6,800,000

¹³ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005, Figure 8-3.



Dogwood Street Extension	Construct a collector facility east to 345 th Avenue (east UGB expansion area boundary)	\$1,600,000
29 th Avenue/Tualatin Valley Highway Signal	Install a traffic signal, interconnect with adjacent railroad crossing	\$600,000

Note: Collector facility cost estimate based on Figure 9 cross-section

The remaining roadways needed to support future development would function as local streets. The preliminary alignment for the recommended collector facilities are shown on Figure 7. These alignments are conceptual and will be refined with further engineering analysis prior to construction.

Policies and Standards

New policies and standards should be adopted to support the UGB expansion areas:

- Development should be limited to 130 residential units connecting to 20th Avenue and 260 residential units connecting to 26th Avenue prior to construction of the 29th Avenue connection to Tualatin Valley Highway. With a roadway connection between 20th and 26th Avenue, a combined development limit of 390 residential units should be applied.
- Roadway and trail cross-sections shown in Figures 9 to 14 should be incorporated into the Cornelius TSP.

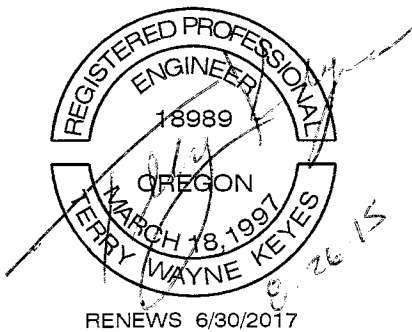
Exhibit F

Amendments to the City of Cornelius Storm Drainage/Surface Water Master Plan (Appendices H)

Cornelius Urban Growth Boundary Expansion

Stormwater Plan

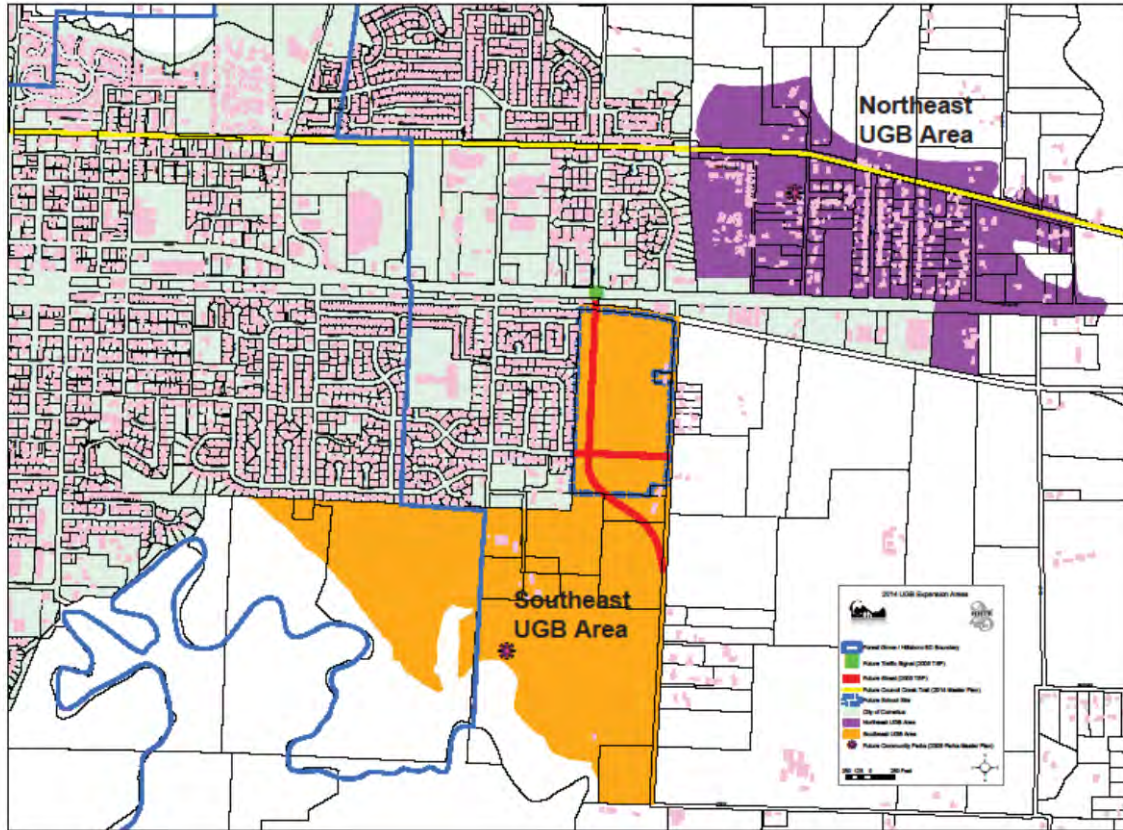
August 26, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



The terrain in these two areas is generally flat. The Northeast area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek.

The Southeast area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River.

Existing Stormwater Facilities

The only existing stormwater facilities in the Northeast UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The stormwater facilities in the Southeast UGB area are limited to the roadside ditches on 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs, these facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards.

Stormwater Standards Overview

Any new development in the UGB expansion areas must at a minimum meet the current *Design and Construction (D&C) Standards for Sanitary Sewer and Surface Water Management* issued by CWS.

Some UGB expansion areas in Washington County, notably Tigard's River Terrace and the unincorporated North Bethany, created additional stormwater standards that go beyond the D&C Standards. In the case of River Terrace, severe erosion in the stream corridors coming off the south side of Bull Mountain necessitated a more stringent approach to stormwater control in the area.

In North Bethany's case, CWS desired to incorporate extensive LIDA (low-impact development practices) into the area and pre-built a number of large regional facilities. This was deemed more desirable to the creation of individual stormwater facilities in each development phase.

One downside of the North Bethany approach is that CWS has had difficulty keeping ahead of development with new facilities. Also, by CWS constructing regional facilities rather than each developer constructing their own facilities, North Bethany has a large stormwater fee or system development charge that is unique in Washington County.

Finally, the D&C Standards issued by CWS are expected to change significantly as a result of a new MS4 permit from the State of Oregon, Department of Environmental Quality (DEQ) to CWS. One change in the new MS4 permit will be an increased level of treatment for stormwater. However, the most significant change in the standards is expected to be a requirement to deal with hydro-modification. Instituting this type of requirement is expected to create the need for very large detention and retention facilities on new development sites.

Cornelius Plan

Because Cornelius does not face the problems Tigard does on Bull Mountain and because the City does not have the staff to plan, design, and build regional facilities, as CWS is doing in North Bethany, Cornelius will require developers to meet the current stormwater standards issued by CWS. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff.

The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight that the City does not have funding to undertake.

Costs

Since developers will be responsible for designing and constructing stormwater facilities in the new UGB areas, the City will incur zero capital costs for these systems. The City will, however, incur, increased maintenance costs long-term, but these costs are funded by monthly stormwater fees payable by the new residents and businesses in the area.

Recommendations

Staff recommends the City use the CWS D&C Standards that are applicable at the time of development to address stormwater issues in the UGB areas. Staff further recommends, the following two conditions be placed on all new development in these areas:

1. Prohibition on the use of proprietary treatment systems for treatment on parts of the system that the City must maintain in the future.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

**ORDINANCE NO. 2015-06
CORNELIUS, OREGON**

AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE SOUTHEAST URBAN GROWTH BOUNDARY IN 2014

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the City of Cornelius Urban Growth Boundary.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The City acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 via the adoption of Ordinance 500.
4. The City acknowledged the City of Cornelius Water Master Plan as a component of the Comprehensive Plan on March 1st 2004 via the adoption of Ordinance 846.
5. The City acknowledged City of Cornelius Sanitary Sewer System Master Plan as a component of the Comprehensive Plan on September 20th, 2004 via the adoption of Ordinance 853.
6. The City acknowledged City of Cornelius Transportation System Plan as a component of the Comprehensive Plan on June 20th 2005 via the adoption of Ordinance 860.
7. The City acknowledged City of Cornelius Parks Master Plan as a component of the Comprehensive Plan on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to service the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements are necessary beyond those currently planned for within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

Section 1. The City of Cornelius Comprehensive Plan Map is hereby amended as outlined in Exhibit A

Section 2. The City of Cornelius Parks Master Plan, Appendices G of the Comprehensive Plan is hereby amended as outlined in Exhibit B.

Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendices H of the Comprehensive Plan is hereby amended as outlined in Exhibit C

Section 4. The City of Cornelius Water Master Plan, Appendices I of the Comprehensive Plan is hereby amended as outlined in Exhibit D.

Section 5. The City of Cornelius Transportation System Plan, Appendices M of the Comprehensive Plan is hereby amended as outlined in Exhibit E.

Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendices H of the Comprehensive Plan is hereby amended as outlined in Exhibit F.

Section 7. Prior to annexation of land within the SE UGB the applicant shall complete a wetland determination of the property.

Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of the Tualatin River.

Section 9. Upon adoption by the Cornelius City Council this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this ___ day of _____, 2015.

City of Cornelius, Oregon

By: _____
Jeffrey C. Dalin, Mayor

ATTEST:

By: _____
Debby Roth, MMC, City Recorder-Treasurer

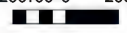
Exhibit A

Comprehensive Plan Map Amendments

**2014 UGB SE Expansion Area
Proposed Zoning Alternative
Draft 5-23-15**




200100 0 200 Feet



Comprehensive Plan / Zoning
Low-density Residential / R-7 (44 Acres)
Medium-density Residential / A-2 (167 Acres)

 TSP Proposed Signal

 TSP Collector Street

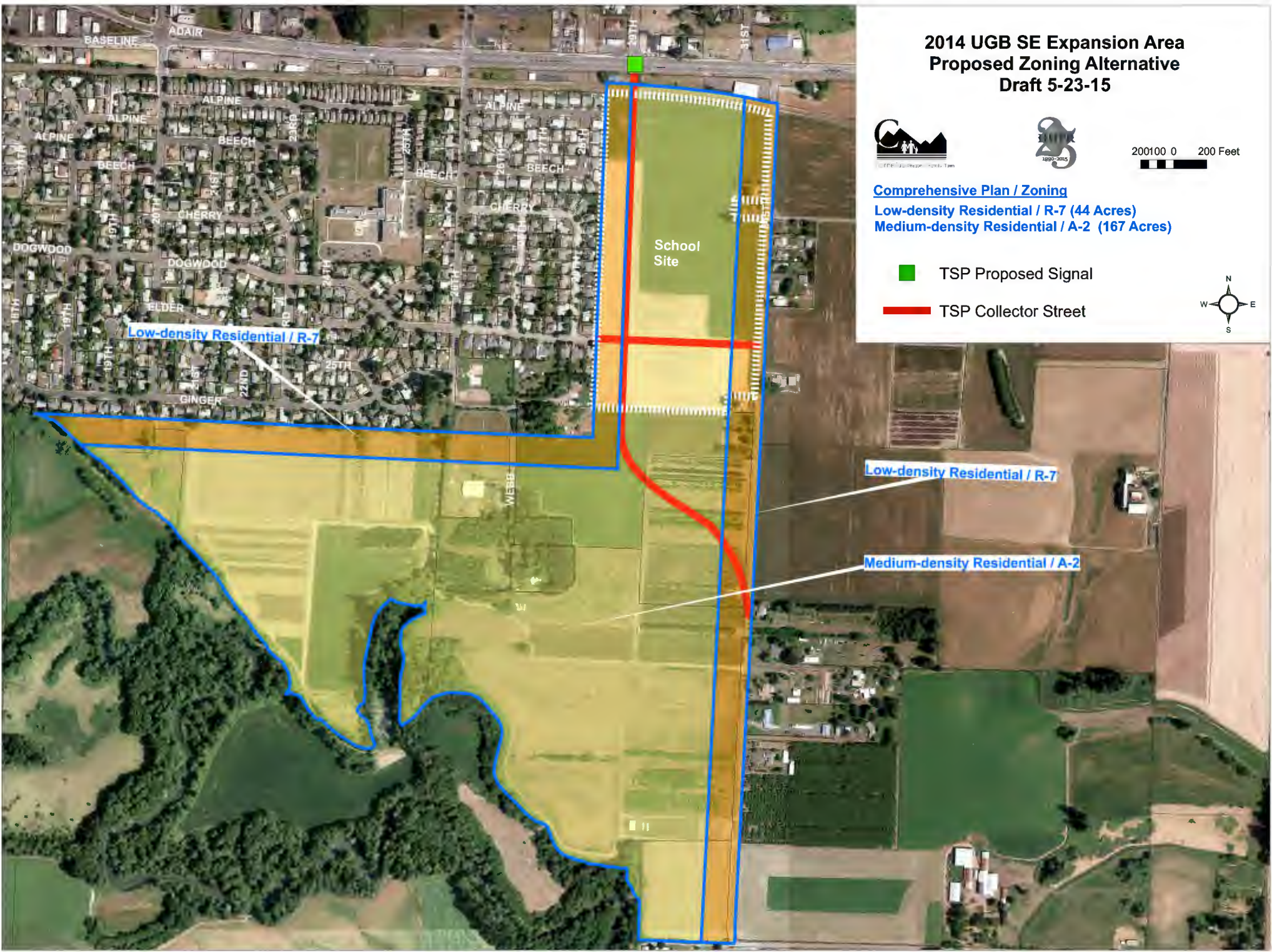


Exhibit B

Amendments to the City of Cornelius Parks Master Plan (Appendices G)



CITY OF CORNELIUS

Amendments to 2009 Parks Master Plan:

Staff is recommending that the City of Cornelius Parks Master Plan be amended as set forth below:

1. Remove the portion of the proposed trail along the Council Creek corridor that coincides with private land ownership as show on attached Map 6.
2. Include the following improvements identified in Council Creek Master Plan as components of the City of Cornelius Parks Master Plan
 - a. The proposed east-west trail alignment along the northern railroad right-of-way as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - b. The proposed North-South trail alignment following 29th Avenue as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - c. Include Trailhead Locations as shown on Council Creek Regional Trail Master Plan Segment 5 Jobes Ditch
 - d. Include trail design cross sections as shown on the attached excerpt of the Council Creek Trail Master Plan.
3. Change the planned Community Park in the NE area (CP-1) to a Neighborhood Park (NP)

Exhibit C

Amendments to the City of Cornelius Sanitary Sewer Master Plan (Appendices H)

TECHNICAL MEMORANDUM

Date: August 10, 2015
To: Michael Cerbone, Community Development Director, City of Cornelius
Terry Keyes, City Engineer, City of Cornelius
From: Ken Condit, ^{KC}PE, through Keith Jones, AICP
Project: City of Cornelius Comprehensive Plan Amendment –
Urban Growth Boundary Expansion Areas
Subject: Conceptual Analysis of Wastewater Facilities Extensions

A. EXECUTIVE SUMMARY – KEY FINDINGS

1. Southeast Urban Growth Boundary Expansion Area

- a. The extension of sewer service to the Southeast Urban Growth Boundary (UGB) Expansion Area (South Area) will require a pump station and force main.
- b. A central location for the South-Area pump station appears feasible and offers the most flexibility in developing the layout of the future South-Area collector sewers.
- c. It is preferable to have the wastewater (WW) generated by the new school in the northeast portion of the South Area conveyed by gravity to the new pump station serving the South Area.
- d. Under this concept, only the northwest portion of the South Area will be served by direct, gravity flow to the City's existing sewer system.
- e. The WW generated in the South Area will be conveyed to the City's existing South Trunk Sewer under Ginger Street. The preferred point of connection to the South Trunk is at 20th Avenue and Ginger.

2. South Trunk Sewer Upgrade

- a. Our analysis confirms that the upper reaches of the South Trunk must be increased in size to handle existing and projected peak flows. These sewer reaches extend from Heather Street, through Free Orchards Park to Emerald Loop, and east along Ginger to 23rd Avenue.
- b. Within the scope of this study, we have identified 3,005 linear feet of the South Trunk that needs to be increased in size. The scope of our analysis excluded the South Trunk reaches downstream of Heather.

3. Northeast Urban Growth Boundary Expansion Area

- a. A conceptual sewer layout has been developed for the Northeast Urban Growth Boundary Expansion Area (North Area) to show the feasibility of extending gravity sewer service to the area.
- b. The conceptual layout divides the North Area into four sewer sub-basins that would convey WW to the existing North-South Trunk Sewer and/or the existing Council Creek Trunk Sewer.

B. INTRODUCTION

This technical memorandum describes the results of the analysis we performed to address sanitary sewer service extensions into the areas covered by the recent UGB expansion. The analysis was performed as part of the Comprehensive Planning process that is required for lands within the UGB.

Planning-level concepts have been developed to document the feasibility of providing WW facilities in the UGB expansion areas and connecting these facilities to the existing WW infrastructure. The projected impacts of connecting these service extensions to the City's existing sewer system have also been identified.

Clean Water Services (CWS) will need to conduct a separate facilities planning process to address the projected impacts on downstream WW components owned by that agency.

C. SOUTHEAST UGB EXPANSION AREA SERVICE CONCEPT

1. General Concept

- a. The sewer service concept for the South Area assumes future developments will generally follow existing local topography.
- b. Due to the general topography (sloping down toward the river), most of the South Area cannot be served by gravity sewers that would be tributary to the City’s existing sewer system. Therefore, gravity sewers for the South Area will need to be tributary to a future South Cornelius Pump Station (SCPS).
- c. The force main for the SCPS will discharge WW into the City’s existing South Trunk sewer located under Ginger Street (see Item 5 below for discharge options).
- d. The alignments of future South-Area gravity sewers and the SCPS force main will be affected by development patterns. Alignments shown in our conceptual layout are provided for illustration purposes.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 1,200 DU
 - Projected Institutional (High School) – 2,500 Students
 - Projected Commercial & Industrial – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - I/I contributions from future developments on currently undeveloped land:
 - Near-term I/I Contribution Factor (25 years for PS planning) – 1,650 gpd/acre (gpad)
 - Long-term I/I Contribution Factor (50 years for sewer planning) – 4,000 gpad
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 3,120 People
 - Projected Average WW Production – 209,000 Gallons per Day (gpd)
 - Projected Institutional (High School) – 30,000 gpd (12 gpd/student)
 - Projected Total Average WW Flow – 239,000 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 3.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 720,000 gpd
 - Peak Infiltration/Inflow Allowances
 - Near-term I/I Contribution – 297,000 gpd (1,650 gpad x 180 net acres)
 - Long-term I/I Contribution – 720,000 gpd (4,000 gpad x 180 net acres)
 - Net acreage excludes low-lying land along southerly boundary of South Area and half of school site that is assumed to be playing fields.
 - Projected Peak Flow –
 - Near-term (25-year) Planning for PS Capacity – 1,020,0000 gpd ≈ 710 gallons per minute (gpm)
 - Long-term (50-year) Planning for Sewer Capacity – 1,440,0000 gpd ≈ 1,000 gpm

3. South Cornelius Pump Station

- a. Concept-Level PS Capacity – 750 gpm (Preliminary Projection for Build-Out and Near-term I/D).
- b. Approximate Minimum Elevation for Development – 156-160 feet
- c. Approximate PS Floor Level (Top of Wetwell) – Elevation 154-158 feet
- d. Approximate Sewer Inverts at Wetwell – Elevation 140-142 feet
- e. Potential PS Sites Identified for Planning (see Exhibit 1)
 - Site 1 – Central Location near swale south of 26th Avenue
 - Site 2 – SE Location between 345th Avenue and Tualatin River
 - Site 3 – SW Location near swale outlet to river
- f. Site 1 is identified as the preferred site for planning purposes.
 - The more centralized site offers more flexibility in developing the tributary gravity sewers.
 - The central site helps to limit the maximum depth of the tributary gravity sewers.
 - The other two sites would probably require a lower inlet invert at the PS wetwell.

4. School Site Service Options

- a. Sewer service to the school can be extended from the new South-Area collection system or potentially from the existing City sewer system to the west (see Exhibit 1).
- b. Gravity Flow South: This option would have WW from the school conveyed by gravity into the sewer system for the South Area tributary to the future SCPS.
- c. Gravity Flow West:
 - This option would have WW from the school conveyed by gravity into the City's sewer system at the east end of existing Dogwood Street.
 - Flows through the Dogwood sewer eventually reach the South Trunk Sewer at 23rd Avenue.
 - The ability to serve the school site from Dogwood would depend on the actual location and elevation of the school, as well as the elevation, capacity and accessibility of the existing sewer in Dogwood.
- d. For planning purposes we show the school being served by the future South-Area sewers and SCPS. The reasons for this assumption are described below.
 - This approach provides a more conservative projection for the PS capacity.
 - There are concerns about accessibility for maintenance if sewer service were extended from Dogwood.
 - Because the WW contribution from the school is a small portion of the overall South-Area WW flow, future impacts on the existing South Trunk Sewer would likely be similar for either option.

5. South-Area Connection to City's Existing Sewer System

- a. South-Area WW can be discharged into the existing South Trunk Sewer at either 20th Avenue or Webb/26th Avenue (see Exhibit 1)
- b. It is preferable to connect to the South Trunk Sewer at 20th Avenue because that is further downstream and will not impact the existing pipe between 26th and 20th.
- c. The force main from the SCPS can discharge to a gravity sewer in the South Area that will extend west and then north to the intersection of Ginger and 20th as shown in Exhibit 1. Based on the preliminary projection for the SCPS capacity and minimum sewer slope, this South-Area outlet sewer will need to be 12 inches in diameter.

6. Assumptions for Conceptual Layout

- a. The layout assumes the gravity sewers tributary to the SCPS would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of about 6 feet.

D. IMPACT OF SOUTH AREA ON EXISTING SYSTEM

1. Scope

Our study of downstream impacts from the South Area was limited to an analysis of the effect the projected peak hourly flow from projected development will have on an upper reach of the existing South Trunk Sewer. This section of the existing sewer extends under Ginger Street, Emerald Loop and the Free Orchards City Park to Heather Street, near 15th Avenue (see Exhibit 1).

2. Background

The 2012 CWS West Basin Facilities Plan (WBFP) previously identified capacity deficiencies in most of the South Trunk Sewer and recommended replacement of about 3,800 feet of this upper reach with larger pipe sizes.

3. Purpose

The purpose of our impact analysis is to provide updated recommendations for pipe replacements. The update is based on the peak flow projections we generated from the current land-use plan for the South Area (see Section C above) and more-recent information on I/I contributions provided by CWS.

4. South Trunk Field Survey

A field survey was performed of the manholes along the upper reach of the South Trunk from Heather Street to 26th Avenue. This survey established current data for existing pipe sizes, invert elevations and manhole rim elevations that were used to generate an updated model of this upper reach. The data is shown in Appendix A.

5. South Trunk Analysis

- a. We evaluated the upper reach of the South Trunk by applying estimates of peak WW and infiltration/inflow contributions from currently developed areas and applying the projected near-term and long-term SCPS flow capacities at the preferred discharge point.
- b. We generated flow estimates from existing, tributary developments using criteria for WW generation listed in the WBFP and updated I/I criteria supplied by CWS. These estimates assume no redevelopment will occur in the tributary areas to significantly increase WW flows.
- c. Breakdowns of the estimated flows into the South Trunk are listed in Table 1 (following page) and shown in Exhibit 2. The projected peak WW flows from developed areas are similar to the WBFP, but do not coincide exactly. The projected I/I contributions are lower than the WBFP because CWS identified a lower, per-acre I/I contribution based on more-recent flow data the agency obtained for the South Trunk sub-basin.

6. Results of Analysis

The pipe replacements identified in our planning-level analysis of the South Trunk are listed in Table 2 (following page). The results of our analysis are further described in the following paragraphs.

- a. Our results generally coincide with the recommendations of the WBFP from Heather (MH #20045) upstream to 20th and Ginger (MH #20034). An 18-inch sewer pipe is needed to convey projected peak flows through these segments for both the near-term and long-term I/I contributions from the South Area.

The 18-inch pipe size assumes the existing, inverted siphons in Free Orchards Park will be replaced with straight, gravity sewers that will be laid aboveground across the low-lying swales. These sewers will need to be supported from pedestrian boardwalks or similar structures through these locations.

Pipe bursting could potentially be used to replace the existing buried 12-inch sewer with an 18-inch pipe. However, the existing South Trunk has a fairly shallow depth of burial under Emerald Loop and where Ginger transitions to 18th Avenue. Consequently, surface heaving could be a major concern with pipe bursting in this stretch. Installation methods will need to be further addressed at a later stage of project development.

- b. Our analysis indicates a 12-inch pipe is needed for the pipe reach in Ginger between 20th and 23rd Avenues based on the average slope. This conclusion contrasts with the WBFP recommendation for a 15-inch pipe along this reach. The difference may result from the lower I/I contribution provided by CWS and a shift of the South-Area sewer connection further downstream along the South Trunk.

It should be noted our survey of the MHs along the South Trunk shows one sewer length in this reach, between MHs #20031 and #20032, has a very mild slope of 0.07%. If this pipe were replaced through pipe bursting, it would continue to have a mild slope, which would reduce the pipe capacity and could promote solids deposition. This issue will need to be considered when evaluating installation methods for this reach.

SFR Land Use Factor = 1,200.0 gpad for existing developments (WBFP, TM 2.3, Table 2)										
Peaking Factor = 3.0 (multiplier applied to residential flow)										
Avg. I/I Contribution = 5,150.0 gpad avg. for Basin FG-6 (CWS Input - July 2015)										
Area	Inlet MH#	Acreage	Flows from Currently Developed Areas (gpm)				Future SCPS Flow (gpm)		Cumulative Flows (gpm)	
			Base WW	Peak WW	Peak I/I	Total Peak	Near Term	Long Term	Near Term	Long Term
1	22461	20	17	50	72	122	0	0	122	122
2	20030	85	74	223	304	527	0	0	649	649
3	20034	20	17	50	72	122	750	1,000	1,521	1,771
4	20036	55	46	138	197	335	0	0	1,856	2,106
5	20043	8	7	20	29	49	0	0	1,905	2,155
		188	160	481	672	1,155	750	1,000	1,905	2,155
									2.75 MGD	3.10 MGD

Pipe Reach	Upstrm MH#	Dnstrm MH#	Location	Existing Size (in.)	Proposed Size (in.)	Reach Length (ft)	Approx. Avg. Slope	Pipe Capacity (gpm) ***
1	20030	20034	23th-20th Ave.	10	12	825	0.25%	775
2	20034	20036	20th-19th Ave.	12	18	510	0.15%	1,780
3	20036	20040	19th Ave-Emerald	12	18	805	0.22%	2,150
4	20040	20043	Emerald-Fawn **	6, 10 & 12	18	420	0.28%	2,425
5	20043	20045	Fawn-Heather **	6 & 10	18	445	0.34%	2,675
Total Length - 3,005							Linear Feet	
12" Pipe - 825							Linear Feet	
18" Pipe - 2,180							Linear Feet	

** Free Orchards Park *** New Pipe w/Max. Depth 80% of Pipe Diameter

E. NORTH EXPANSION AREA SERVICE CONCEPT**1. General Concept:**

- a. The conceptual sewer layout would provide gravity service to the North Area. The layout is shown in Exhibit 3.
- b. The sewer layout is generally based on current development patterns (layout of lots, streets & railroad) with most sewers following an existing R-O-W.
- c. The gravity sewers would be divided into four separate sub-basins: Northwest, Northeast, Southwest and Southeast.
- d. All four sub-basins would be tributary to the Clean Water Services' Council Creek Trunk Sewer.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 480 DU
 - Projected Commercial – 6 acres
 - Projected Industrial & Institutional – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - Average flow contribution from commercial land – 1,000 gpd/acre (gpad)
 - Long-term I/I contribution from currently undeveloped land – 4,000 gpd/acre (gpad)
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 1,250 People
 - Projected Residential – 83,620 Gallons per Day (gpd)
 - Projected Commercial – 6,000 gpd
 - Projected Total Average WW Flow – 89,620 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 4.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 358,500 gpd
 - Peak Infiltration/Inflow Allowance – 300,000 gpd (4,000 gpad x 75 net acres)
 - Projected Peak Flow – 660,000 gpd \approx 460 gallons per minute (gpm)

3. Sewer Drainage Pattern

- a. NW Sub-basin
 - This sub-basin would drain to the west along the existing ODOT railroad R-O-W.
 - WW flows would discharge into an existing sewer that extends down from the Trailer Park to the existing North-South Trunk Sewer.
 - The east boundary of the NW sub-basin is limited by a highpoint in the RR line between 338th and 341st Avenues. East of this point the RR grade slopes down to Dairy Creek.

- b. NE Sub-basin
 - This sub-basin would serve areas that generally slope to the north and east toward Council Creek or Dairy Creek.
 - WW flows would discharge through a gravity sewer extending across the RR line and north along 334th Avenue to the existing Council Creek Trunk Sewer.
- c. SW Sub-basin
 - This sub-basin would generally drain west to the existing sewer along East Lane just north of Baseline Street. The service concept is laid out to minimize the amount of area served by the SW Sub-basin due to constraints posed by existing utilities in the Baseline R-O-W.
 - The existing sewer extending along Baseline is on the south side of the R-O-W. Gravity sewer service from the area north of Baseline is prevented from discharging into this existing sewer by the 72-inch water transmission main under the north side of Baseline.
 - Existing utilities along the north side of the Baseline R-O-W limit the space that would be available for a new parallel sewer on the north side of Baseline.
 - The mobile home park on East and West Lanes is currently served by existing gravity sewers.
- d. SE Sub-basin
 - This Sub-basin would serve a small area on the south side of Baseline, east of the current City limit.
 - The area would be served by an extension of the existing 8-inch sewer that extends along the south side of Baseline. The Baseline sewer discharges into the north-south trunk sewer.

4. Approximate Peak WW Flow Distribution to Existing Trunk Sewers

- a. Approximate flow to N-S Trunk (NW, SW & SE Sub-basins) – 290,000 gpd (60%)
- b. Approximate flow directly to Council Creek Trunk (NE Sub-basin) – 195,000 gpd (40%)

5. Assumptions for Conceptual Layout

- a. The layout assumes gravity sewers would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of 6 feet and a maximum depth of about 15 feet.

F. IMPACT OF NORTH AREA ON EXISTING SYSTEM

1. City’s Baseline Street Sewer

A small amount of additional WW from projected commercial development in the SE Sub-basin will discharge into the City’s existing sewer along the south side of Baseline. This projected WW contribution will be too minor to impact the existing sewer system.

2. North-South Trunk Sewer

The conceptual layout for the North Area would convey projected flows from the NW and SW Sub-basins into the existing CWS North-South Trunk Sewer. CWS records show this line extending from East Lane, just north of Baseline, up to the Council Creek Trunk Sewer. These records also show the line as an 8-inch pipe with most sections between manholes laid at a slope of 0.4%. The North-South Trunk sewer currently receives flows from collector sewers in Baseline and two other City collector sewers north of Baseline.

If future development is evenly distributed throughout the North Area, the NW and SW Sub-basins could carry more than half the projected flows. Since an 8-inch pipe with a 0.4% slope has a capacity of about 0.5 MGD before surcharging, future flows from the NW and SW Sub-basins could surcharge the line. Future CWS facilities planning efforts will need to model the line to verify whether the North-South Trunk will be adequate.

3. Council Creek Trunk Sewer

The sewer service concept for the North Area results in all future WW flows generated in the area being conveyed to the Council Creek Trunk Sewer. The NE Sub-basin will drain directly to this line and the other sub-basins will be conveyed to this line through the North-South Trunk Sewer.

CWS records show the Council Creek line as a 42-inch pipe between the North-South Trunk and 334th Avenue. This existing 42-inch pipe line would need to be at or very near capacity to be impacted at all by the projected WW flows from the North Area. Future CWS modeling of this line will need to address the potential for any impacts from the North Area.

G. ORDER-OF-MAGNITUDE ESTIMATE OF PROBABLE COST

As part of the comprehensive planning process, we developed estimates of the probable project costs for the SCPS, the associated PS force main and downstream South-Area gravity sewer, and the South Trunk Sewer replacements. We used cost information presented in the WBFPP as the basis for the estimates and then applied an inflation factor based on the 20-City Average Construction Cost Index (CCI) published by Engineering News Record (ENR).

The probable project costs include a 30% allowance for construction contingencies and a 35% allowance for non-construction costs (engineering, environmental and legal services and project administration).

Table 3	
Estimates of Probable Project Costs (July 2015 **)	
Project Description	Probable Cost
750-gpm South Cornelius Pump Station	\$ 880,000
8-inch Force Main & 12-inch Downstream Gravity Sewer	\$ 650,000
South Trunk – Reach 1 Replacement (12-inch Sewer)	\$ 280,000
South Trunk – Reach 2-5 Replacement (18-inch Sewer)	\$ 1,450,000
Total Estimated Probable Project Costs	\$ 3,260,000

** July 2015 ENR CCI = 10,037

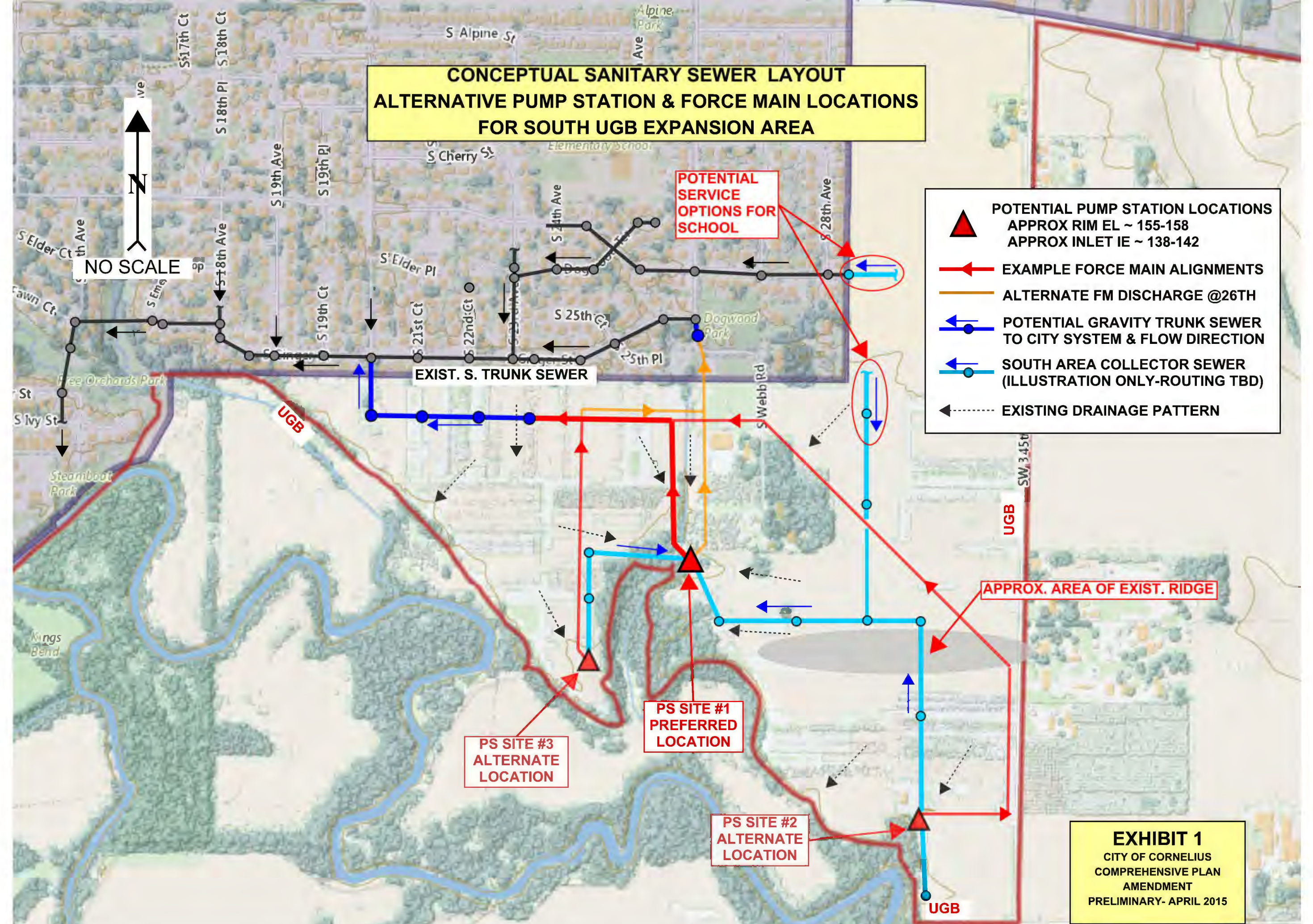
The level of detail of these cost estimates is consistent with Estimate Class 4 described by the Association for the Advancement of Cost Engineering International (Recommended Practice #18R-97, Rev. November 2011). Accordingly, the accuracy is anticipated to be within –25% to +35% of the actual cost.

The actual cost of the improvements will depend on project scope, design development, and actual market conditions at bid time. Costs will also depend on specific site conditions and other variable factors. More detailed estimates of the probable costs will need to be prepared as part of further project planning and design efforts.

**CONCEPTUAL SANITARY SEWER LAYOUT
ALTERNATIVE PUMP STATION & FORCE MAIN LOCATIONS
FOR SOUTH UGB EXPANSION AREA**



NO SCALE



- POTENTIAL PUMP STATION LOCATIONS**
APPROX RIM EL ~ 155-158
APPROX INLET IE ~ 138-142
- EXAMPLE FORCE MAIN ALIGNMENTS**
- ALTERNATE FM DISCHARGE @26TH**
- POTENTIAL GRAVITY TRUNK SEWER TO CITY SYSTEM & FLOW DIRECTION**
- SOUTH AREA COLLECTOR SEWER (ILLUSTRATION ONLY-ROUTING TBD)**
- EXISTING DRAINAGE PATTERN**

EXHIBIT 1
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

**SOUTH TRUNK SEWER EVALUATION
ESTIMATED TRIBUTARY AREAS & FLOWS**

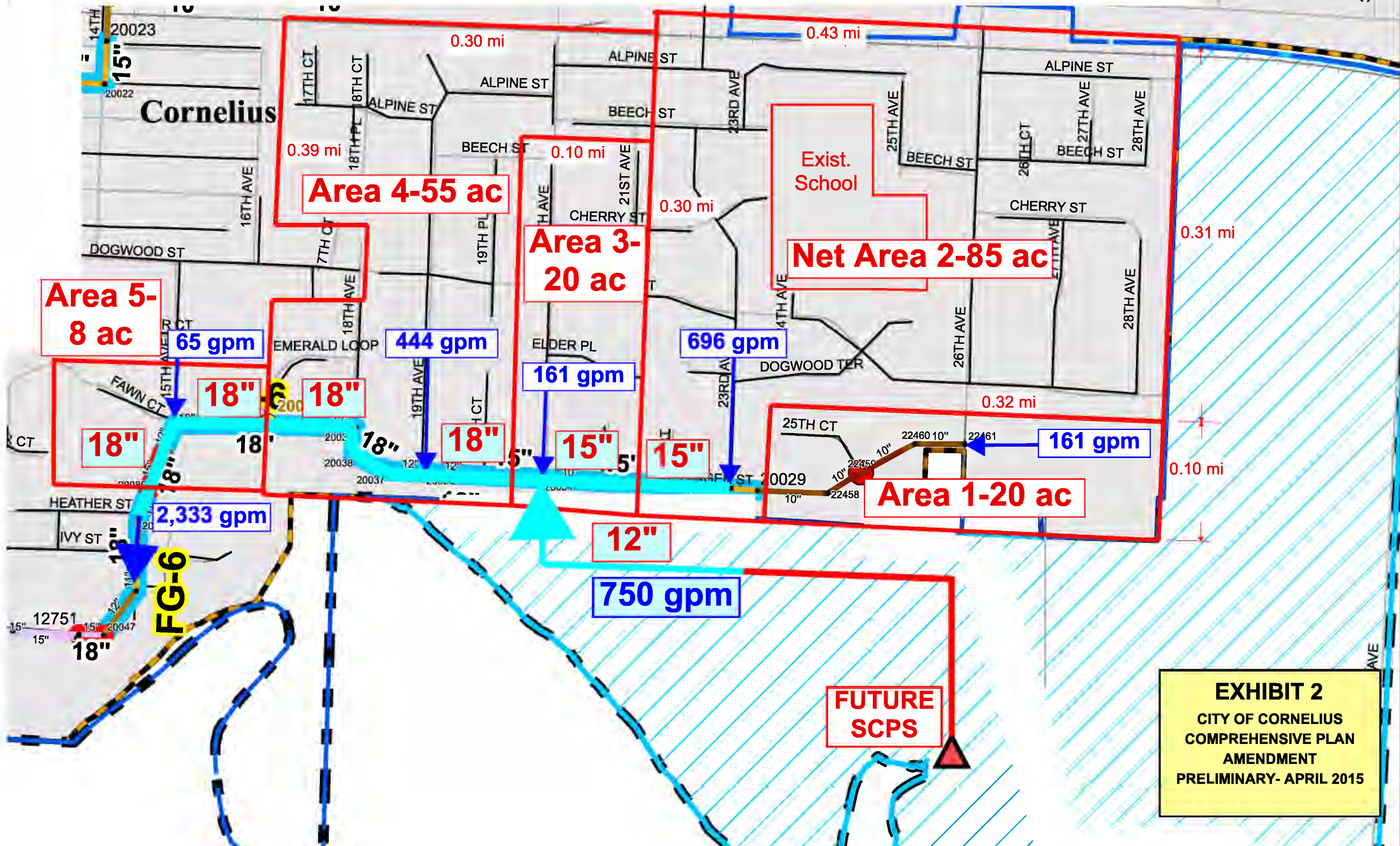
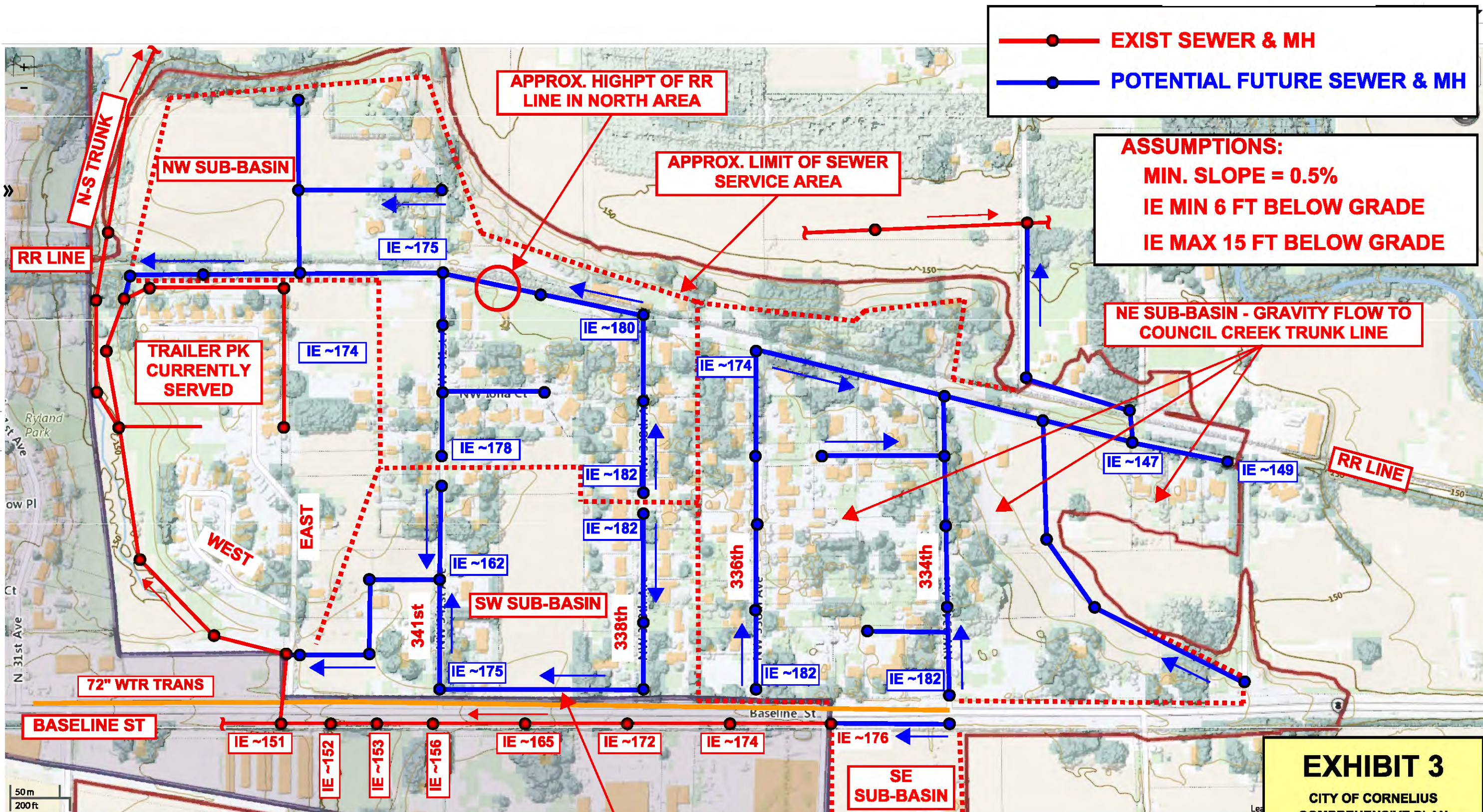


EXHIBIT 2
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

CONCEPTUAL SANITARY SEWER LAYOUT FUTURE SERVICE FOR NORTH UGB EXANSION AREA



—●— **EXIST SEWER & MH**
—●— **POTENTIAL FUTURE SEWER & MH**

ASSUMPTIONS:
 MIN. SLOPE = 0.5%
 IE MIN 6 FT BELOW GRADE
 IE MAX 15 FT BELOW GRADE

NE SUB-BASIN - GRAVITY FLOW TO COUNCIL CREEK TRUNK LINE

MIN. ALLOWABLE SEWER SLOPES: **
 8" DIA 0.40%
 10" DIA 0.28%
 12" DIA 0.22%
 ** FOR 2.0 FPS VELOCITY

POTENTIAL PARALLEL SEWER IN NEW EASEMENT TO AVOID HWY CROSSINGS & UTILITIES

EXHIBIT 3
 CITY OF CORNELIUS
 COMPREHENSIVE PLAN
 AMENDMENT
 PRELIMINARY- APRIL 2015

APPENDIX A

**City of Cornelius
South Trunk Sewer Survey Data**

Model Pipe#	MH#	Location	Rim Elev	MH Inlet			MH Outlet			Run	Slope (ft/ft)
				Size & Mat'l	Dip	IE	Size & Mat'l	Dip	IE		
6122	22461	26th/Ginger	175.77	10"PVC(S)	10	165.77	10"PVC(W)	10.1	165.67	216.61	0.0028
6124	22460		173.21	10"PVC(E)	8.14	165.07	10"PVC(SW)	8.25	164.96	263.44	0.0022
6090	22459	25th/Ginger	174.91	10"PVC(NE)	10.53	164.38	10"PVC(SW)	10.7	164.21	168.04	0.0035
6088	22458		174.25	10"PVC(NE)	10.62	163.63	10"PVC(W)	10.79	163.46	307.38	0.0034
1	20029		173.35	10"PVC(E)	10.95	162.4	10"CSP(W)	11.05	162.3	108.56	0.0027
2	20030	23rd/Ginger	173.23	10"CSP(E)	11.22	162.01	10"CSP(W)	11.29	161.94	260.11	0.0029
3	20031		174.14	10"CSP(E)	12.95	161.19	10"CSP(W)	13.09	161.05	156.34	0.0007
4	20032		173.21	10"CSP(E)	12.27	160.94	10"CSP(W)	12.39	160.82	122.03	0.0029
5	20033		172.54	10"CSP(E)	12.07	160.47	10"CSP(W)	12.19	160.35	282.94	0.0028
6	20034	20th/Ginger	170.84	10"CSP(E)	11.29	159.55	12"CSP(W)	11.39	159.45	254.93	0.0014
7	20035		168.6	12"CSP(E)	9.5	159.1	12"CSP(W)	9.58	159.02	254.70	0.0017
8	20036	19th/Ginger	166.61	12"CSP(E)	8.03	158.58	12"CSP(W)	8.13	158.48	149.79	0.0019
9	20037		163.79	12"CSP(E)	5.6	158.19	12"CSP(NW)	5.7	158.09	152.39	0.0026
10	20038		162.04	12"CSP(SE)	4.34	157.7	12"CSP(N)	4.4	157.64	118.03	0.0038
11	20039	18th/Emerald	164.47	12"CSP(S)	7.28	157.19	12"CSP(W)	7.35	157.12	383.81	0.0019
12	20040	Emerald	160.72	12"CSP(E)	4.33	156.39	12"CSP(W)	4.38	156.34	22.56	0.0080
	20042	Emerald	161.16	12"CSP(E)	5	156.16	10" ??(W) 10" ??(W)	5.15 4.82	156.01 156.34		
13 & 15	<i>(Ignore MH# 20079 - blowoff)</i>									394.50	0.0023
	20043	15th/Fawn	160.34	10"CSP(E)	5.25	155.09	12"CSP(SW)	5.3	155.04		
14				10"CSP(E)	5.25	155.09				130.08	0.0035
	20044	Sou. of Fawn	159.08	12"CSP(NE)	4.5	154.58	12"CSP(SW) 8"CSP(SW)-??	4.4 NOT SURVEYED	154.68		
213 & 16	<i>(Ignore MH# 20079 - blowoff)</i>									313.56	0.0040
	20045	Heather	157.95	12"CSP(NE) 8"CSP(NE)	4.51 4.55	153.44 153.40	10"CSP(S)	4.53	153.42	(Should be 12" Out?)	
???	64144		160.03	12"CSP(N)	6.98	153.05	12"CSP(S)	7.05	152.98	141.59	0.0026

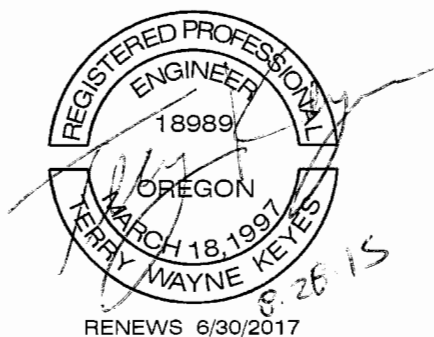
Exhibit D

Amendments to the City of Cornelius Water Master Plan (Appendices I)

Cornelius Urban Growth Boundary Expansion

Water Plan

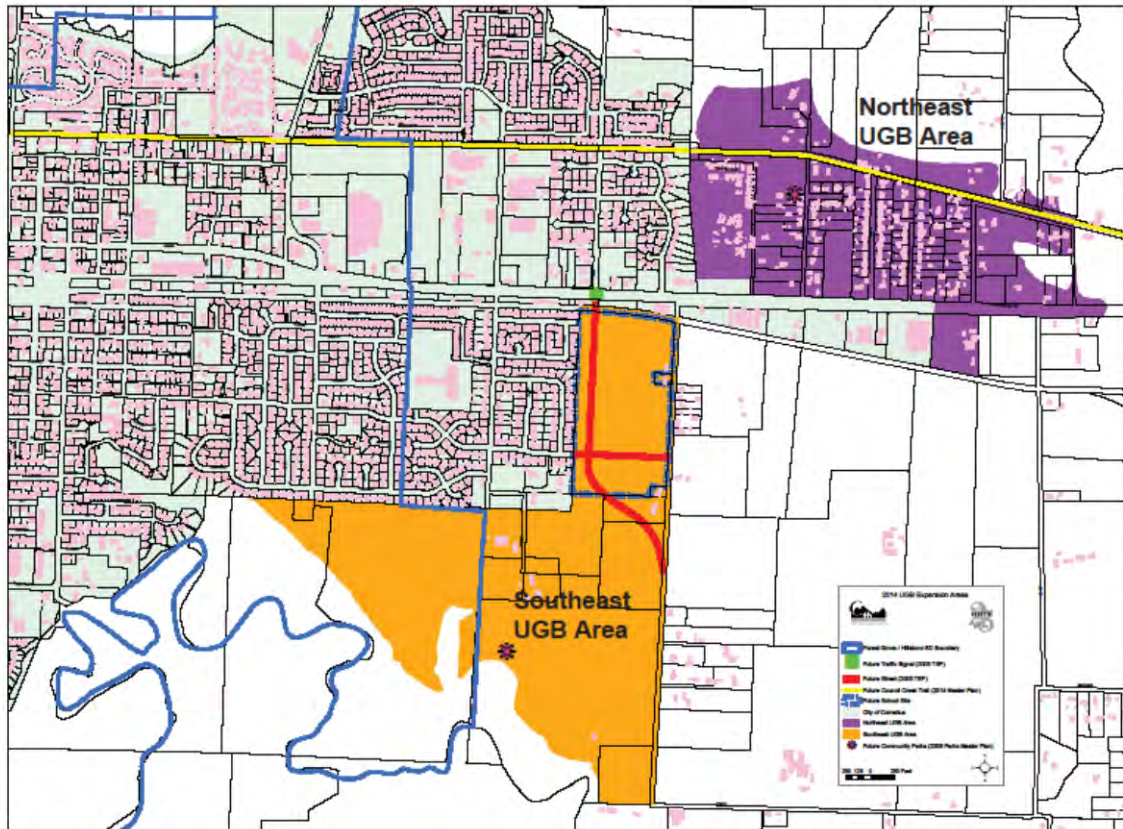
August 28, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



Water Infrastructure – Northeast UGB Area

The City of Hillsboro currently provides water service to the Northeast UGB. Attachment 1 shows the current system. While Hillsboro and Cornelius have had very preliminary talks regarding Cornelius taking over the water system in this area, the City of Cornelius has been cool to the idea because much of the system in the area is undersized and does not meet current standards.

Attachment 2 shows the improvements that are likely needed to bring the water system in this area up to City of Cornelius standards. Most of the improvements involve upgrading the existing lines to 8" and adding fire hydrants. The line on 341st is shown as a 12" line based on the assumption that without a looped system, any significant development north of the railroad will need a 12" line to achieve adequate flow.

The cost of bringing the water infrastructure in this area up to current standards is approximately:

$$4,000 \text{ LF @ } \$130/\text{LF} = \mathbf{\$520,000}$$

This cost cannot be justified based on the limited amount of water user fee revenue the area would produce. Therefore, if the Northeast UGB area is annexed to the City of Cornelius, the annexation will likely occur in small chunks as development occurs. With each annexation, Cornelius will take over the portion of the water system needed to serve that area. The development necessitating the annexation will be primarily responsible for improving the annexed part of the Hillsboro water system to Cornelius standards.

Storage needs for the Northeast UGB area can be easily handled by the City's current 1.5 MG (million-gallons) above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Flow needs for this area can be handled from three sources.

1. 12" Cornelius main line on the north side of Baseline that currently ends at East Lane
2. 12" Cornelius main line on the south side of Baseline that currently ends at the Coastal Farm Store at about 336th Avenue
3. Existing but unused transfer station from the Hillsboro 72" transmission line in Baseline to the Cornelius system at East Lane

In summary, the City of Cornelius can easily serve the Northeast UGB area. The primary concern is the fact that most pipes in this area are substandard. Bringing this area up to current standards is an expensive proposition that is not currently programmed into the Cornelius water rate structure. Therefore, improvements to the water infrastructure in this area will be required at the time of development. Until areas are annexed into the City the system within this area will remain within Hillsboro's service district and will be maintained and operated by Hillsboro.

Water Infrastructure Needs – Southeast UGB Area

The Southeast UGB area represents a clean slate in that the area contains almost no existing water infrastructure. The only public water facility in the area is a 2" plastic line from Baseline south along 345th to serve approximately 8 residents within ¼ mile of Baseline. Since most of these residents are outside the UGB expansion area, the City does not intend to upgrade this 2" plastic line in the foreseeable future. However, the south end of this line may be looped into the new water infrastructure in the UGB area to protect against an emergency such as a line break.

When developed, the Southeast UGB area will be served by 12" mains under the planned collector streets. The collector streets are expected to include: 29th south of Baseline, 26th and 20th south of Ginger, Dogwood east of 28th, and a new east-west collector south of the current city limits that connects 20th, 26th and 29th. All local streets will be underlain with 8" water mains, the minimum standard required by Cornelius.

In addition, to provide adequate flow and pressure to this area at build-out, some improvements in the City's existing water system may be required. The needed improvements will be determined when the City completes its water master plan update later this year. However, the improvements to the existing system that are likely to be needed at full development of the UGB area include:

- 12" line to replace existing 8" line in Dogwood from 18th to 20th
- 12" line to replace 8" line in 20th from Dogwood to Southeast UGB area
- 12" line to replace 8" line in 26th from Dogwood to Southeast UGB area

These improvements are not needed initially, but will be required as the area nears build-out. When the City's water master plan update is completed in late 2015, the amount of development the existing system can support will be determined. For development that occurs before the master plan update is complete, the developer will be responsible for proving that the existing system can provide adequate flow and pressure to the UGB area. If adequate flow and pressure cannot be attained, the developer will need to make the improvements noted above.

Storage needs for the Southeast UGB area can be handled by the City's current 1.5 MG above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Water Infrastructure Costs – Southeast UGB Area

All the new water mains in the Southeast UGB area will be installed and funded by developers. However, the City must pay for oversizing of lines greater than 8" size. In other words, while the developers are responsible for funding the installation of 8" lines under all the streets in this area, the City must fund the additional cost of 12" lines where they are needed. The cost of this upsizing of lines to 12" is estimated to be:

12" oversize cost in UGB area = ~10,000 LF @ \$20/LF = \$200,000

Furthermore, the City must fund improvements to piping outside the UGB area. These improvements are listed above and will cost approximately:

12" replacement lines inside UGB area = ~2,200 LF @ \$140/LF = \$300,000

Water SDCs from the southeast UGB area are expected to be:

1,100 single family residences @ \$3,884 SDC per residence = ~\$4M

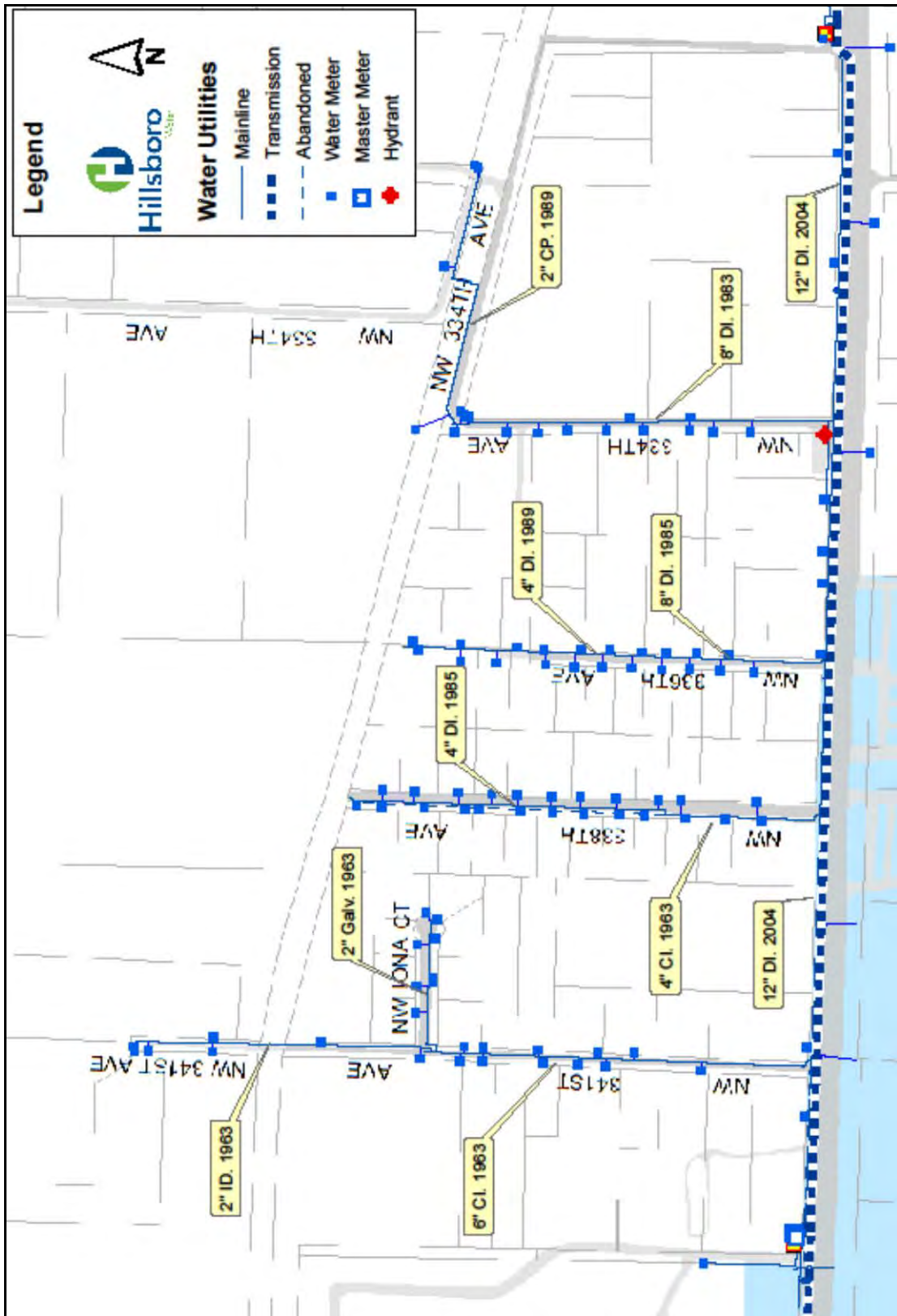
Therefore, the water SDCs captured from the new development in the southeast UGB area are more than adequate to fund the improvements to pipes needed to serve this area.

Recommendations

In the Northeast UGB area, staff recommends the area continue to be served by the City of Hillsboro until parcels are annexed. At the time parcels are annexed into the City of Cornelius, Cornelius should take over the portion of Hillsboro's system needed to serve the annexed parcel. Developers should pay for all improvements needed to bring lines up to City of Cornelius standards.

In the Southeast UGB area, developers should design and install all water mains. The City shall pay for oversizing mains under collectors to 12" from the 8" standard size. The City shall also design, build, and fund improvements necessary to the water mains within the current City boundaries.

Attachment 1 – Hillsboro Water System in Northeast UGB Area



Attachment 2 – Cornelius Water Improvement Needs for Northeast UGB Area

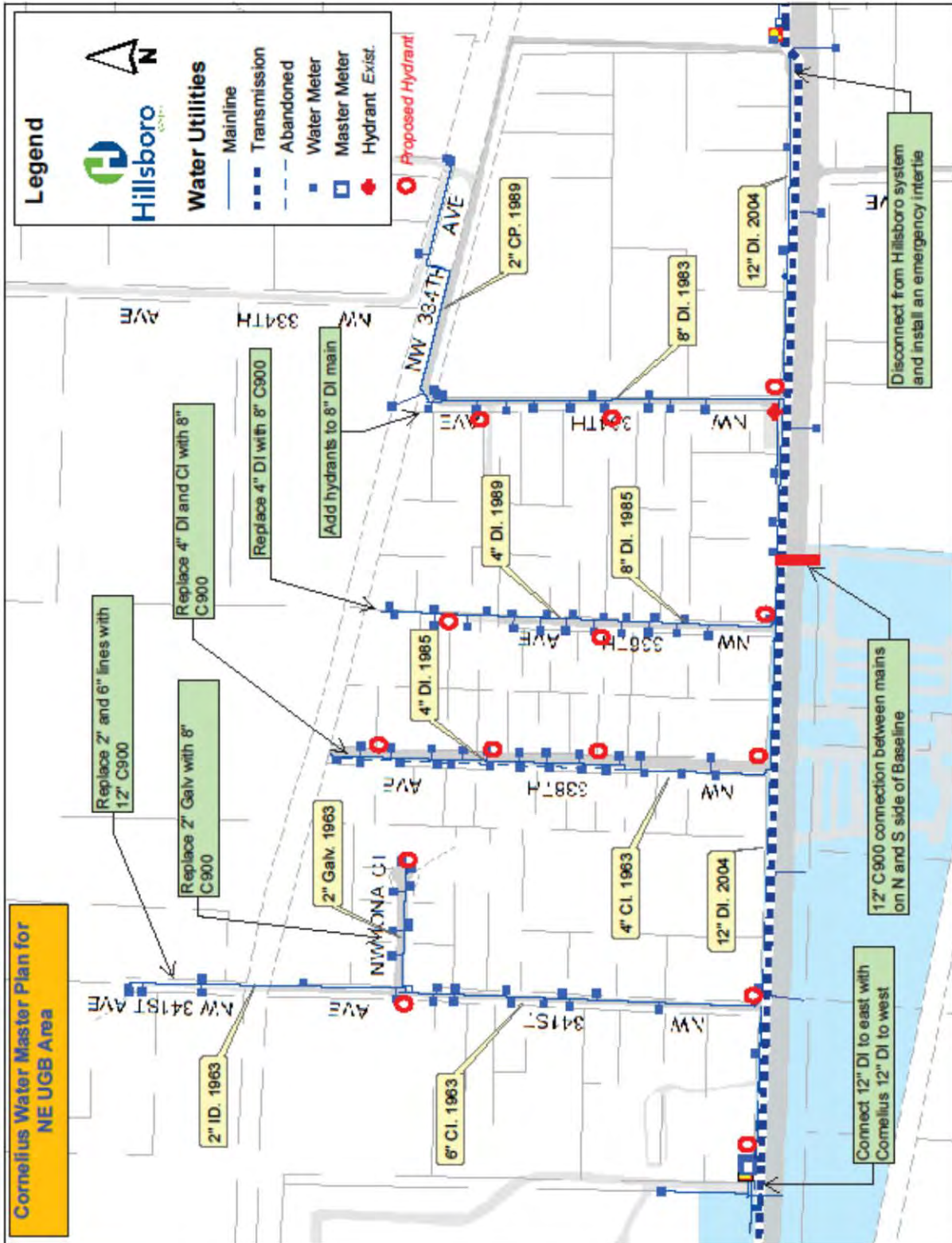


Exhibit E

Amendments to the City of Cornelius Transportation System Plan (Appendices M)

RECOMMENDATIONS

Transportation Planning Rule Findings

The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. Further analysis of Tualatin Valley Highway west of 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety.

Local Improvements

Local roadway projects would be required to support the UGB expansion areas and provide adequate access and internal circulation. Based on the City’s functional classification designations¹³ and the future 2040 PM peak hour volume forecasts, recommended local improvements were identified as shown in Table 11. Planning level cost estimates were developed for each roadway project based on the collector cross-section with parking on both sides of the street (shown in Figure 9). If the collector facilities were constructed with a narrower cross-section (shown in Figures 10 and 11) the costs would be lower.

Table 11: Local Improvements to Support UGB Expansion

Project	Description	Planning Level Cost Estimate
20 th Avenue Extension	Construct a collector facility south of Ginger Street then east to 29 th Avenue extension	\$7,450,000
26 th Avenue Extension	Construct a collector facility south of Ginger Street to the 20 th Avenue extension east-west alignment	\$1,300,000
29 th Avenue Extension	Construct a collector facility south of Tualatin Valley Highway to realignment with 345 th Avenue, install railroad crossing treatments on 29 th Avenue, close railroad crossing on 345 th Avenue	\$6,800,000

¹³ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005, Figure 8-3.

Dogwood Street Extension	Construct a collector facility east to 345 th Avenue (east UGB expansion area boundary)	\$1,600,000
29 th Avenue/Tualatin Valley Highway Signal	Install a traffic signal, interconnect with adjacent railroad crossing	\$600,000

Note: Collector facility cost estimate based on Figure 9 cross-section

The remaining roadways needed to support future development would function as local streets. The preliminary alignment for the recommended collector facilities are shown on Figure 7. These alignments are conceptual and will be refined with further engineering analysis prior to construction.

Policies and Standards

New policies and standards should be adopted to support the UGB expansion areas:

- Development should be limited to 130 residential units connecting to 20th Avenue and 260 residential units connecting to 26th Avenue prior to construction of the 29th Avenue connection to Tualatin Valley Highway. With a roadway connection between 20th and 26th Avenue, a combined development limit of 390 residential units should be applied.
- Roadway and trail cross-sections shown in Figures 9 to 14 should be incorporated into the Cornelius TSP.

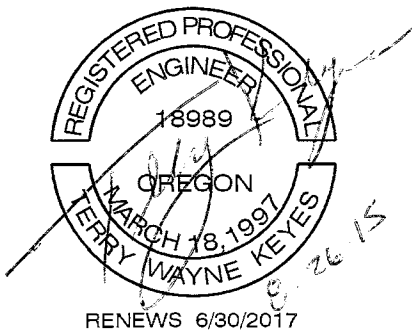
Exhibit F

Amendments to the City of Cornelius Storm Drainage/Surface Water Master Plan (Appendices H)

Cornelius Urban Growth Boundary Expansion

Stormwater Plan

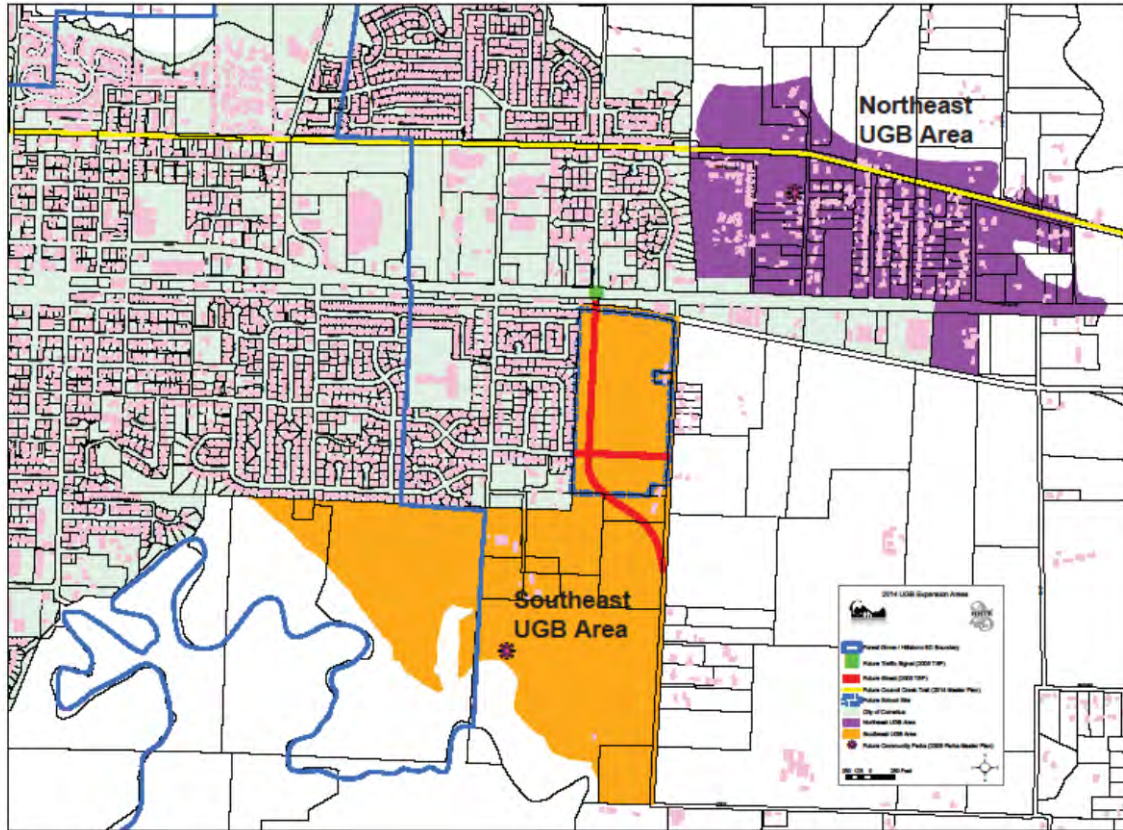
August 26, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



The terrain in these two areas is generally flat. The Northeast area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek.

The Southeast area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River.

Existing Stormwater Facilities

The only existing stormwater facilities in the Northeast UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The stormwater facilities in the Southeast UGB area are limited to the roadside ditches on 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs, these facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards.

Stormwater Standards Overview

Any new development in the UGB expansion areas must at a minimum meet the current *Design and Construction (D&C) Standards for Sanitary Sewer and Surface Water Management* issued by CWS.

Some UGB expansion areas in Washington County, notably Tigard's River Terrace and the unincorporated North Bethany, created additional stormwater standards that go beyond the D&C Standards. In the case of River Terrace, severe erosion in the stream corridors coming off the south side of Bull Mountain necessitated a more stringent approach to stormwater control in the area.

In North Bethany's case, CWS desired to incorporate extensive LIDA (low-impact development practices) into the area and pre-built a number of large regional facilities. This was deemed more desirable to the creation of individual stormwater facilities in each development phase.

One downside of the North Bethany approach is that CWS has had difficulty keeping ahead of development with new facilities. Also, by CWS constructing regional facilities rather than each developer constructing their own facilities, North Bethany has a large stormwater fee or system development charge that is unique in Washington County.

Finally, the D&C Standards issued by CWS are expected to change significantly as a result of a new MS4 permit from the State of Oregon, Department of Environmental Quality (DEQ) to CWS. One change in the new MS4 permit will be an increased level of treatment for stormwater. However, the most significant change in the standards is expected to be a requirement to deal with hydro-modification. Instituting this type of requirement is expected to create the need for very large detention and retention facilities on new development sites.

Cornelius Plan

Because Cornelius does not face the problems Tigard does on Bull Mountain and because the City does not have the staff to plan, design, and build regional facilities, as CWS is doing in North Bethany, Cornelius will require developers to meet the current stormwater standards issued by CWS. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff.

The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight that the City does not have funding to undertake.

Costs

Since developers will be responsible for designing and constructing stormwater facilities in the new UGB areas, the City will incur zero capital costs for these systems. The City will, however, incur, increased maintenance costs long-term, but these costs are funded by monthly stormwater fees payable by the new residents and businesses in the area.

Recommendations

Staff recommends the City use the CWS D&C Standards that are applicable at the time of development to address stormwater issues in the UGB areas. Staff further recommends, the following two conditions be placed on all new development in these areas:

1. Prohibition on the use of proprietary treatment systems for treatment on parts of the system that the City must maintain in the future.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

Tim Franz

From: Joseph Auth <jauth@vt.edu>
Sent: Thursday, May 28, 2015 8:10 PM
To: Michael Carbone; Tim Franz
Subject: Dairy Creek West Neighborhood Meeting Minutes and Petitions
Attachments: DairyCreekWestPetition28May2015.pdf; KarlSarahJacksonLetter_27May2015.pdf

Michael and Tim:

We had our neighborhood meeting on May 27, 2015. Over thirty people attended.

Our neighborhood took the following positions:

1. No one opposed Alternative #1 for the NE UGB Area;
2. We unanimously opposed Alternative #2 for the NE UGB Area;
3. We support the city recommendation of removing the trail along Council Creek from Maps 5 & 6 in the Parks Master Plan since the trail along Council Creek goes through people properties and Metro is moving forward with the trail along the railroad tracks;
4. The Sahfelds at 240 NW 334th Avenue said they will not provide an easement for the sewer line connection to the properties located on Tualatin Valley Highway east of NW 334th Avenue.

I attached the signed petitions from the meeting opposing Alternative #2. We plan to collect additional signatures from our neighbors who could not attend the meeting. I also attached a letter from Karl and Sarah Jackson.

Please reply to confirm you received this e-mail message since we're sending 2MB of attachments. E-mail me if you like hard copies of the petitions and letter.

Thank you and have a good weekend,

Joseph Auth

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobes Ditch and Dairy Creek referred as the '2014 UGB NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

Sincerely,

Name	Address	Signature	Date
Joseph A. Smith	325 NW 334th Avenue Hillsboro, OR 97124	<i>Joseph A. Smith</i>	5/27/15
Amelia Smith	325 NW 334th Ave Hillsboro, OR 97124	<i>Amelia Smith</i>	5-27-15
John D. Doherty SANDFIELD	248 NW 334th Ave Hillsboro, OR 97124	<i>John D. Doherty</i>	5/27-15
THOMAS HENNING	430 NW 334th Hillsboro, OR 97124	<i>Thomas Henning</i>	5-27-15
Lucio Older	165 NW 334th Ave Hillsboro, OR 97124	<i>Lucio Older</i>	5-27-15
CHARLOTTE BASKIN	395 NW 334th Ave Hillsboro, OR 97124	<i>Charlotte Baskin</i>	5-27-15
MAURICE BASKIN	395 NW 334th Ave Hillsboro, OR 97124	<i>Maurice Baskin</i>	5-27-15
Michael K. Kennedy	615 NW 334th Ave Hillsboro, OR 97124	<i>Michael K. Kennedy</i>	
Ken & Sarah Ryan	175 NW 334th Ave Hillsboro, OR 97124	<i>Ken Ryan</i>	5-27-15
Ann Marie Eubank	5875 26th Lane Ct Hillsboro, OR 97124	<i>Ann Marie Eubank</i>	5/27/15
Daryl Smith	6750 NW 334th Hillsboro, OR 97124	<i>Daryl Smith</i>	5/27/15
Sandra Houston TEAN HILL	105 NW 334th Ave Hillsboro, OR 97124	<i>Sandra Houston</i>	5/27/15

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Ditch and Dairy Creek referred as the '2014 UGH NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

Sincerely,

Name	Address	Signature	Date
Margaret Brooks	2600 NW 336th Ave Hillsboro, OR 97124	Margaret Brooks	5/27/15
Diane Brooks	260 NW 336th Ave Hillsboro OR 97124	Diane Brooks	5/27/15
Allan Hargrove	340 NW 338th Ave. Hillsboro OR 97124	Allan Hargrove	5/27/15
STUART KELLY	310 NW 336th Ave Hillsboro OR 97124	Stuart Kelly	5/27/15
SUSAN KAVELS	112 NW 336th Ave. Hillsboro, OR 97124	Susan Kavel	5/27/15
Laura Sheeffer	450 NW 333rd Ave Hillsboro OR 97124	Laura Sheeffer	5/27/15
James P. Sheeffer	450 NW 333rd Ave Hillsboro, OR 97124	James P. Sheeffer	5/27/15
Michelle Korte	630 N.W. 336th Ave Hillsboro, OR 97124	Michelle Korte	5/27/15
Sarah Jackson	150 NW 334th Ave Hillsboro, OR 97124	Sarah Jackson	5/27/15
Jessica Dumas	155 NW 338th Ave Hillsboro, OR 97124	Jessica Dumas	5/27/15
Art Dumas	155 NW 338th Ave Hillsboro, OR 97124	Art Dumas	5/27/15
Wanda Hilde	155 NW 336th Ave Hillsboro OR 97124	Wanda Hilde	5/27/15

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Ditch and Dairy Creek referred as the '2014 UGB NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

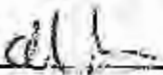
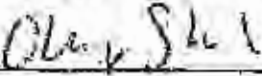

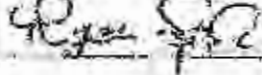
Sincerely,

Name	Address	Signature	Date
TAMI NISBET	330 NW 334th Ave 1711831 17124	[Signature]	5/27/15
TAMI NISBET	330 NW 334th Ave 4224	[Signature]	5/27/15
Julie + Tom Smith	135 NW 304 Ave	[Signature]	5/27/15
Mary + Gary Stanley	440 NW 334th Ave	[Signature]	5/27/15
Mary + Gary Stanley	440 NW 334th Ave	[Signature]	5/27/15
MICHAEL J. ZIEGLER	440 NW 334th Ave	[Signature]	5/27/15
CHRISTINE M. MAVER	785 NW 334th Ave 1415220 1415210	[Signature]	5/27/15
JOHN MAVER	785 NW 334th Ave	[Signature]	5/27/15
Tom L. Bell Medley	825 NW 334th	[Signature]	5-28-15
Raymond Bell	825 NW 334th	[Signature]	5-28-15
Christy Jean Feinberg	825 NW 334th	[Signature]	5-28-15
Tom + Heidi Medley	825 NW 334th Ave	[Signature]	5-28-15

City of Cornelius.

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Ditch and Dairy Creek referred as the '2014 UGB NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

Sincerely,

Name	Address	Signature	Date
Cheryl Spahn	355 NW 33rd Hillside		5-28-15
Arlene Strickland	2500 E Cherry St. Cornelius		5/29/15
WALLNEID IVE	355 N. W. 33rd Ave. ^{Interlock} Cornelius		5-28-15
Rufus Spahn	355 N. W. 33rd Ave.		5-28-15

Karl and Sarah Jackson
150 NW 334th Ave
Hillsboro, OR 97124

City of Cornelius
1355 N Berlow St
Cornelius, OR 97113

To Whom It May Concern:

The proposed commercial zoning along the north side of Highway 8 in the NE area of the Urban Growth Boundary (UGB) is concerning to us for the following reasons:

The proposed commercial areas directly abut our property. The increased noise and traffic in the area would negatively affect us. It would also lower the value of our property and change the dynamics of our neighborhood.



Developing commercial properties could potentially make entering and leaving our streets more difficult because of the increased number of vehicles in the area.

Considering the abundance of unused and underused commercial properties in the Cornelius area, there is no need for more commercial zoning.

We respectfully request the city of Cornelius to not zone the north side of Highway 8 in the NE area of the UGB as commercial.

Sincerely,

Karl and Sarah Jackson

 5-27-15
 5-27-15

June 2, 2015

Michael Cerbone

City of Cornelius

I own the small vacant property at the corner of TV Hwy and 334th (Tax lot ID 1N335D002800). You would expect a piece of property on busy TV to be commercial and since this property had been commercial in the past. The Washington county taxation and assessment report shows my property classification as 2000- commercial vacant. I also have a RMLS report that shows the zoning as RR5 but the land use is designated as commercial lot. My daughter spoke to the county about using the property several years ago as commercial; they did not see a problem with the proposed use on this lot because of its location on TV Hwy and since there is an approved commercial septic permit on file at the county.

I would hope you would take into consideration that the lots on TV Hwy should be zoned commercial which is what the property owners adjacent to our property, East, West and South prefer. The property owners to the North that are not on TV can remain residential which is what they prefer. Win, Win for all.

Thank you for your consideration,



Dorina Ockert

503 690-4905

March 26, 2015

Michael Carbone
City Of Cornelius

RE: Tualatin Highway Urban Growth Boundary Changes (City Of Cornelius)

Michael,

I am writing another letter to reiterate some of our concerns and comments for the council to consider for future development of the land recently brought into the Urban Growth Boundary.

My wife and I have an interest in the small lot on the corner of TV highway & 334th (Oak Park Sub Division Tax lot PTS 4-5). Our lot (as a small piece) can play an instrumental part of future growth. Our lot would be a perfect location for a retail "Pod" location along with an ideal placement for a traffic light. This intersection has several desirable elements. This lot is too small for a large retail location, but does lend itself as a great location for a small IE: convenience store that would serve local residents, and more importantly the existing golf course.

The property on the opposite side of the highway from us (adjacent to Coastal Farm & Supply) would lend itself to a larger commercial draw at the proposed new traffic light. The other Lots on the North Side of TV highway adjacent to us would support commercial growth for the City Of Cornelius as well. With the development opportunities at the intersection of 334th T.V. Highway of the North and South properties, would lend itself to a nice little commercial addition to Cornelius. One of the benefits to having a signal at this new location, the city of Cornelius could use this as the front door to the city (uniformed design), the end of Hillsboro and "WELCOME TO CORNELIUS". The last thing you want is uncontrolled odds and ends Residence (Not a desirable location for someone's home thus there would most likely be extremely transient), which I understand from the owners of the two properties to the East that they are already experiencing transient issues now.

Thank you for your consideration of our recommendations.

Sincerely,
Jerry Lang,



June 2, 2015


Michael Carbone

City of Cornelius

I have an interest in the property at the corner of TV Hwy and 334th (Tax lot ID 1W335D002800). I spoke to the planning department several years ago about building a shop on this property. The planner I spoke with did not see a problem with this use because of the location on TV Hwy and prior use of this property. There is also an approved commercial septic permit on file with the Washington County. The Washington County taxation and assessment report shows our property classification as 2000-commercial vacant (see attached).

Please take into consideration all property owners desires for their OWN property. Our neighbors on TV Hwy to the West, East and South prefer to be zoned commercial. Leave our neighbors to the North as residential which is what they are requesting. This would make everyone happy with their OWN property zoning. Keep in mind there is already a business off of 334th the golf course; along with several of the property owners behind us have home businesses. This street in the future would make a great location for a traffic signal with the existing and future businesses.

Thank you for your consideration,


Cindie Lang

503-577-7181

Presented by: Wayne Schaefer
Summa Elite Realty

5/28/2015 9:35:11 AM

WASHINGTON COUNTY, OR

Tax ID: R0757381
Prop Addr:
City/State/Zip: OR

Latest Listing ID:
County: Washington
Carrier Rt:

OWNER INFORMATION

Owner Name: OCKERT DONNA J
Owner Addr: 20627 SW ANNA CT
City/State/Zip: ALOHA OR 97006-1480

Phone:
Carrier Rt: R007

LAND INFORMATION

Lot SqFt: 12632

Acres: 0.29

BUILDING INFORMATION

Year Built: 0
Stories:
of Bldgs: 0
Bldg Code:
Fireplace:
Heat Method:

Bedrooms:
Bathrooms: 0
Living SF:
Bldg SF Ind:
Bemnt SF:
Mobile Home:

Garage:
Parking SF:
Foundation:
Floor Cover:
Roof Cover:
Exterior Finish:

SALES INFORMATION

Deed Type	Sale Date	Sale Price	Document No
Current:	5/18/2008	\$70,000	000000072748
Prior:			

Title Co: FIDELITY NATIONAL TITLE CO/OR
Lender:
Loan Type:

Vest Type:
Loan Amt: \$0

TAX INFORMATION

Tax Period: 14-15
Tax Year: 2014
Tax Amt: \$810.36
Market Land: \$102,700
Market Impy: \$0
Market Total: \$102,700
Assessed Total: \$56,280

LEGAL INFORMATION

Map Page: 0
Map Column:
Map Row: 0
Nbrhd Code: ZFGH
School Dist: HILLSBORO
Map Code: 1N-3W-35-SE
Township: 01N
Range: 03W
Section: 35
Qtr Section: SE
18th Section:
Census Tract: 329011027
Census Block:
Lot:
Zoning: RR-5
Tax Area Code: 00720
Tax Rate: 0.000

Prop Class: VACANT
Land Use: COMMERCIAL LOT
Subdivision: OAK PARK SUB
Legal Desc: OAK PARK SUBDIVISION, LOT PTS 4-5, ACRES .28

14835000 2200



- General Information
- interactive maps
- map gallery
- data catalog
- contacts
- other ge links
- gis introduction
- frequently asked questions
- Property Search
- property / taxlot
- tax maps
- Survey Search
- Land Services
- Building Services

Assessment & Taxation Report

General Property Information

Site Address:	1 HILLSBORO DR, 97124
Tax Lot ID:	1N335002800
Property Account ID's:	R757381, R757381
Property Classification:	2000 - COMMERCIAL VACANT - See full list of Codes
Neighborhood Code:	12FGH
Latitude / Longitude:	45.5202098 / 121.020995
2009-2010 Tax Statement:	R757381.pdf R757381.pdf
2010-2011 Tax Statement:	R757381.pdf R757381.pdf
2011-2012 Tax Statement:	R757381.pdf R757381.pdf
2012-2013 Tax Statement:	R757381.pdf R757381.pdf
2013-2014 Tax Statement:	R757381.pdf R757381.pdf
2014-2015 Tax Statement:	R757381.pdf R757381.pdf

Sales / Deed Information

Sale Date	Sale Instrument	Deed Type	Sale Price
05/23/2006	2006072746	WARRANTY DEED	\$70,000
//			\$0
//			\$0

Assessed Values for Account R757381

Roll Date:	09/24/2014
Taxcode:	1007.20
Market Land Value:	\$102,700
Market Bldg Value:	\$0
Special Market Value:	\$0
Market Total Value:	\$102,700
Taxable Assessed Value:	\$56,280
Legal:	OAK PARK SUBDIVISION Lots
Lot Size:	A&T Acres: 0.29
Bldg Sq Ft:	0
Year Built:	N/A

Assessed Values for Account R757381

Roll Date:	09/24/2014
Taxcode:	1007.20
Market Land Value:	\$102,700
Market Bldg Value:	\$0
Special Market Value:	\$0
Market Total Value:	\$102,700
Taxable Assessed Value:	\$56,280
Legal:	OAK PARK SUBDIVISION Lots
Lot Size:	A&T Acres: 0.29
Bldg Sq Ft:	0
Year Built:	N/A

Improvement Information

Total Improvement Value:	
Plumbing	
Bedrooms	

Improvements Details

Description	Value	Square Feet
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2015 **Information Advisory**

All property assessment information presented about the 2015 tax year is unaudited and unverified. This information is subject to change, furnished as reference data only and should not be used to calculate or create taxes.

Disclaimer

Every effort has been made to offer the most current and correct information possible on these pages. The information included on these pages has been compiled by County staff from a variety of sources, and is

URGENT - TURN IN TO CORNELIUS AS SOON AS POSSIBLE

City of Cornelius: We strongly oppose designating &/or zoning any land as commercial in the area north of TV Highway (OR Route 8) west of Hillsboro. Designating &/or zoning land as commercial north of TV Highway will impact the livability & livelihood of a long-established neighborhood. A significant increase in traffic is already expected from other development planned near Cornelius. Developing commercial properties north of TV Highway would increase traffic flow even more and could potentially make entering and leaving our streets more difficult. Considering the abundance of unused and underused commercial properties in the Cornelius area, there is no need for more commercial zoning. We respectfully request the City of Cornelius to not zone the north side of TV Highway west of Hillsboro as commercial.

Name: Carolyn Woodward Signature: Carolyn Woodward

Address: 32750 SW Bridge Rd, Hillsboro OR 97123 Date: 6-9-15

RECEIVED

City of Cornelius contact:

Michael Carbone, Community Development Director
(503) 357-3011 Office (503) 357-6322 Fax mcarbone@ci.cornelius.or.us

City of Cornelius
Public Works
JUN 10 2015
Finance Office

City of Cornelius: We strongly oppose designating &/or zoning any land as commercial in the area north of TV Highway (OR Route 8) west of Hillsboro. Designating &/or zoning land as commercial north of TV Highway will impact the livability & livelihood of a long-established neighborhood. A significant increase in traffic is already expected from other development planned near Cornelius. Developing commercial properties north of TV Highway would increase traffic flow even more and could potentially make entering and leaving our streets more difficult. Considering the abundance of unused and underused commercial properties in the Cornelius area, there is no need for more commercial zoning. We respectfully request the City of Cornelius to not zone the north side of TV Highway west of Hillsboro as commercial.

Name: Richard Haug Signature: Richard A. Haug

Address: 2170 SW 331 Ave Hillsboro Date: 6-9-15

RECEIVED RECEIVED

City of Cornelius contact:

Michael Carbone, Community Development Director
(503) 357-3011 Office (503) 357-6322 Fax mcarbone@ci.cornelius.or.us

City of Cornelius
Public Works
JUN 10 2015
Finance Office

Urban Growth Boundary Neighborhood Meeting
1/8/15
Comment Card



Name (Optional): Ray Gibson
Mailing Address (Optional): 965 S Webb Rd Corvallis OR 97331
Phone Number (Optional): 640-5402 E-Mail Address (Optional): _____

Comments: Regional Water Quality Facilities
would be preferable to small neighborhood
WQ facilities.

There is a fairly substantial grove of white oak
trees on Webb Rd (east side) and 300± ft.
south of the Dogwood Park. (preservation?)

Urban Growth Boundary Neighborhood Meeting
1/8/15
Comment Card



Name (Optional): Beth Zetter / Virginia Hockett
Mailing Address (Optional): 1260 NW Susbauer Rd, Cornelius OR 97113
Phone Number (Optional): 503-5590379 E-Mail Address (Optional): shyena@ndcfr.com

Comments: Please send 3 copies of all power
point maps presented at the meeting so
we can distribute to our neighbors

Thank you
[Signature]

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Ditch and Dairy Creek referred as the '2014 UGB NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

Sincerely,

Name	Address	Signature	Date
Mike K... ..	130 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
MARION LEAC	130 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
Rose Lane	130 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/30/2015
David Bl... ..	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
Charles W... ..	130 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
Becky W... ..	130 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
Jay M... ..	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	5/28/2015
LINDA ANTHONY	385 NW 336th Ave Hillsboro, OR 97124	[Signature]	6-3-15
PAULINE J. BRENNER	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	6/3/2015
Shauna K. Nichols	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	6/3/2015
Patsy L. Brenner	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	6/3/2015
Stanley Q. Nichols	300 NW 336th Ave Hillsboro, OR 97124	[Signature]	6/3/2015

City of Cornelius:

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Sincerely,

2014/05/24

Name	Address	Signature	Date
<i>Eric de Bevoise</i>	<i>235 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Christina...</i>	<i>235 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Annette Selmer</i>	<i>340 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Jane...</i>	<i>412 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Janet...</i>	<i>412 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Michelle...</i>	<i>412 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Ronald...</i>	<i>412 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>John...</i>	<i>305 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Michael...</i>	<i>305 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Rebecca...</i>	<i>305 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>
<i>Shirley...</i>	<i>305 NW 31st Ave</i>	<i>[Signature]</i>	<i>5/22/15</i>

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Ditch and Dairy Creek, referred as the '2014 UGB NE Expansion Area' in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

Sincerely,

Name	Address	Signature	Date
Karen Bellinger	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Frank Bellinger	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Megan Vent	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Chris Colby	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Richard Hume	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Michael Hume	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
G. Thompson	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Marion Hunter	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
John Hunter	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
John Hunter	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
James Kelly	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Sean Kelly	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15
Richard North	1100 NW 20th Ave Milwaukie OR 97132	[Signature]	1/21/15

City of Cornelius:

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Sincerely,

Hillsboro, OR 97124

Name	Address	Signature	Date
Joyce Dale	230 NW 350 th Ave Hillsboro, OR 97124	Joyce Dale	5/11/15
Sharon Dale	" " " "	Sharon Dale	5/15/2015
Ketty Galstrap	435 NW 335 th Ave Hillsboro, OR 97124	Ketty Galstrap	6/1/2015
GLEN Giestman	" " " "	Glen Giestman	" "
Christopher Barnes	250 NW 335 th Ave Hillsboro OR 97124	Chris Barnes	4/1/2015
Stacy Seebach	160 NW 335 th 47124	Stacy Seebach	4/1/2015
Brenda Seebach	160 NW 335 th 97124 190 NW 338 th	Brenda Seebach	4/1/15
Linda W. Warden	Hillsboro, OR 97124 190 NW 338 th	Linda W. Warden	6/10/15
Thomas M. Warden	Hillsboro OR 97124 215 NW 338 th	Thomas M. Warden	6/1/2015
Theodore E. Sahlfeld	Hillsboro, OR 97124 215 NW 338 th Ave	Theodore E. Sahlfeld	4/1/2015
Sharon C. Sahlfeld	Hillsboro, OR 97124	Sharon C. Sahlfeld	4/1/15
CHARLES S. BARE	410 NW 335 th AVE HILLSBORO, OR 97124	Charles S. Bare	6/1/15

City of Cornelius:

We strongly oppose designating and/or zoning any land as commercial in the area north of Tualatin Valley Highway (Oregon Route 8) between Jobs Dich and Dairy Creek referred as the "2014 UGB NE Expansion Area" in the city's Comprehensive Plan and Zoning Maps. Designating and/or zoning land as commercial north of Tualatin Valley Highway will impact the livability and livelihood of a long-established neighborhood.

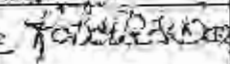
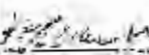
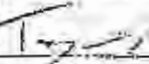
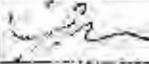
Sincerely,

Name	Address	Signature	Date
Barbara [unclear]	[unclear]	[unclear]	5/21/15
Bradley [unclear]	35955 15th Street Hilliard	Bradley [unclear]	5/21/15
MARRENSKY	3400 SW [unclear]	[unclear]	5/21/15
[unclear]	[unclear]	[unclear]	5/21/15
[unclear]	33795 NW [unclear]	[unclear]	5-21-15
Erin Crank	54075 NW [unclear] Hilliard, OR	[unclear]	5/21/15

City of Cornelius:

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Sincerely,

Name	Address	Signature	Date
Roberta L. Bere	410 N. W. 3387th Ave Hillsboro, OR 97124		6-3-15
LIEBOWITZ MARGIT	305 NW 3387th Hillsboro, OR 97124		6-3-15
TOMY GOULD	305 NW 3387th AVE HILLSBORO OR		6-3-15
Laura M. Johnson-Graul	305 NW 3387th Ave Hillsboro OR 97124		6-3-15

City of Cornelius:

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Sincerely,

Billings OR 97103

Name	Address	Signature	Date
Elinda Blinn	<i>Billings, OR 97103</i> 33765 920 TV Hwy	<i>Elinda Blinn</i>	6/1/15
Kurt Albee	<i>FITTSBORO, OR 97123</i> 33765 SW T.V. Hwy	<i>Kurt Albee</i>	6/1/15
STEVEN M. JAMES	33845 SW Tualatin Hwy <i>Billings, OR 97103</i>	<i>Steve James</i>	6-2-15

City of Cornelius;

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Sincerely,

Name	Address	Signature	Date
John Decker	115 NW 336th Ave Hillsboro OR 97124	[Signature]	4/21/15
Barbara L. Zite	205 NW 336th Ave. Hillsboro OR 97124	[Signature]	4/21/15

Tim Franz

From: Michael Carbone
Sent: Friday, May 29, 2015 8:39 AM
To: Tim Franz
Subject: FW: Cornelius UGB Master Planning Project

Michael Carbone, UGB
City of Cornelius

From: Barbara Hadley [mailto:bhjm43@Comcast.net]
Sent: Friday, May 29, 2015 12:00 AM
To: Michael Carbone
Subject: Cornelius UGB Master Planning Project

Michael Carbone and Technical Advisory Committee:

We have attended all 3 neighborhood meetings and find them very informative. We very much support the Commercial Development you have designated for the south side of TV Hwy (Our Property) and Commercial Development on the north side of TV Hwy. The proposed zoning alternative #2 makes a lot of sense. In fact I would include all frontage property from 336th thru 331st for Commercial Development. I have talked to the people on the north side of TV Hwy (Frontage) and they all support Commercial Development for this strip. There is certainly enough traffic to support this.

We support this UGB Master Planning Project 100%.

Barbara Hadley
Karen Pelenik

March 27, 2015

Michael Carbone, AICP
1355 N. Barlow St.
Cornelius, Or 97113

RE: UGB, City of Cornelius

Dear Mr. Carbone,

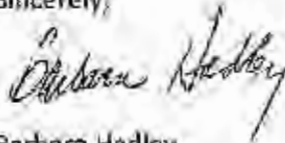
My sister and I have been attending the meetings for the future development of the Community of Cornelius. Sounds like a great time and good timing due to the projected new growth. Our location is 33442 S. W. Tualatin Valley Hwy. We have 6.75 acres that is all frontage property adjacent to Coastal Farm and Ranch. Our family has owned this property since 1949. It is accessible to water and sewer, gas and electric. Our lot (1S32A-00600) is an ideal location for a commercial development and more importantly a traffic signal for increased safety for pedestrians using public transit and the traffic coming in and out of 334th North and South. To the North on 334th there are numerous homes plus a busy beautiful golf course (Killarney West). The S. side of 334th is the parcel of our 6.75 acres for commercial development. A traffic signal at this location makes a lot of sense for extra safety of entering and exiting this busy new commercial site and for the N. side of 334th street traffic.

Our neighbors on the north side of TV Hwy are all concerned about the safety issue this new development along the Hwy. will bring. They are also ready to support commercial growth on the north side as well. The best solution we see is for a traffic signal at 334th.

Traffic along TV Hwy is already very heavy and any side street traffic has a hard time getting on to TV Hwy now. In a few years or less it will be more difficult. Again, a traffic signal is the best solution. There have been a few accidents involving Tri Met in front of our place. Sometimes people are not paying attention when the bus stops for riders.

Thank you for considering our solution to the new future development of the Community of Cornelius, Oregon.

Sincerely,



Barbara Hadley

City of Cornelius - Municipal Code Ordinance 15.0000, 15.0001, 15.0002, 15.0003, 15.0004, 15.0005, 15.0006, 15.0007, 15.0008, 15.0009, 15.0010, 15.0011, 15.0012, 15.0013, 15.0014, 15.0015, 15.0016, 15.0017, 15.0018, 15.0019, 15.0020, 15.0021, 15.0022, 15.0023, 15.0024, 15.0025, 15.0026, 15.0027, 15.0028, 15.0029, 15.0030, 15.0031, 15.0032, 15.0033, 15.0034, 15.0035, 15.0036, 15.0037, 15.0038, 15.0039, 15.0040, 15.0041, 15.0042, 15.0043, 15.0044, 15.0045, 15.0046, 15.0047, 15.0048, 15.0049, 15.0050, 15.0051, 15.0052, 15.0053, 15.0054, 15.0055, 15.0056, 15.0057, 15.0058, 15.0059, 15.0060, 15.0061, 15.0062, 15.0063, 15.0064, 15.0065, 15.0066, 15.0067, 15.0068, 15.0069, 15.0070, 15.0071, 15.0072, 15.0073, 15.0074, 15.0075, 15.0076, 15.0077, 15.0078, 15.0079, 15.0080, 15.0081, 15.0082, 15.0083, 15.0084, 15.0085, 15.0086, 15.0087, 15.0088, 15.0089, 15.0090, 15.0091, 15.0092, 15.0093, 15.0094, 15.0095, 15.0096, 15.0097, 15.0098, 15.0099, 15.0100

City of Cornelius: We strongly oppose designating &/or zoning any land as commercial in the area north of TV Highway (OR Route 8) west of Hillsboro. Designating &/or zoning land as commercial north of TV Highway will impact the livability & livelihood of a long-established neighborhood. A significant increase in traffic is already expected from other development planned near Cornelius. Developing commercial properties north of TV Highway would increase traffic flow even more and could potentially make entering and leaving our streets more difficult. Considering the abundance of unused and underused commercial properties in the Cornelius area, there is no need for more commercial zoning. We respectfully request the City of Cornelius to not zone the north side of TV Highway west of Hillsboro as commercial.

Name: MARVIN L. HEROLD Signature: Marvin L. Herold

Address: 1775 SW 325th Ave Hillsboro, OR 97123

RECEIVED

City of Cornelius contact:

Michael Carbone, Community Development Director
(503) 357-3011 Office (503) 337-5322 Fax mcarbone@ci.cornelius-or.us

Cornelius
Public Works

JUN -8 2015
Finance Office

City of Cornelius - Municipal Code Ordinance 15.0000, 15.0001, 15.0002, 15.0003, 15.0004, 15.0005, 15.0006, 15.0007, 15.0008, 15.0009, 15.0010, 15.0011, 15.0012, 15.0013, 15.0014, 15.0015, 15.0016, 15.0017, 15.0018, 15.0019, 15.0020, 15.0021, 15.0022, 15.0023, 15.0024, 15.0025, 15.0026, 15.0027, 15.0028, 15.0029, 15.0030, 15.0031, 15.0032, 15.0033, 15.0034, 15.0035, 15.0036, 15.0037, 15.0038, 15.0039, 15.0040, 15.0041, 15.0042, 15.0043, 15.0044, 15.0045, 15.0046, 15.0047, 15.0048, 15.0049, 15.0050, 15.0051, 15.0052, 15.0053, 15.0054, 15.0055, 15.0056, 15.0057, 15.0058, 15.0059, 15.0060, 15.0061, 15.0062, 15.0063, 15.0064, 15.0065, 15.0066, 15.0067, 15.0068, 15.0069, 15.0070, 15.0071, 15.0072, 15.0073, 15.0074, 15.0075, 15.0076, 15.0077, 15.0078, 15.0079, 15.0080, 15.0081, 15.0082, 15.0083, 15.0084, 15.0085, 15.0086, 15.0087, 15.0088, 15.0089, 15.0090, 15.0091, 15.0092, 15.0093, 15.0094, 15.0095, 15.0096, 15.0097, 15.0098, 15.0099, 15.0100

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Name: William E. Dryck Signature: William E. Dryck

Address: 3050 SW 331 Ave Hillsboro, OR 97123

RECEIVED Date: 6-8-15

City of Cornelius contact:

Michael Carbone, Community Development Director
(503) 357-3011 Office (503) 357-5322 Fax mcarbone@ci.cornelius-or.us

Cornelius
Public Works

RECEIVED
JUN -8 2015
Finance Office

March 27, 2015

ROB DRAKE, MANAGER
CITY OF CORNELIUS
1300 S. KODIAK CIRCLE
CORNELIUS OR 97113

RE: 33465 SW TV HWY, HILLSBORO, OR 97123

Dear Mr. Drake:

Per the City of Cornelius urban growth boundary expansion and our property located within, we respectfully say...

Our desire for our site is to support and develop commercially.

We are grateful and appreciative to YOU, and Michael Cerbone Community Director, Tim Franz Associate Planner, and all other planners & staff members of this project. Thank you for your efforts in planning for the areas future for all, and endeavoring to bring FORM to a community that could otherwise be CHAOS.

Best Regards & Most Respectfully Yours,



Kathie & Stephen Jackson
21800 NW Fisher Rd
Banks OR 97106
503-324-3232
Kathiejackson21@gmail.com

OWNER OF SUBJECT SITE:
33465 SW TV Hwy
Hillsboro OR 97123

From: Jan Rhenrev
To: Michael Carbone
Subject: Commercial decision
Date: Friday, June 05, 2015 5:57:15 PM

Hello Michael,

Just a short input and that's all it is. I am a property owner on 334th Avenue and I would like development up on the hi way. When the golfers come up the road or even homeowner's want to pull out and go toward Hillsboro it's very difficult. There is traffic coming up the hill by the fruit stand and you just have to estimate that they aren't driving so fast so you can pull out and be safely on the road. With commercial it has so much improvements that comes with development. What is needed especially stop lights, merging lanes an maybe a small grocery store. Go to work and let's get commercial. Sincerely, Jan Rhenrev

Sent from my iPad

Additional Comments UGB Neighborhood Meeting 3/18/15

These comments are in regard to the NE area newly added into the UGB:

1. The center portion of the NE Area is less likely to develop, but if it were to develop and annex into Cornelius someday, what would the costs to the residents be, including on-going city property taxes? This area is less likely to develop, but the comprehensive plan must still address it. How would the development difficulties be overcome and who would pay?
2. There needs to be a real clarification around septic issues. Would DEQ be able to require a hookup to a sewer line (along TV Hwy or the railroad tracks)? Is it even feasible in our neighborhood? Or would they mandate a repair? Nearly the entire center portion of the NE Area is on Hillsboro City water. As soon as 1 homeowner is required to hook up to sewer, there's a greater likelihood others will be as well, given the "domino effect" of extending a sewer line. This along with nonremonstrance agreements certainly speed up forced annexation.
3. Given that nonremonstrance agreements are not required by the State, is Cornelius willing to discuss not requiring them if a homeowner is required by DEQ to hook up to a sewer line? Yes, people hooked up to sewer need to pay for sewer service, including system maintenance. Nonremonstrance agreements are not required for fire service or water service – as demonstrated by our neighborhood, which is being served by both. We pay fire service on our property taxes and receive monthly water bills from the City of Hillsboro. To my knowledge we pay fair amounts for each. People hooked up to a sewer line can do the same thing – pay monthly for service, including system maintenance. There is no reason to require nonremonstrance agreements unless the goal is to force annexation, instead of charging a fair price for services rendered. It's at least a convenient method to require annexation at some point in the future while saying you won't force annexation on unwilling homeowners.
4. Please consider all alternatives to developing a collector street through our neighborhood (center portion of the NE Area). A collector street or major street through our neighborhood would irrevocably change its character. I would prefer the inconvenience of forced right turns if the center median of TV Hwy was blocked. If you must look into a collector street, it would best serve the neighborhood to be put by the railroad tracks and go to TV Hwy in an area interested in development, such as the western portion of the NE Area. A major street won't change the character of an area desiring to develop.
5. Instead of a community park, please consider a smaller neighborhood park.
6. All residents in a newly added UGB area need full costs associated with potential development and annexation. Please see all residents are informed of all costs, including city property tax estimates, sewer hookups vs. septic system repairs, etc.).

The public meeting was well run. Thank you for covering the Community Survey and having a system allowing all who wanted to speak to do so.

Sincerely,

Margaret Banks
260 NW 336th Ave
Hillsboro, OR 97124

From: Margaret Banks
To: Michael Cerbone
Subject: UGB Master Planning & Alternatives
Date: Saturday, May 23, 2015 6:49:52 PM

Michael,

I'm aware that there are a few folks attempting to come up with an alternative 3 for the NE UGB planning area. It would add a commercial zone adjacent to much or all of the north side of TV Highway in the NE Area. In my opinion from what was presented in the recent neighborhood meeting, most of this area is lower value commercial with higher development costs and only suited to small businesses. It was pointed out in the meeting that even the Alternative 2 commercial zone was not prime commercial due to it's size, shape and development costs. It could also have an extreme impact on traffic flow along TV Highway.

All landowners were notified of this process when the Master Planning began. If interested in an alternative 3 the interested parties should have been working on it in the early parts of the planning. Alternatives 1 and 2 have been aired in public meetings and have been part of the process. It should be far too late for an alternative 3, regardless of what the alternative is or who is promoting it. It's too late to be included in the planning and public process that is past. I strongly urge you to stick with the established public process and timelines that have been advertised all along for the Master Plan, and not to attempt an 11th-hour alternative 3 that is too late for the established process.

I also want to reiterate that a strong majority of our neighborhood signed a petition early on registering their will to remain outside of Cornelius & out of the UGB. In fact, citizens in our neighborhood simply want to be left alone. Also, the public responded to your survey with a clear desire to stick with single-family housing in the NE Area. In any semblance of a democracy, the majority needs to take precedence.

My preference is for Alternative 1 to keep all commercial south of TV Highway. If that is what is approved, landowners in the proposed Alternative 2 commercial area could eventually develop quality housing. If done right it could be desirable housing. And given it's not a prime commercial area, it might be the best option.

Please share these comments with the TAC and include them in the public record. Thank you for your consideration.

Sincerely,

Margaret Banks
160 NW 336th Avenue

Hillsboro, OR 97124

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JAN 16 2015

Community
Development

Comments for Cornelius UGB Planning Process

Jan 14, 2015

These are my personal comments applying to the areas newly added into the UGB by the Governor's Grand Bargain. Please consider them in your planning process in addition to those you received at last week's public meeting:

1. The plan must include the FULL costs of potential annexation into Cornelius, and how they will be paid, and specifically how much existing residents & property owners will be required to pay. At a minimum, the following needs to be considered:
 - a. Sewer
 - b. Side street improvements
 - c. Sidewalks – when will people be forced to put in sidewalks? Sidewalks should never go in before storm drains that need to be under them.
 - d. Drainage system for gutters & surface water – some houses have gutters out to ditches – you must maintain their integrity and plan for future gutter drainage into ditches or storm drains. Drainage, or the lack of, is a critical issue for this general area.
 - e. City water – most homes north of TV Hwy are already served by Hillsboro city water. Will residents be forced to hook up to Cornelius City water instead? If so, how much higher will residents' bills become? It doesn't make sense to pay more for the same exact water.
 - f. Street lights along TV Hwy for traffic flow & access to and from side streets. My understanding is that a single street light can end up plugging up access for the next side streets up and down the Hwy. ODOT knows this and has opposed Coastal's desire to add a street light at 336th. Traffic speed is also an issue – if it is slowed down too much, the mix of fast & slow drivers may increase, which means that there would no longer be breaks in traffic to allow access to and from side streets. This is why ODOT has kept the speed limits at their current levels.
 - g. City property taxes – this is very important for residents to know in advance, particularly with low-density, larger lots.
 - h. Future property zoning – this is critical to know in advance – it will have a major impact on residents and landowners. How will working farms be impacted? Can people keep geese and chickens? Fully explain the impacts of zone changes. If new zoning is associated with smaller lots than currently exist, when will landowners be forced to subdivide? How will it impact home sales? How will it impact property taxes? What about existing land uses?
 - i. Address change from Hillsboro to Cornelius required? At what point?
2. Make the extra effort to reach out to all landowners in the impacted areas, which includes notices for meetings, ways to have input, and the survey you are planning. Every single landowner needs the opportunity for input. You should routinely exceed legal requirements for notification – the legal requirements are only bare bone minimums – they do not establish desirable levels of outreach or interaction.

- a. Be aware that it's a hardship for some residents to participate much in this process due to extreme health problems, including cancer, major surgeries and elderly issues. A few have chemical sensitivities that make attending public meetings difficult or not possible.
3. As changes come, there will be more noise and crime. How is that to be addressed, particularly in adjacent unincorporated areas?
4. If a homeowner is required to hook up to sewer at some point by DEQ, do not force a City nonremonstrance agreement for annexation. That is a type of forcible annexation for a situation out of control of the landowner. This area has been served by septic systems for over 50 years. Most houses have Hillsboro City Water. This area has the ability to continue to be served by septic systems with no ill effects on anyone as long as the lots are properly sized.
- a. Other than the nonremonstrance agreements, what else do residents have no knowledge of?
5. Thank you for stating that you will not forcibly annex people into Cornelius, but still seriously consider the petition you have on file signed by residents in the NE Area who do not want to be in the UGB and do not want to be annexed into Cornelius, and work with them to keep their neighborhood and its character intact. The area in question includes 334th, 336th & 338th avenues, and parts of 341st.
- a. Protect & maintain the character of the area that will remain unincorporated to the degree possible.
 - b. Keep the quiet dead-end streets as they are. Do not make them thoroughfares. Do not make the unincorporated area bear the brunt of traffic for those that annex into Cornelius and develop. For example, if landowners adjacent to the railroad tracks to the north annex into Cornelius at some point and put in high-density developments, they need to develop another way out to TV Hwy. Landowners and developers who will make a lot of money, need to use part of the proceeds to develop access around the unincorporated area. Major thoroughfares through the unincorporated area would permanently change the character and adversely impact the neighborhood.
 - c. Allow for large lots, low-density development – many lots in this area are between a half acre and an acre, others are larger. Much of this area is already developed into low-density housing.
 - d. If light rail is put in along the railroad tracks to the north, ensure that areas zoned low-density will not be forcibly required to redevelop into high-density areas.
 - e. Concern about business development along TV Hwy adjacent to unincorporated areas that would impact the areas not annexed.
 - i. Do they need to be allowed?
 - ii. If allowed, what kind of businesses would be allowed?
 - iii. Prohibit Porn/Adult shops, marijuana dispensaries (medical or recreational), liquor stores, businesses that house or rehabilitate criminals and sex offenders, etc. Even convenience stores open at night, such as 711 or Pajal's Pantry bring crime and noise.

iv. What about impacts on traffic flow along TV Hwy and to/from the side streets?

Sincerely,

A handwritten signature in cursive script that reads "Margaret Banks".

Margaret Banks
260 NW 336th Avenue
Hillsboro, OR 97124

From: Margaret Banks
To: Jeff Dalin (external); Jeff Dalin (external); Michael Carbone
Subject: Community Survey
Date: Saturday, February 14, 2015 10:32:49 AM

Jeff, (Michael)

First, thank you for mailing a survey notice to all property owners. Although please remember that some residents are overwhelmed with major issues (cancer, surgeries, elderly issues, etc.) and may not be able to respond. They are relying on their signature on the neighborhood petition they signed (the one to remain outside of the UGB and outside of Cornelius), that it also indicates their desire to keep our neighborhood intact as is.

I went through the survey last night and answered as best as could be done given the survey and responses. I decided not to cram the text boxes with these comments, but to turn them in separately. These comments go with my survey responses.

Wow. That survey is overly simplified, treating the NE Area as a single area. Why? Planning by its very nature isn't, and can't, be simple.

There are folks close to the existing City boundary that wish to annex and have their properties developed. There are those in the developed neighborhood area that signed the neighborhood petition (to remain out of the UGB and out of Cornelius). These two areas can't be treated as one, not even in the long-term.

Cornelius has publically stated multiple times that they will work with the residents in the impacted areas - the residents that signed the neighborhood petition. The City has indicated that they can keep the existing residential area at a low density. Even the lowest current zoning density would change our neighborhood.

People believe what you do, not what they are told. This survey makes it appear that you may change the way our area is handled, and that you have ignored previous conversations. You need to remember all of the people that signed the neighborhood petition - they believe that their voice has already been heard.

Are you still going to work with our neighborhood to keep it low density and as intact as possible as has been publically stated multiple times? This is important.

It's as important as not insisting on a non-remonstrance agreement for future annexation if someone is forced into a septic hookup.

Sincerely,

Margaret Banks
260 NW 335th Ave
Hillsboro, OR 97124

Urban Growth Boundary Neighborhood Meeting
2/18/15
Comment Card



Name (Optional): Dorothy Saffeld

Mailing Address (Optional): 20 NW 334th Ave Hillsboro 97124

Phone Number (Optional): 503-31-5878 E-Mail Address (Optional): Dorothy.Saffeld@XATT.com

Comments: BT don't see any need to me from being in the City of Cornelius because of diminished value of the price of water and at least double. BT already have Washington County police and all Cornelius does is sent them if the Cornelius fire dept is not interested.

Riverside Manufacturing LLC
PO Box 23512
Tigard, OR 97281
P. 503-598-9495
F. 503-598-9620

Riverside Manufacturing LLC

March 26, 2015

Michael Carboné
City Of Cornelius

RE: Tualatin Highway Urban Growth Boundary Changes (City Of Cornelius)

Michael,

As per your request, this is a follow up to our discussion on March 18th 2015 (Public Meeting) regarding input on the future development of the Tualatin Highway corridor / Urban Growth Boundary Changes.

As you are aware, well thought out development is vital to any City's future growth. The city of Cornelius has a lot to offer both future business and new residences with the small town feel that many people are looking for as well as the exposure to new Industry and retail business.

The recent changes in the urban growth boundaries could not have happened at a better time to achieve beneficial growth for the city of Cornelius.

My wife and I have an interest in the small lot on the corner of TV highway & 334th (Oak Park Sub-Division Tax lot PTS 4-5). Our lot (as a small piece) can play an instrumental part of future growth. Our lot would be a perfect location for a retail "Pad" location along with an ideal placement for a traffic light. This intersection has several desirable elements.

This lot is too small for a large retail location, but does lend itself as a great location for a small IE: convenience store that would serve local residences, and more importantly the existing golf course. The property on the opposite side of the highway from us (adjacent to Coastal Farm & Supply) would lend itself to a larger commercial draw at the proposed new traffic light. The other Lots on the North Side of TV highway adjacent to us would support commercial growth for the City Of Cornelius as well.

Without improved infrastructure any growth realized by the City Of Cornelius in the future, will also increase the risk and jeopardizing the safety of the riders of Tri-Met (bus stop on our lot), general traffic from both the golf course and local residence. This traffic light would also help move local traffic if an east/west access is added in the future and a way to safely into and exit TV Highway.

Some of the safety hazards that currently exist are as follows:

1. No sidewalk for Tri-Met riders (large ditch as you step off the bus)
2. Line of sight is greatly reduced due to the grade change just before 334th St. (you cannot see down or up the hill until it's too late).
3. During the summer months, sun glare is also an issue traveling West bound.

I realize that traffic control should be limited in order to keep traffic moving. This location is the perfect location for the following reason.

1. Westbound traffic has not reached top speed coming from the traffic light @ Winco.

2. Increased safety for both Tri-Met riders getting on and off the bus at the bus stop.
3. Local traffic trying to enter and exit Tualatin Valley Highway for 334th St.
4. Existing and increased seasonal traffic from the golf course.

It is also very important in gaining buyin from property owners affected. The more property owners from the wet land property leaving Hillsboro on both sides up to near the Veterinary business, (5 or 6 owners) met this week to discuss the potential options for development of this area. We all agreed that we will work together and support the needs of the group to do what is the best to help improve the City Of Cornelius.

The suggestions listed above would not infringe on the property owners desire to keep the residential zone outside of the affected area.

Thank you for your consideration of our recommendations.



Sincerely,
Jerry Laug, Owner

March 29, 2015

Michael Carbone
Community Development Director
Cornelius, OR 97113

Dear Mr. Carbone,

I understand that at the last city of Cornelius meeting there was discussion of the future use and or zoning of the properties with Tualatin Valley Highway frontage.

I was unable to attend that meeting but would like to take this opportunity to express my opinion of what I have been told was discussed.

I am a co-owner of approximately 12 acres of land at 33225 S.W. Tualatin Valley Hwy. We have approximately 1900 feet of highway frontage from 334th Ave. east to property owned by Mr. John VanGransven.

I, along with some of the other Tualatin Valley Hwy. property owners, am writing in the hope of getting the support of both the City Manager and yourself in the placement of a future traffic signal at 334th Ave. I sincerely believe with the current traffic situation on this stretch of highway that a traffic signal is critical for safe highway access for all of the businesses and the residents. It is also my understanding that the placement of a signal at 334th Ave. would considerably increase the possibility of future commercial use by creating 3-4 pad sites making these properties much more attractive to commercial business interests. With Coastal Farm Supply and Pape tractor dealership already in place makes it even more likely that other commercial businesses would be willing to invest on this stretch of Tualatin Valley Hwy.

If you need to contact me regarding this matter, please call me at 971-246-0540.

Thank you for your consideration of this matter.

Sincerely,
Tracy J. Turner
33225 S.W. Tualatin Valley Hwy.
Hillsboro, OR 97124

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APR 03 2015

CORNELIUS
PUBLIC WORKS

RECEIVED

APR 03 2015

Finance Office

March 30, 2015

Michael Cerbone
Community Development Director
Cornelius, Oregon 97113

Dear Michael,

Pursuant to the conversation at the last City of Cornelius meeting regarding future use/zoning of the properties with Tualatin Valley Highway frontage,

I own nine acres bordering the future Light Rail bordered at the North end by 336th Ave. and bordered on the East by 334th Ave. I also own a Multi-Family (fourplex) and adjoining lot on the East of these frontage commercial use properties.

I met Thursday evening with many of the frontage property owners. I am writing this letter in the hope of having the support of the City Manager and yourself in the placement of a future traffic signal at 334th Ave. I believe the criterion by ODAT is at or near 150 cars per hour/peak hours. My experience as a Commercial/Industrial Real Estate Broker leads me to believe that the property East of and contiguous to the Coastal Supply Development will be the most intensively used business property along this heavily used corridor. This property is known as the Hadley Property. As I discussed with Barbara Hadley several days ago, her property, in fact, can and should be considered as the anchor property to any commercial properties in this area. By signaling this intersection, it is easy to speculate no less than three pad sites and possibly four pads. If I were still brokering, my first call would be Rite Aid Drug Stores. I can think of many National Credit Tenants that could be attracted to the Hadley Property. Its proximity to Central and West Hillsboro is also very attractive. With efficient development on this site, development on the two pads that could be created on the North side of the intersection of 334th Ave., and including Killarney West Golf Course, the signal criterion can be easily met.

Sincerely,



John Van Grunsven
614 E Main St
Hillsboro, OR 97123
503.648.5070
Jvg45@msn.com

May 27, 2015

Michael Cerbone AICP
Community Development Director
City of Cornelius
1300 Kodak Circle
1355 N Barlow St.
Cornelius, OR. 97113

Dear Michael Cerbone and the Technical Advisory Committee:

At the last meeting on Wednesday May 20th, a few of the property owners voiced concern regarding commercial use on a narrow strip of land north of Tualatin Valley Highway. I had a lengthy conversation with Sarah Jackson an attendee of that meeting. We discussed these changes that will most certainly occur. I asked Sarah if she preferred Multi-Family use over commercial. She did not seem to be enthralled with either choice. I responded by saying that I could not envision any other uses. Single family housing is a bad choice and Industrial is not appropriated for that site. Because of the depth of the site, if multi-family is the preferred use placed on the property by Cornelius it will most certainly become a problematic property to own and manage. This property if becoming multi-family because of its depth will be very close to the tens of thousands of cars that use that roadway daily. The traffic noise will be a big negative in attracting a level of tenants to justify overall costs of construction. I presently own and manage the four-plex east of and contiguous to the site. The adjacent property has been a headache over the last nineteen years of ownership. In 2006 I went on a trip to Vietnam. When I arrived home I received a call from a tenant, he wanted to know if I would permit his access on the property because of a restraining order put on him by Police, because of what he called a small fight. I called the District Attorney, with concern in his voice exclaimed "what small fight", there were eleven Squad cars sent to the site. Seems as though this tenant stabbed the tenant living in the apartment above, at that point the tenant that was stabbed went to his unit to get his meat cleaver. It is very difficult to attract quality tenants when a property is compromised by negative issues. The traffic count is increasing daily, if multi-family use is applied to the site it will be multi-family for a very long period of time, thus negating a well anchored Commercial Development, serving both Hillsboro and Cornelius. I have stated in the past that if this area is developed commercially it will be a great asset to the City of Cornelius for a very long time into the future. If developed efficiently it will most certainly bring a customer base from Hillsboro that will be a synergy to those retail and service businesses that are presently in Downtown Cornelius.

Sincerely,



John Van Grunsven
614 E Main St
Hillsboro, OR. 97123

From: [Jeff Shipman](mailto:Jeff.Shipman)
To: [Michael Carbone](mailto:Michael.Carbone)
Cc: jfranz@cd.comelius.or.us
Subject: Shipman property & UGB plan
Date: Friday, May 22, 2015 4:07:34 PM

Hi Michael,

Please accept this email as notification of our intention to seek annexation with the city zoning that varies from the R7 classification that is currently proposed.

We would like to explore the possibility of having higher-density housing on the bulk of the property with a small amount of commercial office space at the "front" of the property, the south side that is closest to the highway.

It is our understanding that the housing density of A2 zoning may be possible for part of the property within the parameters of Commercial C-2 zoning, or potentially with a "Mixed Use Comprehensive Plan" designation.

We haven't ruled out R7, as is listed on the maps the city is providing as the current preference, but want to keep our options open as we continue to investigate options for development of the property.

The property is defined as T.01N R.03W SWQTRSEC35 03900. The map reference is TG 592/H24.

Thanks for your assistance in navigating this process.

Jeff Shipman

Shipman & Son, LLC

503-537-8169

RECEIVED
JUN 18 2015
Finance Office

22 MAY 2015

JUN 18 2015

San Jose
City of San Jose

C-6-15

TO IS THE CITY CORNELIUS

I AM RESIDENT ON 334TH AVENUE
I AM IN FAVOR OF COMMERCIAL USE
NORTH OF T.Y.H. HWY ONLY AND
OF THE OTHER USES.
J

JOSE OLIVERA
415 NW 334TH AVENUE
HILLSBORO OR 97124

RECEIVED
JUN 10 2015
Cousins
Public Works

June 4, 2015

RECEIVED
JUN - 8 2015
Finance Office

Mr. Michael Cerbone
Community Development Director
1300 S. Kodiak Cir.
Cornelius, OR 97113


Dear Mr. Cerbone,


We have had the opportunity to attend your meetings regarding the properties that were recently brought into the urban growth boundary. Our properties, 33505 and 33535 TV Highway, are located on the north side of TV Highway and we fully expect that they would be zoned commercial as is the majority of the properties from 10th St. in Hillsboro to the entrance of Forest Grove.

It is important for us to be on the record in opposition of our properties being zoned residential. It should be obvious to all involved that the best use for such a busy thoroughfare is commercial not residential.

If you would be kind enough to acknowledge our opposition to be residentially zoned and desire to be commercially zoned, in writing, we would be very appreciative.

Respectfully,


Gaby Wilfert


Dave Wilfert


Clark Wilfert

Cornelius UGB Master Planning Community Preferences Survey: Final Responses

Participants and Geographic Area

- 46 total responses – *note that not everyone answered every question and that responses were not limited to where people primarily live*
- 28 self-identified as from NE UGB area and 5 adjacent to it (33)
- 2 self-identified as from SE UGB area and 4 adjacent to it (6)
- Remaining 7 from other/declined to state

Housing Mix Preference -- responses are from all respondents, regardless of where they live

- **NE Area** residential mix average -- 92% detached SF; 5% SF attached; 3% MF
- 27 out of 37 respondents (92%) want the area to be 100% SF detached housing
- **SE Area** residential mix average – 86% SF detached; 10% SF attached; 4% MF
- 17 out of 31 (55%) want the area 100% SF detached

Layout of Neighborhoods. 88% of respondents prefer larger lot and yard with less common open space versus smaller lots/cluster development and more common open space and parks

Parks and Open Space

- **NE Area (43 total responses)**
 - 49% not important/do not want/somewhat unimportant;
 - 37% somewhat or very important;
 - 14% neutral/don't know
- **SE Area (36 total responses although only 6 self-identified as living in/next to SE area)**
 - 31% not important/do not want/somewhat unimportant;
 - 42% somewhat or very important
 - 28% neutral/don't know

Walking and Biking Paths

- **NE Area (43 total responses)**
 - 51% not important/do not want/somewhat unimportant;
 - 37% somewhat or very important;
 - 11% neutral/don't know
- **SE Area (36 total responses although only 6 self-identified as living in/next to SE area)**
 - 33% not important/do not want/somewhat unimportant;
 - 42% somewhat or very important
 - 25% neutral/don't know

Commercial Development (39 total responses)

- 67% not important/do not want/somewhat unimportant
- 24% somewhat or very important
- 10% neutral/don't know

Predominant Type of commercial/retail uses preferred

- 67% None wanted
- 12% Limited, small-scale uses – i.e. coffee shop or convenience store
- 15% City-wide serving uses – grocery store or restaurant
- 5% Regional serving uses – home improvement store

Cornelius UGB Meeting #1

Opportunities & Constraints:

- Traffic Flow and timing along TV Highway – make sure service is maintained
- Access to TV Highway from 341st – Difficult now, called ODOT, don't want it to get worse.
- 345th Transients and homeless people along southern 345th – Also concerned about impacts from workers maintaining the proposed pump station.
- Concern about access for farming equipment from 345th/Cook area to TV Highway – Currently use 345 to access TV Highway – Don't think it would be good to send equipment through subdivisions
- Stormwater should not be directed to existing drainages pipes on 345th (culverts) – There are impacts from when Coastal was developed
- Concern about police and fire service and how needs will be met with additional population
- Concern about what will occur behind Ginger Lane – Neighbors currently enjoy the open space behind them.
- Concerns about trails within the community, belief that new trails will provide a conduit for crime moving along the trail system, homeless people and concern about people defecating along the trails
- Concern about the potential for vandalism to irrigation pumping structures and irrigation pipe east and south of 345th
- Concerned about increase in traffic, potential for crime with increased traffic in the NE UGB roadways
- Diminished property value as a result of being included within the City (Who will compensate for this?) Belief that property values have been diminished as a result of being included within the UGB.
- 334th, 338th, and 336th would like to keep rural character of the street. Potentially Low Density Residential – residents would prefer an Ag/Rural option
- 341st is a mix of pro and con development.

- Concern about how the water serving NE UGB would change upon annexation. Will annexation and/or development trigger a transfer of water service from Hillsboro to Cornelius.
- Will the City promise not to annex the property in the NE (concern about forced annexation)?
- If connection to the City occurs for sanitary sewer. Will a nonremonstrance agreement be required for annexation?
- Concern about annexation (failed septic/DEQ). Residents are concerned that annexation will impact farm deferral.
- Concern about increased taxes, changed zoning, as a result of annexation.
- Surcharge on 338th? It was noted that one resident (not present) believes he paid a future payment for sanitary sewer.
- How did the floodplain get determined? Has it changed since 1998? Contention that the UGB boundary does not match the floodplain maps.
- It was requested that a hard copy survey be mailed to each lot for response.

Cornelius UGB Master Planning Project
Neighborhood Meeting #2 Notes.
March 18, 2015

6:05 p.m.

Meeting Overview by Michael Cerbone, City of Cornelius.

- Introductions of City Staff and Public Officials.
- Next meeting in May, Date to be Determined.
- Upcoming Technical Advisory Meeting, open to public, time and date to be announced and noticed.

6:10 p.m.

Community Preference Survey by Stefanie Slyman, Harper Houf Peterson Righellis Inc. (HHPR).

Summary of the results as reported by Stefanie is attached.

6:25 p.m.

SE UGB Area Discussion by Keith Jones, HHPR and Reah Flisakowski, DKS Associates

Keith

- Orientation of SE UGB Area.
 - o Approximately 205 Acres
 - o Boundary description shown to audience using map.
 - o Described School Site and Discussion with Hillsboro School District. Depending upon what they construct in the future they will need about 40-acres for High School Site; 30-acres for a Middle School Site or 20-acres for a Elementary School.
 - o Showed on map possible future roadway alignments as described within the City Transportation System Plan (TSP).
 - o Described slope of area and the need for a sanitary pump station which will pump effluent up to S. Ginger Street where the existing sewer line will need to be upgraded. From the S. Ginger Street line, effluent will be directed to the main Clean Water Services (CWS) collection trunk lines.

Keith provide a brief overview of the City Zoning Districts that could be considered, all of which are existing Zoning Districts in the City. No new zoning districts are anticipated.

- Zoning District
 - o Single-Family, R-7: 6,000 sq. ft. minimum lot size; 4-5 dwellings per net acre; this is a low density residential zone.

- Single-Family, R-10: 10,000 sq. ft. minimum lot size; 3 dwelling per net acres; this is a low density residential zone.
 - Multi-Family, A-2; Various minimum lot sizes depending upon the proposed development of a site. This zone can permit Apartments, Duplexes, Single-Family Dwellings or Multi-Family dwellings with 3 or more dwelling units; 8-10 dwellings per net acres; this is a medium density residential zone.
 - Planned Unit Development, PUD. This is not an actual zoning designation, but rather an overlay used with an underlying zoning district that provides flexibility for a developer to create a development that results in a better finished product other than what can be expected by using the base development requirements.
- Parks Master Plan
- Showed on the map where the City of Cornelius Parks Master Plan conceptually identifies the general area where a 15 to 20 acres park area could be located.

Q/C = Questions/Comment

A/C= Answer/Comment

Q/C. Is there a first draft of the zoning map?

A/C. No, not yet. The purpose of this meeting is to obtain feedback from the community and property owners as to the opportunities and constraints in each area. At the third neighborhood meeting to be scheduled in May the consultant team will provide a comprehensive plan designation map for review and comment by the community.

Reah provided a brief discussion about the Transportation facilities in the area and the 6 main intersections in the SE UGB area that will be studied.

- Signalization

- A new intersection along Baseline Street (State Highway 8, an Oregon Department of Transportation Facility, ODOT) will be needed. Due to the railway and existing intersections, a new signalized intersection will most likely be approved by ODOT at the intersection of Baseline Street and N. 29th Avenue. (near Murphy's Furniture). This signal was identified in the City's 2005 Transportation System Plan (TSP).
- The railroad crossing at 345th most likely would be closed to allow for a crossing at 29th.
- The final alignment of the roadways into the SE UGB area from a new signalized is not yet known at this time. The TSP shows a conceptual alignment that can be shifted as the roadway goes through final design.
- Signalization elsewhere along Baseline for the SE UGB area is not likely due to the 'alignment' of existing intersections/roadways and inability to meet warrants.

- Traffic counts

- Analysis of traffic counts in the area focuses on the afternoon (PM) peak hour, when the most volume of traffic occurs.
- As development in the new UGB areas occurs, additional traffic studies will be required so the appropriate traffic mitigation devices/designs can be required as needed.

SE UGB area audience questions/concerns

Q/C = Questions/Comment

A/C= Answer/Comment

Q/C. With more people coming into the City, why is Baseline Street (Hwy. 8) not getting bigger to accommodate traffic?

A/C. ODOT has indicated that Hwy. 8 is not at capacity. Approximately 34,000 vehicles use the facility each day. As part of the UGB master planning process the City is required to look at the growth of the area and associated traffic impacts up to the year 2040. With the new UGB areas, there will likely be a new signal at the 29th Street intersection. However, the current design of the Hwy. 8 is not anticipated to be enlarged (new lanes) or significantly redesigned as it appears there is adequate capacity based on recent studies.

Q/C. There is concern about safety, especially left hand turn movements onto Baseline (Highway 8).

A/C. The signalized lights are timed/linked to each other and should provide a 'break' in traffic to allow for left turns. However, there will be times that a person will have to wait for a few minutes before they can turn. Additional lighting at these intersections can improve safety and facilitate better turn movements.

Q/C. What will the timing be in regards to a signalized intersection and improvements to other local streets, such as S. Dogwood Street if the school is not developed, prior to development further south?

A/C. At the time of development the City will require a Traffic Study to be completed. Based upon the Study, a developer may be required to improve/provide street improvements so future traffic can be accommodated. At some point development will justify the need for the new signal at N. 29th Avenue and Baseline Street. If a signal is needed prior to the school being developed, then the City can require it to be installed by the developer who is triggering the need for the improvement.

Q/C. Were street, sewer and property values considered along S. Linden Street and for the new sewer pump station? (concern about impacts to property values resulting from the location of new sewer pump station)

A/C. A future pump station is a small enclosed structure that houses pumps. It is not a large open pit lagoon facility. There are similar structures in Cornelius and nearby communities. They are typically no larger than a typical single-family home. The City and Consultants are exploring options for upgrading the S. Linden Street sewer line, such as 'Pipe Bursting'. Pipe Bursting is a method of replacing pipe without the need to dig trenches in the street.

At the end of the process the City will understand what improvements will be necessary to support development and will be capable of planning for infrastructure improvements.

Q/C. There was a question about the UGB process and how the area was established. Some in the audience were not previously aware of the UGB area.

A/C. Michael Cerbone gave a brief overview of the UGB process. The new UGB area was brought into the City via a legislative action also referred to as the “Grand Bargain”. This occurred as a result of an appeal to the State of Oregon regarding the establishment of the UGB and Rural and Urban Reserves by Washington County and METRO. Oregon State Legislators enacted House Bill 4078 which created the new UGB areas in Cornelius, Forest Grove and Hillsboro. State Law requires that the City Comprehensively plan for the new UGB areas. The UGB adopted boundaries utilized the 100-year floodplain, which is why the boundary is oddly shaped. The City acknowledges that many property owners are unhappy with the way the State created the new UGB areas. A positive aspect of the way that land was brought into the UGB is that the City is exempt from having to meet all of METRO’s normal UGB planning processes. This has given Cornelius more flexibility, such as planning the areas for less density.

Q/C. Will the new future roadway through the school property be off-set?

A/C. At this time the exact alignment of the roadway is not known. However the roadway will be designed so it aligns with a new intersection at 29th. A good example is the signalization intersection at Baseline Street and S. 20th Avenue/N. 19th Avenue near Walgreens.

Q/C. If my septic system fails and our property is on the east side of 345th Avenue, will we be required to connect to City Service?

A/C. No, the UGB ends at the east side of 345th Avenue. Therefore private property east of 345th is outside of the UGB. Current State law does not allow Cities to provide services to properties that are outside of their UGB area.

Q/C. There is a wildlife corridor along the Tualatin River. When it floods, where will the wildlife go, if the area is developed?

A/C. The concern was noted.

Q/C. What is the estimated time of development?

A/C. This planning project is looking for City Council adoption in fall of 2015. Afterwards, property owners can voluntarily begin the Annexations/Zone Map application process which can take around 6 months to process. Additional time is then required for the recording of a final plat and review of engineer drawings for public improvements. Prior to development in the SE area a Sanitary Sewer Pump Station must be designed and constructed. There is indication that Clean Water Services (CWS) may construct this facility, or a private developer may.

Q/C. Will there be more street lights on Baseline Street (Hwy 8)? It is currently dark in places and it is difficult to see vehicles and pedestrians.

A/C. The traffic consultant will look at this concern.

- Q/C. A new signalized intersection at the corner of N.29th Avenue and Baseline Street makes the most sense. A Local Improvement District (LID) has some of the facility in place, such as a right-hand turn lane. Will property owners that abut this intersection have to pay more?
- A/C. No. Development of the Intersection will be responsibility of the developer(s). Monies from other funding sources can also be used, such as funds from the County and Transportation Development Tax.
- Q/C. We bought a property that is along the City Limits. To the south, there is an open field that is part of the new UGB area. When we bought the home, the realtor indicated that our view of the field area behind our home would remain unobstructed. Is there a way the City can limit development behind our house and not impact our view? We were not notified of the meetings that are taking place.
- A/C. No, the City cannot preclude a property owners rights to develop their property. The City is making every effort to contact affected property owners. If you did not receive a notice please sign the sign-in sheet or contact Michael Cerbone Community Development to be included on the mailing/contact list or to express your concerns/comments.
- Q/C. Will we have a say/part into the future zoning?
- A/C. Yes, a third neighborhood meeting is planned to present the future zoning for the areas, at this meeting public input will be received. . There will also be opportunities through your comments/concerns being shared with the Technical Advisory Committee which will make a recommendation to staff. Staff will subsequently make a recommendation to the City of Cornelius Planning Commission. The Planning Commission will then make a recommendation to the City of Cornelius City Council for a final decision. The Planning Commission and City Council will provide opportunities for your written comments and testimony as well.
- Q/C. Will we have a right to purchase and/or right to limit development near us that would impact our view?
- A/C. You have a right to contact the property owner and purchase their property if it's available. If a development application that requires land use notice is received, you will be notified and will have an opportunity to submit comment on that application.

7:15 p.m.

NE UGB Area Discussion by Keith Jones, HHPR and Reah Flisakowski, DKS Associates

Keith

- Orientation of NE UGB Area.
 - o Approximately 175 Acres
 - o Boundary description shown to audience using map.
 - o Described two main areas inside of this region. The western and eastern half. Each area has its own unique features and challenges.
 - o Showed on map possible future roadway alignments as described within the City Transportation System Plan (TSP).
 - o Described difficulties to expanding sanitary services to this area due to existing 72" water main location and the location of the sanitary trunk line that is outside of UGB area to the north.

Keith provide a brief overview of the City Zoning Districts that could be considered, all of which are existing Zoning Districts in the City. No new zoning districts are anticipated.

- Zoning District
 - o Single-Family, R-7: 6,000 sq. ft. minimum lot size; 4-5 dwellings per net acre; this is a low density residential zone.
 - o Single-Family, R-10: 10,000 sq. ft. minimum lot size; 3 dwelling per net acres; this is a low density residential zone.
 - o Multi-Family, A-2; Various minimum lot sizes depending upon the proposed development of a site. This zone can permit Apartments, Duplexes, Single-Family Dwellings or Multi-Family dwellings with 3 or more dwelling units; 8-10 dwellings per net acres; this is a medium density residential zone.
 - o Planned Unit Development, PUD. This is not an actual zoning designation, but rather a an overlay used with an underlying zoning district that provides flexibility for a developer to create a development that results in a better finished product other than what can be expected by using the base development requirements.
 - o Commercial, C-2.
 - o Manufactured Home Park, MHP. This zoning district is Comprehensive Planned as a Medium Density Residential Use.

 - o There is an area just east of Coastal Farm & Ranch that most likely would be Comprehensive Planned for Commercial, because it directly abuts Baseline Street (Hwy 8) and is abuts a commercial use.

 - o The existing trailer park in the western area of the NE UGB area would most likely be zoned as a Manufactured Home Park, so they can continue the existing use.

- The eastern half of the NE UGB area, due to development pattern and large lots, will be recommended to be zoned Single-Family, R-10, a low density residential zone.

- Parks Master Plan
 - Showed on the map where the City of Cornelius Parks Master Plan conceptually identifies the area where a smaller park area could be located.
 - The Parks Master Plan can be amended in the future to address trails in the area.
 - A park in the area would be discouraged from being developed along Baseline Street.

Reah provides a brief discussion about the Transportation facilities in the NE UGB area.

- Signalization
 - A new intersection in this area would be difficult to support, unless there is a new roadway to provide east-west connectivity for the entire area back to the signalized intersection. Currently there is no internal connectivity, which ODOT would require for a signal to be installed. There is no simple solution to provide this east-west route without impacting existing homes or planned facilities.
 - If a signal were possible and could be supported, it would most likely be situated at NW 336th Avenue, across from Coastal Farms.
 - The railroad to the north has a limited number of crossings which make connectivity even more challenging.
 - There may be enough development to warrant a speed study of this section of Baseline Street in the future, which could justify reducing traffic speed limits.
 - The likelihood of Tri-Met building light-rail service along the northern tracts, which are owned by ODOT, is not listed as a high priority and will likely not happen in the near future.

Q/C = Questions/Comment

A/C= Answer/Comment

Q/C. Does ODOT think clearly? i.e. placement of raised medians. (concern was raised about the possibility of medians that would remove the ability for left turns)

A/C. The comment was noted for future discussion.

Q/C. The raised medians affect emergency vehicle access.

A/C. Currently if emergency vehicles have to get around traffic that is blocked by a median, they will go around in the opposite travel lane.

Q/C. How can a property be served with utilities, such as sewer?

A/C. There are basically two methods. 1). As a property owner you choose to annex and connect to City services. Or 2). Your septic system fails and the State (DEQ) requires you to connect if you are within 300 feet of an existing available sewer line. If you are forced to connect, the City will require that you sign a non-remonstrance agreement which will state that when your property becomes eligible, (i.e. contiguous) you will consent to annexation. As part of this process the City will identify the manner in which each property will be served with water and sewer.

Q/C. If annexed, can we maintain our City of Hillsboro Water service/bill? The cost of Cornelius water is extremely higher, for the same water.

A/C. Staff will examine at what point Hillsboro Water Users will be converted to City of Cornelius Water Users.

Q/C. Can the northern railroad be used to create a new road for vehicle connectivity?

A/C. Most likely not. Railroads usually do not give up their right to their right-of-way. This ROW is also identified for a future extension of light rail and a new trail.

Q/C. Please clarify forced annexation.

A/C. If your septic system fails, the State (DEQ) will require you to connect to a sewer line, if available and within 300 feet. If you are forced to connect, the City will require that you either annex into the City or sign a non-remonstrance agreement which will state that when your property becomes eligible, (i.e. contiguous) you will consent to annexation.

Q/C. Please clarify a non-remonstrance agreement?

A/C. If you are forced to connect to the City's sanitary sewer system and your property is not contiguous (touching) the City, the City will require that you sign a non-remonstrance agreement which will state that when your property becomes eligible, (i.e. contiguous) you will consent to annexation.

Q/C. How much weight do we have in determining zoning?

A/C. Your comments/concerns from all neighborhood meetings for the project will be given to the Technical Advisory Committee who will make a recommendation to Staff who will make a recommendation to the City of Cornelius Planning Commission. The Planning Commission will then make a recommendation to the City of Cornelius City Council for a final decision. These are public meetings that are open to the public. The Planning Commission and City Council will provide opportunities for your verbal and written comments and testimony.

Q/C. Will there be notice of upcoming meetings?

A/C. Yes. Notice will be mailed, posted on the City website, posted on the reader board on the side of the Council Chambers and posted in the paper.

Q/C. Do the traffic studies account for accidents?

A/C. Yes, for the volume of traffic there are no major concerns in regards to accidents.

Q/C. Does the traffic study look at the possibility of connection via the railway?

A/C. No, it does not consider vehicle connectivity along the railway. However it does account for future pedestrian connectivity.

Q/C. If I annex, do I have to connect to City sewer.

A/C. No, not until your septic system fails. When it fails, you will be required to connect if the sanitary sewer system is available (within 300 feet of your property).

Q/C. Can NW Iona Ct. be zoned R-10?

A/C. Based upon the development and size of the lots, it is a good candidate for the R-10 zone.

Q/C. My property has a significant slope to it. How will this affect development?

A/C. For properties with slopes, this is considered when development occurs. Through engineering and design a property with steep topography can typically be safely developed.

Q/C. Does the 300-foot state requirement keep moving if a property owner nearby extends the sewer line?

A/C. Yes, once the sewer line is moved and it is available the measurement is taken from the end of the line. Therefore, it may through time come closer to a property.

Q/C. Whose responsibility (who bears the cost) is it to extend a sewer line?

A/C. It is the responsibility of those who want or need to extend it. Primarily developers of a property are responsible for the extension of utility lines.

Q/C. If annexed, where does my tax money go? (i.e. Fire Department)

A/C. Monies go to the appropriate taxing district and agencies.

Cornelius Urban Growth Boundary Expansion

Transportation Report

September 18, 2015



This report presents our recommendations for the Cornelius urban growth boundary (UGB) expansion areas transportation element. The transportation element documents a review of existing transportation conditions and applicable standards, future transportation operations with the proposed Comprehensive Plan amendments, and transportation system needs following Transportation Planning Rule (TPR) guidelines. The report also identifies elements to support a future update of the Cornelius Transportation System Plan aimed to incorporate the UGB expansion areas.

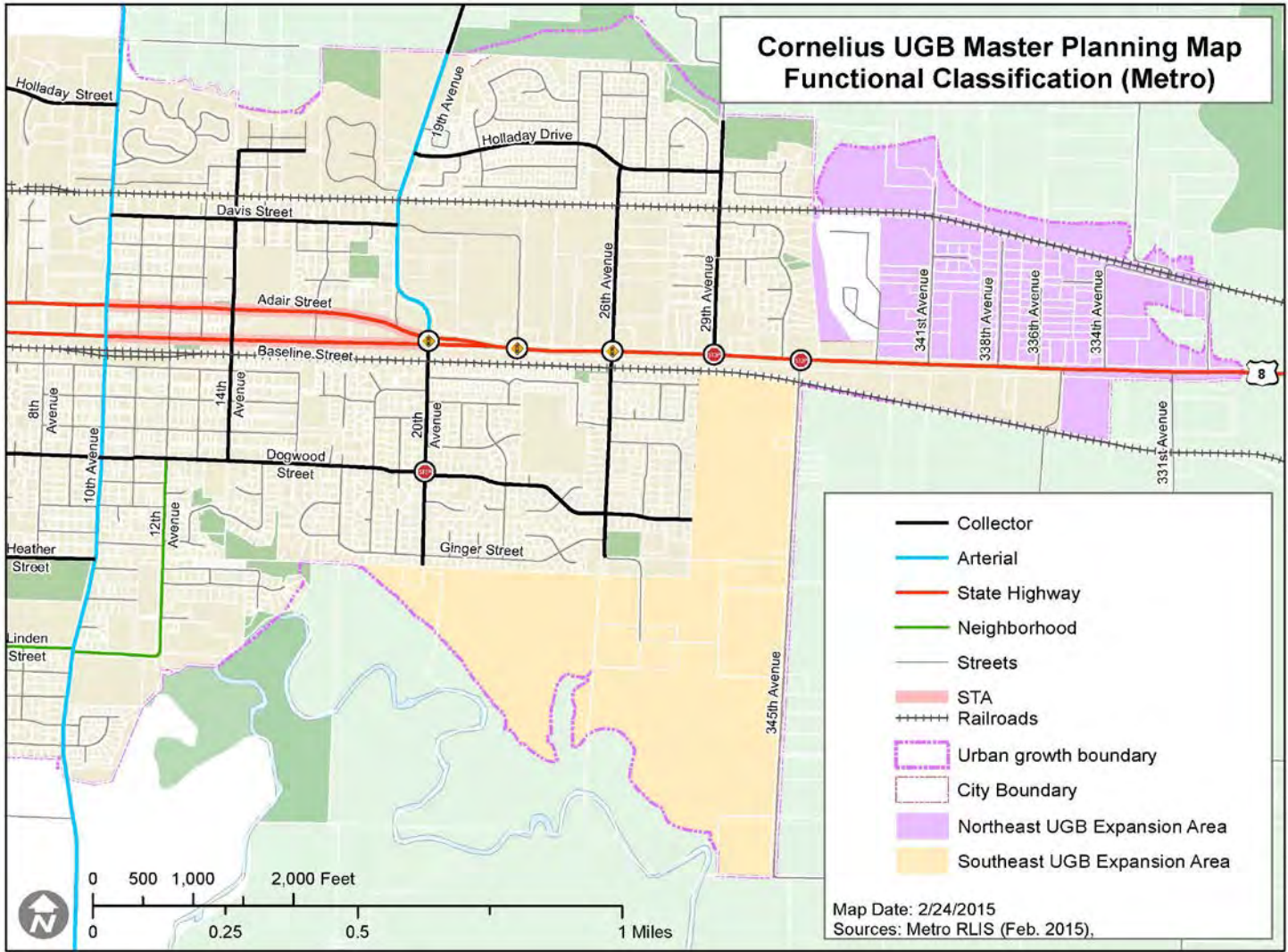
STUDY AREA

The City of Cornelius covers approximately 2 square miles and is located in Washington County, just east of Forest Grove and one mile west of Hillsboro. The UGB expansion consists of two areas east of the city limits, one north of Tualatin Valley Highway and one south of Tualatin Valley Highway.

The project study area (shown in Figure 1) is generally bordered by 19th/20th Avenues to the west, the flood plain to the south, 345th Avenue to the east (south of Tualatin Valley Highway), 331st Avenue to the east and the flood plain to the north (north of Tualatin Valley Highway). Six study intersections were selected for analysis based on proximity and potential impacts from the UGB expansion:

- Tualatin Valley Highway (Baseline Street, Route 8)/20th Avenue
- Tualatin Valley Highway (Baseline Street, Route 8)/Fred Meyer Driveway
- Tualatin Valley Highway (Baseline Street, Route 8)/26th Avenue and S Webb Road
- Tualatin Valley Highway (Baseline Street, Route 8)/29th Avenue (NW Hobbs Road)
- Tualatin Valley Highway (Baseline Street, Route 8)/345th Avenue
- 20th Avenue/Dogwood Street

Figure 1: Study Area





TRANSPORTATION FACILITIES

Evaluating the transportation impacts of the UGB expansion requires an understanding of the current transportation facilities in this area. The land in the southeast expansion area is currently used for rural residential and agriculture, while the land in the northeast expansion area is primarily low density residential or vacant. As a result, transportation facilities do exist but many are not constructed to urban standards. This section includes descriptions of existing infrastructure available to serve pedestrian, bicycle, transit and motor vehicle modes of travel.

Pedestrian Facilities

Sidewalks along key roadways within the study area are shown in Figure 2 based on available Metro GIS data. Sidewalks are generally provided on both sides of the street throughout the study area, with the following notable key gaps:

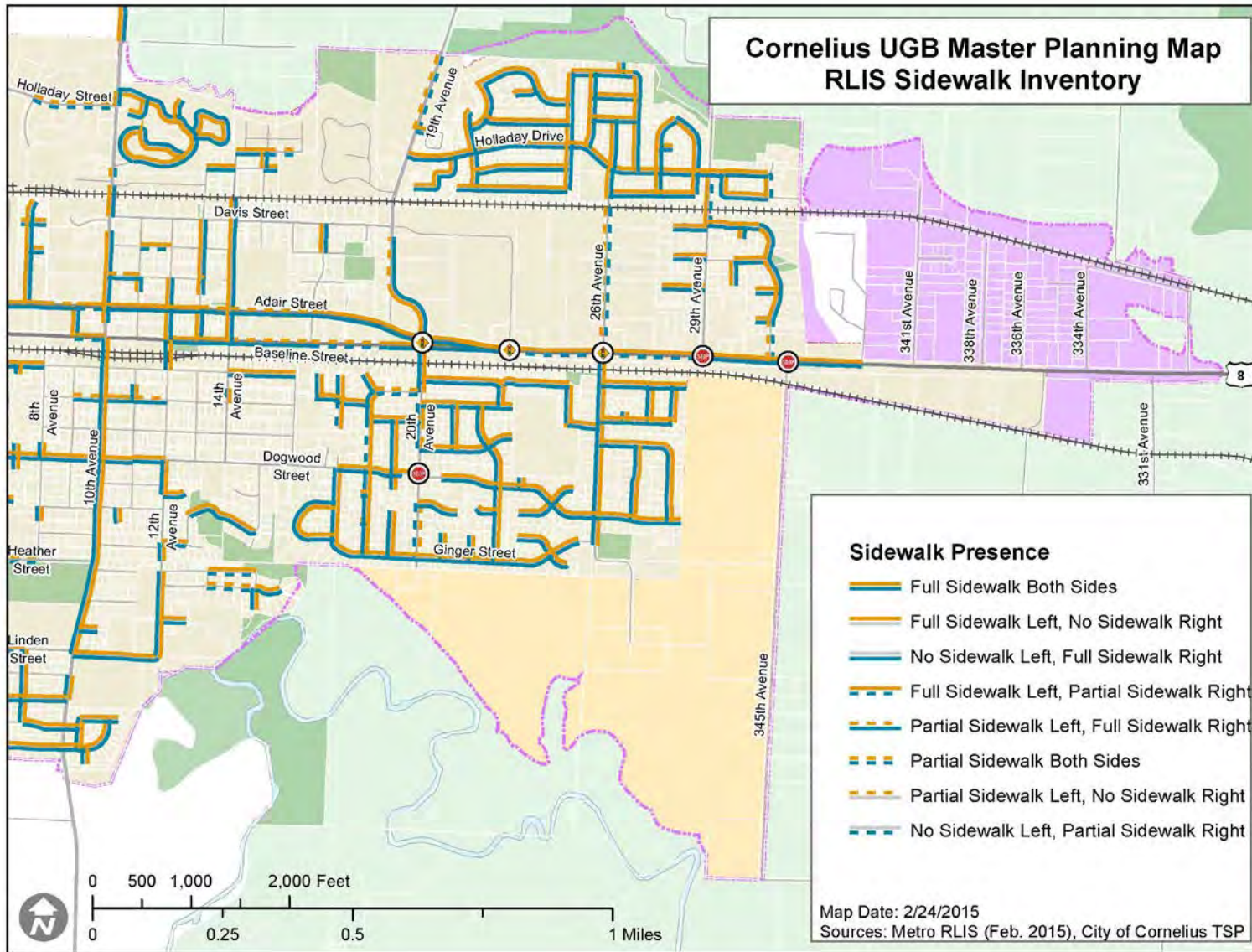
- South side of Tualatin Valley Highway between Fred Meyer and 29th Avenue (partial sidewalks) and east of 345th Avenue beyond the study area
- North side of Tualatin Valley Highway east of East Lane beyond the study area
- 20th Avenue between the north Walgreen's driveway (west side) and just south of Davis Street (east side) to the north Cornelius city limits
- 26th Avenue and 29th Avenue north of Tualatin Valley Highway to the railroad tracks
- 341st, 338th, 336th, and 334th Avenues north of Tualatin Valley Highway

In general, the pedestrian network provides connectivity to most streets in the study area. However, the current gaps in the pedestrian system along 29th Street do not allow pedestrians in Cornelius, north of the 3F line, to access the Tualatin Valley Highway. No marked pedestrian crossings are currently provided on Tualatin Valley Highway.

Sidewalks have not been fully inventoried in the recently expanded UGB areas, but observations using available aerial photography indicate that very few sidewalks are available in these areas.



Figure 2: Existing Pedestrian Facility Inventory



Bicycle Facilities

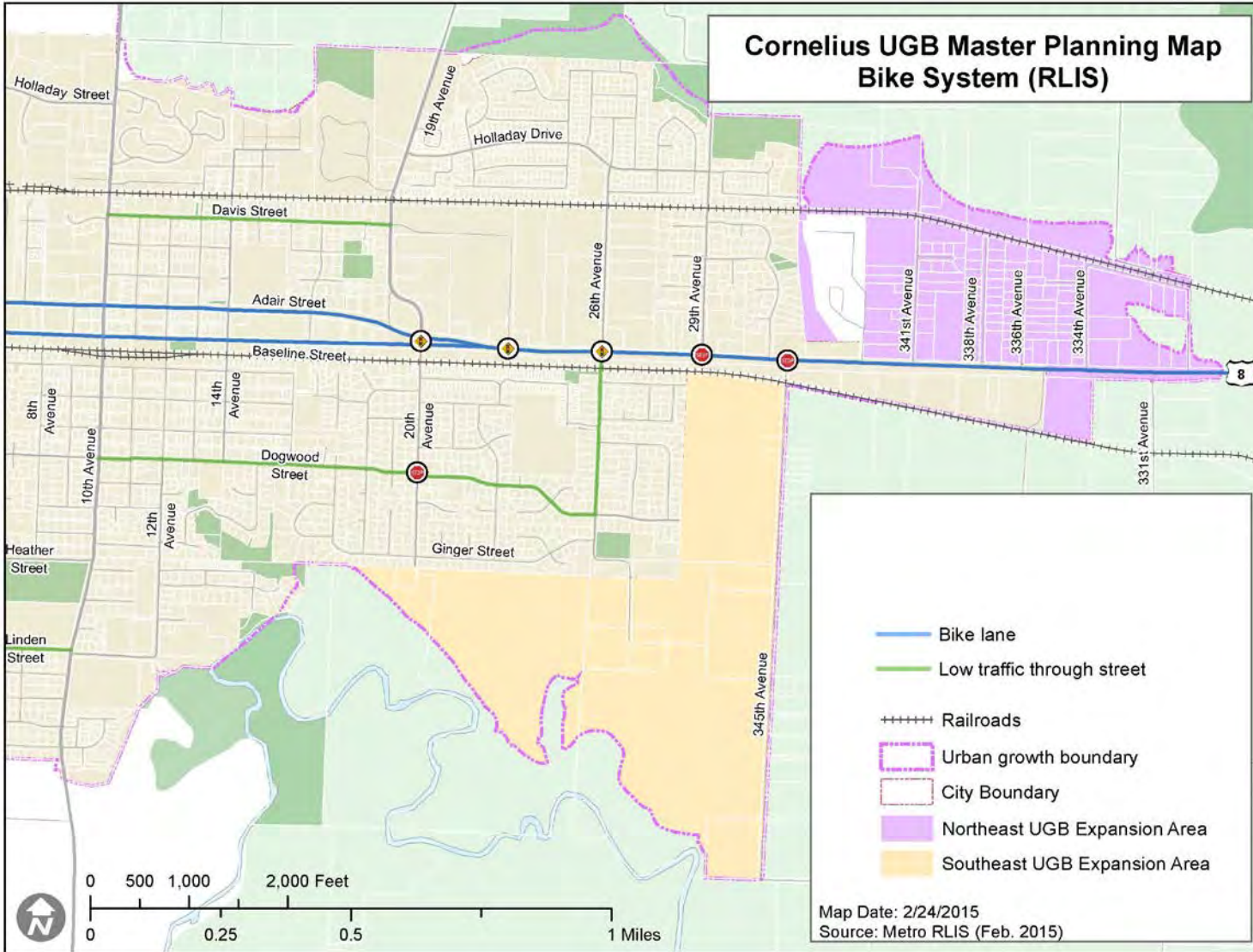
Metro's existing bicycle designations are identified in Figure 3. There are designated bicycle lanes on Tualatin Valley Highway through the study area. Dogwood Street, between 20th Avenue and 26th Avenue, and 26th Avenue, between Dogwood Avenue and Tualatin Valley Highway are designated by Metro as "low traffic through streets". In addition, field review indicates that bicycle facilities are also provided on the following roadways:

- 20th Avenue between Tualatin Valley Highway and north Walgreen's Access (west side) and North Davis Street (east side)
- 20th Avenue between Tualatin Valley Highway and South Alpine Street
- 29th Avenue between Tualatin Valley Highway and approximately 500 feet north of Tualatin Valley Highway

No other key study area roads have bike lanes. However, most local streets in the area serve relatively low traffic volumes, which are appropriate for shared use by bicycles and motor vehicles.



Figure 3: Existing Bicycle Facility Inventory



Public Transit

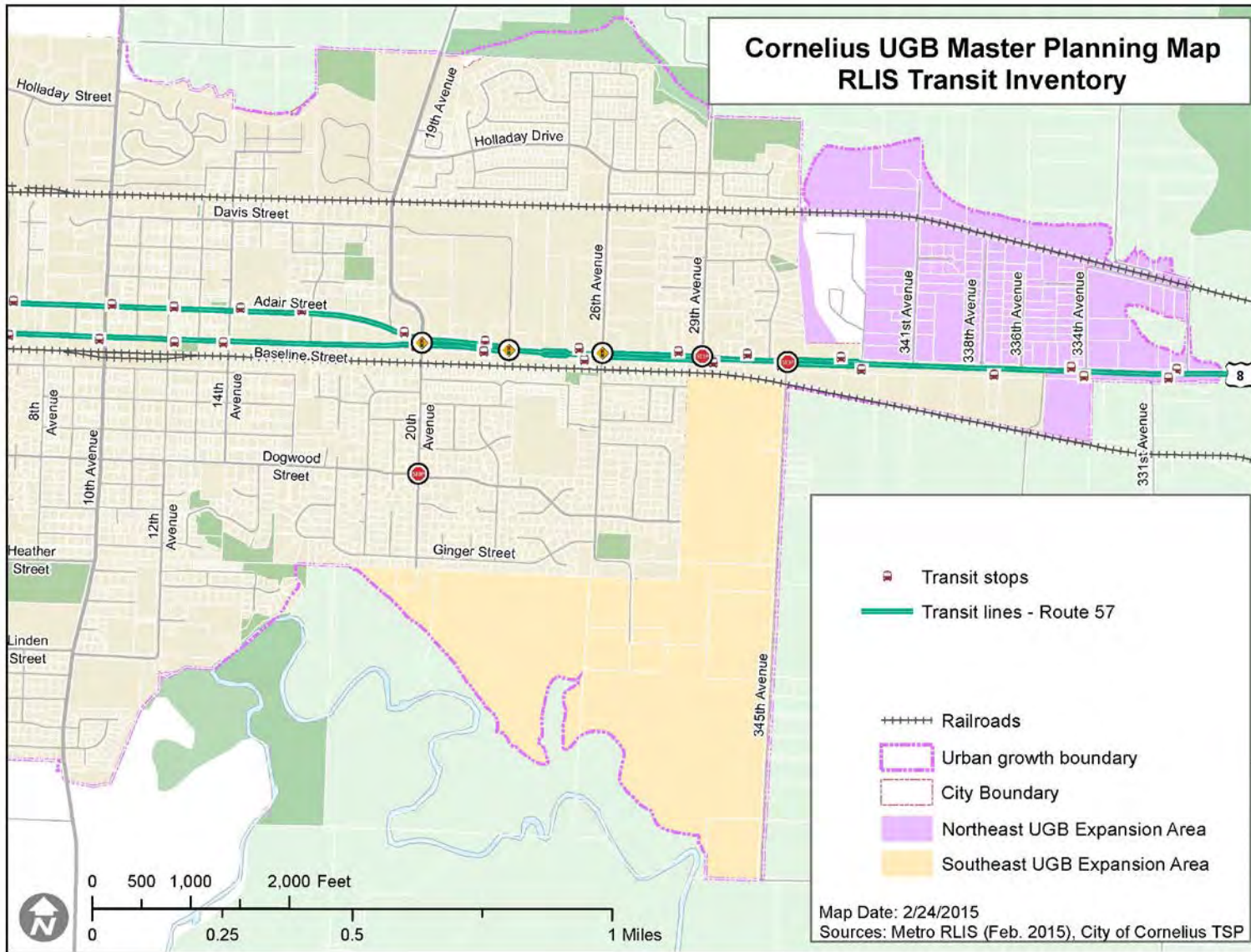
TriMet is the regional transit provider for the Portland metro area and operates one bus route within Cornelius, #57 – TV Highway/Forest Grove which provides frequent service with 15-minute headways daily. Within the study area, between North 20th Avenue and 331st Avenue, there are currently eight scheduled transit stops westbound and nine stops eastbound. Existing transit facilities are shown in Figure 4. Bus shelters and bus turn-outs are provided at several of the stops in the study area. The stop locations and daily ridership are summarized in Table 1 below.

Table 1: TriMet Route #57 Stop Locations on Tualatin Valley Highway (Weekday Ridership)

Stop Location	Direction	Stop ID	On	Off	Total
N Adair and N 20 th Avenue	Westbound	34	21	47	68
West of Fred Meyer Driveway	Westbound	28	47	76	123
West of 26 th Avenue	Westbound	284	7	43	50
West of 29 th Avenue	Westbound	286	8	23	31
West of 31 st Avenue	Westbound	287	2	9	11
West of East Lane	Westbound	298	3	16	19
West of 334 th Avenue	Westbound	292	3	7	10
East of 331 st Avenue	Westbound	290	2	3	5
Total Route 57 (within Study Area)	Westbound		93	224	317
West of 331 st Avenue	Eastbound	291	3	2	5
Baseline and S 20 th Avenue	Eastbound	277	76	36	112
West of Fred Meyer Driveway	Eastbound	267	56	25	81
West of 26 th Avenue	Eastbound	263	45	13	58
East of 29 th Avenue	Eastbound	285	18	6	24
West of 345 th Avenue	Eastbound	300	11	3	14
East of East Lane	Eastbound	256	8	2	10
East of 338 th Avenue	Eastbound	297	3	2	5
West of 334 th Avenue	Eastbound	293	4	2	6
Total Route 57 (within Study Area)	Eastbound		224	91	315



Figure 4: Existing Transit Facility Inventory





Motor Vehicle Facilities

Field inventories were conducted to determine characteristics of roadways within the study area. Data collected included posted speed limits, roadway lanes, lane configurations, and intersection controls. These characteristics define corridor capacity and operating speeds through the street system, which affect travel path choices for drivers in the study area. The summary of study area roadway characteristics is listed in Table 2.

Table 2: Existing Key Study Area Roadway Characteristics

Roadway	City or County Functional Classification	Posted Speed Limit (mph)	Number of Lanes	Lane Width (ft)	Shoulder Width (ft)
Tualatin Valley Highway west of 345 th Avenue	Arterial ¹	40	4/5	12	0-6
Tualatin Valley Highway east of 345 th Avenue	Arterial ²	50	4/5	12	0-6
N 20 th Avenue	Arterial	30	2	12	6
S 20 th Avenue	Collector	25	2	12	0-6
Dogwood Street	Collector	25	2	16	0-1.5
Fred Meyer Driveway	Local Road	Not Posted	2	12	0
26 th Avenue	Collector	25	2	12	1.5
29 th Avenue	Collector	25	2	12	0-6
345 th Avenue	Local Road	25	2	12	0-1.5
341 st Avenue	Local Road	25	2	9	0-1
338 th Avenue	Local Road	25	2	14	0-1
336 th Avenue	Local Road	25	2	10	0-1
334 th Avenue	Local Road	25	2	10	0-1

¹ Tualatin Valley Highway (State Highway Route 029) is classified by ODOT as a Statewide Highway, on the National Highway System (NHS), on the National Network (NN – Federally Designated Truck Route) and RRR (Reduction Review Route).

² *ibid*



The key routes through the area are Tualatin Valley Highway and 20th Avenue, which are classified as arterials by the Cornelius Transportation System Plan. Tualatin Valley Highway is classified by ODOT as a Statewide Highway. In addition to the City's standards and guidelines, ODOT's standards and design guidelines would apply to Tualatin Valley Highway. South 20th Avenue, Dogwood Street, 26th Avenue and North 29th Avenue are classified as collectors.

Transportations Opportunities and Constraints

The most significant constraints in the recently expanded UGB area are the railroad tracks just north and south of Tualatin Valley Highway. These provide significant constraints on north-south access through the area.

There is a site owned by the Hillsboro School District just south of Tualatin Valley Highway between SW 345th Avenue and the existing neighborhoods to the west. The logical extension of Dogwood Street into the recently expanded UGB area would bisect this site. Depending on the future use of the site, this may be acceptable (depending on whether an elementary and middle school or a high school is developed). If the school district determines that the land should be used for a high school, an analysis must be undertaken to see if Dogwood Street can be incorporated into the site. Dogwood Street may need to be aligned through the property as far to the south as possible.

Turns from all side streets onto Tualatin Valley Highway are difficult due to the high traffic volume and relatively high speeds on Tualatin Valley Highway. For safety purposes, raised medians in targeted locations may need to be considered, restricting turns from side streets to right-in/right-out only. While these access restrictions would be inconvenient for those using the side streets, they would help prevent crashes related to vehicles turning left or crossing the highway.

Access spacing requirements constrain the potential locations for north-south connections through the UGB expansion area.

TRANSPORTATION STANDARDS

The following sections describe the transportation standards for the street network serving the study area, including access spacing and mobility.

Access Management Standards

Proper roadway access spacing is important to maintain operating characteristics and safety. While all parcels are allowed access, it is desired that access to parcels along major roadways be limited to side streets or consolidated. When roadway access points are located too frequently along a roadway, safety and roadway capacity are diminished. Access management practices can help roadways operate more efficiently and include closure, consolidation, or relocation of accesses. It is best to incorporate appropriate access spacing practices upon initial development or redevelopment to limit the amount of management required in the future. Access management standards vary depending on posted speed on the roadway. Access spacing standards for study area roadways are identified in Table 3.

Table 3: Access Management Standards

Facility (by Agency)	Minimum Access Spacing	Maximum Access Spacing
ODOT^a		
- Tualatin Valley Highway (40 mph)	800 feet	-
- Tualatin Valley Highway (50 mph)	1,100 feet	-
City of Cornelius^b		
- Arterial	530 feet	-
- Collector	100 feet	530 feet
- Neighborhood/Local	-	530 feet
- All Roads	Require an access report for new access points stating that the driveway/roadway is safe as designed meeting adequate stacking, sight distance and deceleration requirements as set by ODOT, Washington County and AASHTO.	

^aSource: 1999 Oregon Highway Plan, Appendix D – Highway Classification by Milepoint and Appendix C Revisions to Address Senate Bill 264 (2011). Table 14: Access Management Spacing Standards for Statewide Highways with Annual Average Daily Traffic (AADT) of More than 5,000 Vehicles, Urban Areas, Posted Speed 40-50 mph.

^bSource: Cornelius Transportation System Plan Update, Table 8-2



Mobility Standards

Consideration of intersection operations is important to ensure mobility needs of the transportation system are being met. The performance standard for intersections controlled by the City of Cornelius is Level of Service (LOS) D during the PM peak hour of the day.³ The performance standard for intersections controlled by ODOT is based on the functional classification of the facility. For Tualatin Valley Highway, the performance standard is a maximum v/c ratio of 0.99 for both the first and second peak hour.⁴

EXISTING TRAFFIC CONDITIONS

The following sections summarize the current conditions for traffic volumes, study intersection operations, and collision data assessment.

Existing Motor Vehicle Volumes

The existing intersections within the study area were selected for focused analysis in order to address areas of concern along major roadways and to monitor impacts of potential build-out within the recent UGB expansion. Intersection turn movement counts were conducted during the weekday PM peak hour (4:00 to 6:00 p.m.) at the study area intersections⁵. These counts were adjusted to reflect design hour volumes (30th Highest Hour - 30 HV) based on ODOT's methodology.⁶ The count data was then used as a basis for evaluating traffic performance at the study intersections for existing PM peak hour conditions. The existing PM peak hour traffic volumes at study intersections are shown in Figure 5.

³ Page 10-12, Cornelius Transportation System Plan Update, June, 2005. Note: a lesser standard may be accepted for local street approaches or driveway access points, if these intersections are found to operate safely.

⁴ Oregon Highway Plan, Policy 1F Revisions: Adopted 12/21/11, Table 7: Volume to Capacity Ratio Targets within Portland Metropolitan Region, Corridors.

⁵ Traffic counts conducted on Wednesday, February 18, 2015, 4-6 PM, by Quality Counts.

⁶ Analysis Procedures Manual, Version 2, Oregon Department of Transportation, Last Update: December, 2014.

Existing Intersection Operations

The PM peak hour intersection volumes were used to determine the existing study intersection operating conditions based on the 2000 Highway Capacity Manual⁷ (HCM) methodology for signalized and the 2010 Highway Capacity Manual (HCM) methodology for unsignalized intersections. The results of this analysis are listed in Table 4 for the PM peak hour. The intersection performance measures of effectiveness (MOEs) for the applicable agency are also provided in Table 4. As listed, each of the study intersections meets its respective mobility standard during the PM peak hour.

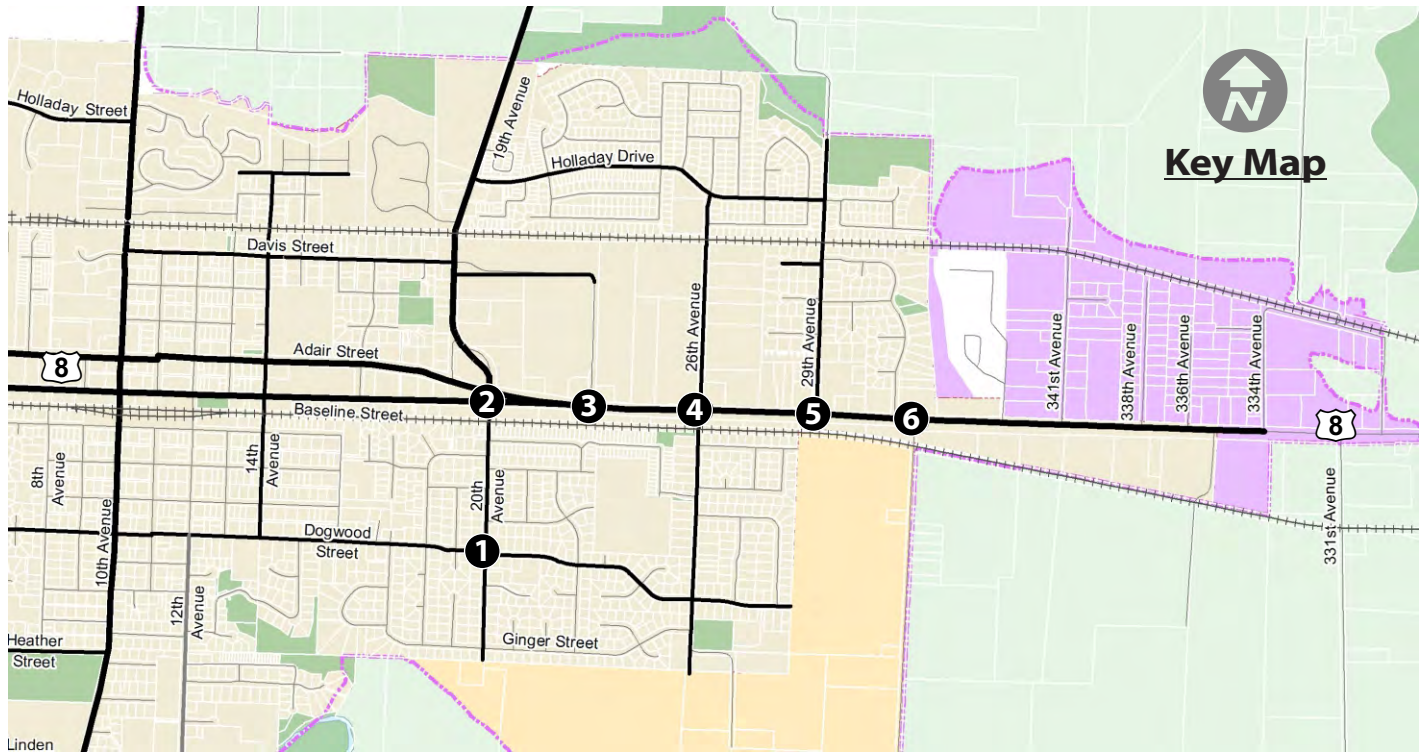
Table 4: Existing 2015 Intersection Performance (PM Peak Hour)

Signalized Intersections	Delay (sec)	LOS	V/C	MOEs	
				Agency	Standard
20 th Avenue/Tualatin Valley Highway	61.8	E	0.67	ODOT	v/c ≤ 0.99
Fred Meyer/Tualatin Valley Highway	15.3	B	0.73	ODOT	v/c ≤ 0.99
26 th Avenue/Tualatin Valley Highway	16.5	B	0.73	ODOT	v/c ≤ 0.99
Unsignalized Intersections	LOS	Major Street V/C	Minor Street V/C	Agency	Standard
29 th Avenue/Tualatin Valley Highway	-	0.17	0.41	ODOT	v/c ≤ 0.99
345 th Avenue/Tualatin Valley Highway	-	0.04	0.38	ODOT	v/c ≤ 0.99
S 20 th Avenue/Dogwood Street	A/B	-	-	City	LOS D

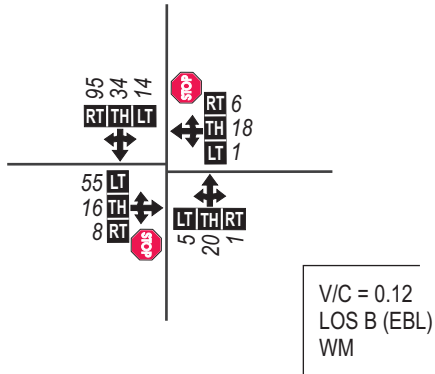
Signalized Intersection:
 Delay = Average Intersection Delay (sec.)
 LOS = Level of Service
 V/C = Volume-to-Capacity Ratio
 Shaded values do not meet standards

Unsignalized Intersection:
 LOS = Major Street LOS/Minor Street LOS
 V/C = Volume-to-Capacity Ratio

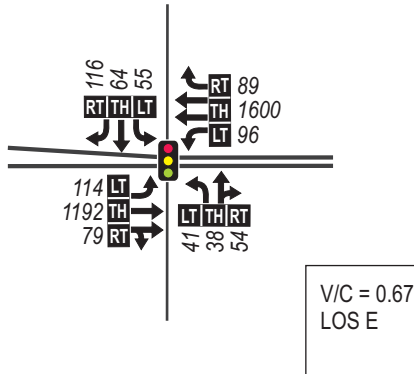
⁷ 2000 Highway Capacity Manual, Transportation Research Board, Washington DC, 2000 and 2010 Highway Capacity Manual, Transportation Research Board, Washington DC, 2010.



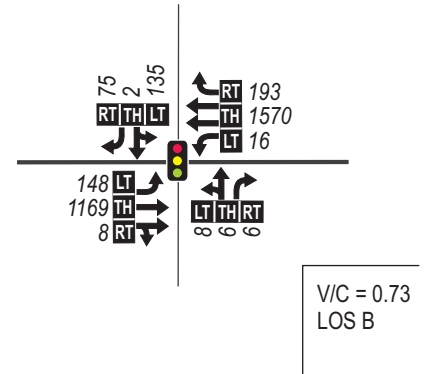
1. Dogwood St. @ 20th Ave.



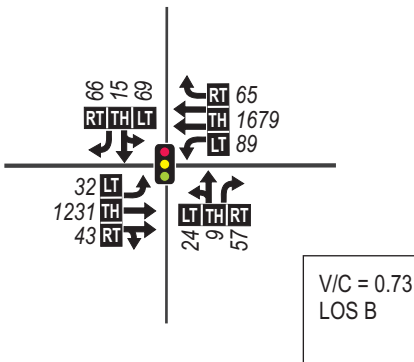
2. OR 8 (Adair St./Baseline St.) @ 20th Ave.



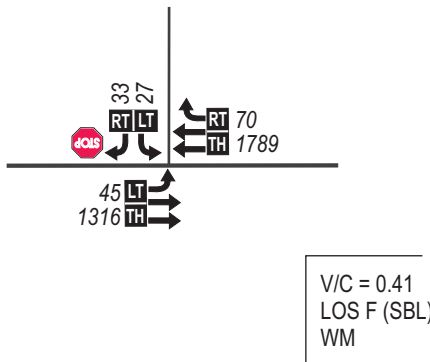
3. OR 8 (Adair St./Baseline St.) @ Fred Meyer Dwy.



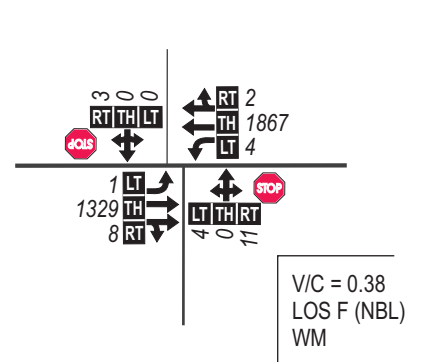
4. OR 8 (Adair St./Baseline St.) @ 26th Ave.



5. OR 8 (Adair St./Baseline St.) @ 29th Ave.



6. OR 8 (Adair St./Baseline St.) @ 345th Ave.



LEGEND

- # - Study Intersection
- STOP - Stop Sign
- Traffic Signal
- ← - Lane Configuration
- 000 - PM Peak Hour Traffic Volume
- LT|TH|RT - Volume Turn Movement
Left•Thru•Right

DKS

Figure 5

2015 EXISTING 30HV TRAFFIC VOLUMES

Safety Assessment

Crash data for the most recent three year period (2011 – 2013) were obtained from ODOT for the calculation of crash rates for study area intersections, as shown in Table 5. Crash rates were calculated as the number of crashes per million entering vehicles (MEV), based on the number of crashes and the annual average total entering volume. ODOT does not have an intersection crash rate standard. Crash rates over 1.0 crashes per MEV should be flagged for further investigation. All of the study intersection had crash rates of less than 1.0 crashes per MEV.

Table 5: Study Intersection Crash Rates (2011 – 2013)

Intersection	Crashes per Year				Crash Rate
	2011	2012	2013	Total	
Tualatin Valley Highway/20 th Avenue	5	4	8	17	0.46
Tualatin Valley Highway/Fred Meyer Driveway	1	1	0	2	0.06
Tualatin Valley Highway/26 th Avenue	2	7	8	17	0.48
Tualatin Valley Highway/ 29 th Avenue	1	3	1	5	0.15
Tualatin Valley Highway/345 th Avenue	2	1	3	6	0.18
South 20 th Avenue/Dogwood Street	0	0	0	0	0.00

ODOT has a Safety Priority Index System (SPIS) that it uses for the identification and analysis of locations on the state highway system with potential safety needs. Each year, the system is used to produce a list of sites within each ODOT Region that are ranked within the top 5th or 10th percentiles of all SPIS locations statewide. The SPIS score is based on three years of crash data and reflects crash frequency, crash rate, and crash severity. There are no top 5th or 10th percentile ODOT SPIS locations (2010 – 2012) in the study area.

Washington County also maintains a SPIS list as a screening tool to identify potentially hazardous intersections. The SPIS score is based on three years of crash data for the County roadway system and reflects crash frequency, crash rate, and crash severity. There are no Washington County SPIS locations (2010 – 2012) in the study area.

TRANSPORTATION SYSTEM IMPACTS

The potential transportation system impacts of the Cornelius UGB expansion areas are summarized in the following sections. The future conditions evaluation includes an overview of the Transportation Planning Rule, future land use, forecasting methodology, summary of planned roadway improvements, and study area motor vehicle intersection capacity analysis with the UGB expansion in place.

Transportation Planning Rule (TPR) Overview

The Transportation Planning Rule⁸ requires that, where an amendment to a comprehensive plan or zoning regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures that assure that allowed land uses are consistent with the function, capacity, and performance standards of the facility. The recent Cornelius UGB expansion proposes an amendment to the comprehensive plan map. Therefore, the proposed map changes must comply with the TPR.

The traffic analysis required by the TPR measures impacts by estimating the change in vehicle trips on the transportation system resulting from a comprehensive plan or zoning amendment. Generally, the analysis procedure estimates the transportation system's performance under a proposed comprehensive plan/zoning designation reasonable worst-case scenario. If the proposed scenario is found to not have significant transportation system impacts (e.g., fewer estimated vehicle trips generated than under existing comprehensive plan designation or insignificant offsite impacts from additional vehicle trips), no mitigation measures are required. If significant transportation system impacts are found, any improvements needed to maintain adequate operations will be identified for incorporation in the city's Transportation System Plan (TSP).

⁸ Oregon Department of Land Conservation and Development, Transportation Planning Rule, Oregon Administrative Rules Chapter 660, Division 12, as amended September 2012.

Future Land Use

Land use is a key factor in developing a functional transportation system. The amount of land that is planned to be developed, the type of land uses, and how the land uses are mixed together have a direct relationship to the expected demands on the transportation system. Understanding the amount and type of land use is critical to maintaining or enhancing transportation system operations.

The UGB for the Portland metropolitan area was expanded in 2014 by about 345 acres east of Cornelius to accommodate future growth. This land is currently under several Washington County land use districts including Rural Residential, Agriculture and Forest and Future Development. Through this planning effort, the land will be converted to City of Cornelius urban Comprehensive Plan designations. Preliminary designations were developed based on input from city staff and the community. The proposed designations were assessed to determine the amount of buildable land and household and employment growth that could result in each of the expansion areas under a reasonable worst-case condition. The reasonable worst case includes consideration of maximum potential build-out under allowed zoning given topographic, environmental, and likely market constraints.

Under the proposed comprehensive plan designations for the UGB expansion area, a compatible zoning designation was applied to conduct the transportation impact analysis. Each of these zoning designations was assessed to determine a reasonable worst-case level of development. Household estimates were based on zoning density requirements while employee estimates were based on employment density data for similar uses. The estimated growth in households and employees for each expansion area are shown in Table 6.

Table 6: UGB Expansion Area Land Use Forecasts

Expansion Area	Comprehensive Plan Designation	Zoning for Reasonable Worst Case Development	New Household Growth (Worst Case – Existing)	New Employee Growth (Worst Case – Existing)
SE Area	Commercial	A-2	1,754	50
	Low Density Residential	R-7	240	0
NE Area	Low Density Residential	R-7	412	0
	Low Density Residential	R-10	54	0
	Commercial	C-2	0	90
	Medium Density Residential	MHP	14	0

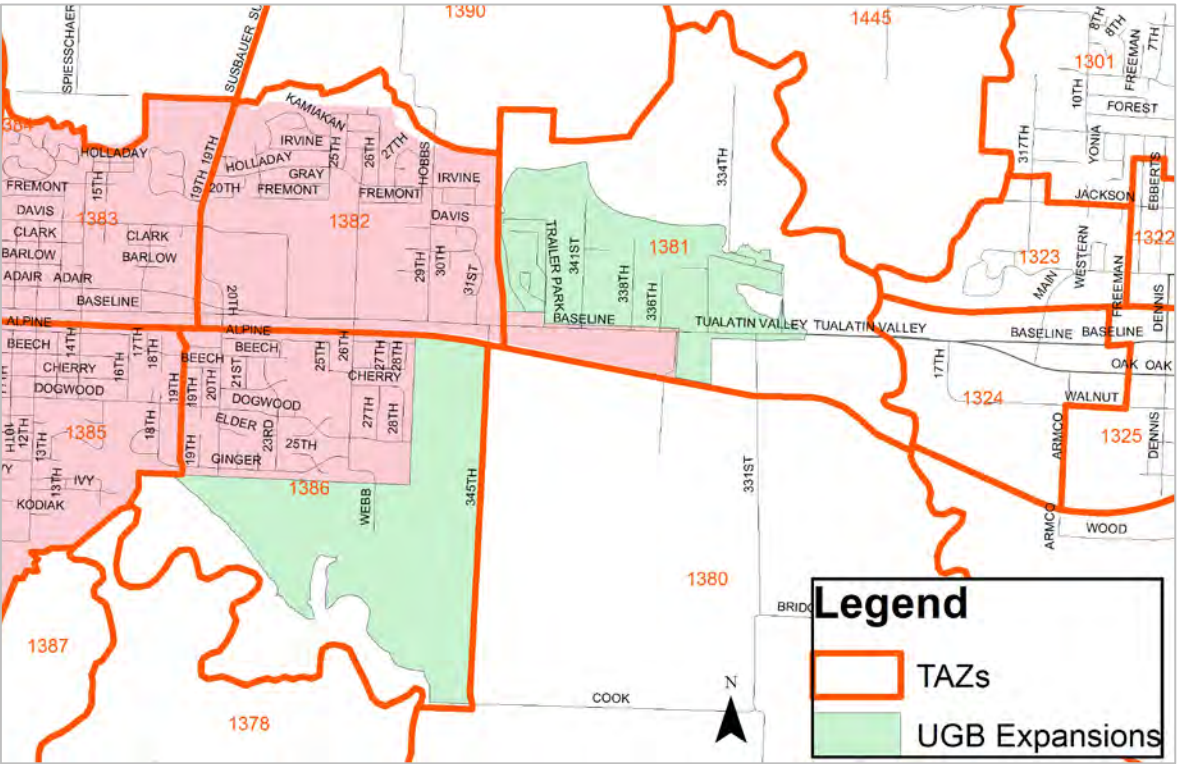
Forecasting Methodology

A determination of future street network needs requires the ability to accurately forecast travel demand resulting from estimates of future population and employment for the Cornelius UGB expansion area, and the rest of the City and Metro region. The objective of the transportation planning process is to provide the information necessary for making decisions about how and where improvements should be made to create a safe and efficient transportation system that provides travel options.

The travel demand forecasting process generally involves estimating travel patterns for new development based on the decisions and preferences demonstrated by existing residents, employers and institutions around the region. Travel demand models are mathematical tools that help us understand future commuter, school and recreational travel patterns including information about the length, mode and time of day a trip will be made.

Transportation Analysis Zone (TAZ) household and employee allocations from the current Metro 2040 planning horizon year reflect the assumption that the two UGB expansion areas would see significant development by 2040. Each of the two expansion areas is contained within a single TAZ, as shown in Figure 6 below. The two TAZs, 1386 (southeast area) and 1381 (northeast area), also include areas currently within the UGB (pink) and areas outside of the proposed UGB expansion area (white).

Figure 6: UGB Expansion Area TAZs



The land uses allocated in the Metro 2040 model TAZs are significantly different from what is estimated under a reasonable worst case buildout for the proposed comprehensive plan designations (shown in Table 6). Table 7 shows the difference in household and employee totals for the two TAZs, and includes development in the expansion areas, as well as development within the current UGB and in the rural area for each TAZ. Note Metro base year land use data at the TAZ level is confidential, therefore only changes to the TAZ land uses can be reported.

Vehicle trips that would be generated by the Cornelius UGB expansion were estimated by applying the Metro 2040 model trip generation rates by land use type. The future 2040 PM peak hour trip table in the Metro 2040 model was modified to reflect the reasonable worst-case land use under proposed comprehensive plan. In the case of the southeast expansion area, the trips were factored up based on a regression analysis of model land use and trip generation in the far west Metro area. Similarly, trips were factored down in the northeast expansion area. Overall, the Cornelius UGB expansion is expected to generate about the same number of PM peak hour trips as forecasted in the 2040 Metro model. The difference in the number of trips generated by each TAZ between the 2040 Metro model and the proposed UGB expansion is shown in Table 7.

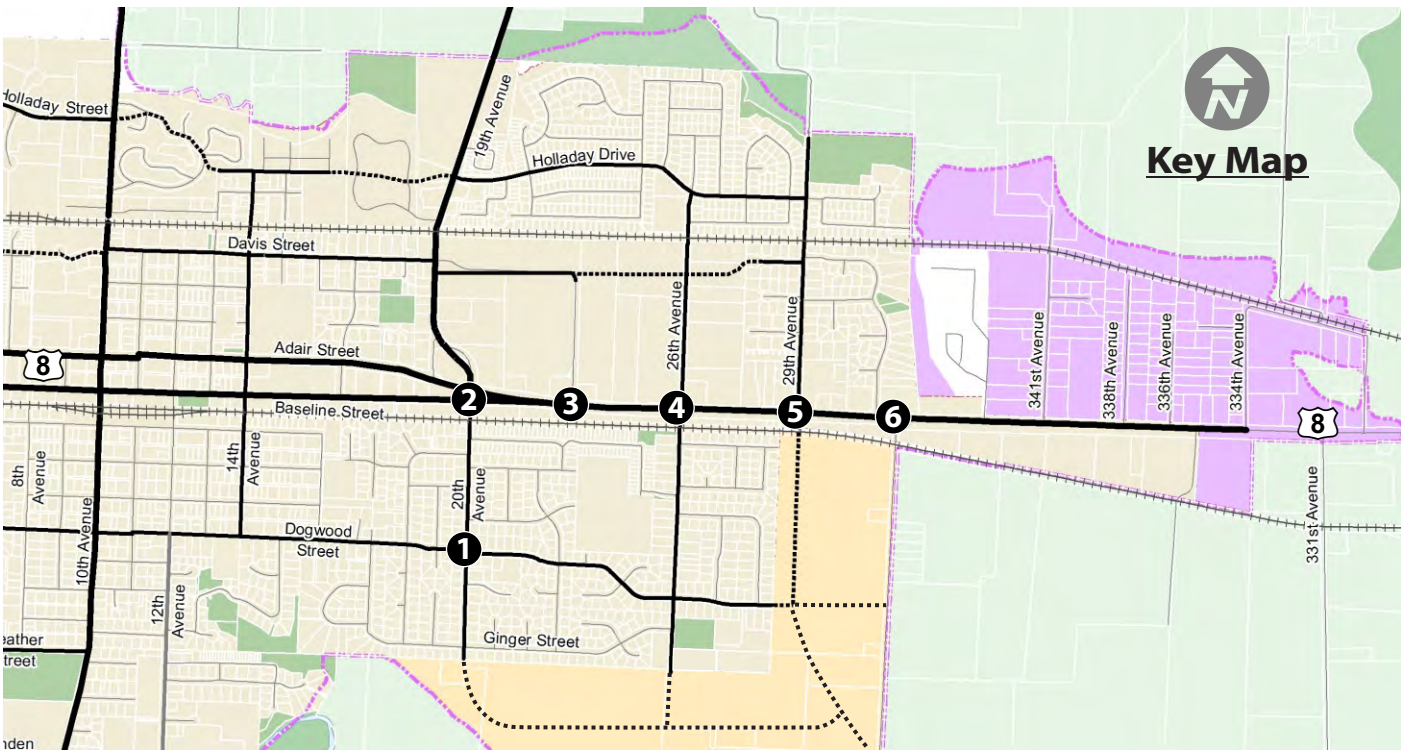
Table 7: Changes in 2040 Land Use and PM Peak Hour Trips (Proposed minus Metro Model)

TAZ	Households	Employees	Inbound Trips	Outbound Trips	Total Trips
1386 (SE Area)	+ 593	- 159	+ 186	+ 46	+ 232
1381 (NE Area)	- 193	- 313	- 128	- 148	- 266

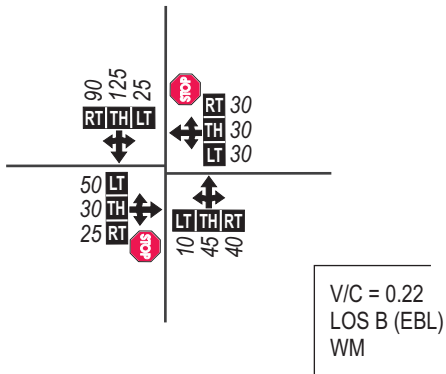
The 2040 Metro model was refined with new and relocated model link connectors to better represent the loading of trips for TAZ 1386 (southeast area) and 1381 (northeast area) to the regional network. A new 2040 trip assignment was run in the refined model using the modified trip table and the planned roadway improvements listed in the next section. The modified trip table reflected the estimated land use forecasts for each expansion area shown in Table 6.

A post processing technique following NCHRP 255 methodology⁹ was used to refine model growth forecasts to the traffic volume forecasts used for 2040 intersection analysis. These volumes were then used to analyze and determine future impacts from the proposed UGB expansion areas on the future roadway network. Future 2040 volume forecasts at the study intersections are shown in Figure 7.

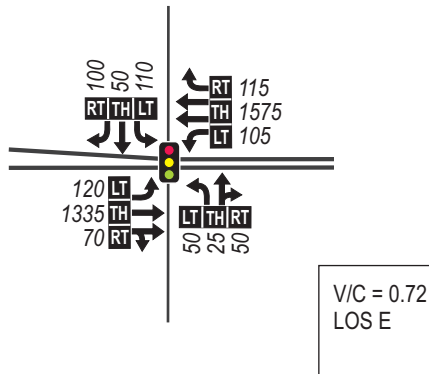
⁸ Highway Traffic Data for Urbanized Area Project Planning and Design – National Cooperative Highway Research Program Report 255, Transportation Research Board, Washington DC, 1982.



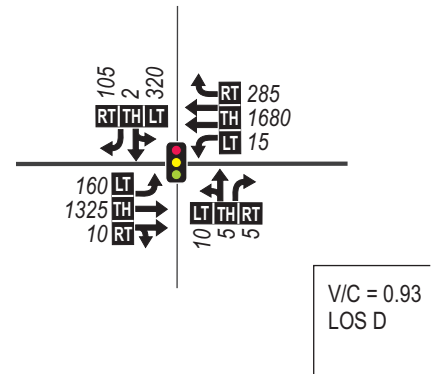
1. Dogwood St. @ 20th Ave.



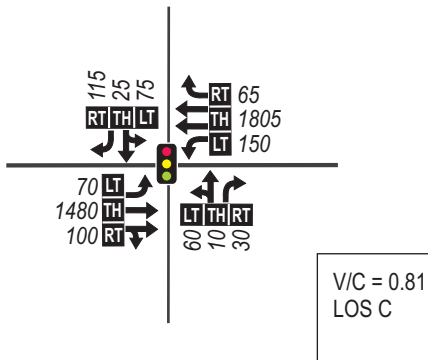
2. OR 8 (Adair St./Baseline St.) @ 20th Ave.



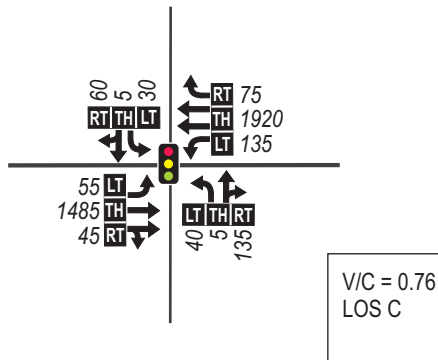
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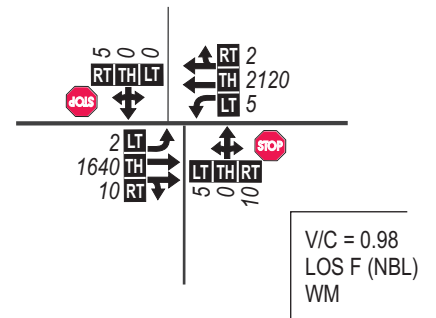
4. OR 8 (Adair St./Baseline St.) @ 26th Ave.



5. OR 8 (Adair St./Baseline St.) @ 29th Ave.



6. OR 8 (Adair St./Baseline St.) @ 345th Ave.



LEGEND

- # - Study Intersection
- STOP - Stop Sign
- Traffic Signal
- ← - Lane Configuration
- 000 - PM Peak Hour Traffic Volume
- LT/TH/RT - Volume Turn Movement
Left•Thru•Right

V/C - Volume-to-Capacity Ratio
LOS - Level of Service
WM - Worst Movement

DKS

Figure 7

**2040 FUTURE 30HV
TRAFFIC VOLUMES**

Planned Study Area Roadway Improvements

The Metro 2040 RTP and Cornelius TSP¹⁰ include several future roadway improvements with reasonable funding sources within or near the UGB expansion area. The planned improvements reflected in the 2040 travel demand model that affect the 2040 traffic forecasts and intersection operations analysis include:

- Davis Street extension from 19th Avenue to 29th Avenue (RTP #10799)
- Holladay Street extension from 10th Avenue to 19th Avenue (RTP #10796 and #10797)
- Evergreen Road widening to 5 lanes between Glencoe Road and 25th Avenue (RTP #10836)
- Glencoe Road widening to 3 lanes between Evergreen Road and Jackson Avenue (RTP #10591)
- New traffic signal at the 29th Avenue/Tualatin Valley Highway intersection (RTP #10802)
- Extension of 29th Avenue south of Tualatin Valley Highway, realigns to 345th Avenue south of Dogwood Street (TSP)
- Close 345th Avenue railroad crossing and construction new railroad crossing on 29th Avenue extension south of Tualatin Valley Highway (TSP)

The Evergreen Road and Glencoe Road widening projects combined with the Holladay Street extension add vehicle capacity to the future network and appear to attract trips to the Cory Street – Hornecker Road – Susbauer east-west route between Hillsboro and Cornelius. This alternative route lowers the east-west volume growth on Tualatin Valley Highway through the study area.

¹⁰ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005.



Future Intersection Operations

A capacity analysis of study area intersections was completed for 2040 with the proposed UGB expansion area development. The results of the capacity analysis are listed in Table 7, which indicates that all study intersections would meet standards. The 345th Avenue/Tualatin Valley Highway intersection would operate with a v/c ratio of 0.98 for the northbound left turn movement. Planned improvements include the closure of the 345th Avenue railroad crossing south of Tualatin Valley Highway. With this improvement, the traffic volumes on the south leg are expected to remain low and not trigger the need for capacity improvements. Other unsignalized side street approaches to TV Highway within the study area would have traffic operations similar to 345th Avenue. The intersection performance measures of effectiveness (MOEs) for the applicable agency are also provided in Table 7.

Table 7: Future 2040 Performance (PM Peak Hour) with Reasonable Worst Case UGB Land Use

Signalized Intersections	Delay (sec)	LOS	V/C	MOEs	
				Agency	Standard
20 th Avenue/Tualatin Valley Highway	63.2	E	0.72	ODOT	v/c ≤ 0.99
Fred Meyer/Tualatin Valley Highway	38.5	D	0.93	ODOT	v/c ≤ 0.99
26 th Avenue/Tualatin Valley Highway	20.2	C	0.81	ODOT	v/c ≤ 0.99
29 th Avenue/Tualatin Valley Highway	24.7	C	0.76	ODOT	v/c ≤ 0.99
Unsignalized Intersections	LOS	Major Street V/C	Minor Street V/C	Agency	Standard
345 th Avenue/Tualatin Valley Highway	-	0.01	0.98	ODOT	v/c ≤ 0.99
S 20 th Avenue/Dogwood Street	A/B	-	-	City	LOS D

Signalized Intersection:
 Delay = Average Intersection Delay (sec.)
 LOS = Level of Service
 V/C = Volume-to-Capacity Ratio
 Shaded values do not meet standards

Unsignalized Intersection:
 LOS = Major Street LOS/Minor Street LOS
 V/C = Volume-to-Capacity Ratio

Trip Generation Sensitivity Assessment - NE Area Commercial

To better understand the potential traffic impacts of future development in the northeast area commercial designation (6-acre parcel shown in Figure 8), a trip generation sensitivity assessment was conducted. An alternative trip generation estimate was calculated using Institute of Transportation Engineers (ITE) methodology¹¹ based on reasonable worst case development scenario of C-2 zoning that assumes a new supermarket and a fast food restaurant with a drive-through window. Trip generation calculations for the ITE estimate approach are shown in Table 8.

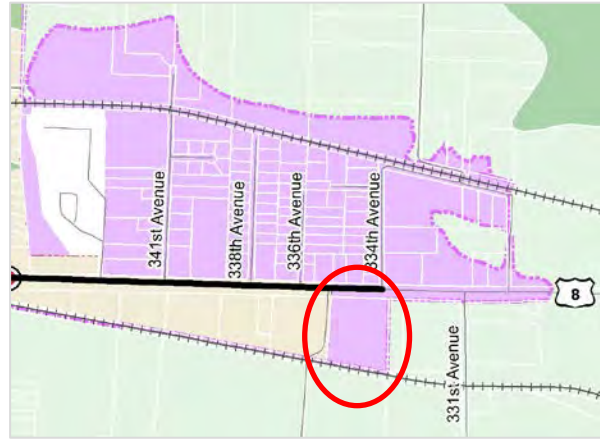


Figure 8: NE Area Commercial Designation

Table 8: ITE Trip Generation Calculations for PM Peak Hour of Adjacent Street Traffic

Land Use	Building Area (Sq Ft)	Total Trips	Pass-By Trips	Diverted Linked Trips	Total Primary Trips
Supermarket (ITE code 850)	57,000	540	194 (36%)	205 (38%)	141
Fast Food w/ Drive-Through (ITE code 934)	3,000	98	49 (50%)	20 (20%)	29
Total	60,000	638	143	225	170

In order to evaluate potential impacts at the nearest study intersections along the Tualatin Valley Highway, pass-by trips and diverted linked trips were subtracted to estimate total primary trips. Pass-by trips and diverted linked trips are trips that affect turning movement volumes at the commercial site’s access, but do not affect overall trip growth at adjacent intersections along the highway. This resulted in 170 new trips (141 generated by the supermarket and 29 generated by the restaurant) that would not otherwise occur on the system. Our comparison of the ITE trip generation approach to the 2040 Metro model trip generation is shown in Table 9.

¹¹ Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012.



Table 9: Comparison of Methodology for PM Peak Hour Trip Rates for NE Area Commercial Parcel

Methodology	Building Area (Sq Ft)	Retail Employees	Total Trips	Inbound Trips	Outbound Trips
Metro Model Trip Totals	60,000	90 ¹	134	54	80
ITE Trip Totals	60,000 ²	-	170	87	83
Additional ITE Trips			+36	+33	+3

¹ Future 2040 Metro model trip rates are based on number of employees. Building area estimate assumed 1.5 retail employees per 1,000 SF.

² ITE trip rates used in this analysis are based on building square footage.

The ITE trip generation approach for the commercial parcel results in 33 additional inbound trips and 3 additional outbound trips compared to the Metro model approach. These additional trips were evaluated at the nearest intersection to the west and to the east of the commercial parcel along the Tualatin Valley Highway. Trip assignment onto Tualatin Valley Highway (rounded to nearest 5 vehicles) was based on the proportion of eastbound and westbound volumes forecasted in the 2040 PM peak hour, resulting in 15 additional eastbound trips through the 29th Avenue/Tualatin Valley Highway intersection and 20 additional westbound trips through the 334th Avenue/Tualatin Valley Highway intersection. Outbound trip generation difference was insignificant and therefore not evaluated. Future intersection performance under each trip generation approach is shown in Table 10.

Table 10: Future 2040 Intersection Performance (PM Peak Hour) Comparison: Metro Model vs. ITE

29 th Avenue/Tualatin Valley Highway (Signalized)	Delay (sec)	LOS	V/C	MOEs	
				Agency	Standard
Metro Model trip generation	24.7	C	0.76	ODOT	v/c ≤ 0.99
ITE trip generation	24.7	C	0.76	ODOT	v/c ≤ 0.99
334 th Avenue/Tualatin Valley Highway (Unsignalized)	LOS	Major Street V/C	Minor Street V/C	Agency	Standard
Metro Model trip generation	C/F	0.08	0.78	ODOT	v/c ≤ 0.99
ITE trip generation	C/F	0.08	0.80	ODOT	v/c ≤ 0.99

Signalized Intersection:

Delay = Average Intersection Delay (sec.)

LOS = Level of Service

V/C = Volume-to-Capacity Ratio

Shaded values do not meet standards

Unsignalized Intersection:

LOS = Major Street LOS/Minor Street LOS

V/C = Volume-to-Capacity Ratio

Future operations with the ITE approach showed no impact to operations at 29th Avenue/Tualatin Valley Highway compared to the forecast based on the Metro regional travel demand model. This is because the additional trips estimated by the ITE approach were inbound trips to the commercial site traveling eastbound through the intersection. Since the eastbound through was not a critical movement, the 15 new trips did not affect the delay or volume-to-capacity calculations for the overall intersection.

At the 334th Avenue/Tualatin Valley Highway intersection, future operations with the ITE approach showed minimal impact to operations. The addition of 20 eastbound trips to Tualatin Valley Highway slightly increased the 334th Avenue southbound volume-to-capacity ratio from 0.78 to 0.80 which is well within agency mobility targets.

The trip generation sensitivity assessment found no traffic impacts triggered by future commercial development in the northeast area along Tualatin Valley Highway. Due to the estimated high level of trip generation from the commercial development (up to 638 PM peak hour trips as shown in Table 8), there may be localized traffic impacts at the development access on Tualatin Valley Highway. Potential mitigations may include the addition of a traffic signal and/or access management strategies depending on the size, land use and layout of future development.

SE AREA DEVELOPMENT PHASING ASSESSMENT

An assessment of future traffic volumes on the collector street connections to the SE area was conducted to determine if phased buildout of the UGB expansion area would be desirable to manage potential volume impacts. In general, both 20th Avenue and 26th Avenue are two-lane facilities with urban improvements (curb, sidewalk and street lighting), fronting single-family driveways and low use on-street parking. Based on these roadway characteristics, setting a desirable maximum volume of 500 vehicles per hour would support neighborhood livability goals. Hourly traffic volumes outside the morning and evening commute hours would be considerably lower.

With the planned local street network complete and three connections to Tualatin Valley Highway, the estimated PM peak hour traffic volumes on 20th, 26th and 29th Avenue would each be well below the 500 vehicle per hour goal. However, portions of the southeast expansion area could develop prior to construction of the 29th Avenue extension, increasing traffic demand on 20th and 26th Avenue. To achieve livability goals, development connecting to 20th Avenue should be limited to 130 residential units and development connecting to 26th Avenue should be limited to 260 residential units prior to construction of the 29th Avenue connection to Tualatin Valley Highway. If development constructs a roadway connection within the southeast area between 20th and 26th Avenue, then a combined development limit of 390 residential units could be applied.

ROADWAY AND TRAIL CROSS-SECTIONS

The collector facility cross-sections were updated for the southeast expansion area to reduce right-of-way requirements and encourage active transportation by providing comfortable, low-stress routes while still accommodating the needs of motor vehicles. The recommended collector cross-sections, shown in Figures 9 to 11, were developed in coordination with the City of Cornelius. There are three options for on-street parking; parking both sides, parking one side and no parking. Cyclists would share the travel lane with vehicles which is acceptable for low volume and low speed facilities (typically less than 5,000 vehicles per day and 25 miles per hour). The appropriate collector cross-section will be selected by the City during the development phase based on criteria such as fronting land use, estimated parking demand, topography, and environmental constraints.

Figure 9: Collector Cross-section with Parking Both Sides

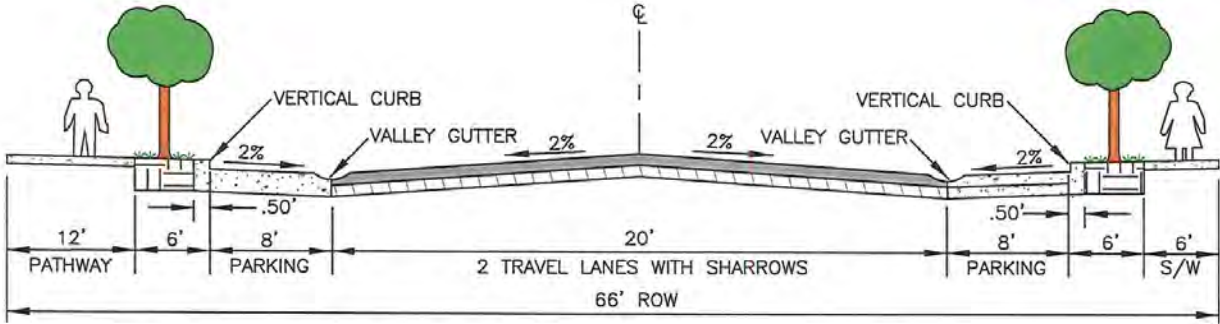


Figure 10: Collector Cross-section with Parking One Side

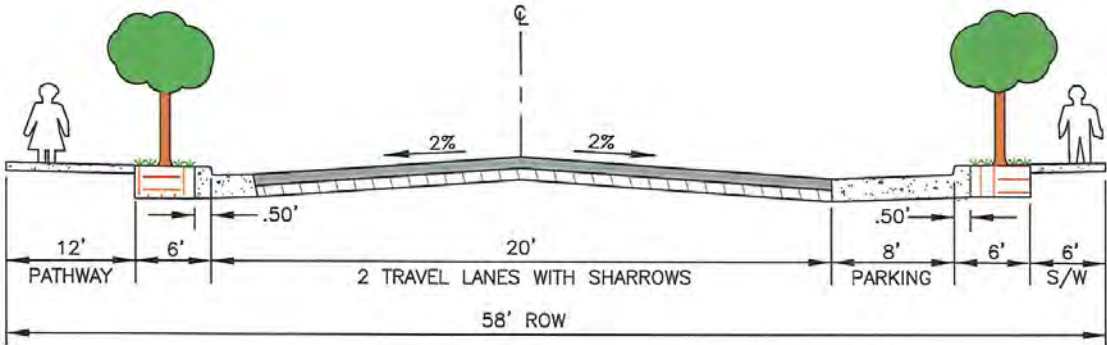
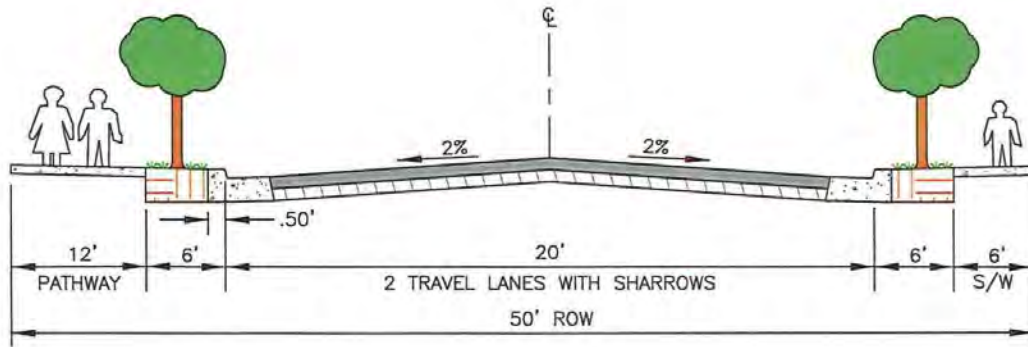
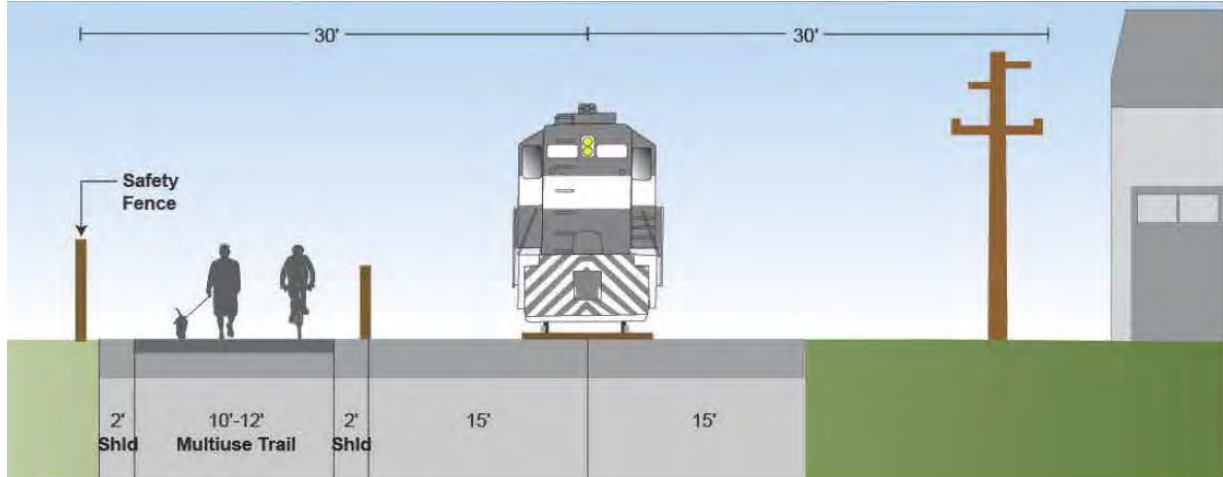


Figure 11: Collector Cross-section with No Parking



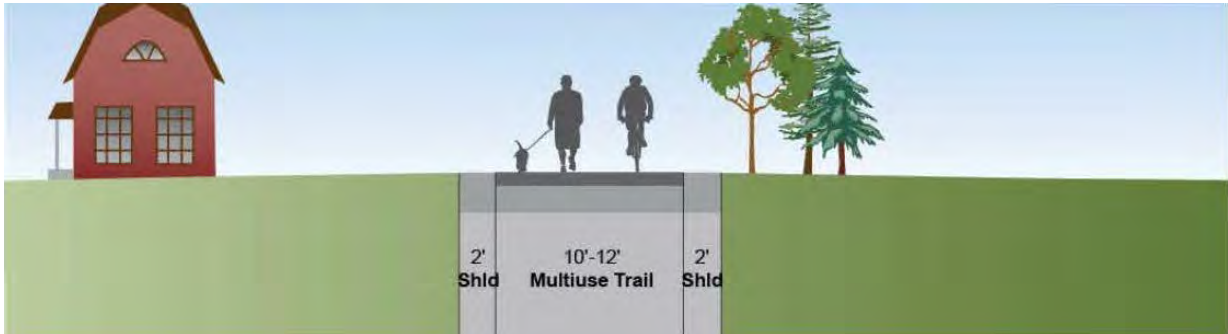
The planned Council Creek Trail¹² has two alignment concepts and trail types through the northeast expansion area; a multiuse rail-with-trail following the existing rail corridor and a multiuse trail following the south side of Council Creek. The Council Creek Trail cross-sections applicable to the UGB northeast expansion area are shown in Figures 12 and 13.

Figure 12: Council Creek Trail Rail-With-Trail Concept for NE Area



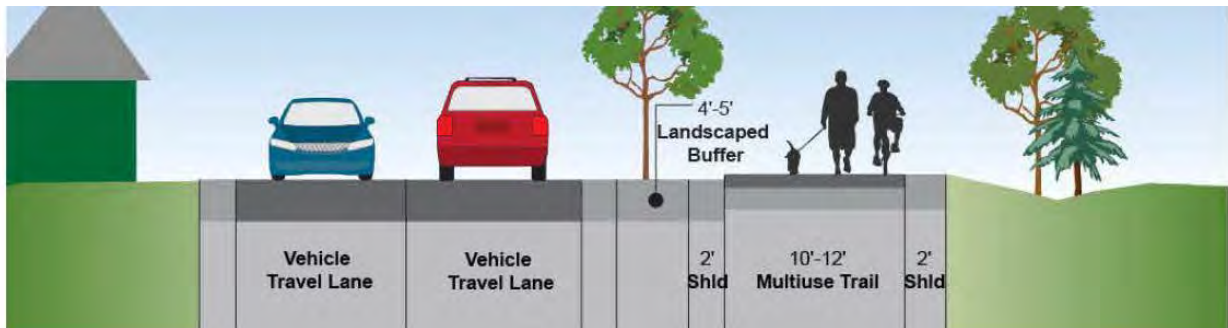
¹² Council Creek Regional Trail Master Plan, Report No. 3 Implementation Strategy, Parametrix, December 2014, Trail Alternatives Segments 4 and 5.

Figure 13: Council Creek Trail Multi-use Trail Concept for NE Area



The southeast expansion area has a single alignment concept with several trail types; on-street treatments (sidewalks and bike lanes) on 29th Avenue between Tualatin Valley Highway and railroad crossing then transition to a buffered multi-use trail to the south through UGB expansion area. The Council Creek Trail cross-section applicable to the southeast expansion area is shown in Figure 14. The trail facility in this cross-section is consistent with the collector cross-sections shown previously.

Figure 14: Council Creek Trail Multi-use Trail – Urban Street Adjacent Concept for SE Area



RECOMMENDATIONS

Transportation Planning Rule Findings

The traffic analysis completed for the proposed Cornelius UGB expansion areas found the potential vehicle trip increase would not significantly impact the surrounding transportation system and would satisfy the requirements of OAR 660-012-0060. No capacity improvements to existing facilities beyond those identified in the RTP and Cornelius TSP are required to support the UGB expansion areas. Further analysis of Tualatin Valley Highway west of 345th Avenue should be included in the upcoming Cornelius TSP update to identify specific projects to serve fronting property needs for access, capacity and safety.

Local Improvements

Local roadway projects would be required to support the UGB expansion areas and provide adequate access and internal circulation. Based on the City’s functional classification designations¹³ and the future 2040 PM peak hour volume forecasts, recommended local improvements were identified as shown in Table 11. Planning level cost estimates were developed for each roadway project based on the collector cross-section with parking on both sides of the street (shown in Figure 9). If the collector facilities were constructed with a narrower cross-section (shown in Figures 10 and 11) the costs would be lower.

Table 11: Local Improvements to Support UGB Expansion

Project	Description	Planning Level Cost Estimate
20 th Avenue Extension	Construct a collector facility south of Ginger Street then east to 29 th Avenue extension	\$7,450,000
26 th Avenue Extension	Construct a collector facility south of Ginger Street to the 20 th Avenue extension east-west alignment	\$1,300,000
29 th Avenue Extension	Construct a collector facility south of Tualatin Valley Highway to realignment with 345 th Avenue, install railroad crossing treatments on 29 th Avenue, close railroad crossing on 345 th Avenue	\$6,800,000

¹³ Cornelius Transportation System Plan, DKS Associates, adopted June 20, 2005, Figure 8-3.



Dogwood Street Extension	Construct a collector facility east to 345 th Avenue (east UGB expansion area boundary)	\$1,600,000
29 th Avenue/Tualatin Valley Highway Signal	Install a traffic signal, interconnect with adjacent railroad crossing	\$600,000

Note: Collector facility cost estimate based on Figure 9 cross-section

The remaining roadways needed to support future development would function as local streets. The preliminary alignment for the recommended collector facilities are shown on Figure 7. These alignments are conceptual and will be refined with further engineering analysis prior to construction.

Policies and Standards

New policies and standards should be adopted to support the UGB expansion areas:

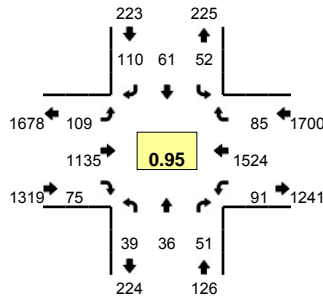
- Development should be limited to 130 residential units connecting to 20th Avenue and 260 residential units connecting to 26th Avenue prior to construction of the 29th Avenue connection to Tualatin Valley Highway. With a roadway connection between 20th and 26th Avenue, a combined development limit of 390 residential units should be applied.
- Roadway and trail cross-sections shown in Figures 9 to 14 should be incorporated into the Cornelius TSP.

TECHNICAL APPENDIX

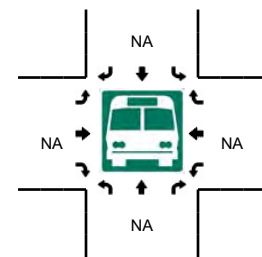
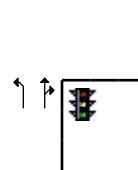
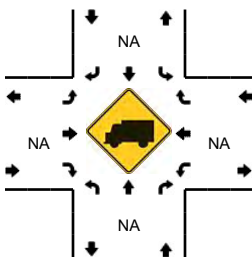
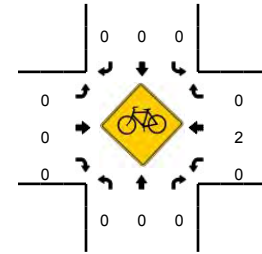
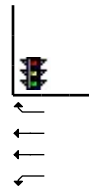
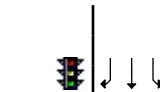
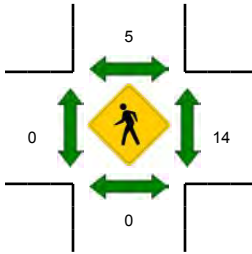
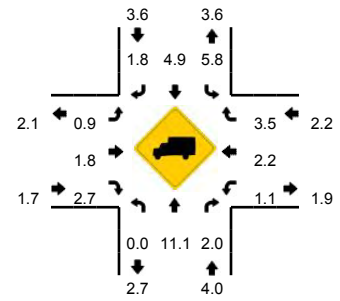
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CITY/STATE: Cornelius, OR

QC JOB #: 13208301
DATE: Wed, Feb 18 2015



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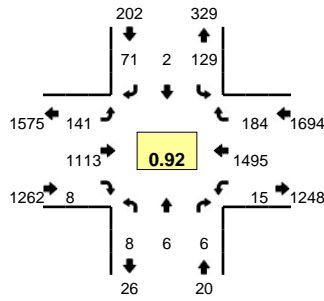


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Pedestrians						12								8			20	
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Railroad																		
Stopped Buses																		

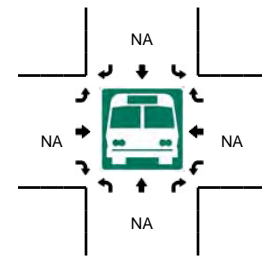
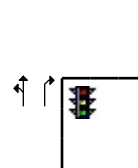
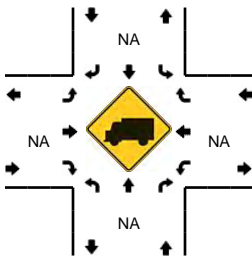
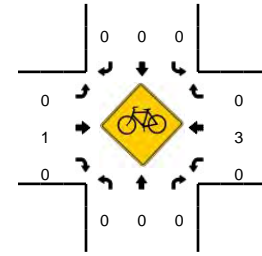
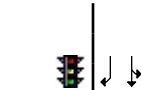
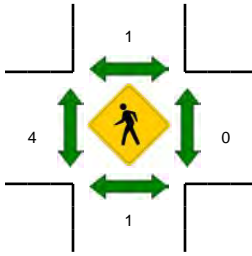
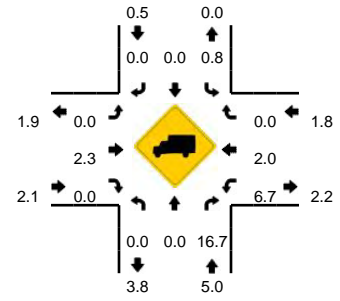
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CITY/STATE: Cornelius, OR

QC JOB #: 13208302
DATE: Wed, Feb 18 2015



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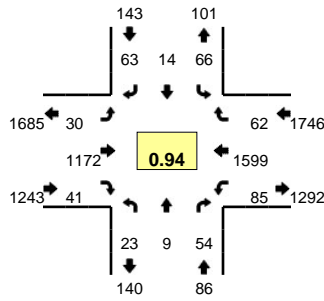


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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
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Heavy Trucks	0	0	0	0	4	0	0	0	0	40	0	0	0	44	0	0	88	
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Railroad																		
Stopped Buses																		

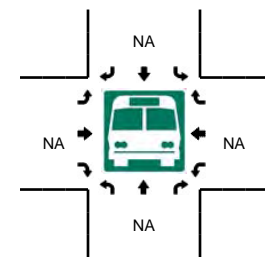
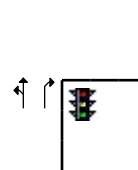
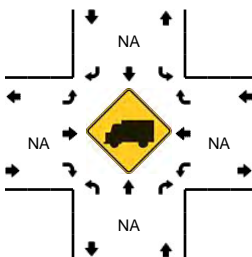
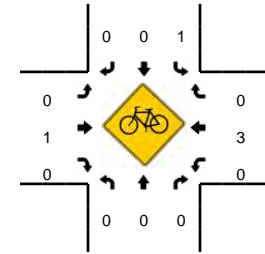
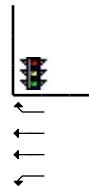
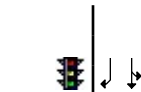
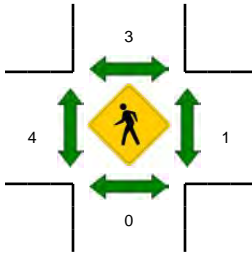
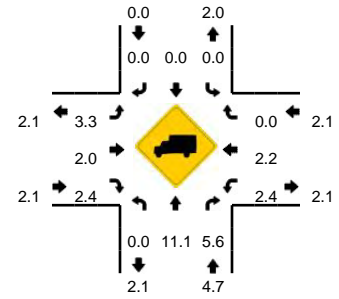
Comments:

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QC JOB #: 13208303
DATE: Wed, Feb 18 2015



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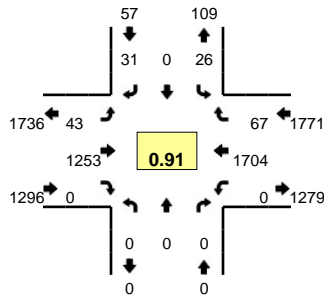


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4:05 PM	1	0	4	0	2	0	6	0	3	80	2	0	5	139	6	0	248	
4:10 PM	1	0	3	0	7	0	5	0	7	105	2	0	6	100	4	0	240	
4:15 PM	2	0	3	0	6	0	7	0	3	89	2	0	4	117	8	0	241	
4:20 PM	1	0	3	0	9	0	5	0	5	75	7	0	6	120	2	0	233	
4:25 PM	1	1	2	0	1	0	4	0	7	87	2	0	7	104	6	0	222	
4:30 PM	1	1	1	0	16	3	11	0	3	75	1	0	9	127	4	0	252	
4:35 PM	3	0	7	0	7	4	14	0	2	104	4	0	3	143	6	0	297	
4:40 PM	2	2	9	0	9	2	10	0	6	100	5	0	6	117	5	0	273	
4:45 PM	1	0	3	0	5	1	4	0	0	122	2	0	11	127	8	0	284	
4:50 PM	3	2	3	0	8	1	1	0	0	71	2	0	5	133	2	0	231	
4:55 PM	2	0	2	0	3	0	2	0	5	97	7	0	7	115	8	0	248	2982
5:00 PM	3	1	1	0	5	2	3	0	1	88	6	0	8	132	3	0	253	3022
5:05 PM	0	0	9	0	1	1	6	0	1	97	3	0	10	131	5	0	264	3038
5:10 PM	5	2	4	0	1	0	1	0	1	103	5	0	7	126	2	0	257	3055
5:15 PM	1	1	5	0	5	0	0	0	2	116	2	0	6	173	7	0	318	3132
5:20 PM	1	0	4	0	5	0	5	0	6	92	2	0	9	134	4	0	262	3161
5:25 PM	1	0	6	0	1	0	6	0	3	107	2	0	4	141	8	0	279	3218
5:30 PM	3	2	3	0	3	0	5	0	5	63	3	0	7	116	7	0	217	3183
5:35 PM	4	1	1	0	6	0	1	0	0	74	5	0	9	86	0	0	187	3073
5:40 PM	0	0	5	0	2	1	3	0	4	82	3	0	12	121	3	0	236	3036
5:45 PM	2	0	8	0	2	0	2	0	4	93	5	0	8	122	8	0	254	3006
5:50 PM	1	1	2	0	2	0	3	0	3	78	5	0	10	122	4	0	231	3006
5:55 PM	0	0	2	0	4	0	3	0	3	98	2	0	14	99	0	0	225	2983
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	4	60	0	44	0	44	0	44	1260	24	0	76	1792	76	0	3436	
Heavy Trucks	0	0	4		0	0	0		4	40	0		0	48	0		96	
Pedestrians							4			4				0			8	
Bicycles							0			1	0			0	0	0	1	
Railroad																		
Stopped Buses																		

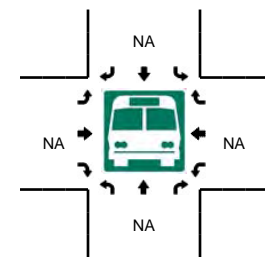
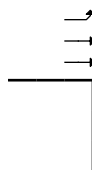
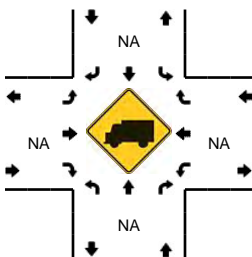
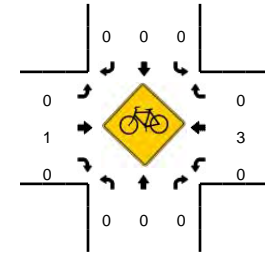
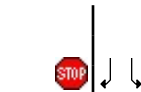
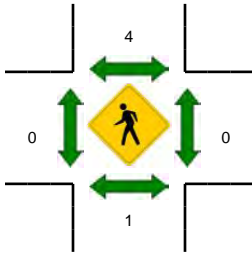
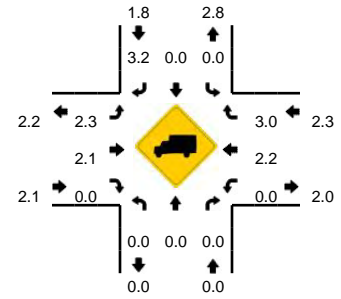
Comments:

LOCATION: N 29th Ave -- OR 8
CITY/STATE: Cornelius, OR

QC JOB #: 13208304
DATE: Wed, Feb 18 2015



Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

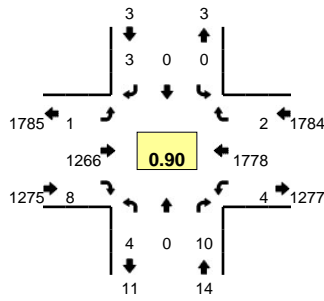


5-Min Count Period Beginning At	N 29th Ave (Northbound)				N 29th Ave (Southbound)				OR 8 (Eastbound)				OR 8 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	3	0	2	0	5	85	0	0	0	90	9	0	194	
4:05 PM	0	0	0	0	3	0	7	0	2	79	0	0	0	140	2	0	233	
4:10 PM	0	0	0	0	3	0	1	0	2	119	0	0	0	111	3	0	239	
4:15 PM	0	0	0	0	0	0	3	0	2	91	0	0	0	128	2	0	226	
4:20 PM	0	0	0	0	2	0	1	0	3	90	0	0	0	131	7	0	234	
4:25 PM	0	0	0	0	1	0	0	0	1	83	0	0	0	116	5	0	206	
4:30 PM	0	0	0	0	5	0	2	0	4	97	0	0	0	144	5	0	257	
4:35 PM	0	0	0	0	1	0	2	0	3	108	0	0	0	141	6	0	261	
4:40 PM	0	0	0	0	2	0	3	0	1	122	0	0	0	133	4	0	265	
4:45 PM	0	0	0	0	2	0	0	0	5	123	0	0	0	140	7	0	277	
4:50 PM	0	0	0	0	2	0	5	0	3	86	0	0	0	133	6	0	235	
4:55 PM	0	0	0	0	2	0	1	0	5	98	0	0	0	126	2	0	234	2861
5:00 PM	0	0	0	0	2	0	4	0	3	89	0	0	0	136	5	0	239	2906
5:05 PM	0	0	0	0	1	0	2	0	4	92	0	0	0	148	8	0	255	2928
5:10 PM	0	0	0	0	4	0	1	0	3	112	0	0	0	139	7	0	266	2955
5:15 PM	0	0	0	0	0	0	4	0	4	122	0	1	0	188	6	0	325	3054
5:20 PM	0	0	0	0	4	0	3	0	4	97	0	0	0	157	3	0	268	3088
5:25 PM	0	0	0	0	1	0	4	0	3	107	0	0	0	119	8	0	242	3124
5:30 PM	0	0	0	0	1	0	1	0	2	70	0	0	0	130	3	0	207	3074
5:35 PM	0	0	0	0	4	0	1	0	5	77	0	1	0	98	3	0	189	3002
5:40 PM	0	0	0	0	3	0	1	0	2	86	0	0	0	136	8	0	236	2973
5:45 PM	0	0	0	0	2	0	2	0	1	99	0	0	0	139	3	0	246	2942
5:50 PM	0	0	0	0	3	0	1	0	1	87	0	0	0	129	9	0	230	2937
5:55 PM	0	0	0	0	2	0	2	0	3	98	0	0	0	103	5	0	213	2916
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	32	0	32	0	44	1324	0	4	0	1936	64	0	3436	
Heavy Trucks	0	0	0	0	0	0	0	0	4	44	0	0	0	64	0	0	112	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

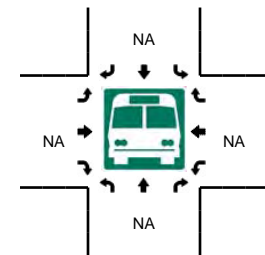
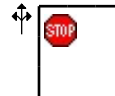
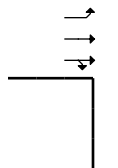
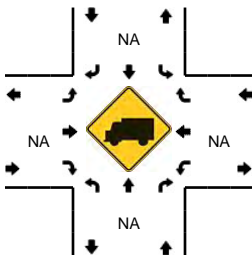
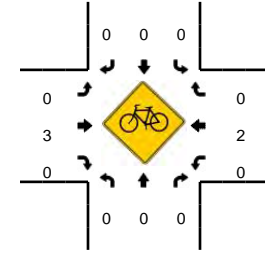
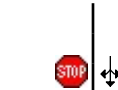
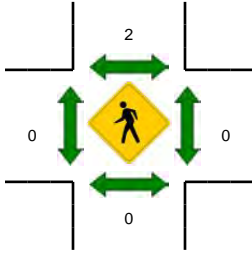
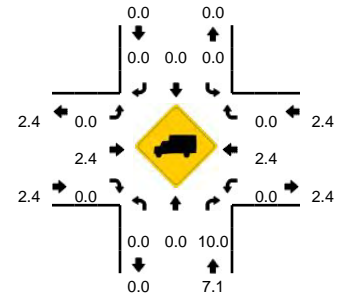
Comments:

LOCATION: SW 345th Ave -- OR 8
CITY/STATE: Cornelius, OR

QC JOB #: 13208305
DATE: Wed, Feb 18 2015



Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

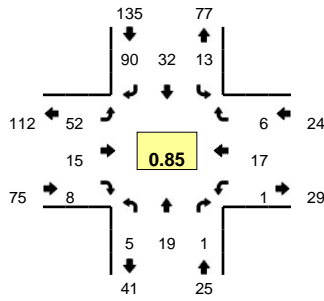


5-Min Count Period Beginning At	SW 345th Ave (Northbound)				SW 345th Ave (Southbound)				OR 8 (Eastbound)				OR 8 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	0	2	0	0	0	0	0	0	96	0	0	0	101	0	0	201	
4:05 PM	0	0	0	0	0	0	1	0	0	85	0	0	1	151	1	0	239	
4:10 PM	0	0	0	0	0	0	0	0	0	125	0	0	0	110	1	0	236	
4:15 PM	0	0	0	0	0	0	3	0	0	87	0	0	0	125	0	0	215	
4:20 PM	1	0	0	0	0	0	0	0	0	98	0	0	0	139	0	0	238	
4:25 PM	0	0	1	0	0	0	0	0	0	75	2	0	0	127	0	0	205	
4:30 PM	0	0	0	0	0	0	0	0	0	102	2	0	0	150	0	0	254	
4:35 PM	1	0	1	0	0	0	0	0	0	108	1	0	0	152	1	0	264	
4:40 PM	1	0	2	0	0	0	0	0	1	121	0	0	0	134	1	0	260	
4:45 PM	0	0	3	0	0	0	3	0	0	121	0	0	0	143	0	0	270	
4:50 PM	0	0	0	0	0	0	0	0	0	92	0	0	0	146	0	1	239	
4:55 PM	0	0	0	0	0	0	0	0	0	95	2	0	0	125	0	0	222	2843
5:00 PM	1	0	1	0	0	0	0	0	0	99	0	0	0	142	0	0	243	2885
5:05 PM	1	0	0	0	0	0	0	0	0	83	1	0	0	157	0	0	242	2888
5:10 PM	0	0	1	0	0	0	0	0	0	121	0	0	1	152	0	0	275	2927
5:15 PM	0	0	1	0	0	0	0	0	0	116	0	0	1	197	0	0	315	3027
5:20 PM	0	0	0	0	0	0	0	0	0	109	1	0	1	149	0	0	260	3049
5:25 PM	0	0	1	0	0	0	0	0	0	99	1	0	0	131	0	0	232	3076
5:30 PM	0	0	0	0	0	0	0	0	1	85	0	0	0	131	0	0	217	3039
5:35 PM	0	0	0	0	0	0	0	0	0	86	0	0	0	102	0	0	188	2963
5:40 PM	0	0	0	0	2	0	0	0	0	93	1	0	1	140	0	0	237	2940
5:45 PM	1	0	0	0	0	0	0	0	0	100	1	0	1	144	0	0	247	2917
5:50 PM	1	0	1	0	0	0	0	0	0	92	0	0	2	144	0	0	240	2918
5:55 PM	3	0	0	0	0	0	0	0	0	92	0	0	1	104	0	0	200	2896
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	8	0	0	0	0	0	0	1384	4	0	12	1992	0	0	3400	
Heavy Trucks	0	0	0	0	0	0	0	0	0	52	0	0	0	68	0	0	120	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

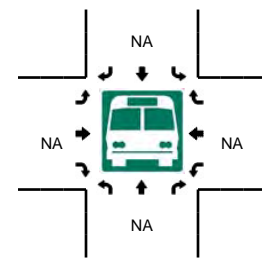
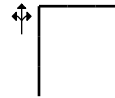
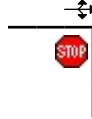
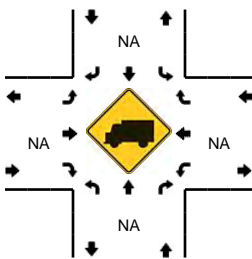
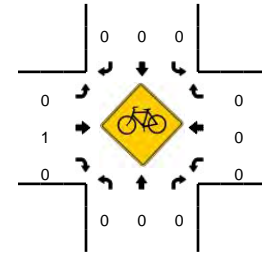
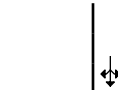
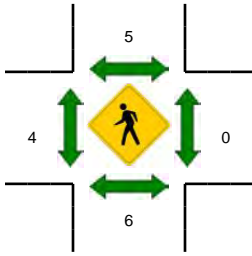
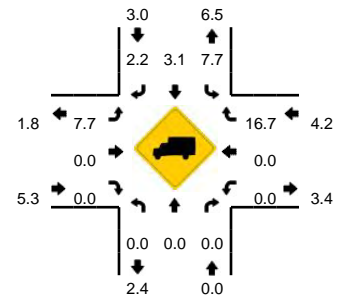
Comments:

LOCATION: S 20th Ave -- S Dogwood St
CITY/STATE: Cornelius, OR

QC JOB #: 13208306
DATE: Wed, Feb 18 2015



Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:20 PM -- 5:35 PM



5-Min Count Period Beginning At	S 20th Ave (Northbound)				S 20th Ave (Southbound)				S Dogwood St (Eastbound)				S Dogwood St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	1	0	0	3	1	9	0	4	0	0	0	0	2	0	0	20	
4:05 PM	0	0	0	0	1	2	9	0	9	0	1	0	0	1	1	0	24	
4:10 PM	1	1	0	0	0	2	9	0	5	2	1	0	0	1	2	0	24	
4:15 PM	0	2	0	0	1	5	4	0	2	2	0	0	0	2	0	0	18	
4:20 PM	1	2	0	0	3	3	9	0	2	2	0	0	0	0	1	0	23	
4:25 PM	0	1	0	0	0	2	9	0	4	3	0	0	0	1	2	0	22	
4:30 PM	0	3	0	0	2	1	8	0	5	0	0	0	0	2	0	0	21	
4:35 PM	0	1	0	0	0	3	9	0	1	0	0	0	0	1	0	0	15	
4:40 PM	1	0	0	0	3	3	9	0	5	2	1	0	0	2	0	0	26	
4:45 PM	0	2	0	0	0	2	4	0	8	1	1	0	0	1	1	0	20	
4:50 PM	1	0	0	0	1	0	6	0	6	2	0	0	0	2	0	0	18	
4:55 PM	0	2	1	0	0	3	7	0	5	0	0	0	0	1	1	0	20	251
5:00 PM	0	1	0	0	0	2	13	0	2	2	1	0	0	1	0	0	22	253
5:05 PM	0	2	0	0	0	4	9	0	2	2	0	0	0	1	0	0	20	249
5:10 PM	0	0	0	0	2	3	6	0	2	0	1	0	0	0	1	0	15	240
5:15 PM	1	3	0	0	0	2	3	0	4	1	1	0	0	2	0	0	17	239
5:20 PM	0	1	0	0	2	5	7	0	6	1	1	0	0	3	0	0	26	242
5:25 PM	1	3	0	0	0	4	6	0	4	1	0	0	1	0	2	0	22	242
5:30 PM	1	3	0	0	2	2	10	0	6	3	0	0	0	1	0	0	28	249
5:35 PM	0	2	0	0	3	2	10	0	2	0	2	0	0	3	1	0	25	259
5:40 PM	0	3	0	0	1	2	5	0	6	0	0	0	0	1	0	0	18	251
5:45 PM	0	4	0	0	3	1	8	0	3	3	0	0	0	2	1	0	25	256
5:50 PM	0	2	0	0	1	3	9	0	2	1	1	0	0	2	0	0	21	259
5:55 PM	0	3	0	0	1	2	8	0	4	0	0	0	0	0	0	0	18	257
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	28	0	0	16	44	92	0	64	20	4	0	4	16	8	0	304	
Heavy Trucks	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	8	
Pedestrians		8				0				16				0			24	
Bicycles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
Railroad																		
Stopped Buses																		

Comments:

OPERATIONS ANALYSIS

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	45	1316	1789	70	27	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	288	-	-	126	0	15
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	3	0	3
Mvmt Flow	49	1446	1966	77	30	36

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1966	0	2788
Stage 1	-	-	1966
Stage 2	-	-	822
Critical Hdwy	4.14	-	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.22	-	3.5
Pot Cap-1 Maneuver	292	-	~ 15
Stage 1	-	-	97
Stage 2	-	-	397
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	292	-	~ 12
Mov Cap-2 Maneuver	-	-	72
Stage 1	-	-	97
Stage 2	-	-	330

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	51
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	292	-	-	-	72	246
HCM Lane V/C Ratio	0.169	-	-	-	0.412	0.147
HCM Control Delay (s)	19.8	-	-	-	86.3	22.1
HCM Lane LOS	C	-	-	-	F	C
HCM 95th %tile Q(veh)	0.6	-	-	-	1.6	0.5

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	1	1329	8	4	1867	2	4	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	215	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	2	0	0	0	10
Mvmt Flow	1	1477	9	4	2074	2	4	0	12

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	2077	0	0	1486	0	0	2529	3569	743
Stage 1	-	-	-	-	-	-	1483	1483	-
Stage 2	-	-	-	-	-	-	1046	2086	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.4
Pot Cap-1 Maneuver	271	-	-	458	-	-	14	6	340
Stage 1	-	-	-	-	-	-	133	191	-
Stage 2	-	-	-	-	-	-	248	96	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	271	-	-	458	-	-	13	6	340
Mov Cap-2 Maneuver	-	-	-	-	-	-	13	6	-
Stage 1	-	-	-	-	-	-	130	187	-
Stage 2	-	-	-	-	-	-	242	95	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0	130
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	271	-	-	458	-	-	231
HCM Lane V/C Ratio	0.379	0.004	-	-	0.01	-	-	0.014
HCM Control Delay (s)	130	18.3	0.2	-	12.9	-	-	20.8
HCM Lane LOS	F	C	A	-	B	-	-	C
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	3
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	3

Major/Minor	Minor2		
Conflicting Flow All	2825	3572	1038
Stage 1	2084	2084	-
Stage 2	741	1488	-
Critical Hdwy	7.5	6.5	6.9
Critical Hdwy Stg 1	6.5	5.5	-
Critical Hdwy Stg 2	6.5	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	8	6	231
Stage 1	56	96	-
Stage 2	379	189	-
Platoon blocked, %			
Mov Cap-1 Maneuver	8	6	231
Mov Cap-2 Maneuver	8	6	-
Stage 1	55	95	-
Stage 2	358	185	-

Approach	SB
HCM Control Delay, s	20.8
HCM LOS	C

Minor Lane/Major Mvmt

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	55	16	8	1	18	6	5	20	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	8	2	2	2	2	17	2	2	2
Mvmt Flow	65	19	9	1	21	7	6	24	1

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	179	165	96	179	221	24	152	0	0
Stage 1	129	129	-	36	36	-	-	-	-
Stage 2	50	36	-	143	185	-	-	-	-
Critical Hdwy	7.18	6.52	6.22	7.12	6.52	6.37	4.12	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.318	3.518	4.018	3.453	2.218	-	-
Pot Cap-1 Maneuver	770	728	960	783	678	1011	1429	-	-
Stage 1	860	789	-	980	865	-	-	-	-
Stage 2	948	865	-	860	747	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	738	717	960	751	668	1011	1429	-	-
Mov Cap-2 Maneuver	738	717	-	751	668	-	-	-	-
Stage 1	857	780	-	976	862	-	-	-	-
Stage 2	915	862	-	822	739	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.5	10.1	1.4
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1429	-	-	751	731	1551	-	-
HCM Lane V/C Ratio	0.004	-	-	0.124	0.04	0.011	-	-
HCM Control Delay (s)	7.5	0	-	10.5	10.1	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	14	34	95
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	8	3	2
Mvmt Flow	16	40	112

Major/Minor Major2

Conflicting Flow All	25	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.18	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.272	-	-
Pot Cap-1 Maneuver	1551	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1551	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach SB

HCM Control Delay, s 0.7

HCM LOS

Minor Lane/Major Mvmt

HCM Signalized Intersection Capacity Analysis
 1: S 20th Avenue/N 20th Avenue & TV Highway

3/17/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	1192	79	96	1600	89	41	38	54	55	64	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	12	12	12	12
Total Lost time (s)	4.5	5.3		4.5	5.3	5.3	4.5	4.5		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3504		1787	3539	1656	1805	1639		1703	1810	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.71	1.00		0.69	1.00	1.00
Satd. Flow (perm)	1787	3504		1787	3539	1656	1355	1639		1242	1810	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	1255	83	101	1684	94	43	40	57	58	67	122
RTOR Reduction (vph)	0	3	0	0	0	33	0	38	0	0	0	82
Lane Group Flow (vph)	120	1335	0	101	1684	61	43	59	0	58	67	40
Heavy Vehicles (%)	1%	2%	3%	1%	2%	4%	0%	11%	2%	6%	5%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	13.4	53.7		12.1	52.4	52.4	39.9	39.9		39.4	39.4	39.4
Effective Green, g (s)	13.4	53.7		12.1	52.4	52.4	39.9	39.9		39.4	39.4	39.4
Actuated g/C Ratio	0.11	0.45		0.10	0.44	0.44	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	4.5	5.3		4.5	5.3	5.3	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	199	1568		180	1545	723	450	544		407	594	519
v/s Ratio Prot	c0.07	0.38		0.06	c0.48			0.04			0.04	
v/s Ratio Perm						0.04	0.03			c0.05		0.03
v/c Ratio	0.60	0.85		0.56	1.09	0.08	0.10	0.11		0.14	0.11	0.08
Uniform Delay, d1	50.8	29.6		51.4	33.8	19.8	27.6	27.7		28.4	28.1	27.8
Progression Factor	1.00	1.00		0.79	1.30	2.30	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	6.0		2.8	48.8	0.2	0.4	0.4		0.7	0.4	0.3
Delay (s)	55.8	35.6		43.7	92.7	45.6	28.0	28.1		29.1	28.5	28.1
Level of Service	E	D		D	F	D	C	C		C	C	C
Approach Delay (s)		37.3			87.7			28.1			28.4	
Approach LOS		D			F			C			C	

Intersection Summary		
HCM 2000 Control Delay	61.8	HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio	0.67	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 14.8
Intersection Capacity Utilization	72.6%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis

4: TV Highway & Fred Meyer Driveway

3/17/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	1169	8	16	1570	193	8	6	6	135	2	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	14	14	11
Total Lost time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1805	3536		1687	3539	1615		1848	1380		1913	1561
Flt Permitted	0.06	1.00		0.21	1.00	1.00		0.86	1.00		0.72	1.00
Satd. Flow (perm)	113	3536		373	3539	1615		1638	1380		1440	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	1271	9	17	1707	210	9	7	7	147	2	82
RTOR Reduction (vph)	0	0	0	0	0	52	0	0	6	0	0	69
Lane Group Flow (vph)	161	1280	0	17	1707	158	0	16	1	0	149	13
Heavy Vehicles (%)	0%	2%	0%	7%	2%	0%	0%	0%	17%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	83.6	83.6		78.0	77.2	77.2		19.2	19.2		19.2	19.2
Effective Green, g (s)	83.6	83.6		78.0	77.2	77.2		19.2	19.2		19.2	19.2
Actuated g/C Ratio	0.70	0.70		0.65	0.64	0.64		0.16	0.16		0.16	0.16
Clearance Time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	231	2463		290	2276	1038		262	220		230	249
v/s Ratio Prot	c0.06	0.36		0.00	c0.48							
v/s Ratio Perm	0.42			0.04		0.10		0.01	0.00		c0.10	0.01
v/c Ratio	0.70	0.52		0.06	0.75	0.15		0.06	0.01		0.65	0.05
Uniform Delay, d1	28.9	8.7		8.5	14.7	8.5		42.8	42.4		47.2	42.7
Progression Factor	2.22	0.18		0.44	0.96	0.60		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.7	0.5		0.1	1.6	0.2		0.4	0.0		13.3	0.4
Delay (s)	69.9	2.1		3.8	15.7	5.3		43.2	42.4		60.5	43.1
Level of Service	E	A		A	B	A		D	D		E	D
Approach Delay (s)		9.6			14.5			43.0			54.3	
Approach LOS		A			B			D			D	

Intersection Summary

HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

8: 26th Avenue & TV Highway

3/17/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	1231	43	89	1679	65	24	9	57	69	15	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	14	16
Total Lost time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1752	3521		1770	3539	1615		1779	1524		1947	1830
Flt Permitted	0.08	1.00		0.14	1.00	1.00		0.77	1.00		0.74	1.00
Satd. Flow (perm)	146	3521		266	3539	1615		1412	1524		1499	1830
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	34	1310	46	95	1786	69	26	10	61	73	16	70
RTOR Reduction (vph)	0	1	0	0	0	19	0	0	55	0	0	63
Lane Group Flow (vph)	34	1355	0	95	1786	50	0	36	6	0	89	7
Heavy Vehicles (%)	3%	2%	2%	2%	2%	0%	0%	11%	6%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1!	2!		5!	6!			8			4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	94.8	91.1		94.8	76.2	76.2		12.4	12.4		12.4	12.4
Effective Green, g (s)	94.8	91.1		94.8	76.2	76.2		12.4	12.4		12.4	12.4
Actuated g/C Ratio	0.79	0.76		0.79	0.64	0.64		0.10	0.10		0.10	0.10
Clearance Time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	164	2673		443	2247	1025		145	157		154	189
v/s Ratio Prot	0.01	c0.38		0.03	c0.50							
v/s Ratio Perm	0.16			0.14		0.03		0.03	0.00		c0.06	0.00
v/c Ratio	0.21	0.51		0.21	0.79	0.05		0.25	0.04		0.58	0.04
Uniform Delay, d1	8.8	5.7		12.4	16.1	8.2		49.5	48.4		51.3	48.4
Progression Factor	1.76	1.15		1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.6		0.2	3.0	0.1		0.9	0.1		5.2	0.1
Delay (s)	16.0	7.1		12.6	19.1	8.3		50.4	48.5		56.5	48.5
Level of Service	B	A		B	B	A		D	D		E	D
Approach Delay (s)		7.3			18.4			49.2			53.0	
Approach LOS		A			B			D			D	

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: S 20th Avenue/N 20th Avenue & TV Highway

6/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1335	70	105	1575	115	50	25	50	110	50	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	12	12	12	12
Total Lost time (s)	4.5	5.3		4.5	5.3	5.3	4.5	4.5		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3511		1787	3539	1656	1805	1628		1703	1810	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.72	1.00		0.71	1.00	1.00
Satd. Flow (perm)	1787	3511		1787	3539	1656	1373	1628		1265	1810	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	1405	74	111	1658	121	53	26	53	116	53	105
RTOR Reduction (vph)	0	3	0	0	0	33	0	35	0	0	0	71
Lane Group Flow (vph)	126	1476	0	111	1658	88	53	44	0	116	53	34
Heavy Vehicles (%)	1%	2%	3%	1%	2%	4%	0%	11%	2%	6%	5%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	13.8	53.0		12.8	52.0	52.0	39.9	39.9		39.4	39.4	39.4
Effective Green, g (s)	13.8	53.0		12.8	52.0	52.0	39.9	39.9		39.4	39.4	39.4
Actuated g/C Ratio	0.12	0.44		0.11	0.43	0.43	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	4.5	5.3		4.5	5.3	5.3	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	205	1550		190	1533	717	456	541		415	594	519
v/s Ratio Prot	c0.07	0.42		0.06	c0.47			0.03			0.03	
v/s Ratio Perm						0.05	0.04			c0.09		0.02
v/c Ratio	0.61	0.95		0.58	1.08	0.12	0.12	0.08		0.28	0.09	0.07
Uniform Delay, d1	50.6	32.3		51.1	34.0	20.3	27.8	27.5		29.8	27.9	27.7
Progression Factor	1.00	1.00		0.76	1.35	2.10	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.4	14.0		2.8	44.5	0.2	0.5	0.3		1.7	0.3	0.2
Delay (s)	55.9	46.3		41.5	90.2	42.8	28.3	27.8		31.5	28.2	27.9
Level of Service	E	D		D	F	D	C	C		C	C	C
Approach Delay (s)		47.1			84.3			28.0			29.5	
Approach LOS		D			F			C			C	

Intersection Summary

HCM 2000 Control Delay	63.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.8
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

4: TV Highway & Fred Meyer Driveway

6/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1325	10	15	1680	285	10	5	5	320	2	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	14	14	11
Total Lost time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1805	3536		1687	3539	1615		1837	1380		1912	1561
Flt Permitted	0.06	1.00		0.17	1.00	1.00		0.42	1.00		0.72	1.00
Satd. Flow (perm)	105	3536		295	3539	1615		807	1380		1437	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1440	11	16	1826	310	11	5	5	348	2	114
RTOR Reduction (vph)	0	0	0	0	0	73	0	0	4	0	0	96
Lane Group Flow (vph)	174	1451	0	16	1826	237	0	16	1	0	350	18
Heavy Vehicles (%)	0%	2%	0%	7%	2%	0%	0%	0%	17%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	83.6	83.6		77.3	76.5	76.5		19.2	19.2		19.2	19.2
Effective Green, g (s)	83.6	83.6		77.3	76.5	76.5		19.2	19.2		19.2	19.2
Actuated g/C Ratio	0.70	0.70		0.64	0.64	0.64		0.16	0.16		0.16	0.16
Clearance Time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	236	2463		241	2256	1029		129	220		229	249
v/s Ratio Prot	c0.07	0.41		0.00	c0.52							
v/s Ratio Perm	0.44			0.04		0.15		0.02	0.00		c0.24	0.01
v/c Ratio	0.74	0.59		0.07	0.81	0.23		0.12	0.00		1.53	0.07
Uniform Delay, d1	33.5	9.4		10.6	16.3	9.2		43.2	42.4		50.4	42.8
Progression Factor	2.01	0.23		0.49	0.95	0.49		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.9	0.5		0.1	1.9	0.3		2.0	0.0		258.7	0.6
Delay (s)	73.1	2.7		5.3	17.4	4.8		45.2	42.4		309.1	43.4
Level of Service	E	A		A	B	A		D	D		F	D
Approach Delay (s)		10.2			15.5			44.5			243.8	
Approach LOS		B			B			D			F	

Intersection Summary

HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

8: 26th Avenue & TV Highway

6/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1480	100	150	1805	65	60	10	30	75	25	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	14	16
Total Lost time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1752	3506		1770	3539	1615		1793	1524		1954	1830
Flt Permitted	0.06	1.00		0.07	1.00	1.00		0.55	1.00		0.70	1.00
Satd. Flow (perm)	107	3506		136	3539	1615		1035	1524		1420	1830
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	74	1574	106	160	1920	69	64	11	32	80	27	122
RTOR Reduction (vph)	0	3	0	0	0	20	0	0	28	0	0	108
Lane Group Flow (vph)	74	1677	0	160	1920	49	0	75	4	0	107	14
Heavy Vehicles (%)	3%	2%	2%	2%	2%	0%	0%	11%	6%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1!	2!		5!	6!			8			4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	93.1	87.0		93.1	75.2	75.2		14.1	14.1		14.1	14.1
Effective Green, g (s)	93.1	87.0		93.1	75.2	75.2		14.1	14.1		14.1	14.1
Actuated g/C Ratio	0.78	0.72		0.78	0.63	0.63		0.12	0.12		0.12	0.12
Clearance Time (s)	4.0	4.8		4.0	4.8	4.8		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	166	2541		349	2217	1012		121	179		166	215
v/s Ratio Prot	0.02	c0.48		0.07	c0.54							
v/s Ratio Perm	0.32			0.29		0.03		0.07	0.00		c0.08	0.01
v/c Ratio	0.45	0.66		0.46	0.87	0.05		0.62	0.02		0.64	0.07
Uniform Delay, d1	14.8	8.7		28.0	18.3	8.6		50.4	46.8		50.6	47.1
Progression Factor	1.41	1.02		1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.9		1.0	4.9	0.1		9.1	0.0		8.3	0.1
Delay (s)	22.1	9.7		29.0	23.1	8.7		59.5	46.9		58.9	47.2
Level of Service	C	A		C	C	A		E	D		E	D
Approach Delay (s)		10.3			23.1			55.7			52.7	
Approach LOS		B			C			E			D	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: TV Highway & 29th Avenue

6/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗		↖	↗	
Volume (vph)	55	1485	45	135	1920	75	40	5	135	30	5	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3524		1770	3539	1672	1770	1593		1805	1589	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3524		1770	3539	1672	1770	1593		1805	1589	
Peak-hour factor, PHF	0.91	0.91	0.92	0.92	0.91	0.91	0.92	0.92	0.92	0.91	0.92	0.91
Adj. Flow (vph)	60	1632	49	147	2110	82	43	5	147	33	5	66
RTOR Reduction (vph)	0	2	0	0	0	23	0	124	0	0	56	0
Lane Group Flow (vph)	60	1679	0	147	2110	59	43	28	0	33	15	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	2%	2%	0%	2%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.6	83.1		15.6	93.1	93.1	4.8	21.7		3.6	20.5	
Effective Green, g (s)	5.6	83.1		15.6	93.1	93.1	4.8	21.7		3.6	20.5	
Actuated g/C Ratio	0.04	0.59		0.11	0.66	0.66	0.03	0.15		0.03	0.15	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	70	2091		197	2353	1111	60	246		46	232	
v/s Ratio Prot	0.03	0.48		c0.08	c0.60		c0.02	c0.02		0.02	0.01	
v/s Ratio Perm						0.04						
v/c Ratio	0.86	0.80		0.75	0.90	0.05	0.72	0.11		0.72	0.06	
Uniform Delay, d1	66.8	22.1		60.3	19.5	8.1	66.9	50.9		67.7	51.5	
Progression Factor	1.00	1.00		1.33	0.46	0.21	1.00	1.00		1.00	1.00	
Incremental Delay, d2	60.4	2.3		10.6	3.7	0.0	33.3	0.9		41.5	0.5	
Delay (s)	127.2	24.4		90.8	12.7	1.7	100.3	51.8		109.2	52.0	
Level of Service	F	C		F	B	A	F	D		F	D	
Approach Delay (s)		28.0			17.2			62.5			70.1	
Approach LOS		C			B			E			E	

Intersection Summary

HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1640	10	5	2120	2	5	0	10	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	215	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	2	0	0	0	10	0	0	0
Mvmt Flow	2	1822	11	6	2356	2	6	0	11	0	0	6

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	2358	0	0	1833	0	0	3021	4201	917	3284	4206	1179
Stage 1	-	-	-	-	-	-	1832	1832	-	2368	2368	-
Stage 2	-	-	-	-	-	-	1189	2369	-	916	1838	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	7.1	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.4	3.5	4	3.3
Pot Cap-1 Maneuver	211	-	-	337	-	-	6	2	259	4	2	186
Stage 1	-	-	-	-	-	-	81	128	-	37	68	-
Stage 2	-	-	-	-	-	-	203	68	-	297	127	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	211	-	-	337	-	-	6	2	259	4	2	186
Mov Cap-2 Maneuver	-	-	-	-	-	-	6	2	-	4	2	-
Stage 1	-	-	-	-	-	-	81	128	-	37	67	-
Stage 2	-	-	-	-	-	-	193	67	-	284	127	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	\$ 518	25
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	17	211	-	-	337	-	-	186
HCM Lane V/C Ratio	0.98	0.011	-	-	0.016	-	-	0.03
HCM Control Delay (s)	\$ 518	22.2	0	-	15.9	-	-	25
HCM Lane LOS	F	C	A	-	C	-	-	D
HCM 95th %tile Q(veh)	2.5	0	-	-	0.1	-	-	0.1

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	50	30	25	30	30	30	10	45	40	25	125	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	8	2	2	2	2	17	2	2	2	8	3	2
Mvmt Flow	59	35	29	35	35	35	12	53	47	29	147	106

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	394	383	200	391	412	76	253	0	0	100	0	0
Stage 1	259	259	-	100	100	-	-	-	-	-	-	-
Stage 2	135	124	-	291	312	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.52	6.22	7.12	6.52	6.37	4.12	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.318	3.518	4.018	3.453	2.218	-	-	2.272	-	-
Pot Cap-1 Maneuver	555	550	841	568	530	945	1312	-	-	1456	-	-
Stage 1	733	694	-	906	812	-	-	-	-	-	-	-
Stage 2	854	793	-	717	658	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	494	532	841	507	513	945	1312	-	-	1456	-	-
Mov Cap-2 Maneuver	494	532	-	507	513	-	-	-	-	-	-	-
Stage 1	726	678	-	897	804	-	-	-	-	-	-	-
Stage 2	778	785	-	641	643	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	12.3	0.8	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1312	-	-	561	602	1456	-	-
HCM Lane V/C Ratio	0.009	-	-	0.22	0.176	0.02	-	-
HCM Control Delay (s)	7.8	0	-	13.2	12.3	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.6	0.1	-	-

Intersection

Int Delay, s/veh 2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	15	1640	2117	50	30	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	1783	2301	54	33	16

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	2355	0	1178
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	6.94
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	3.32
Pot Cap-1 Maneuver	205	-	184
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	205	-	184
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	161.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	205	-	-	-	63
HCM Lane V/C Ratio	0.08	-	-	-	0.776
HCM Control Delay (s)	24.1	-	-	-	161.8
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	3.5

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	15	1640	2137	50	30	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	1783	2323	54	33	16

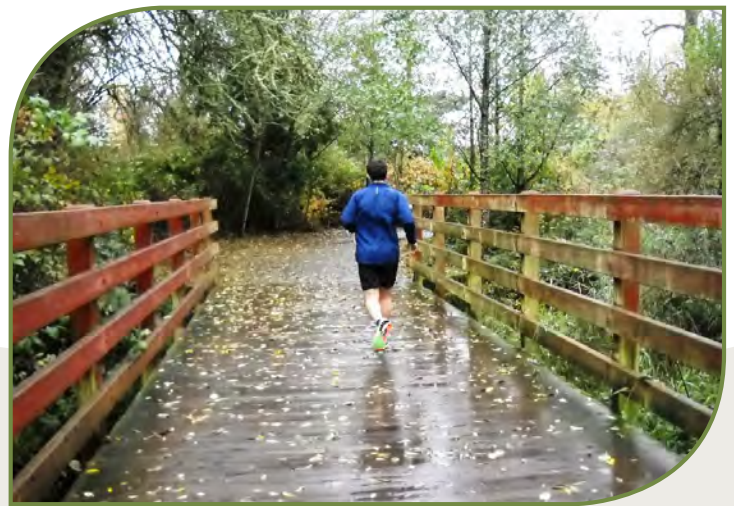
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	2377	0	1189
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	6.94
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	3.32
Pot Cap-1 Maneuver	201	-	180
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	201	-	180
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	172
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	201	-	-	-	61
HCM Lane V/C Ratio	0.081	-	-	-	0.802
HCM Control Delay (s)	24.5	-	-	-	172
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	3.6

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Council Creek Regional Trail Master Plan

Prepared for

City of Banks, Oregon
City of Forest Grove, Oregon
City of Cornelius, Oregon
City of Hillsboro, Oregon
Washington County, Oregon
Oregon Department of Transportation
Metro

Prepared by

Parametrix

Date

May 2015

Citation

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Appendices A, B, and C are major documents ranging upward of 100 pages each in length. These appendices can be downloaded from the link below.

<http://www.oregonmetro.gov/public-projects/council-creek-regional-trail-master-plan>

Executive Summary

Trail Purpose

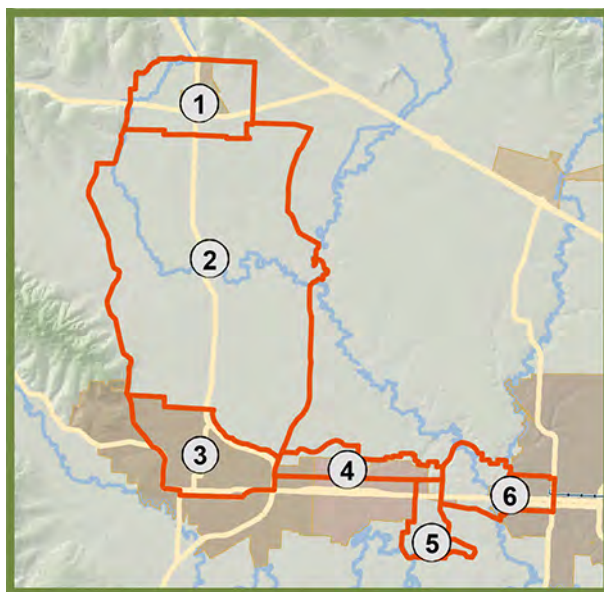
The Council Creek Regional Trail will be a multiuse pathway for pedestrians, bicyclists, and other nonmotorized travelers for both recreational and transportation purposes. The trail will extend almost 15 miles from the Banks-Vernonia Trail in Banks to the TriMet Blue Line MAX station in downtown Hillsboro. The regional trail will connect the cities of Banks, Forest Grove, Cornelius and Hillsboro, a large expanse of productive farmlands between Banks and Forest Grove, and some smaller areas of still unincorporated land within the urban growth boundary (UGB) between Forest Grove and Hillsboro.

This regional trail will pass through rural, suburban, and urban areas—residential neighborhoods, farms, downtowns, commercial, and industrial; cross or follow state highways Oregon 6, Oregon 8, and Oregon 47; and numerous urban and rural roadways; and follow and cross an Oregon Department of Transportation (ODOT) owned rail line. Council Creek will connect to six other existing or planned regional trails and greenways, and to local trail systems.

Study Area

The Council Creek Regional Trail study area consisted of two corridors—North-South and West-East. Smaller segments within these two corridors were identified for planning purposes. Some segment boundaries were modified as outcomes of the existing conditions and trail alignment analysis phases of the master planning process. Two segments defined earlier in the process were combined, and some trail alignments were initially considered that were outside of the original segment boundaries.

Trail Planning Segments



Master Plan

The Council Creek Regional Trail Master Plan is the culmination of a community vision that stretches back almost a decade. Work on the master plan began over 2 years ago. The master plan will provide implementation guidance as local and regional partners embark on efforts to fund, design and build the trail.

The master plan is the product of a combined effort by local, regional, and state governments, a local stakeholder advisory committee, and the many individuals and groups that contributed their ideas. The active government partners are the Cities of Banks, Forest Grove, Cornelius, and Hillsboro, as well as Washington County, Metro and ODOT. Some or all of these jurisdictions may be responsible for the final design, engineering and building of sections of the trail.

In the course of master plan development, trail sections were adjusted or eliminated; trail alignments were decreased, altered or added; and some underlying assumptions were modified, all to reflect partner, public, and stakeholder comments and recommendations. All illustrated trail alignments and trail types in the master plan are plan level, meaning that they have not been subject to survey, final design, or engineering.

The entire process of the Council Creek Regional Trail Master Plan is documented in three plan reports that are included as appendices to the master plan report:

- Plan Report No. 1 – Existing Conditions (February 2014)
- Plan Report No. 2 – Trail Alignment Analysis (July 2014)
- Plan Report No. 3 – Implementation Strategy (December 2014)

Public Review

In addition to technical reviews and analysis conducted by the project consultant and supported by the staff of the partner jurisdictions, a series of advisory committee and public reviews were conducted.

October 2013	Project Advisory Committee (PAC) considered and approved project goals and objectives, scope of work and schedule, and public involvement process.
January 2014	PAC considered existing conditions information.
April 2014	Stakeholder Advisory Committee (SAC) reviewed existing conditions information and full range of possible trail alternatives.
June 2014	Public open house review of the full range of possible trail alignments within the study area.
June 2014	SAC reviewed first public open house outcomes and considered recommendations on the trail alternatives to advance to the next phase.
July 2014	PAC considered trail alignment alternatives and recommendations on the alignments to advance to the preferred alternative phase.
August 2014	Open house review of the trail alignment alternatives identified by the PAC for consideration as the preferred alternatives.
November 2014	Open house review of preliminary preferred trail alternatives and costs, development phasing, and implementation actions.
December 2014	PAC and SAC met jointly to review the outcomes of project open houses, and make recommendations for preferred trail alternatives.

Trail Highlights

North-South – The preferred trail alignment for this corridor extends approximately 9 miles from the north side of the City of Banks to the northeast side of the City of Forest Grove. The corridor is primarily rural and in active agricultural use, except for sections in Banks. The preferred alignment passes through Banks, farmland in rural unincorporated Washington County, the unincorporated community of Verboort, and to the edge of Forest Grove. Outside of Banks, the multiuse trail aligns along the edges of existing county roadways, minimizing impacts on farmlands, stream corridors and wetlands. As private land acquisition for the north-south trail will be on a willing seller basis, an interim trail solution relying on shared-use of these county roadways is also included as part of the master plan.

West-East – The second trail corridor extends approximately 5.5 miles from downtown Forest Grove to downtown Hillsboro. Sections are in Forest Grove, Cornelius, and Hillsboro, and urban unincorporated Washington County between Cornelius and Hillsboro. A north-south “spur” trail to the Tualatin River is also included. The corridor is primarily urbanized, or planned for residential, commercial and industrial uses. Except for the Tualatin River spur, the entire west-east trail will be located within an existing rail right-of-way. A rail-with-trail solution is proposed, but final design could vary depending on changes in the future use of the corridor for freight or commuter train or other transit service.

Plan Implementation – Trail Cost and Phasing

Cost estimates are plan level and subject to change based on survey, design and engineering, actual property acquisition costs, and the timing of trail development.

Banks to Forest Grove (Segments 1 and 2)	\$27,149,400
Forest Grove to Hillsboro (Segments 3, 4 and 6)	\$22,164,550
Tualatin River Spur Trail (Segment 5)	\$2,611,500

Many factors will influence trail construction phasing and time frames. The timing and feasibility of property acquisition and availability of construction funding are primary drivers. Phasing will also be influenced by changing jurisdictional authority and priorities, public and private development, and evolving regional and local plans. The preferred trail alignments in both corridors and suggested phasing at the time of completion of this master plan are illustrated on the map that follows.

1: Plan Background and Development

Project Context and Location

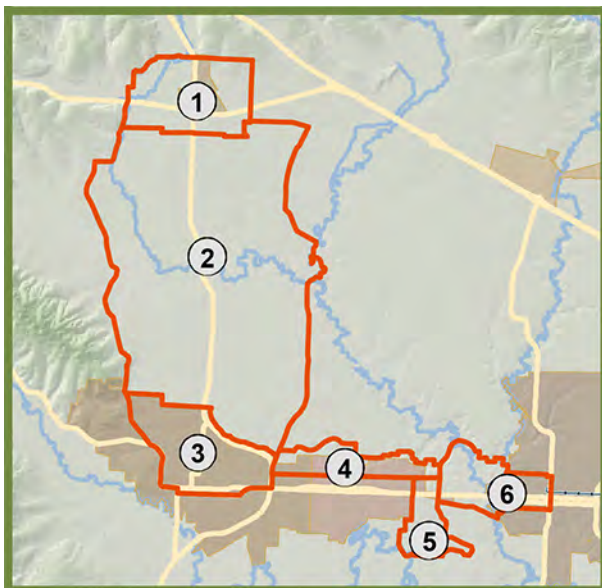
The Council Creek Regional Trail (CCRT) will be a multiuse pathway for pedestrians, bicyclists, and other nonmotorized travelers for both recreational and transportation purposes. The trail will extend almost 15 miles from the Banks-Vernonia Trail in Banks to the TriMet Blue Line MAX station in downtown Hillsboro. The CCRT will connect through rural, suburban, and urban areas—residential neighborhoods, farms, downtowns, commercial, and industrial. The CCRT will cross or follow state highways Oregon 6, Oregon 8, and Oregon 47; and follow and cross a rail line and numerous urban and rural roadways.

The CCRT Master Plan is a partnership of the cities of Banks, Forest Grove, Cornelius, and Hillsboro, Washington County, Metro and the Oregon Department of Transportation (ODOT). Some or all of these jurisdictions may be responsible for the final design, engineering and building of sections of the trail. The CCRT will pass through the four cities, a large expanse of productive farmlands between Banks and Forest Grove, and some smaller areas of still unincorporated land within the urban growth boundary (UGB) between Forest Grove and Hillsboro.

Trail Planning Corridors and Segments

The CCRT study area consists of two corridors – North-South and West-East. Smaller segments within these two corridors were identified for planning purposes. See Map 1 below. Some segment boundaries were modified as outcomes of the existing conditions and trail alignment analysis phases of this planning process. Two segments defined earlier in the process were combined, and some trail alignments were considered that were outside of the segment boundaries.

Map 1. Trail Planning Segments



North-South Trail Corridor

The preferred alternative for this corridor extends approximately 9 miles from the north side of the City of Banks to the City of Forest Grove. The original corridor was bounded by NW Thatcher Road and NW Kansas City Road on the west, and on the east by NW Martin Road, NW Marsh Road, and NW Roy Road (3 to 4 miles wide). The corridor is primarily rural and in active agricultural use, except for Banks and portions of Forest Grove. The preferred trail alternative will pass through the City of Banks, rural reserves south of Banks in rural unincorporated Washington County, through the unincorporated community of Verboort to Oregon 47, and to the north edge of Forest Grove.

Planning segments within the North-South Corridor are:

- **Segment 1: Banks**
- **Segment 2: Washington County North**

West-East Trail Corridor

The second trail corridor is less than 3,000 feet wide in some places and extends for approximately 5.5 miles from downtown Forest Grove to downtown Hillsboro. Council Creek is generally the original corridor's northern boundary, and Oregon 8 was generally the southern boundary. Portions of this corridor are in the cities of Forest Grove, Cornelius, and Hillsboro, and in urban unincorporated Washington County between Cornelius and Hillsboro. A north-south "spur" trail to the Tualatin River is also included. The corridor is primarily urbanized, or planned for residential, commercial and industrial uses. There are some high value natural resource lands along stream corridors and two remaining active commercial agricultural areas.

Planning segments within the West-East Corridor are:

- **Segment 3: Forest Grove.** This segment was originally included in the North-South Corridor, but was shifted when the joint PAC/SAC decision was made to extend the trail along the rail corridor into downtown Forest Grove.
- **Segment 4: Cornelius.** The west end of this segment includes areas of incorporated Forest Grove.
- **Segment 5: Jobs Ditch.** North-south in orientation. Accommodates a spur trail to the Tualatin River that would connect to the CCRT main stem trail at the east end of Segment 4.
- **Segment 6: Hillsboro – Washington County East.** This segment includes urban unincorporated lands that were brought within the Cornelius UGB in 2014.

Master Plan Reports

The CCRT Master Plan was developed in four phases, and each phase is reported in a standalone plan report:

- **Plan Report No. 1 – Existing Conditions (February 2014)** – Described and mapped factors that may impact trail planning and development by each planning segment, as well as by existing conditions, including existing plans, design opportunities and challenges, natural resources, transportation, land uses and structures, and major utility corridors (see CCRT Master Plan Appendix A).

- **Plan Report No. 2 – Trail Alignment Analysis (July 2014)** – Analyzed and mapped a range of trail alignment alternatives and trail types. This report documents public, stakeholder, and advisory committee processes and outcomes through July 2014, including alignment alternatives recommended for further analysis as the preferred alternative (see Appendix B).
- **Plan Report No. 3 – Implementation Strategy (December 2014)** – Analyzed the alignments identified for additional consideration in the preceding phase, and provided trail design typology and conceptual cross sections, cost estimates, assessments of partner jurisdiction authority for trail development and operations, regulatory requirements, and a preliminary phasing plan (see Appendix C). This report also documents public, stakeholder and advisory committee processes and outcomes after July 2014, including preferred trail alternative recommendations made by the Project Advisory Committee (PAC) and Stakeholder Advisory Committee (SAC) meeting jointly in December 2014.
- **Master Plan** – The master plan describes and maps the preferred alternatives recommended in December 2014, and summarizes key existing conditions and implementation strategies developed as part of Plan Report Nos. 1 and 3. Recommended trail alignments, trail types, and roadway and stream crossings shown in the master plan have not been subject to survey, final design, or engineering.

Goals and Objectives

The CCRT Master Plan *Project Delivery and Quality Control Plan* details overarching master plan project goals, objectives and processes (Appendix D). This document states:

The Council Creek Regional Trail (CCRT) Master Plan will recommend a comprehensive strategy, including trail alignment alternatives and implementation actions, for the development of an uninterrupted 15-mile-long regional trail corridor from downtown Hillsboro through the cities of Cornelius and Forest Grove and then north across rural unincorporated farming areas in Washington County to the City of Banks. Specific master planning process objectives are to:

- *Coordinate the inputs and actions of the various project jurisdictional partners, and other stakeholders.*
- *Engage local jurisdictions, property owners, citizens, businesses, and other stakeholders in the CCRT's development.*
- *Collect and summarize baseline information on the existing conditions within the CCRT corridor and in immediately abutting areas.*
- *Analyze specific trail segments within the trail corridor addressing opportunities and constraints with respect to roadway and railway crossings, stream and wetland impacts, urban and rural land uses, and other opportunities and limitations, to best assure trail sections and segments can be constructed to regional trail standards.*
- *Develop implementation and phasing strategies.*
- *Produce draft CCRT Master Plan documents available for jurisdictional, stakeholder, and public review and distribution.*
- *Produce a final CCRT Master Plan to guide local jurisdictions in the planning, design, permitting, and development of the trail.*

Advisory Committees

The master plan process benefited from the input and guidance of three committees. Committee membership is listed on the Acknowledgments page of this master plan report. Committee roles and responsibilities, and the original project meeting schedule, are included as Appendix E.

Project Management Team (PMT)

The PMT met regularly over the course of the project to review project schedules, processes and preliminary deliverables; and to address issues raised during project outreach events such as public open houses. The PMT consisted of a staff representative from the Cities of Forest Grove, Cornelius, and Hillsboro, as well as from Washington County, Metro, and ODOT.

Project Advisory Committee (PAC)

The PAC consisted of PMT members, plus a staff representative from the city of Banks, and one additional official each from Forest Grove, Cornelius, Washington County, and Metro. The PAC met four times in the course of the master plan process.

- **October 2013:** Considered and approved project goals and objectives, scope of work and schedule, as well as public involvement processes.
- **January 2014:** Considered existing conditions information.
- **July 2014:** Considered trail alignment alternatives and recommendations on the alignments to advance to the preferred alternative phase.
- **December 2014:** Joint meeting with the Stakeholder Advisory Committee (SAC) to review the outcomes of project open houses, and make recommendations for preferred trail alternatives.

Stakeholder Advisory Committee (SAC)

SAC membership was drawn across a wide range of interests including the environmental, bicycling, neighborhood, business and agricultural communities. The SAC met three times in the course of the planning effort.

- **April 2014:** Reviewed existing conditions information and full range of possible trail alternatives.
- **June 2014:** Reviewed first public open house outcomes and considered recommendations on the trail alternatives to advance to the next stage of the planning process.
- **December 2014:** Met jointly with PAC.

Stakeholder and Community Engagement

The project's Public Involvement Plan (PIP) stated the following goals. The full PIP is included as Appendix F.

- *Ensure effective coordination and communication between jurisdictional partners and stakeholders and related projects taking place within the trail study corridor.*
- *Engage local jurisdictions, utilities, neighborhoods, property owners, citizens, bicycle and pedestrian advocates, area nonprofits, businesses, and other stakeholders directly in master plan development.*

- *Guide jurisdictional partners on future planning, design, permitting, and development of the trail.*
- *Host activities and provide tools that will add value to the project and genuinely engage the community in an open and transparent process.*
- *Keep the public informed with accurate, up-to-date information.*
- *Build trust and a long-term relationship with the community.*
- *Maintain a level of flexibility with the process.*

In the course of the master plan process, the PMT determined that the timing and number of outreach and advisory committee meetings as scheduled in the original PIP should be moved forward to better assure early and effective stakeholder and public input. Accordingly, SAC and PAC meetings, and an open house originally scheduled for presentation of the draft final master plan, were moved to the trail alignment analysis and implementation strategy phases of the project. Washington County, through the support of county staff and approval by the county commission, provided additional funding to hold a third public open house.

Hispanic Community Outreach

The CCRT Public Involvement Plan (see Appendix F) included a section specifically addressing Hispanic community outreach. The cities and rural areas of western Washington County have large Spanish speaking populations. As participation in project open houses proved, the Hispanic community strongly supports improved bicycle and pedestrian options. Local nonprofits Adelante Mujeres and Centro Cultural had representatives on the project's Stakeholder Advisory Committee. Arturo Villaseñor of Adelante Mujeres worked with the Project Management Team to coordinate outreach efforts.

Through the support of Metro staff and the Metro Council (Resolution No. 14-4511), in particular Councilor Kathryn Harrington, additional funding was provided to engage the Hispanic community in this master plan. This funding provided for:

- Production of a written project overview in Spanish distributed through Adelante Mujeres and Centro Cultural, and the City of Forest Grove.
- Translation of public notices, project materials and display posters into Spanish for use at project open houses and for other outreach efforts such as farmers markets.
- Spanish translators provided by Adelante Mujeres and Centro Cultural at project open houses, and an open house resource table staffed with Spanish speakers. In addition, Parametrix, using the services of a native Spanish speaker on staff, recorded and transcribed open house notes in Spanish. The City of Hillsboro also assigned a native Spanish speaker on staff to the open houses.
- Booths at Summer 2014 farmers markets staffed by Spanish speakers and project information and surveys in Spanish and English.

Public Open Houses

The first and third open houses were held at the Forest Grove Community Auditorium. The second open house was held at the City of Cornelius Council Chambers.

- **June 4, 2014:** Reviewed the full range of possible trail alignments within the study corridor. Approximately 60 individuals attended this meeting. Public input on concerns and ideas for trail development was recorded. In addition, 47 project questionnaires were submitted. Open house records are included in Plan Report No. 2.
- **August 27, 2014:** Reviewed the set of trail alignment alternatives identified by the PAC for consideration as the preferred alternatives, and solicited public comments and suggestions for additional alternatives. Approximately 60 individuals attended. In addition, 15 project questionnaires were submitted. Open house records are included in Plan Report No. 3.
- **November 5, 2014:** Reviewed preliminary preferred trail alternatives and costs, development phasing, and implementation actions. Approximately 50 individuals attended. In addition, 15 project questionnaires were submitted. Open house records are included in Plan Report No. 3.



Stakeholder Interviews

Supplementing the community open houses, members of the project team met formally and informally with individual stakeholders throughout the planning process. Twelve formal interviews were conducted. Records of these interviews are included as appendices in Plan Report Nos. 2 and 3. Metro hosted a project website providing opportunities for interested parties to review all draft and final plan reports, and this master plan report.

2: Existing Conditions

Existing conditions within the CCRT study area present a wide range of opportunities and challenges for trail development. These include existing and planned land uses, property ownership and control, natural resources and other physical features, and transportation. For a complete review see Plan Report No. 1 – Existing Conditions (Appendix A). Additional existing conditions information and impacts, particularly with respect to applicable jurisdictional guidelines and regulations, are summarized in Plan Report No. 3.

Key conditions and features that may impact the preferred north-south and west-east trail corridors and preferred trail alignments and types include:

Table 1. North-South Corridor (EAST 1) Existing Conditions and Features

Condition or Feature	Impact
Private land ownership	<ul style="list-style-type: none"> • Extensive land acquisition required for multiuse trail alignment
Multiple jurisdictions	<ul style="list-style-type: none"> • Banks has authority to build trails • County can only build trails in road right of way, preference for trails along street edges makes County participation feasible
Wetlands/nonwetland waters/floodplain	<ul style="list-style-type: none"> • New or improved crossing structures and bridge over West Fork Dairy Creek and associated wetlands/floodplain • May require special permitting and mitigation • Opportunity for habitat enhancement
Vegetative cover	<ul style="list-style-type: none"> • Native vegetation highly altered, primary trail impact will be on wetlands and riparian vegetation
Fish and Wildlife	<ul style="list-style-type: none"> • Limited ESA species reduces trail siting challenges • All structures—boardwalks, bridges, culverts—should be wildlife passage friendly
Flat topography	<ul style="list-style-type: none"> • No special structures or treatments required to be ADA-compliant
Highway crossings	<ul style="list-style-type: none"> • Crosses OR 6 by widening existing undercrossing, eliminates need for new crossing
Lower traffic local roadways	<ul style="list-style-type: none"> • Provides for safer and better quality bicycling and walking experience • Several collector and arterial roadways will be crossed, requiring bike/ped safety improvements • Trails along street edges in County will require right-of-way widening
Land uses/structures	<ul style="list-style-type: none"> • Passes through community of Verboort • Close to agricultural uses and buildings, making property acquisition more complex and requiring variations in trail type
Utilities	<ul style="list-style-type: none"> • Transmission power poles along some road sections will constrain trail siting • Irrigation lines along some road sections will limit siting options, particularly where transmission power poles are opposite

Table 2. West-East Corridor (RAIL 1) Existing Conditions and Features

Condition or Feature	Impact
Private land ownership	<ul style="list-style-type: none"> Trail entirely within road or rail right of way except in Segment 5.
Wetlands/nonwetland waters/floodplain	<ul style="list-style-type: none"> New or improved crossing structures over Jobes Ditch and Dairy Creek, and associated wetlands/floodplain May require special permitting and mitigation Opportunity for habitat enhancement
Vegetative cover	<ul style="list-style-type: none"> No major native vegetation impacts
Fish and wildlife	<ul style="list-style-type: none"> Limited ESA species reduces trail siting challenges Boardwalks, bridges, culverts should be wildlife passage friendly
Flat topography	<ul style="list-style-type: none"> No special structures or treatments required to be ADA-compliant
Highway crossings	<ul style="list-style-type: none"> Jobes Ditch spur trail (Segment 5) crosses a state highway (OR 8) Crosses OR 47 in Forest Grove. Two conceptual options proposed (see Chapter 6).
Higher traffic roadways	<ul style="list-style-type: none"> Several collector and arterial roadway will be crossed requiring bike/ped safety improvements
Rail	<ul style="list-style-type: none"> Sharing MAX or freight rail with trail complicates design solutions (see Chapter 4)
Land use/structures	<ul style="list-style-type: none"> Direct impacts to land use/structures negligible as trail is primarily within rail right of way Some indirect impacts from increased use of rail corridor; safety and security fencing recommended Commercial/industrial section of rail lessens visual quality of bicycling and walking experience
Utilities	<ul style="list-style-type: none"> Power lines along north side of rail may impact trail siting (see Chapter 4)

Existing Plans

A variety of regional and local government plans and policies will impact CCRT development. These include plans related to conventional transportation, active transportation (including trails), parks and open space, and land use.

The most significant finding regarding the 22 regional and local plans reviewed at the outset of this project is that with one exception (see Local Plans on the next page) all either support the CCRT directly or support trails and active transportation alternatives to motorized travel. Nine other statewide or local guidance and regulatory policy documents were reviewed later in the process. Results are documented in Plan Report No. 3, and are summarized in Chapter 5 of this master plan.

Regional Plans

Metro is responsible for regional planning on behalf of Washington County and three of the four local government jurisdictions participating in the CCRT planning effort (Banks is not within Metro). Three Metro planning documents support pedestrian and bicycle systems and regional trail development.

- Regional Transportation Plan (2013)
- Regional Active Transportation Plan (2014)

- Regional Trails and Greenways Plan (2014)

Local Plans

Washington County and the four partner cities have adopted numerous long-range plans addressing land use, trails and bicycle/pedestrian systems, parks and open space, and transportation. All plans reviewed, except for the Forest Grove Rail Concept Study (which nonetheless indirectly supports alternative transportation options), supported pedestrian and bicycle systems and trails and, in many cases, specifically identified the CCRT. See Plan Report No. 1 (Appendix A) for complete information.

Natural Resources

Vegetative Cover

Farming and forestry practices, and gradual urbanization in the CCRT study area have greatly altered woodland, valley, and stream corridor vegetation from historic patterns. Because of these losses, remaining native vegetation will present few constraints to trail development, except where associated with wetlands and riparian woodlands. Opportunities for wetland and riparian enhancement and prairie grassland restoration may arise as part of trail development.

There are four major habitats crossed or along the preferred trail alignments:

Farmlands

There are extensive and productive farmlands between Banks and Forest Grove (Segments 1 and 2). Segments 5 and 6 between Cornelius and Hillsboro also have remaining areas of farmland.

Farmlands in the valley floor were once prairie grassland habitat with oak savannah and other tree species. Although agricultural practices have greatly altered historic ecosystems, many grassland species, such as pollinators, insects, small mammals, and birds, are still present.

Urbanized Lands

Significant portions of Segments 1, 3, 4, and 6 are highly urbanized. Development has greatly reduced intact contiguous areas of native vegetation, and landscaping practices have introduced many nonnative plant species.

Valley Woodlands

Nonriparian woodland remnants include small woodlots surrounded by agricultural lands, and wooded residential areas. Many woodland wildlife and bird species will forage into farmlands and nearby suburban areas.

Wetlands and Riparian Woodlands

Wetlands and riparian areas crossed by the preferred trail alignments are along West Fork Dairy Creek (Segment 2), the main channel of Council Creek (Segment 3), and Dairy Creek near the confluence with McKay Creek (Segment 6). There are also numerous minor stream and drainage corridors, but many of these have been highly altered by channelization, draining, and/or the removal of riparian vegetation.

Wetlands and riparian habitats support pollinators and insects, smaller and larger mammals, and a variety of water-dependent reptiles and amphibians. Bird species that favor wetter environments are also common. Bridges and boardwalks, and careful trail siting along habitat edges or through previously disturbed areas, are recommended to avoid impacts. Trail development should be an opportunity to restore and improve these habitats.

Streams and Water Bodies

Streams crossed by the preferred trail alignments include the West Fork of Dairy Creek (Segment 2), Council Creek (Segment 3), and Dairy Creek near the confluence with McKay Creek (Segment 6).

Trail crossings of streams should be avoided if at all possible, and bridges and boardwalks, rather than culverts, should be used if a crossing is necessary. The design of crossing structures should take into careful consideration the preservation of stream and riparian habitat and passage for fish and wildlife. Bridges and boardwalks, and careful trail siting along habitat edges or through previously disturbed areas are recommended to avoid impacts. Trail development should be an opportunity to restore and improve these habitats.

Floodplains

East of Oregon 47, the West Fork Dairy Creek floodplain begins to narrow from the broad floodplain west of the highway (Segment 2). The Council Creek floodplain in Segment 3 is considerably more proscribed than that of West Fork Dairy Creek. Within Segment 6, the 100-year floodplain created by the confluence of Council, Dairy, and McKay Creeks significantly broadens.

Trails across floodplains should be avoided if possible, but trail alignments and treatments can be more flexible and adaptive than in wetland or riparian areas. Siting of trails outside of 10-year and 50-year floodplains and along edges of the 100-year floodplain will reduce the possibility of inundation. Trail structures in floodplain areas should be constructed to withstand intermittent flooding, and elevated structures such as boardwalks should be considered to avoid impeding floodwaters.

Fish and Wildlife

Although there are some federal Endangered Species Act (ESA)- and state-listed fish and wildlife species present within the CCRT study area, preferred trail alignments avoid most areas of high fish and wildlife value—stream corridors and associated riparian zones and wetlands. High value areas impacted by the preferred alignments are limited to improving two existing crossings of West Fork Dairy Creek (Segment 2) along NW Evers Road, improving or replacing the existing NW Porter Road bridge across Council Creek (Segment 3), and reuse or replacement of an existing railroad bridge across Dairy Creek (Segment 6).

Roadways and rail lines, and the lack of suitable connecting habitat due to urbanization and farming, are the primary barriers to wildlife movements across and along the preferred trail alignments. Higher traffic volume and wider streets in particular pose difficulties to wildlife passage, as can active rail lines. Future trail builders should consult Metro's Westside Trail Master Plan (2014) Chapter 6, Wildlife Corridors, for principles of habitat restoration and conservation and wildlife friendly passage treatments developed within the context of the Tualatin Valley.

Environmental Overlay Zones/Mitigation Areas

Some CCRT municipal partners have established land use regulations defining environmental or natural resource overlay zones. Only the City of Hillsboro's overlay around Dairy Creek (Segment 6) may be impacted by a preferred trail alignment, but the location of this section of trail within an established rail corridor will greatly limit or eliminate potential conflicts. No designated environmental mitigation sites are crossed by a preferred trail alignment.

Steep and Unstable Slopes

The preferred trail alignments are mostly along flat valley bottomland. Topography should not be a significant challenge to trail siting. The West Fork Dairy Creek (Segment 2), Council Creek (Segment 3), and Dairy Creek (Segment 6) have steeper slopes along stream banks. Slope impacts will be mitigated by using boardwalks and bridges for trail crossings.

The Oregon Department of Geology and Mineral Industries (DOGAMI) documents unstable slope conditions. According to the DOGAMI records, there are no unstable slopes along the preferred alignments.

Hazardous Materials

The preferred trail alignments do not cross or abut any hazardous materials sites documented by the Oregon Department of Environmental Quality (DEQ).

Soils and Geology

Except for soils associated with streams and wetlands, none of the soils along the preferred trail alignments pose significant constraints to trail development.

Transportation

Rail

The rail line extending from near the Pacific University campus in Forest Grove to the vicinity of the MAX station in downtown Hillsboro presently supports limited freight rail service. This line is a possibility for a future MAX light rail extension or some other form of high capacity transit.

This rail line corridor is the preferred west-east CCRT alignment.

Roadways

The preferred CCRT alignment will require several new arterial and collector roadway intersection or midblock crossing improvements. See Chapter 4.

Regional Trails and Bikeways

The CCRT preferred trail alignments will connect to, cross, or parallel the following existing or planned regional trails, bikeways, and greenways.

Table 3. Regional Trails

Segment 1	Banks-Vernonia Trail, Path to the Pacific Trail
Segments 1, 2, and 3	Tualatin Valley Scenic Bikeway
Segment 3	Gales Creek Trail*
South of Segment 3	Yamhelas Westsider Trail*
Segment 5	Tualatin River Greenway
Segment 6	Dairy Creek Greenway

*Connects via local trails that are or will be part of Forest Grove’s “Emerald Necklace” trails vision.

Transit

TriMet provides transit and bus services within Segments 3, 4, and 6. The eastern terminus of the CCRT will be in downtown Hillsboro in the vicinity of the MAX Blue Line light rail station near N First Avenue (Segment 6). A possible extension of light rail or high capacity transit from Hillsboro to downtown Forest Grove could use the freight rail line that crosses Segments 3, 4, and 6.

Land Uses and Structures

The preferred CCRT trail alignments will connect to major destinations or activity generators such as schools, outdoor recreation areas, and civic and commercial centers. Existing land uses and structures can also significantly reduce the options for trail siting. A range of land uses and structures are documented in Plan Report Nos. 1 and 2.

Lands between Segment 1 and Segment 3 in unincorporated Washington County are primarily designated Rural Reserves under Metro authority and zoned Exclusive Farm Use under County code. Specific land use standards in the County’s Rural/Natural Resources Plan and Community Development Code may apply to trail development.

Historic and Archaeological Resources

Oregon State Parks and Recreation (OPRD) manages a historic and archaeological preservation inventory program which identified the following resources near the preferred trail alignment.

Table 4. Historic Resources

Segment 1	Fifteen historic sites or within the city limits of Banks.
Segment 2	There are over a dozen historic sites and buildings in Segment 2 in or near to the community of Verboort.
Segments 3, 4, and 6	Only one designated historic or archaeological resource (Hillsboro Pioneer Cemetery), although the rail line itself is historically significant given its original function as an early 20th Century electric rail commuter service connecting Forest Grove to Portland.

Conflicts between documented historic resources and the preferred CCRT alignments should not be a factor. Historic sites and buildings are destinations for pedestrians and bicyclists, particularly where there are larger concentrations of such sites, as is the case around the community of Verboort (Segment 2).

Utility Corridors

Electrical Transmission Corridors

Electrical transmission structures can challenge trail routing. Pole or tower relocation can be very expensive (up to approximately \$100,000 per pole set, plus permitting). With transmission-level infrastructure, relocations often involve multiple poles or towers. Utility requirements for maintenance access and vegetation management around and under power transmission infrastructure (wires, poles and towers) can also limit trail options. See Plan Report No. 3 (Appendix C) for more details.

Bonneville Power Administration (BPA): A BPA transmission-scale power line system enters and crosses the larger CCRT study area, but has no direct impact on preferred trail alignments. A BPA power substation near Oak Street (Segment 3) is near the intersection of the north-south and west-east preferred trail alignments, and power lines may pass over short sections of the trail in this location.

Portland General Electric (PGE): A PGE transmission line follows the east edge of Oregon 47 from Banks to NW Kemper Road through Segments 1 and 2. This transmission line then follows local roadways through the community of Verboort. The location of PGE transmission poles may constrain opportunities to site the preferred street-adjacent multiuse trail in these areas.

A PGE transmission line also follows the north side of the preferred CCRT rail corridor alignment through Segments 4 and 6. The location of these power poles may challenge trail-with-rail solutions.

Agricultural Irrigation

Tualatin Valley Irrigation District (TVID): Routes over or along major agriculture irrigation lines operated by TVID are possibilities for street-adjacent multiuse trail siting along the preferred alignment in Segment 2. These TVID lines parallel nearly the entire preferred alignment through these segments, except for the trail section along Oregon 47 south of Banks.

Trail use is limited by TVID and Bureau of Reclamation policy and would require special agreements with these agencies and with the underlying private property owners. PGE

transmission lines on the opposite side from TVID lines along NW Visitation Road and a portion off NW Osterman Road further complicates CCRT siting.

Sewer and Water

No preferred trail alignments conflict with major sanitary sewer and drinking water lines or structures.

Natural Gas and Petroleum Pipelines

No preferred trail alignments conflict with major natural gas or petroleum pipelines.

3: Preferred Trail Alignments

Overview

Plan Report No. 1 – Existing Conditions (Appendix A) provides the essential background and context to the technical analysis reported in Plan Report No. 2 – Trail Alignment Analysis (Appendix B). This analysis established the set of trail alternatives advanced to consideration as preferred alternatives. Plan Report No. 3 – Implementation Strategy (Appendix C) documents the considerations and processes that resulted in preferred alternative recommendations by the SAC and PAC.

All illustrated trail alignment alternatives and trail types are conceptual and plan-level and have not been subject to survey, final design, or engineering.

Master Plan Evolution

CCRT alignments and trail types evolved significantly as an outcome of technical analysis, public input, and advisory committee review. Comparative trail alternative criteria were developed and approved by the PAC. These criteria were applied to the range of alternatives published as part of Plan Report No. 3 (see Chapter 8). The selection of preferred alternatives in December 2014 also reflected stakeholder and public input, including identification of an interim shared-use on-street solution through the North-South Corridor (Segments 1 and 2).

Key changes and decisions with respect to trail alignments and types over the course of the project are summarized in Table 5 below, and illustrated on the three maps that follow (Maps 2, 3, and 4) showing the alternatives under consideration in April, July and October 2014. Capitalized names below (WEST, RAIL, CREEK, etc.) are those applied to various alignment alternatives. See Plan Report Nos. 2 and 3 for details and complete mapping. Map 5 shows the preferred alternatives selected by the SAC and PAC in December 2014. The preferred alternatives are described and mapped in more detail in the balance of Chapter 3 of this master plan report.

Table 5. Changes to Trail Alignments and Types (April 2014 to November 2014)

Segment 1: Banks
Original WEST option dropped to avoid extended crossings of farmland and a new crossing of OR 6.
Original CENTER option dropped at request of City to avoid undue impacts on Main St (OR 47) through downtown Banks. In late 2015, new City trail system plan may recommend use of Main St.
Added new combined WEST/CENTER option that used planned City collector road alignment and existing OR 6 undercrossing.
Segment 2: Washington County North
WEST and EAST connector routes to OR 47 shifted from local roads to collector (NW Greenville Rd) to align with Tualatin Valley Scenic Bikeway, and to eliminate farmland crossings.
All trail alignments involving crossings of farmland dropped, except for BPA corridor (WEST).
Only trail alignments along street edge of farmlands used, except BPA WEST.
Use of NW Thatcher Rd (WEST) dropped – too many farm impacts.

On-street solution used through Verboort community rather than separate trails, including for last 500 feet on NW Visitation Rd before NW Heesacker Rd.

Shared-use on-street option retained as interim alternative for all of EAST 1, except OR 47 approaching Banks.

On-street option retained as interim alternative for all of EAST 1.

On-street option recommended as permanent solution for first 500 feet at north end of NW Porter Rd to avoid impacts on farm improvements.

Segment 3: Forest Grove

West-East trail route along rail corridor extended into downtown Forest Grove.

Segment 4: Cornelius

Use of future N Holladay St roadway extension between OR 47 and N 10th Ave identified as possible route alternative to the along-the-creek CREEK option.

CREEK between N 10th Ave and N 19th Ave realigned to use street ROW and willing seller property only.

All trail alignment options north of Council Creek between N 19th Ave and NW Hobbs Rd dropped.

Use of north side of RAIL 1 further analyzed with ODOT, TriMet, and PGE input (south side remains the more technically feasible and cost effective option).

RAIL 2 option added at suggestion of urban unincorporated property owners (subsequently dropped based on Union Pacific Rail policy).

Segment 5: Jobes Ditch

Option along NW 334th Ave impacting rural reserve farm properties dropped, recommended option (N 29th Ave extension) exclusively in UGB.

Segment 6: Hillsboro/Washington County East

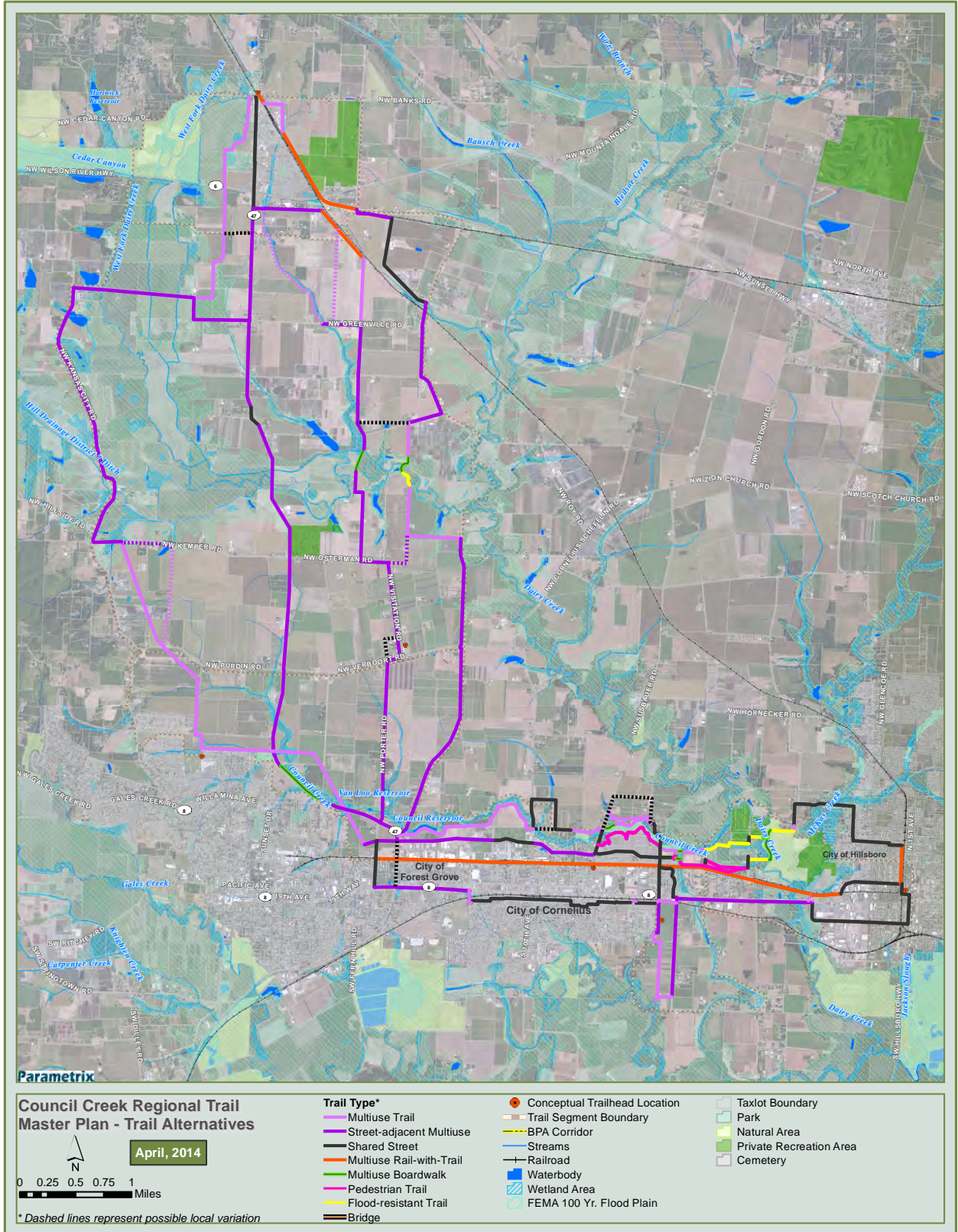
CREEK modified to use on-street option rather than separate trail along portion of golf course.

Use of north side of RAIL 1 further analyzed with ODOT, TriMet, and PGE input (south side remains the more technically feasible and cost-effective option).

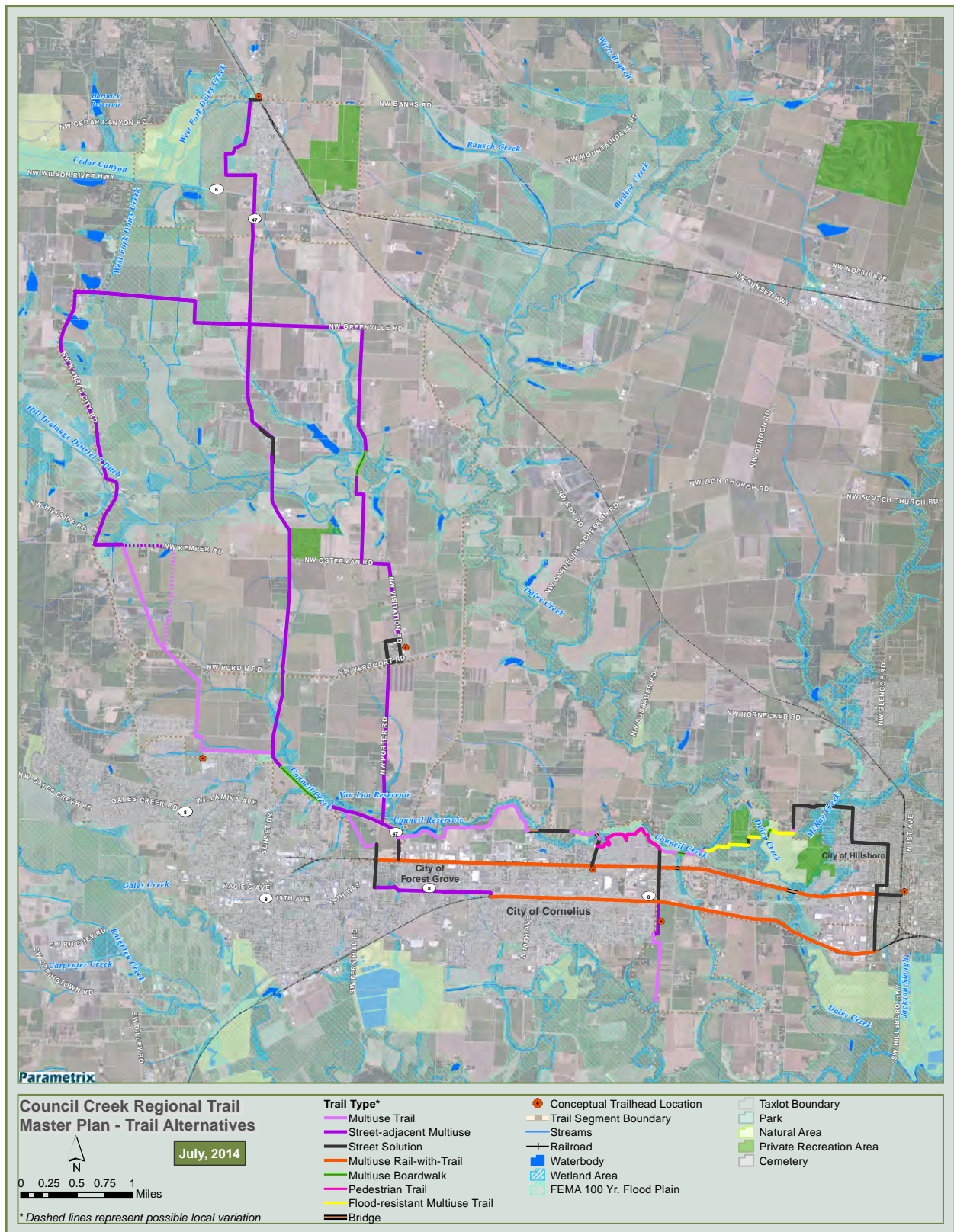
New connector option between CREEK and RAIL 1 added to allow combination of two options.

RAIL 2 option added at suggestion of urban unincorporated property owners (subsequently dropped based on UPRR policy).

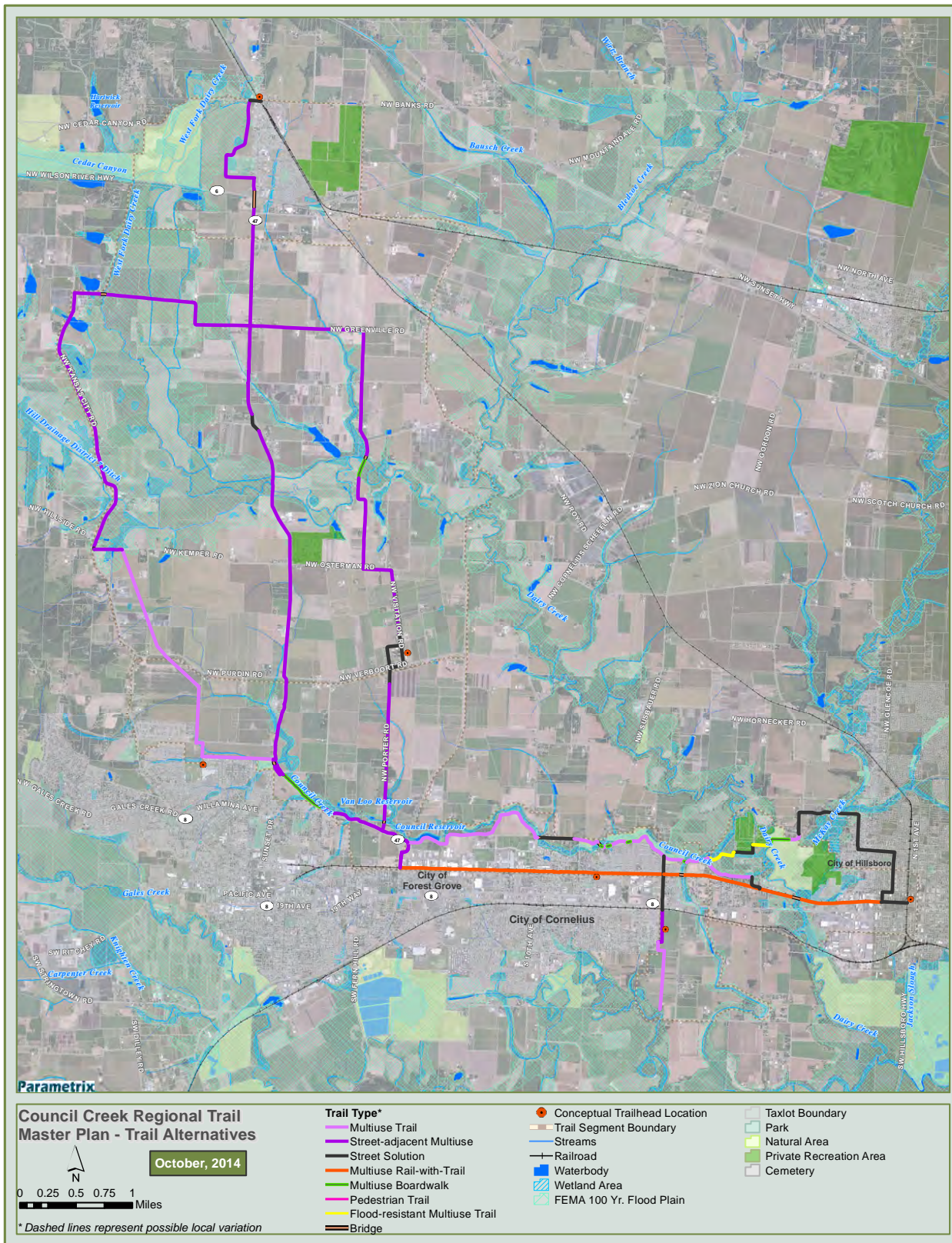
Map 2. Trail Alignment Alternatives – April 2014



Map 3. Trail Alignment Alternatives – July 2014



Map 4. Trail Alignments Alternatives – October 2014



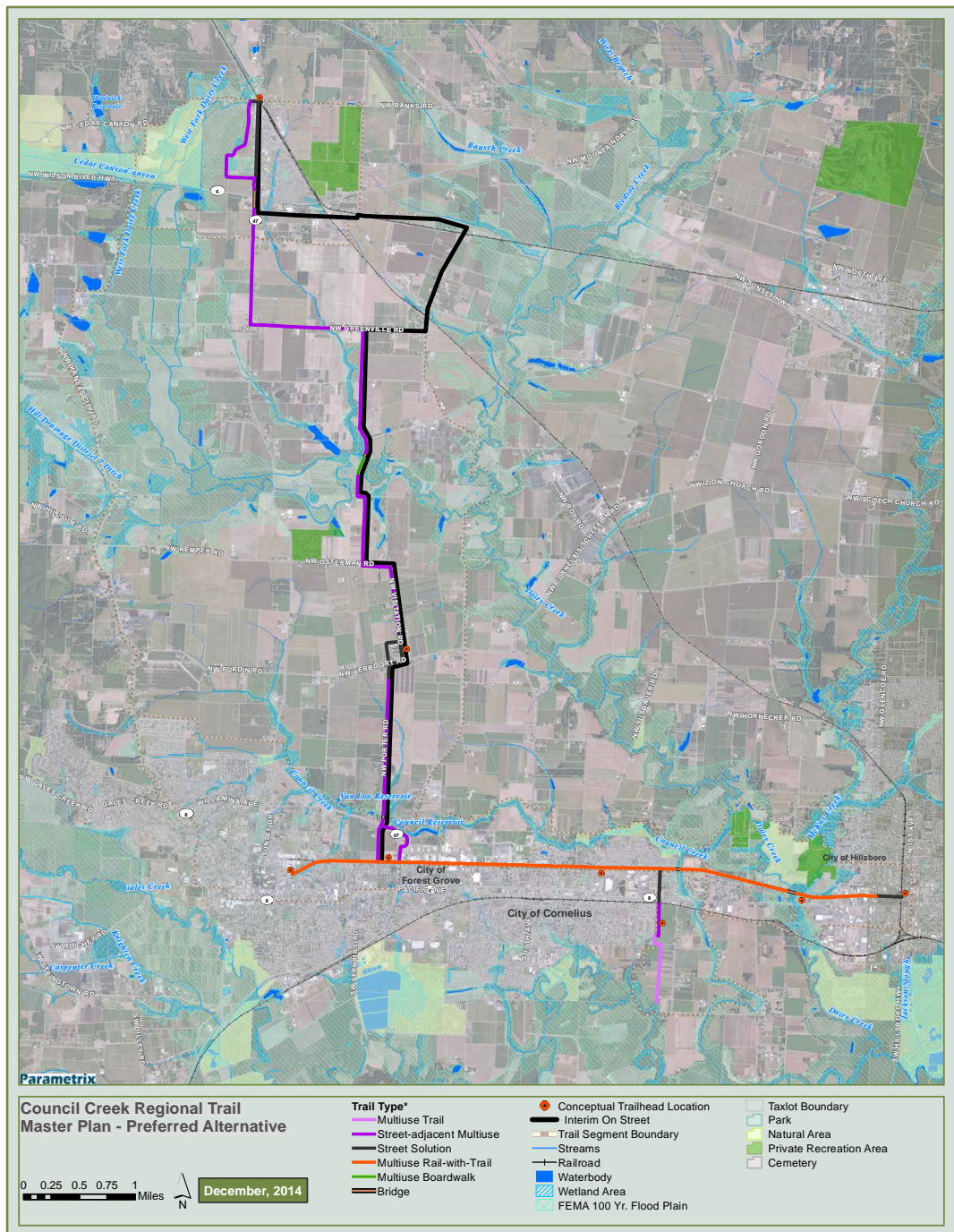


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Preferred Trail Alternatives

Overall and north-south and west-east corridor maps follow illustrating the preferred alignments and trail type alternatives as recommended by the PAC and SAC in December 2014. The preferred alternatives for each trail planning segment are also mapped and key information listed (jurisdiction, trail types, trail design, trail length, estimated costs, and phasing). Conceptual trail type cross sections in each segment are also illustrated. Details of the interim on-street solution shown on Map 5 below can be found in Chapter 6.

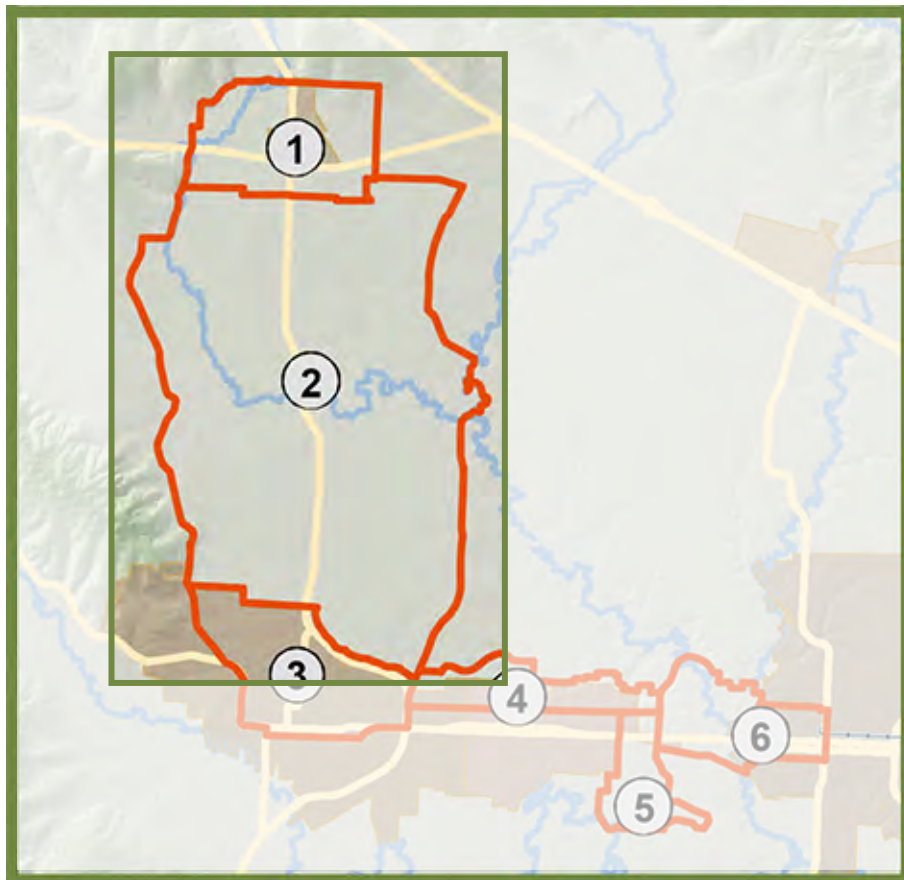
Map 5. Preferred Trail Alternative - December 2014



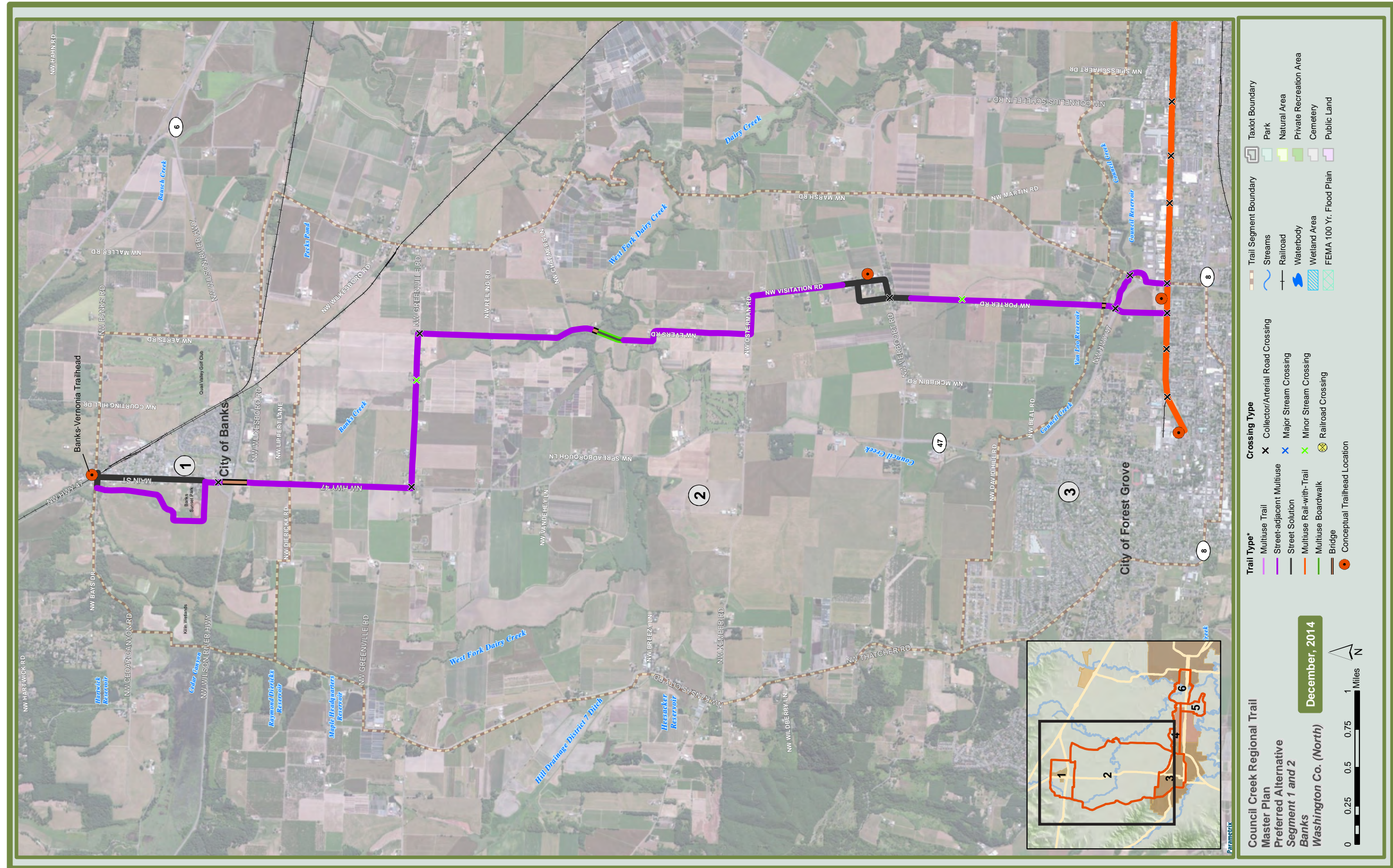
Preferred Trail Alternatives

Segment 1: Banks

Segment 2: Washington County North



Map 6. Segments 1 and 2 | North-South Corridor



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Segment 1: Banks



City of Banks Welcome Sign



*Oregon 6/Oregon 47
undercrossing looking south*



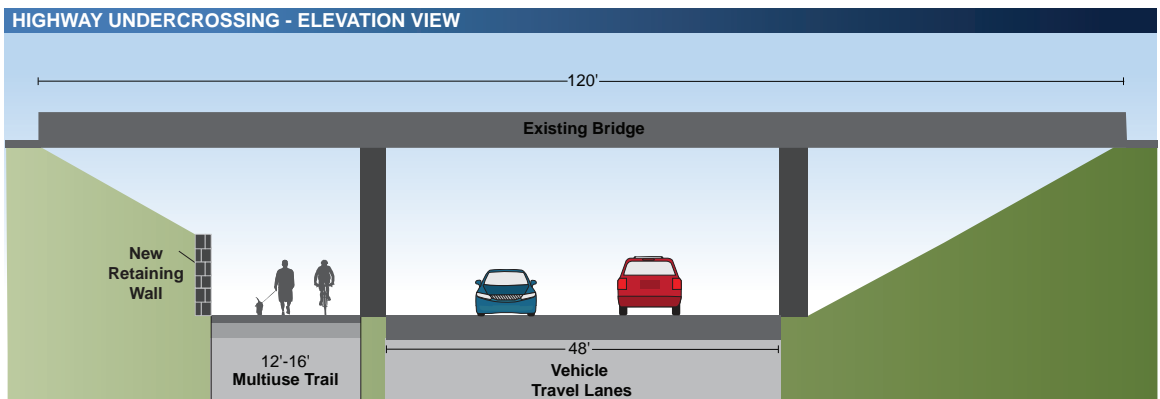
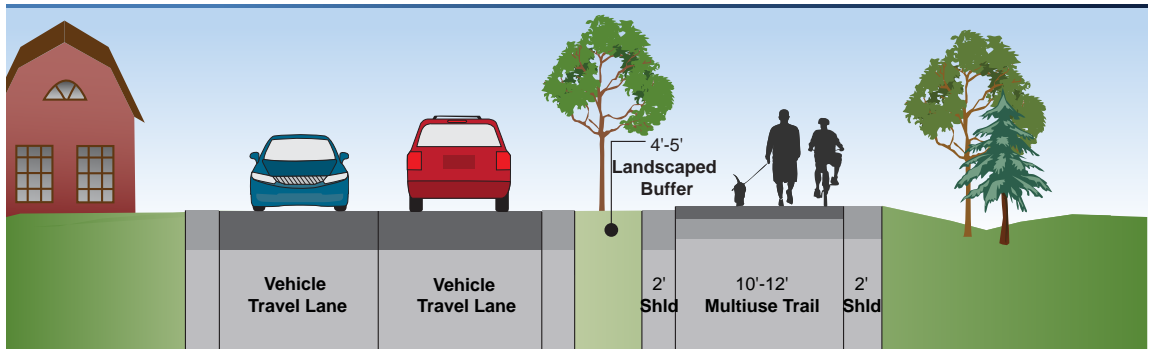
Banks-Vernonia Trailhead



*Proposed Westside Circulator
Roadway route*

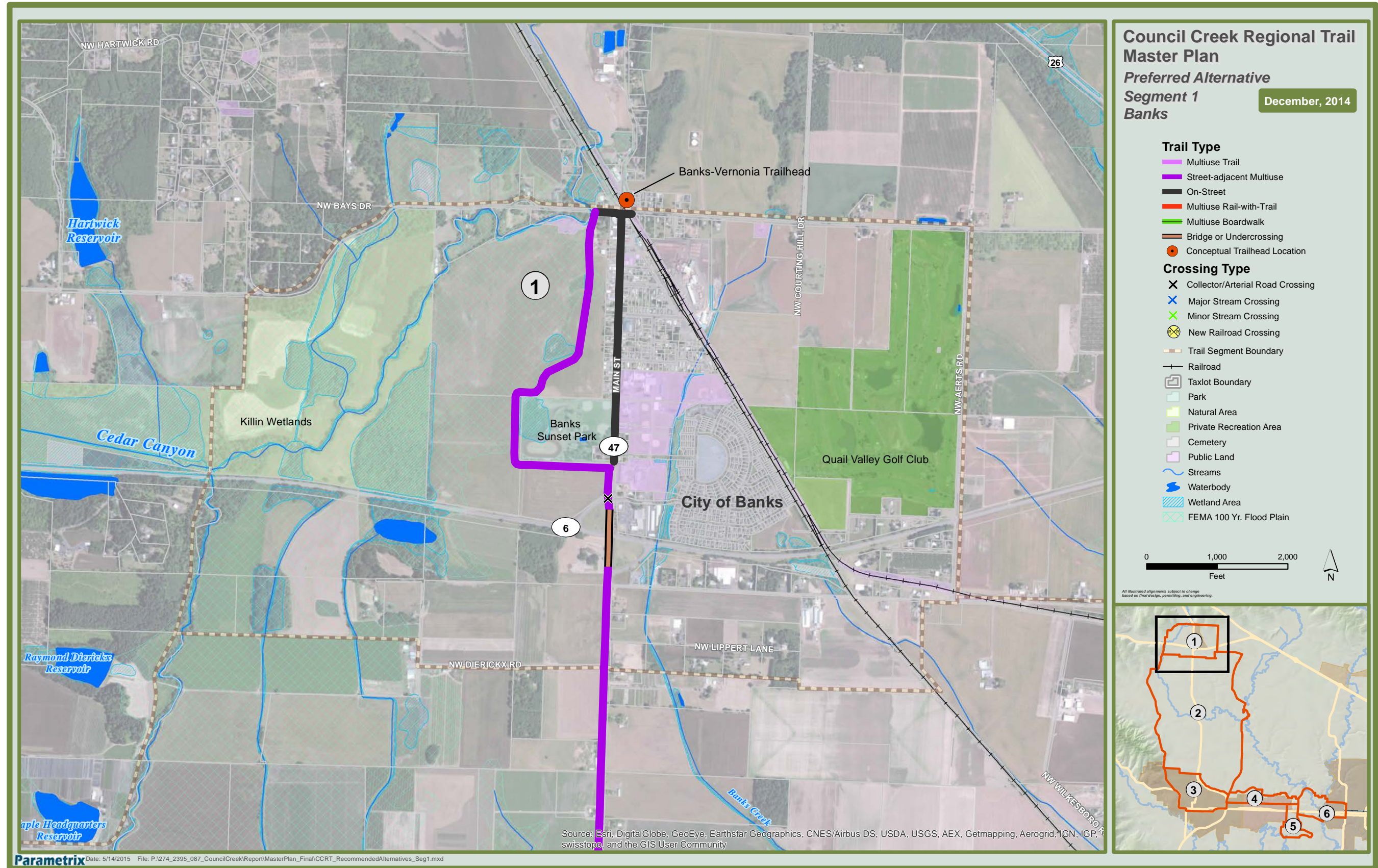
Segment 1: Banks

Jurisdiction	City of Banks		
Trail Types	<ul style="list-style-type: none"> • Urban street-adjacent multiuse on west side of downtown • Urban street-adjacent multiuse without buffer approaching and through OR 6 undercrossing, extensive retaining walls • Rural street-adjacent multiuse south of OR 6 		
Design	<ul style="list-style-type: none"> • Asphalt, 10'-12' wide, gravel shoulders • Undercrossing: 14'-16' wide, concrete surface 		
Length	1.44 mile	Cost Estimate	\$4,473,200
Phasing	<ul style="list-style-type: none"> • OR 6 undercrossing/approach trails: NEAR-TERM • Along OR 47, south of OR 6: MID-TERM • West side of downtown: As new roadway is developed 		
Notes	Undercrossing/approach trails on west side of Main St/OR 47; uses existing Banks-Vernonia Trailhead; trail on west side of downtown requires planned new collector roadway; City trail system plan scheduled for late 2015 adoption may recommend Main St rather than new collector for CCRT route; land acquisition required.		



Note: Trail surface under bridge may be concrete and/or widened.

Map 7. Segment 1: Banks



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Segment 2: Washington County North



Visitation Church in Verboort



NW Evers Road



NW Evers Road crossing of West Dairy Creek



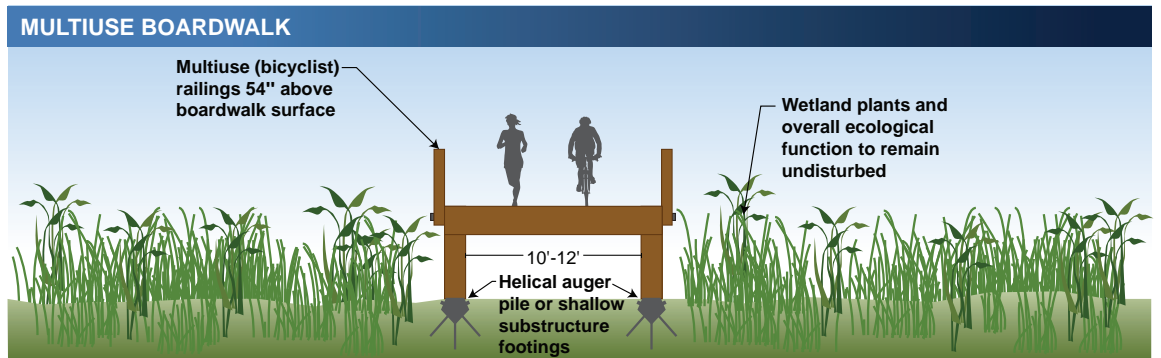
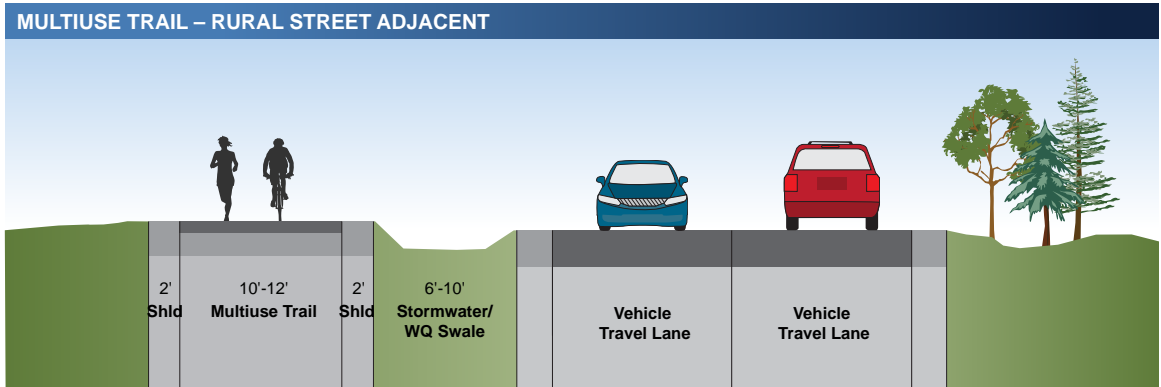
Porter Road showing TVID setback



NW Heesacker Road nearing Verboort

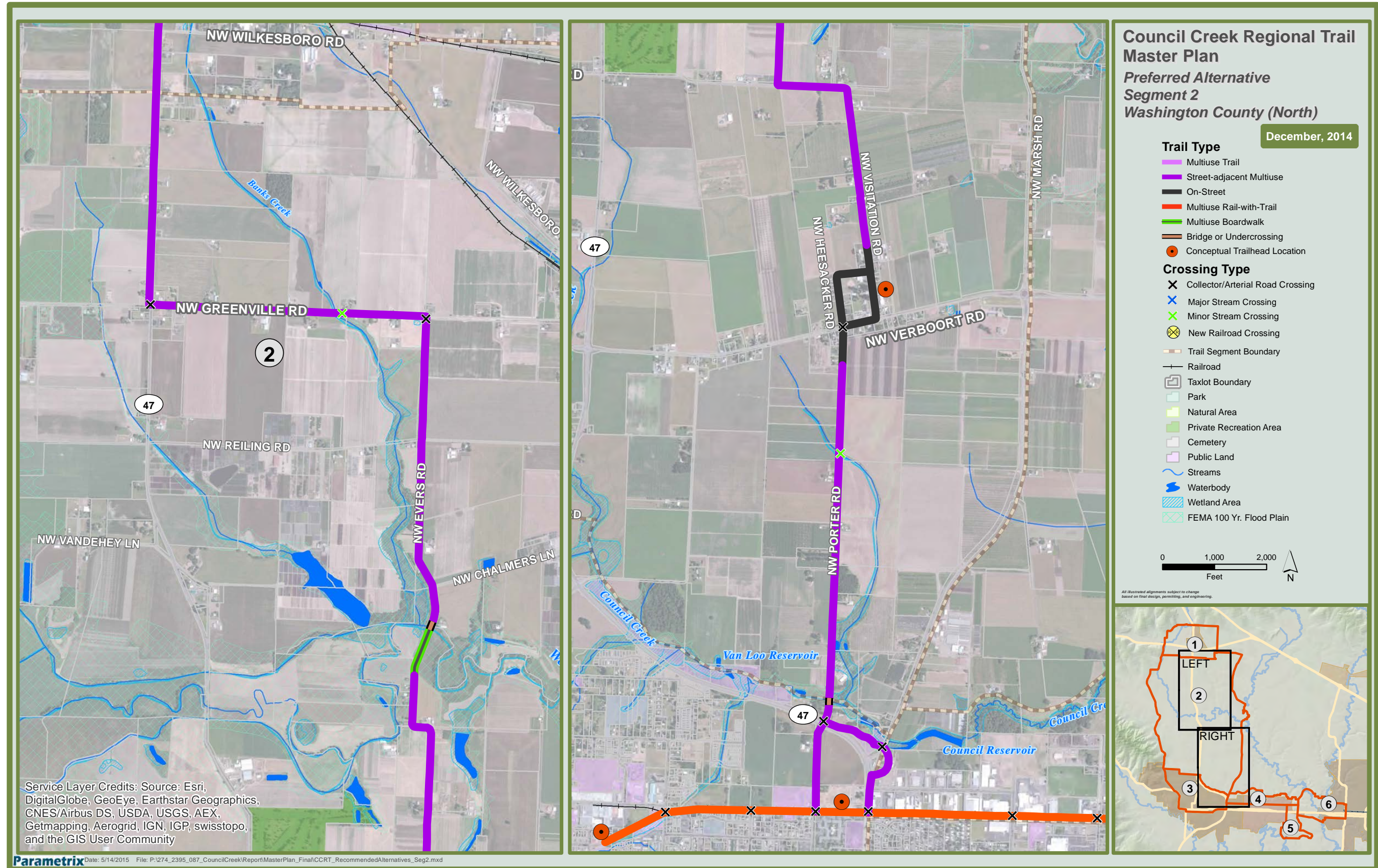
Segment 2: Washington County North

Jurisdiction	Washington County		
Trail Types	<ul style="list-style-type: none"> • Rural street-adjacent multiuse, buffer may be narrowed or eliminated to reduce impacts on farm buildings. • Multiuse boardwalk/bridge (crossing West Fork Dairy Creek) • Combination of widened shoulders, widened sidewalks, and shared-use roadway to create loop through community of Verboort 		
Design	<ul style="list-style-type: none"> • Asphalt, 10'–12' wide, gravel shoulders • Boardwalk, 10'–12' wide, steel structure, concrete surface • Widened shoulders and sidewalks in Verboort 		
Length	7.5 miles plus Verboort loop	Cost Estimate	\$22,676,200
Phasing	<ul style="list-style-type: none"> • Through community of Verboort: NEAR-TERM • OR 47/Greenville Rd: MID-TERM • Balance of Segment 2: LONG-TERM 		
Notes	New multiuse boardwalk across West Fork Dairy Creek combined with 90-foot-span bridge; new trailhead in vicinity of Verboort; crosses one arterial and four collector roadways; land acquisition required.		



Note: Boardwalk materials will vary: wood, steel, concrete, etc.

Map 8. Segment 2: Washington County North



Preferred Trail Alternatives

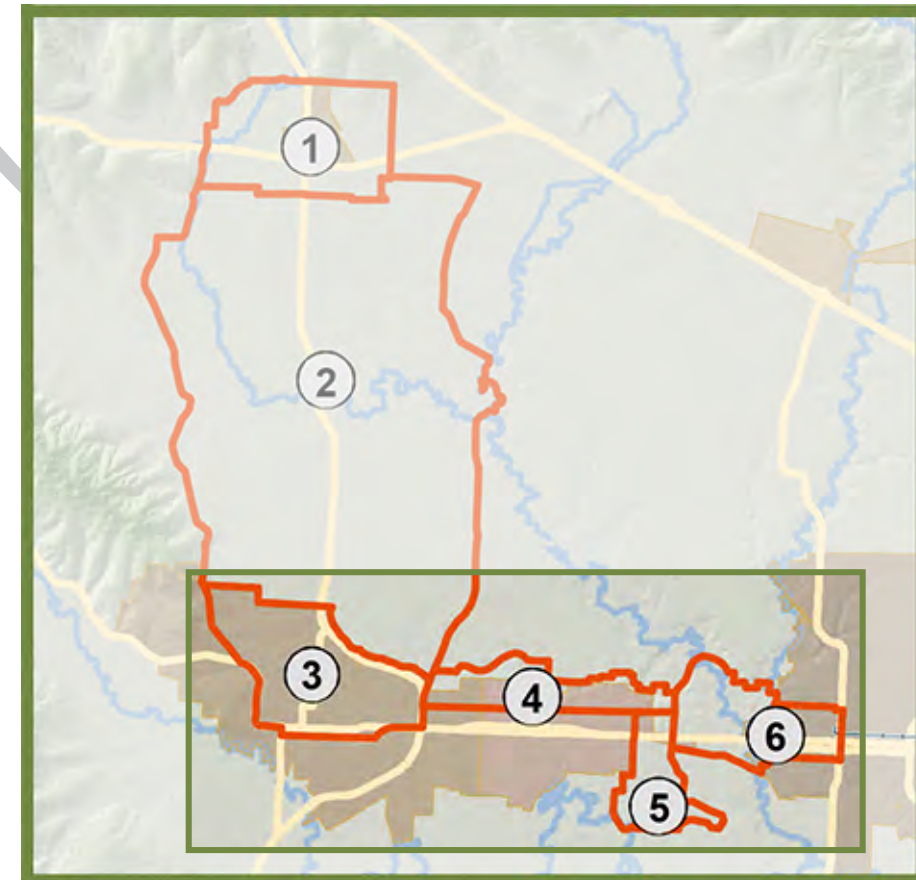
Segment 3: Forest Grove

Segment 4: Cornelius

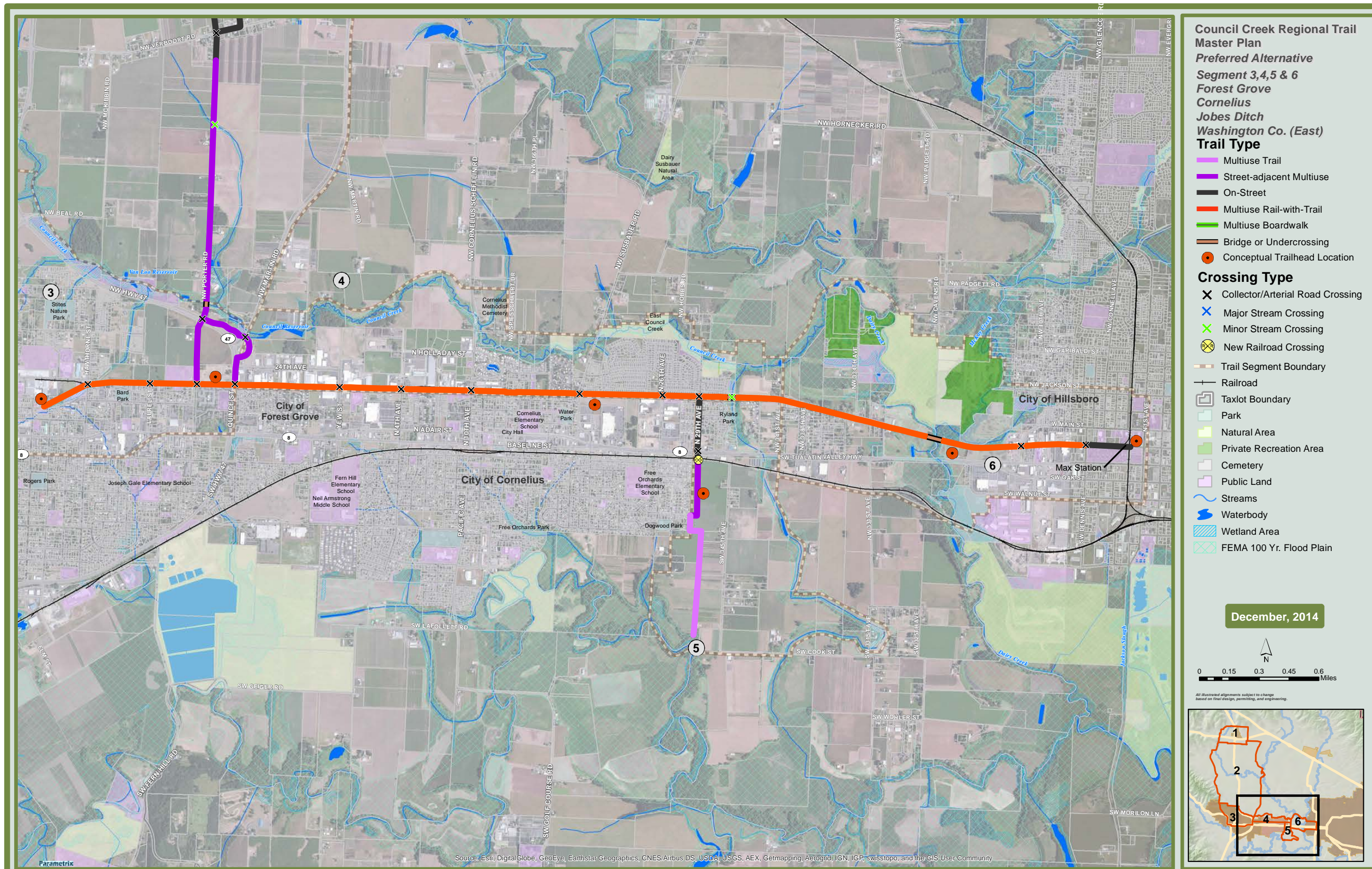
Segment 5: Jobes Ditch

Segment 6: Hillsboro – Washington County East

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Map 9. Segments 3, 4, 5 and 6: West-East Corridor



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Segment 3: Forest Grove



Oak Street/Oregon 47/Porter Road



Rail corridor near Hawthorne Street



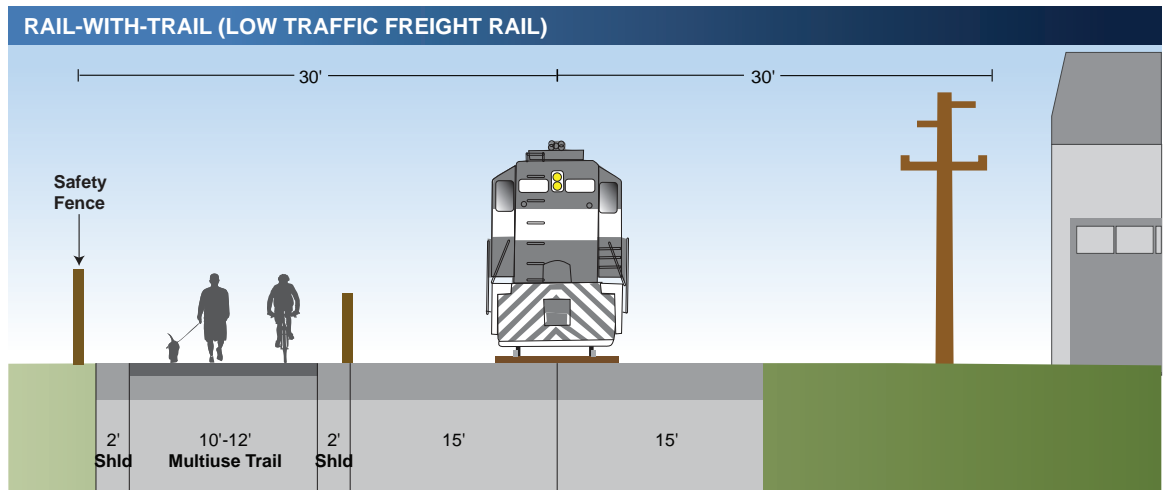
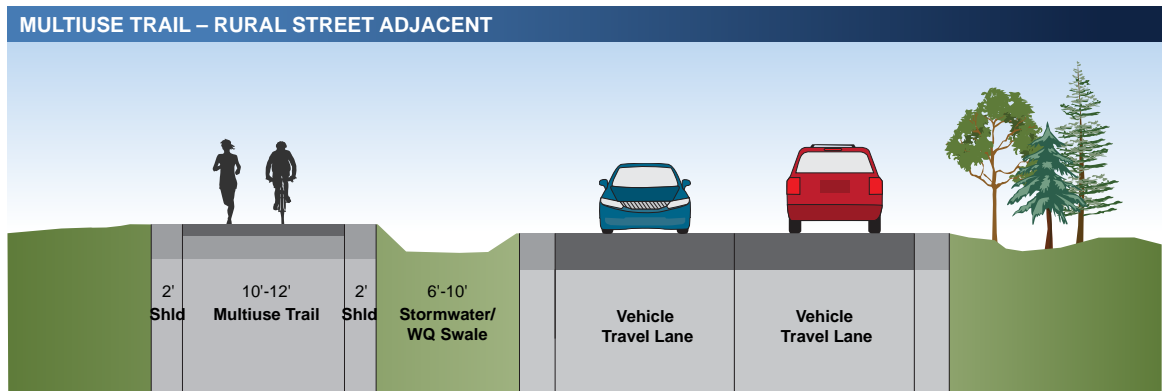
Pacific University



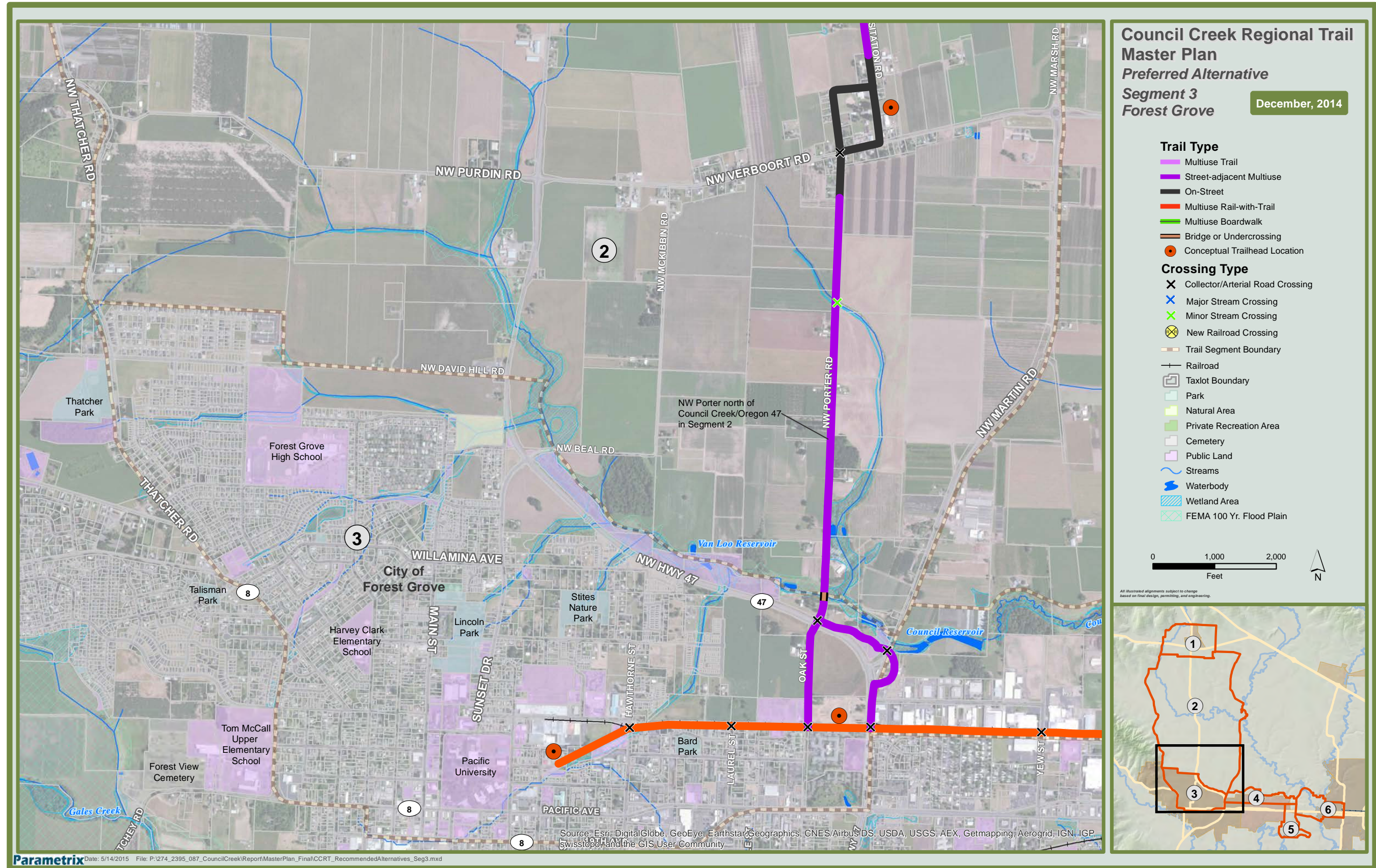
Rail corridor near BPA substation

Segment 3: Forest Grove

Jurisdiction	City of Forest Grove		
Trail Types	<ul style="list-style-type: none"> • Urban street-adjacent multiuse (along Oak Street) • Rail-with-trail (section west of OR 47) • Connection across OR 47 in Forest Grove TBD (see page 79) 		
Design	<ul style="list-style-type: none"> • Asphalt, 10'–12' wide, gravel shoulders • Rail-with-trail design may vary based on type of future rail or transit service 		
Length	1.05 mile	Cost Estimate	\$4,565,000
Phasing	<ul style="list-style-type: none"> • Rail-with-trail: NEAR-TERM • Connection across OR 47: NEAR-TERM 		
Notes	<p>Uses improved or replacement Porter Road Bridge; two options for crossing OR 47 in Forest Grove and connecting to rail-with-trail (see page 79); new trailhead in vicinity of Oak St/BPA power substation; uses downtown facilities as second trailhead; two to three arterial roadway crossings. See pages 54–57 for the full range of possible rail-with-trail or other transit solutions.</p>		



Map 10. Segment 3: Forest Grove



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Segment 4: Cornelius



Rail corridor through Cornelius



Rail corridor through Cornelius



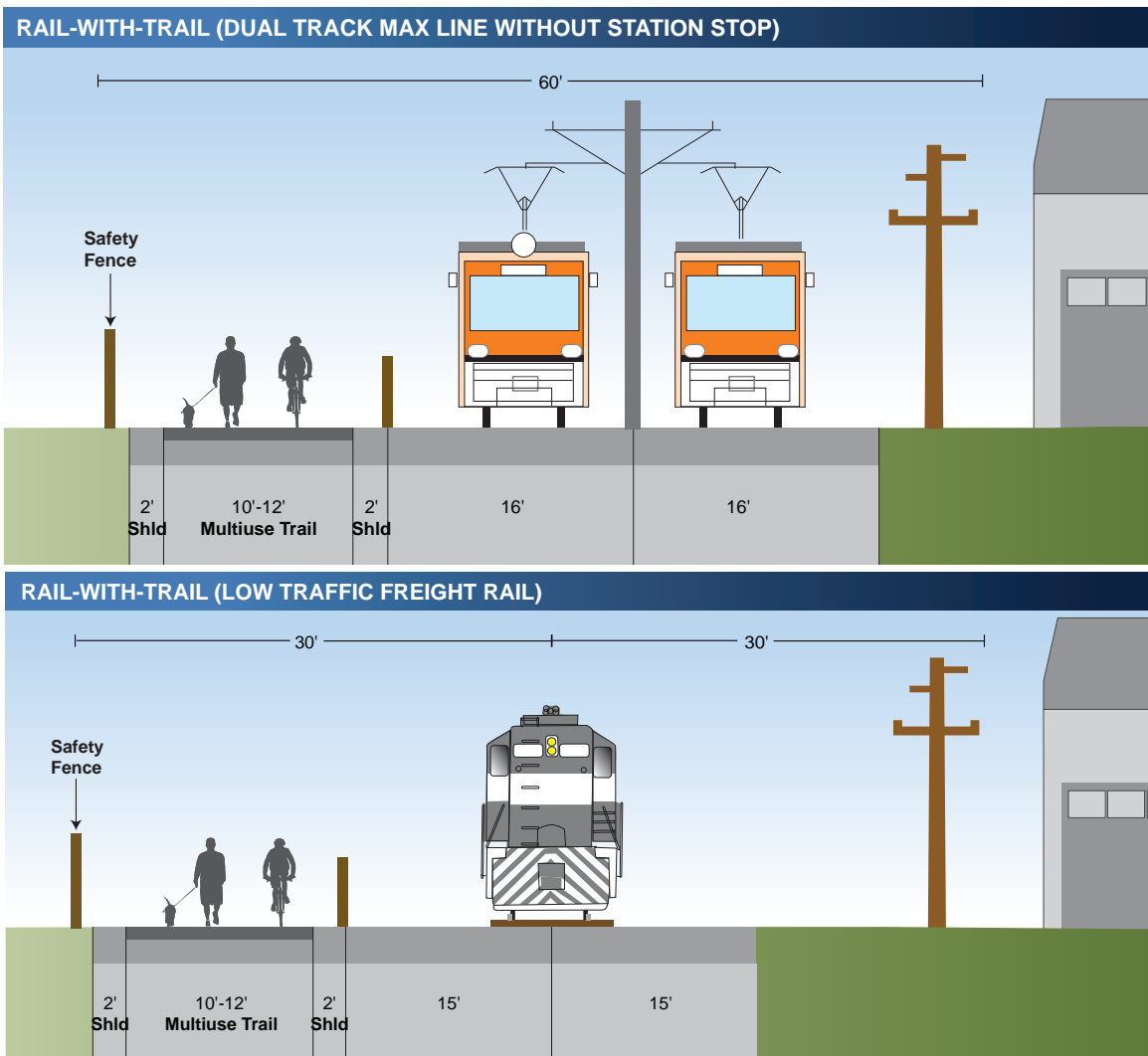
Rail siding west of N 10th Ave.



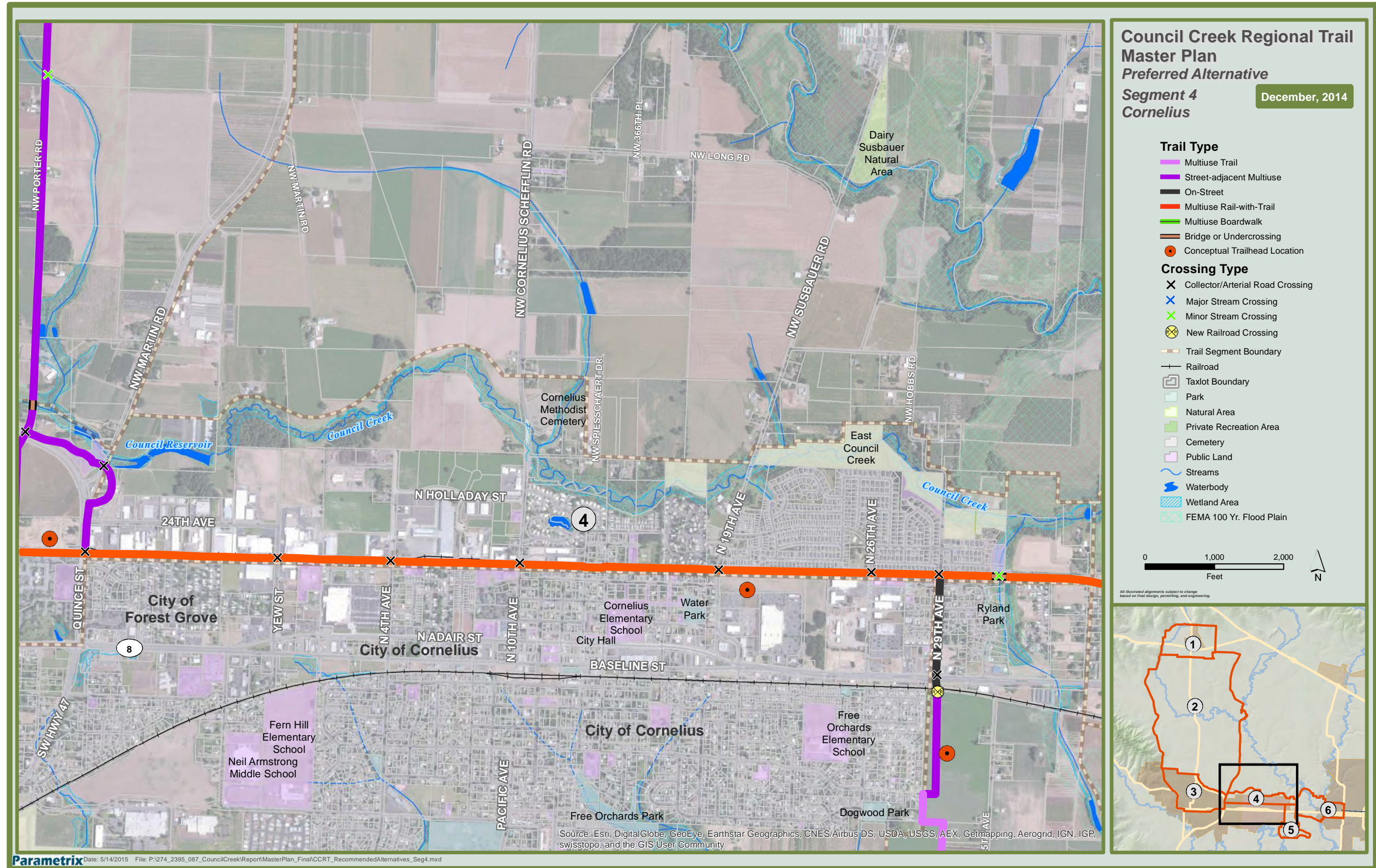
Cornelius welcome sign

Segment 4: Cornelius

Jurisdiction	City of Forest Grove – west of Yew Street City of Cornelius – east of Yew Street		
Trail Type	• Rail-with-trail (section east of OR 47)		
Design	• Asphalt, 10’–12’ wide, gravel shoulders • Rail-with-trail design may vary based on type of future rail or transit service		
Length	2.67 miles	Cost Estimate	\$9,957,600
Phasing	• Staged west to east – NEAR TERM		
Notes	Trail on south side of rail right of way; location and design may vary based on possible future MAX extension or high capacity transit; four collector and two arterial roadway crossings; one minor stream crossing (Jobs Ditch); new trailhead on south side of rail along N 19th Ave. See pages 54–57 for a range of possible rail-with-trail or transit solutions.		



Map 11. Segment 4: Cornelius



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Segment 5: Jobes Ditch



*Jobes Ditch Spur Trail corridor
near Dogwood Park*



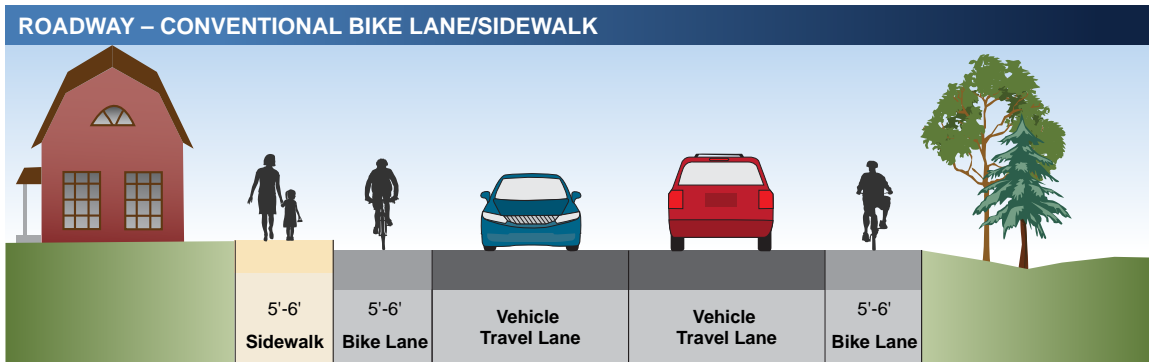
*Jobes Ditch Spur Trail corridor
looking toward Oregon 8*



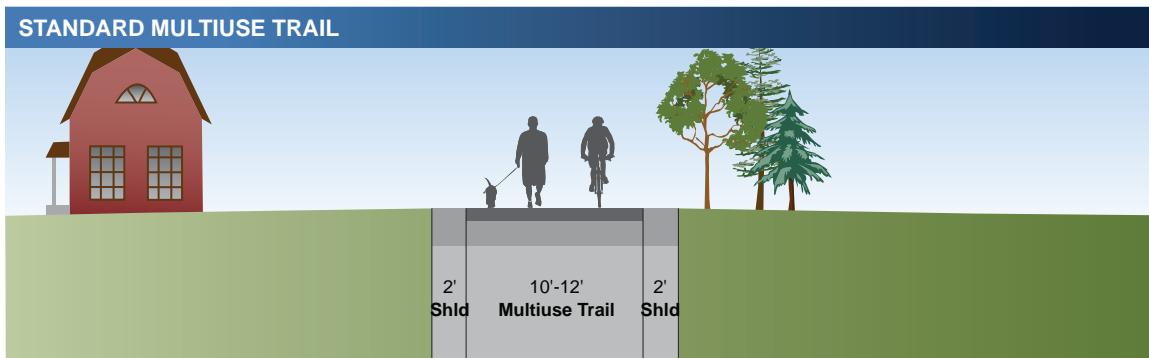
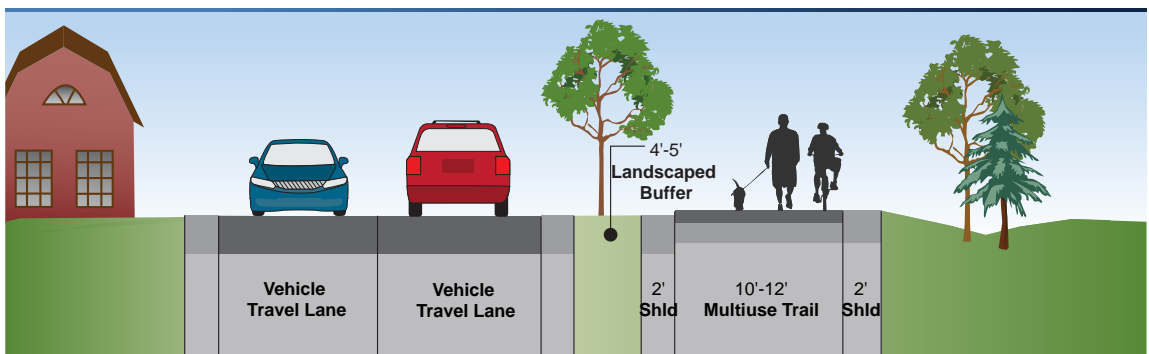
*Looking toward Tualatin River from
SW Cook Street*

Segment 5: Jobes Ditch (HOBBS Alternative)

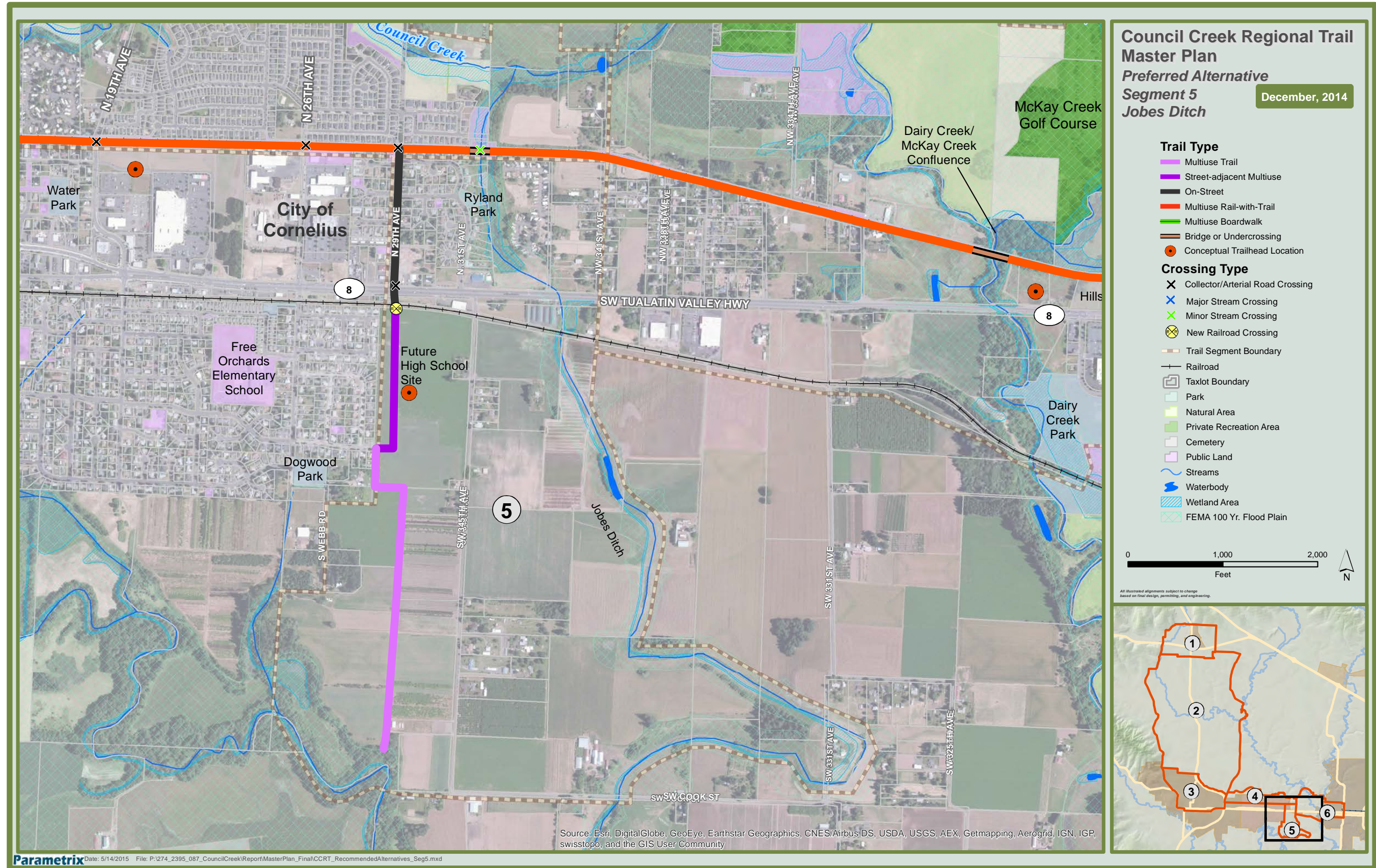
Jurisdiction	City of Cornelius – North of OR 8 Washington County – South of OR 8 to Tualatin River (area will eventually be annexed to Cornelius)		
Trail Types	<ul style="list-style-type: none"> • Bike lanes/sidewalks – RAIL 1 to OR 8 • Urban street-adjacent multiuse – OR 8 to Dogwood St • Standard multiuse – Dogwood St to Tualatin River 		
Design	• Asphalt, 10'-12' wide, gravel shoulders		
Length	1.44 miles	Cost Estimate	\$2,491,500 (excludes cost of new highway and railroad crossings)
Phasing	• As funding is obtained and building of street and rail crossings occur		
Notes	Will require building of N 29th Ave extension including new highway and rail crossing; new high school and new development south of Dogwood St. could include sections of trail; shared-use trailhead at new high school; requires property acquisition.		



Note: Can include sidewalks on both sides.



Map 12. Segment 5: Jobs Ditch



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Segment 6: Hillsboro – Washington County East



Rail corridor near Dairy Creek



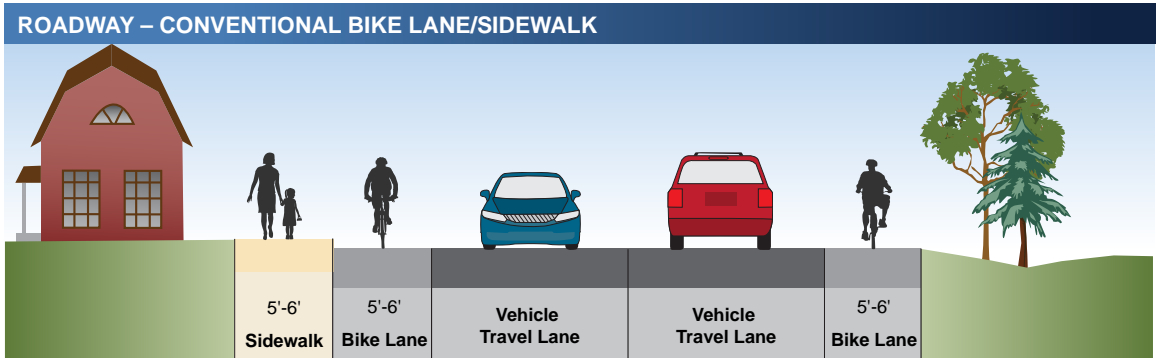
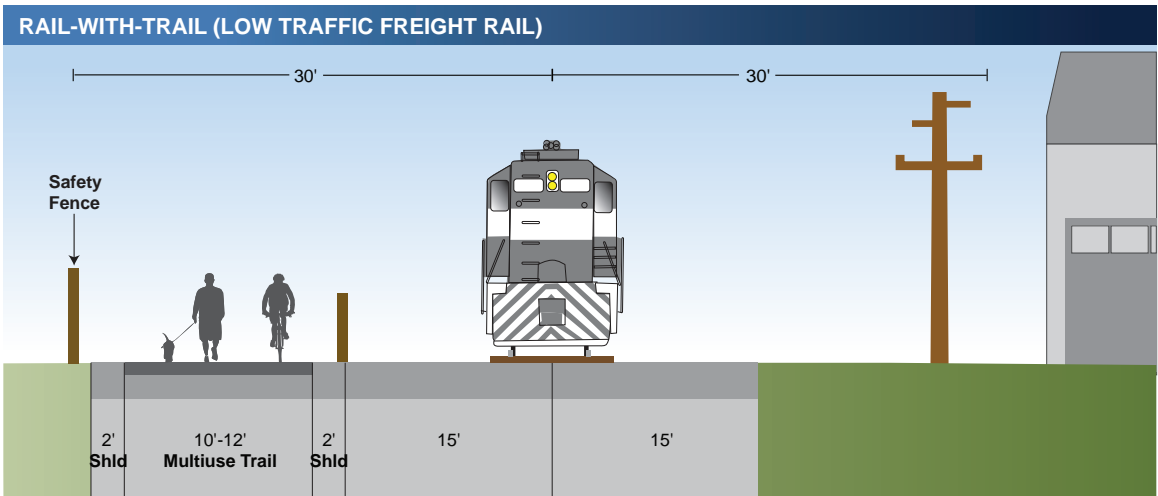
Wider rail right of way east of NW 334th Avenue



MAX Station in downtown Hillsboro

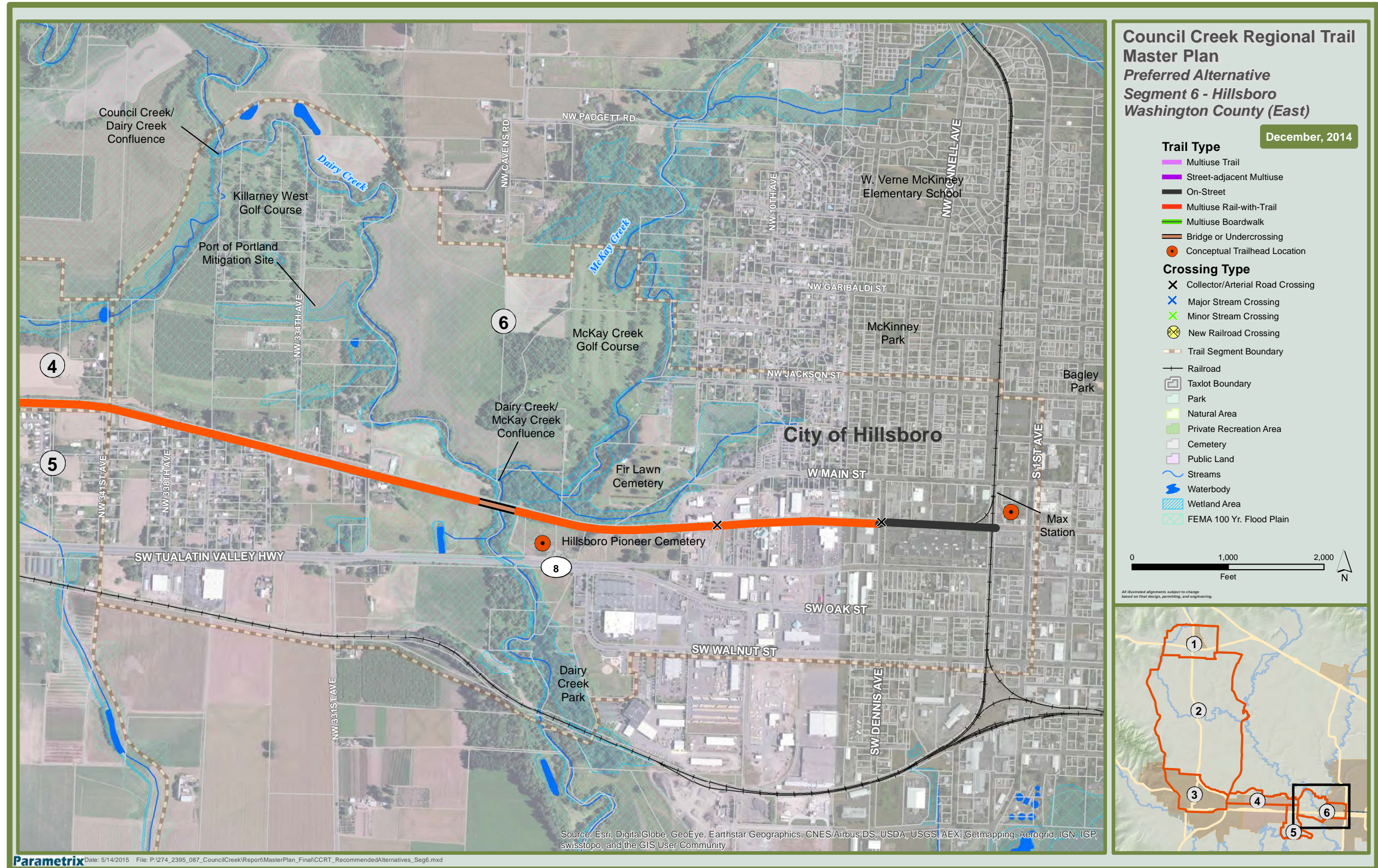
Segment 6: Hillsboro – Washington County East

Jurisdiction	Washington County* – West of Dairy Creek City of Hillsboro – East of Dairy Creek <small>*Most of area between Segment 4 and Dairy Creek is in UGB and will annex to Cornelius</small>		
Trail Types	<ul style="list-style-type: none"> • Rail-with-trail • Sidewalks/bike lanes – Washington St in Hillsboro 		
Design	<ul style="list-style-type: none"> • Asphalt, 10'–12' wide, gravel shoulders • Rail-with-trail design may vary based on type of future rail or transit service • 390-foot-span bridge across Dairy Creek 		
Length	1.69 miles	Cost Estimate	\$7,646,800
Phasing	• NEAR-TERM to MID-TERM (probably last section of rail-with-trail to be built)		
Notes	Trail on south side of rail right of way; location and design may vary based on future MAX extension or other transit solution; two collector roadway crossings; if freight rail is abandoned, rail bridge over Dairy Creek could be reused; one new and one shared-use trailhead. See pages 54–57 for a full range of rail-with-trail and other transit solutions.		



Note: Can include sidewalks on both sides.

Map 13. Segment 6: Hillsboro – Washington County East



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4: Trail Types and Treatments

Overview

Lengthy multijurisdictional trails such as Council Creek must reflect changing opportunities and constraints along the trail route. City and county transportation, bicycle/pedestrian, and parks and open space plans may define local standards. Trail width and treatments, surface materials, and structures may need to vary to accommodate trail use types and volumes, neighboring development, vegetation, streams, topography, and roadway patterns.

Trail design standards should incorporate such local standards and conditions. Standards should also apply reasonably consistent design and treatments that provide a common template creating economies in both construction and maintenance, and a uniform sense of place for trail users. Chapter 4 provides the following information:

- **Trail Types and Treatments:** Baseline standards for designing and building different trail types that are compatible with the varying landscapes along the trail corridor. Conceptual trail cross-sections and some plan views are provided.
- **Trail Crossings:** Conceptual guidelines and cross sections for crossings at major road intersections, midblock, and grade-separated.

**Table 6. Trail Types and Treatments by Segment
NORTH-SOUTH CORRIDOR – EAST 1**

Section	Description	Trail Type	Width	Surface
Segment 1: BANKS				
WESTSIDE	Follows future City Westside Circulator Roadway ^a	Urban street-adjacent multiuse	10'–12' (2' gravel shoulders)	Asphalt
UNDERCROSSING	Includes 750 linear feet of approach trail w/retaining walls; passes under OR 6	Multiuse highway undercrossing	12'–16' (no buffer)	Asphalt, concrete
HIGHWAY	Follows west side of OR 47 across city limits/UGB into Segment 2	Rural street-adjacent multiuse	10'–12' (2' gravel shoulders)	Asphalt
^a City trail system plan scheduled for late 2015 adoption may change this section to bicycle lanes and sidewalks along Main Street.				
Segment 2: WASHINGTON COUNTY NORTH				
HIGHWAY	Follows west side OR 47 from Banks UGB to NW Greenville Rd	Rural street-adjacent multiuse	10'–12' (2' gravel shoulders)	Asphalt
GREENVILLE	North side of NW Greenville Rd to NW Evers Rd	Rural street-adjacent multiuse	10'–12' (2' gravel shoulders)	Asphalt
EVERS	West or east side of NW Evers Rd to north side section along NW Osterman Rd	Rural street-adjacent multiuse	10'–12' (2' gravel shoulders)	Asphalt

Section	Description	Trail Type	Width	Surface
VISITATION	West or east side of NW Visitation Rd to just north of NW Heesacker Rd	Rural street-adjacent multiuse	10'-12' (2' gravel shoulders)	Asphalt
VERBOORT	Verboort Loop w/some shoulder widening and sidewalk improvements	Shared-use	Existing roadways	Asphalt, concrete
PORTER	West or east side of NW Porter Rd to OR 47	Rural street-adjacent multiuse	10'-12' (2' gravel shoulders)	Asphalt

WEST-EAST CORRIDOR – RAIL 1

Section	Description	Trail Type	Width	Surface
Segment 3: FOREST GROVE				
OAK (For alternate route see Chapter 6.)	Along Oak St from OR 47 to RAIL 1	Urban street-adjacent multiuse	10'-12' (2' gravel shoulders)	Asphalt
RAIL 1	Follows south side of rail ROW; safety and security fencing recommended	Rail-with-trail	10'-12' (2' gravel shoulders)	Asphalt
Segment 4: CORNELIUS				
RAIL 1	Follows south side of rail ROW; safety and security fencing recommended	Rail-with-trail	10'-12' (varying shoulders)	Asphalt
Segment 5: JOBES DITCH				
N 29TH	Follows N 29th Ave to OR 8; may require some retrofit sidewalks	Bike lanes/sidewalks	N/A	Concrete, asphalt
HIGH SCHOOL	OR 8 to S Dogwood St; build with N 29th Ave extension	Urban street-adjacent multiuse	10'-12' (2' gravel shoulders)	Asphalt
RIVER	S Dogwood St to Tualatin River; build as part of urban development	Standard multiuse	10'-12' (2' gravel shoulders)	Asphalt
Segment 6: HILLSBORO – WASHINGTON COUNTY EAST				
RAIL 1	Follows south side of rail ROW; safety and security fencing recommended; new bridge at Dairy Creek	Rail-with-trail	10'-12' (varying shoulders)	Asphalt
WASHINGTON	Some retrofit sidewalks required north side of Washington St	Bike lanes/sidewalks	N/A	Concrete

Preferred Trail Types

The CCRT preferred trail type is a multiuse trail accommodating the full range of users—touring, commuter, family, and recreational bicyclists; users of other conveyances such as strollers, skates, etc.; and family, touring, and casual pedestrians seeking exercise and recreation or alternative means to schools, shopping, and services. Two multiuse trail variations are primarily recommended for of the CCRT—street-adjacent multiuse and rail-with-trail. The common features are:

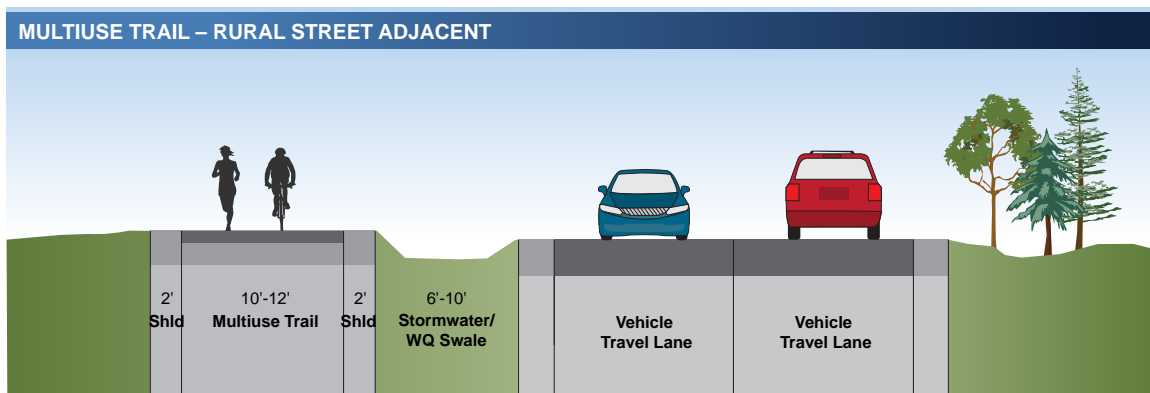
- Surface width of 10 to 12 feet, with 2-foot-wide graveled shoulders (10-foot width is practical for lower volume rural trail sections)
- Asphalt or other hard surface (concrete does not require graveled shoulders – can be used to narrow trail sections in constrained areas)
- ADA-compliant grades (less than 5 percent longitudinal slope and 2 percent cross-slope)

Street-Adjacent Multiuse

Alignments that closely parallel roadways distinguish street-adjacent multiuse trails from the standard multiuse trail (see page 57 for standard multiuse cross section). The street-adjacent trail is separated from the roadway by a landscaped buffer or drainage swale between edge of road and trail.

Rural Street-Adjacent Multiuse

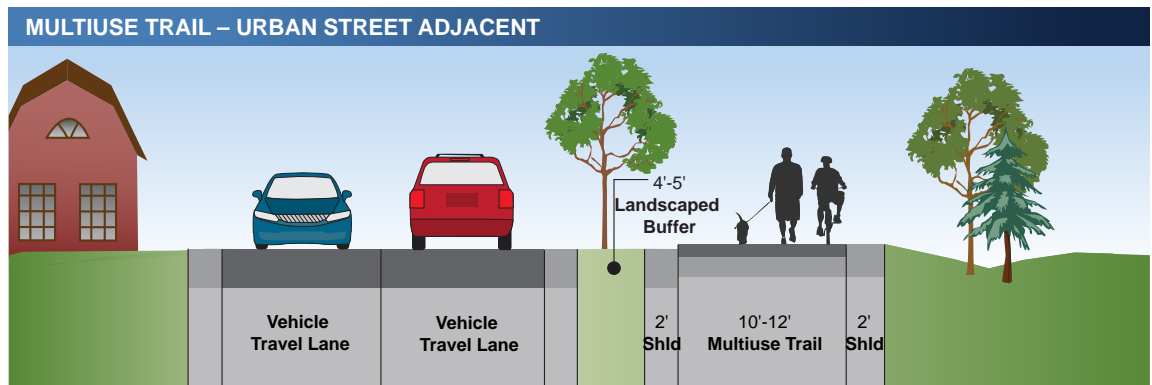
For roadways where stormwater conveyance and treatment is handled by open drainage swales, typically in rural areas. Swales act as the trail buffer. The rural street-adjacent multiuse type is the primary solution for the North-South Corridor. The greatest challenge for this trail type will be conflicts with other infrastructure—TVID irrigation lines or PGE power transmission poles—that also closely follow existing roadways. Relocation of these lines or the purchase of additional right of way may be necessary.



Urban Street-Adjacent Multiuse

For streets where stormwater is conveyed through culverts and piping, typically in urban areas. Includes a landscaped buffer between edge of road and trail. The urban street-adjacent multiuse trail is recommended for the following trail sections:

- **Segment 1:** West side of downtown Banks.
- **Segment 3:** Along Oak Street south of Oregon 47.
- **Segment 5:** Section of the Jobs Ditch/HOBBS spur trail developed as part of the future extension of N 29th Avenue and construction of a new high school.



Rail-with-Trail

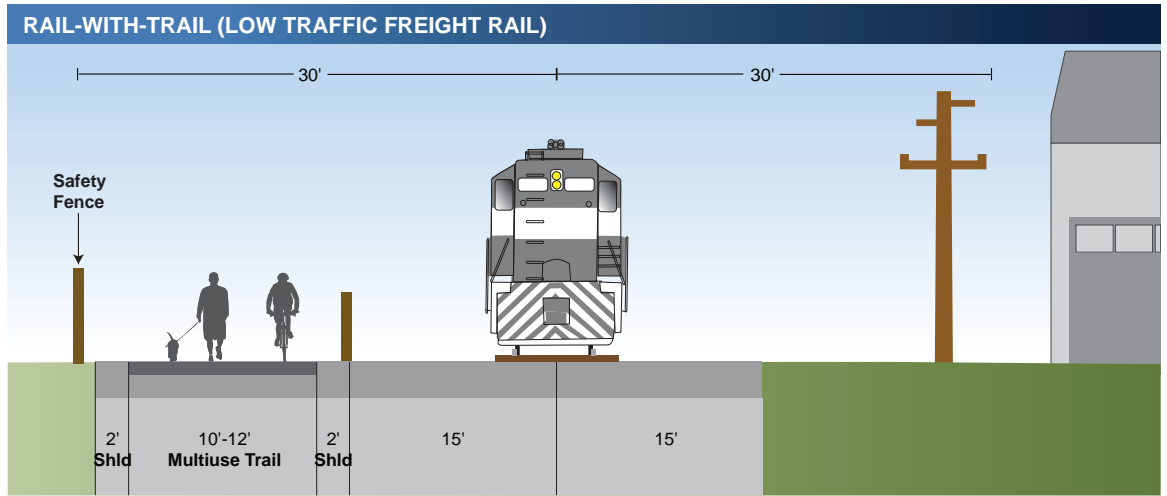
A rail corridor (RAIL 1) from downtown Forest Grove through downtown Cornelius to downtown Hillsboro is the preferred CCRT alignment through Segments 3, 4 and 6. This rail corridor is owned by the State of Oregon and leased to a private freight rail operator. The rail corridor is primarily 60 feet wide and occupied by single-track freight line with very limited low speed traffic. The freight rail track is approximately 5 feet off-center of the corridor towards the north side. Specific trail solutions are complicated by continued freight rail use, plans for a future TriMet MAX line or high capacity transit extension, and a PGE transmission-scale power line along the north edge of the rail corridor from Oregon 47 to Hillsboro.

Given current and future uses, four rail-with-trail variations are illustrated. All variations assume a multiuse trail sited along the south side of the rail corridor. North side trail alignments may require expensive power pole relocations, particularly through Segment 4. Final trail design and engineering may find room to switch sides for portions of the trail, or offer siting or design solutions providing five or more extra feet of separation between the south edge of the rail corridor right of way and the planned trail.

Any decision to extend MAX to downtown Forest Grove will be preceded by abandonment of the rail line for freight services, and a range of planning and transportation corridor studies. See page 57 for an illustration of one concept to re-use the rail corridor without freight or MAX lines. High capacity transit with a multiuse trail is another option for the future of the corridor.

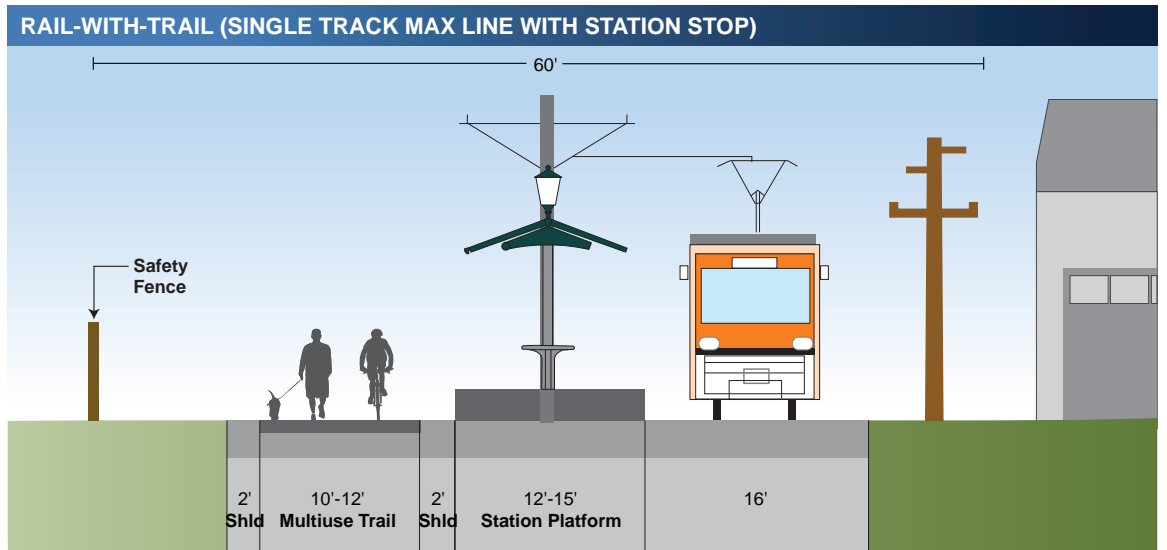
Single-Track Freight Rail

Assumes that freight rail is still operating at time of trail development. The cross section below illustrates the minimum trail separation from low speed, low traffic freight lines suggested by Federal Highway Administration (FHWA) guidance. The multiuse trail can be further modified to fit within the 60-foot rail corridor by eliminating one shoulder or reducing trail width to 10 feet.



Single-Track MAX (with Station Stops)

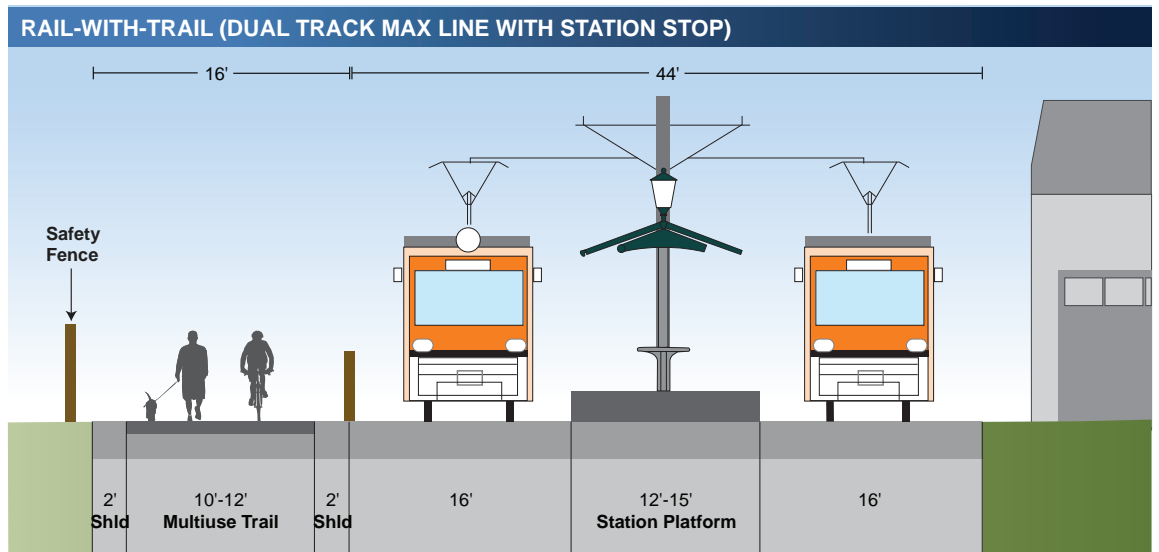
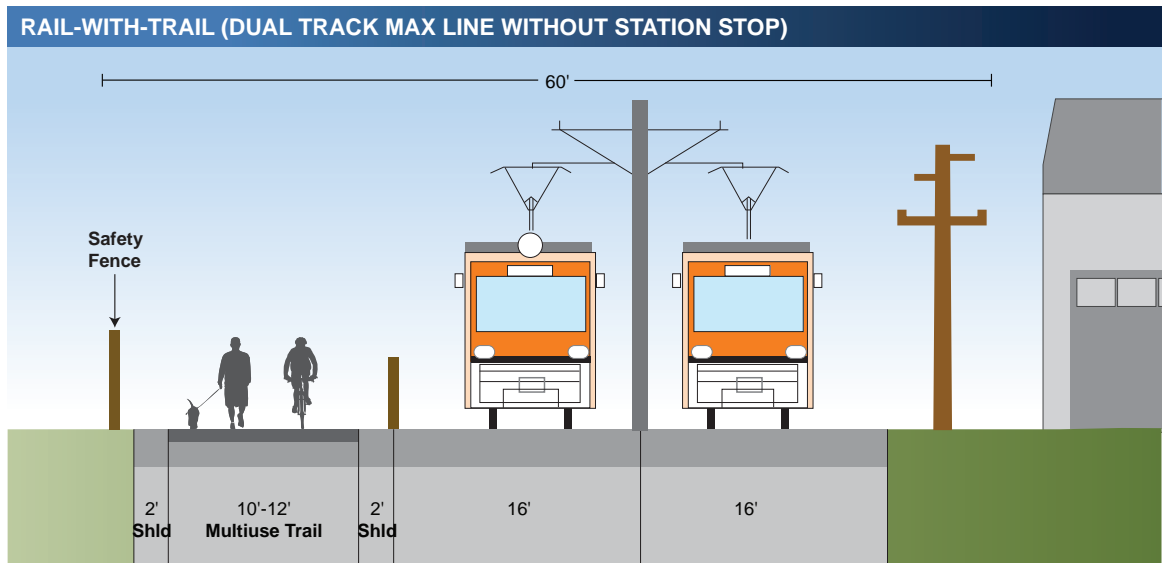
TriMet requires less separation from MAX tracks than FHWA guidance. Since MAX tracks would be new, the rail alignment could also be shifted within the corridor. This trail/single-track MAX combination, including minimum width (12 feet) station stop **side** platforms, would leave approximately 16 feet of the rail corridor for additional separation between the trail and track, for intermittent passing tracks, or for amenities such as landscaping. PGE power poles would not have to be relocated.



Dual-Track MAX (with and without Station Stops)

TriMet standards allow dual-track MAX systems **without** station stops within a 32-foot-wide section. This dual-track configuration, when combined with a 16-foot-wide trail section, leaves 12 feet for additional separation between the tracks and the trail. It also avoids power pole relocation.

The trail siting challenge with the dual-track is that station stops will be intermittently required. The minimum width for a station stop **center** platform sited between tracks is 15 feet, for a total 47-foot-wide MAX section. This leaves the rail corridor 3 feet too narrow to accommodate a 16-foot trail section. Additional right of way may be difficult to acquire due to surrounding development. The multiuse trail section could be narrowed or use concrete surfaces to eliminate gravel shoulders. Station stop design could also narrow the platform width. PGE power poles in the vicinity of station stops may have to be relocated.



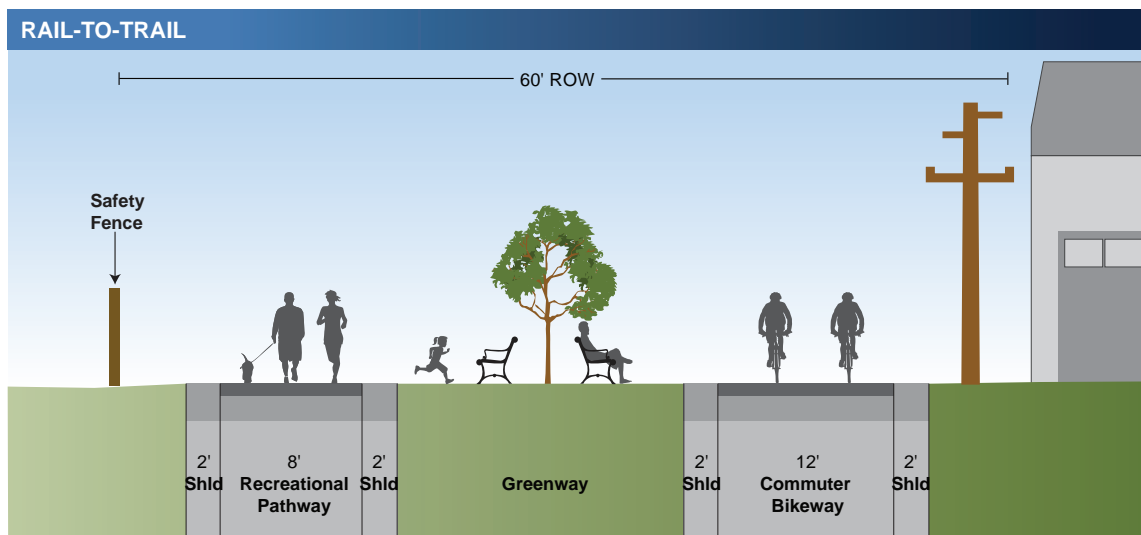
Note: May require power pole relocation, trail width may have to be modified to accommodate station platform.

Other Trail Types

A variety of opportunities and constraints suggest or require other trail types to establish a continuous and fully functional regional-scale trail accommodating all users.

Rail-to-Trail

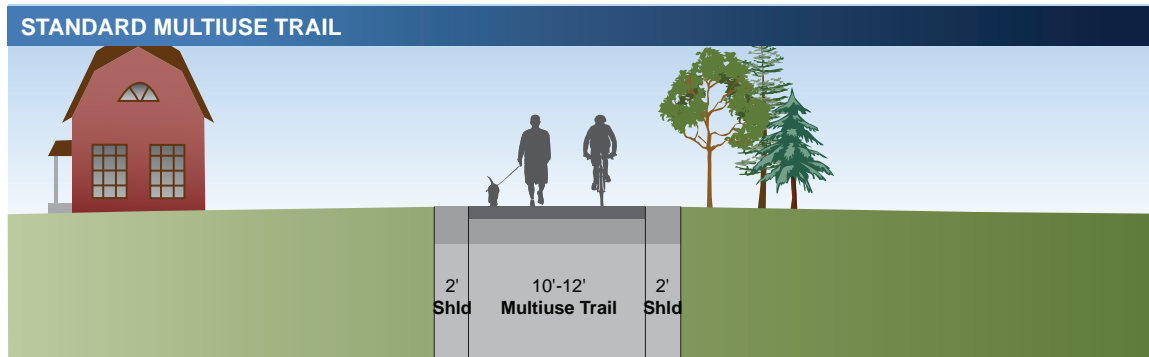
If freight rail vacates the West-East Corridor, and the MAX extension does not occur, a multiuse trail combined with greenway and recreational improvements is possible. One possible scenario is illustrated below. High capacity bus transit with a multiuse trail is another option.



Note: Wide range of trail combinations possible with rail right-of-way if no future freight or passenger rail service is planned.

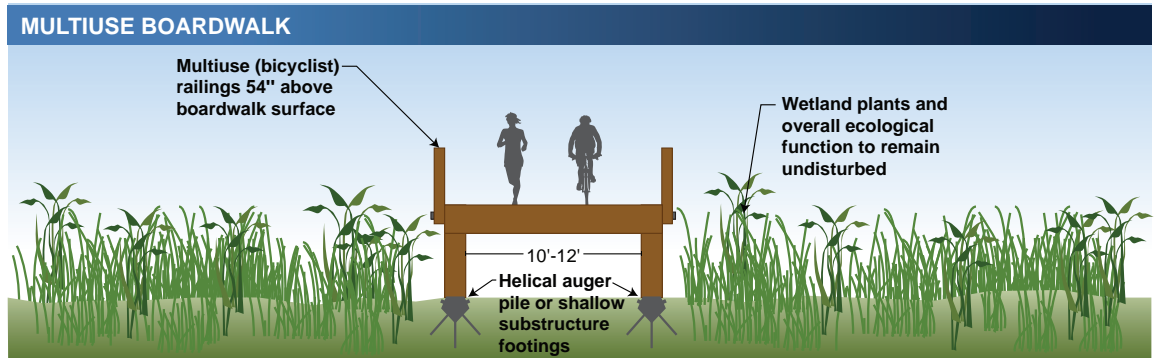
Standard Multiuse

The standard multiuse trail follows an off-road alignment, completely separate from and on a different route from roadways. The standard multiuse trail type is applied to the Segment 5: Jobes Ditch/HOBBS trail section south of S Dogwood Lane.



Multiuse Boardwalk

Elevated multiuse boardwalk structures set on piers across wetlands, floodplain areas, or other sensitive lands can reduce or eliminate many environmental impacts. Multiuse boardwalks combined with new or existing bridges are recommended to cross the West Fork Dairy Creek (Segment 2). Boardwalk materials can vary: wood, steel, concrete, etc. Steel structures with concrete surfaces are recommended.



Shared-Use Roadway

Shared-use roadways allow all trail users to use vehicular roadways, with signing and road surface markings to assure safety. This solution is only practical and safe on low-speed, low-traffic roadways. See page 78 for an interim shared-use trail alignment solution for the North-South Corridor (EAST 1).

The EAST 1 preferred alternative proposes a permanent shared-use solution through Verboort. This includes sections of NW Visitation Road, NW Heesacker Road, and NW Porter Road; a widened shoulder on NW Visitation Road; and a widened sidewalk on the north side of NW Verboort Road.

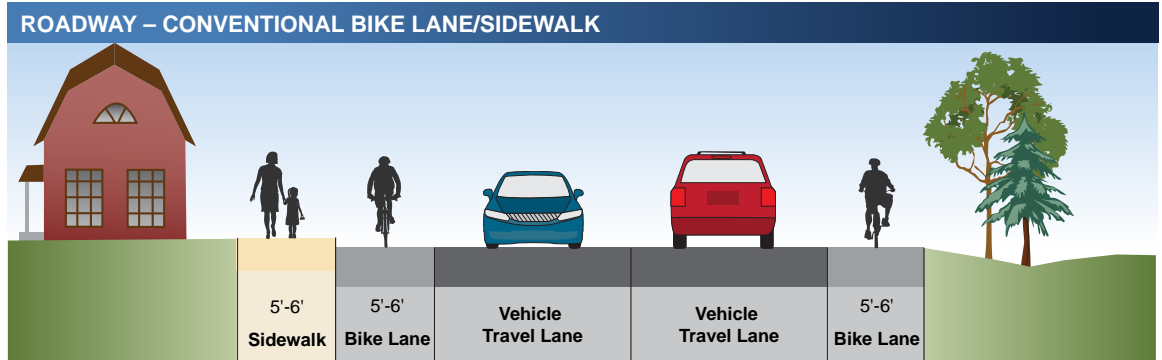


Note: Functional for low speed, low vehicle traffic roadways.

Bicycle Lane–Sidewalk

Conventional bicycle lanes, designated by road surface striping/signing, with parallel pedestrian sidewalks, are recommended for two CCRT sections:

- Along N 29th Avenue to the Jobes Ditch/HOBBS multiuse trail (Segment 5).
- Along NW Washington Street between NW Dennis Avenue and the downtown Hillsboro MAX station (Segment 6). Most of this section is already developed with sidewalks and bicycle lanes.



Note: Can include sidewalks on both sides.

In addition, the City of Banks is expected to adopt a new bicycle/pedestrian and trail system plan by the end of 2015. Early in the CCRT process the City requested that Main Street (Segment 1) **not** be part of the CCRT route. The City’s new plan may reverse this recommendation.

Crossing Structures

Multiuse Bridges

Up to three new bridges crossing streams will be required (Segments 2, 3 and 6). Bridge lengths are approximate but conceptually sized to limit any in-water work. The final design and construction method for bridges will be subject to the specifics of each site.

Table 7. Multiuse Bridges

Segment 2	West Fork Dairy Creek – NW Evers Rd	90-foot span
Segment 3	Council Creek – NW Porter Rd	Existing restored bridge
Segment 6	Dairy Creek – south of confluence with McKay Creek	390-foot span

The new Dairy Creek trail bridge in Segment 6 would parallel the existing railway bridge. If freight rail is abandoned, the existing bridge could be adapted for trail use.



Example multiuse bridge

Other Stream Crossings

Minor stream crossings may require modifying existing conveyance structures (such as by lengthening culverts), installation of short new culverts, or signing and pavement markings over existing bridge structures. Culverts may require permitting from Clean Water Services (CWS) or other local agencies, and from federal agencies for fish bearing streams. See Chapter 9 of Plan Report No. 3 for more information.

Roadway Crossings

The CCRT will cross a variety of urban and rural local, collector, and arterial roadways at existing intersections and at midblock. Collector and arterial midblock and intersection crossing points are shown on segment maps. CCRT roadway crossings are all at-grade, with the exception of the recommended undercrossing of Oregon 6 south of Banks (Segment 1). The final determination of intersection and midblock crossing treatments should be based on local jurisdiction or Washington County standards. Local street midblock and intersection street crossings use conventional crosswalk signing and striping.

Crossings in *italics* are at the same point as a rail crossing. To the extent freight rail or light rail is operating at the time of trail development, improvements to rail crossing infrastructure and surfaces may also be required.

Table 8. Arterial and Collector Crossings

Segment 1	NW Banks Rd at new Westside Circulator Roadway
Segment 1	OR 47/Main St Undercrossing of OR 6
Segment 2	NW Greenville Rd at OR 47 and NW Evers Rd
Segment 2	NW Verboort Rd at NW Porter Rd
Segment 3	NW Porter Rd/Oak St at OR 47 or NW Martin Rd
Segment 3	Two options (see Chapter 6) connecting the north-south and west-east preferred alignments
Segment 3	<i>Hawthorne St</i>
Segment 3	<i>Laurel St</i>

Segment 3	Oak St
Segment 3	OR 47/Quince St
Segment 4	Yew St
Segment 4	N 4th Ave
Segment 4	N 26th Ave
Segment 4	NW Hobbs Rd/N 29th Ave
Segment 5	N 29th Ave at OR 8
Segment 6	W Main St
Segment 6	NW Dennis Ave

Arterial and Collector Intersections

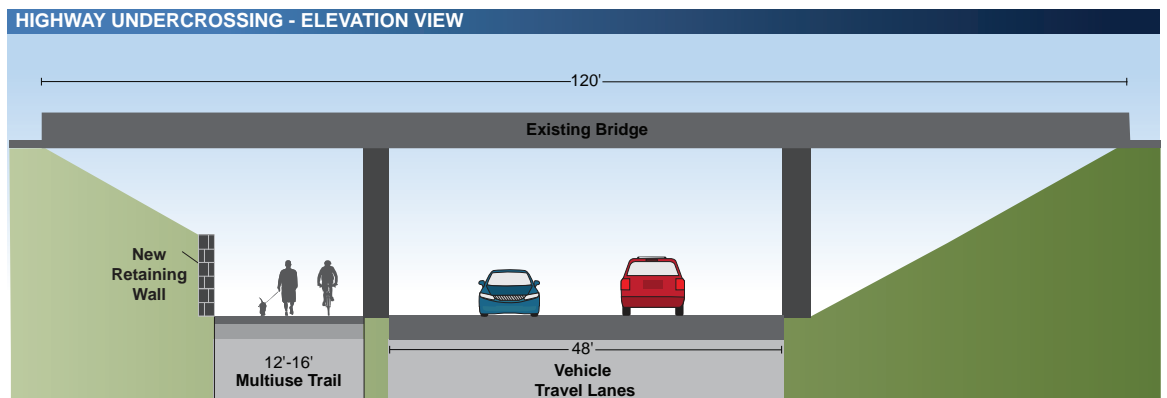
Trail crossings at established collector and arterial intersections will use traffic stop signals or signing, crosswalk signing and striping, and other traffic controls. Upgrades may be required on a case-by-case basis in accordance with municipal or ODOT standards.

Arterial and Collector Midblock

Arterial roadway crossings use crosswalk signing and striping and pedestrian-activated full stop signals. A raised center refuge island is highly preferable. Collector roadway crossings use crosswalk signing and striping and pedestrian-activated flashing beacons. A raised center refuge island is preferable.

Highway Undercrossing

An undercrossing of Oregon 6 is recommended south of downtown Banks (Segment 1). The trail will follow the west side of Main Street (Oregon 47) south out of the city, cross under Oregon 6, and continue south into Segment 2. This solution requires a 14- to 16-foot widening of the existing undercrossing. The undercrossing retaining slope would be cut back and replaced with an approximate 50-foot-long retaining wall. Slope cuts and varying height retaining walls would be required for the trail's north (350 linear feet) and south (400 linear feet) approaches to the undercrossing. Although street-adjacent, the approach trails would **not** include the standard 4- to 5-foot buffer. Trail paving should be concrete through the undercrossing and may be asphalt for the approaches.



Note: Trail surface under bridge may be concrete and/or widened.

Rail Crossings

Although the west-east trail alignment will follow a rail line for its entire distance, the trail will only cross rail lines in two places. ODOT Rail will have to be consulted for all rail crossings and issue applicable crossing orders and permits.

- **Segment 3:** EAST 1 will have to cross to the south side of the rail line at either Oak Street or Oregon 47 (Quince Street) to connect to the west-east trail alignment on the south side of the rail right of way.
- **Segment 5:** Jobes Ditch/HOBBS will require permitting and construction of a new rail crossing as part of the future NW Hobbs Road/N 29th Avenue extension. This rail crossing treatment and cost will be determined as part of the larger road project.

Other Trail Structures

Trailheads

Trailhead facilities can include vehicle parking, secure bicycle parking, wayfinding and interpretive signing, restrooms, shelters, and picnic areas. Site design and amenities may vary greatly based on location and expected usage. Trailheads that share parking and other facilities at government centers, schools, and commercial areas are an economical alternative to standalone sites.

In areas along the CCRT without nearby trailhead facilities or available commercial center or institutional facility parking, appropriate “no parking” and other traffic control signing should be installed. In particular, trail crossings of residential and agricultural area roadways, or where other trails intersect, should be signed.

Trailhead locations shown on segment maps are intended to identify the general areas within which a trailhead facility would be desirable, *and are not property-specific*. Conceptual trailhead locations are listed in Table 9. A lump-sum land acquisition estimate is included in estimated overall trailhead costs. Trailhead sites with probable private property acquisition requirements are in *italics* in Table 9.

Table 9. Conceptual Trailhead Locations

Segment 1	Existing Banks-Vernonia Trailhead, Banks
Segment 2	<i>NW Visitation Rd, Verboort</i>
Segment 3	Downtown Forest Grove: Shared-use with existing commercial center or government offices
Segment 3	<i>Near Oak St south of OR 47, Forest Grove</i>
Segment 4	<i>Near N 19th Ave south of rail corridor</i>
Segment 5	Shared-use with future high school
Segment 6	<i>North side of OR 8 near Dairy Creek</i>
Segment 6	Downtown Hillsboro: Shared-use with existing commercial center or government offices

5: Implementation

Cost Estimates

Tables 10 and 11 summarize construction and design/engineering costs, and order of magnitude land acquisition costs, for each trail alignment alternative in each trail planning segment. Cost assumptions and more detailed cost breakdowns are included in Plan Report No. 3 (see Appendix C). Plan Report No. 3 cost information includes all the trail alternatives being considered as of November 2014. The cost estimates below represent refinements based on PAC/SAC recommendations in December 2014.

Table 10. Cost Estimates by Overall Trail Corridor

Banks to Forest Grove (Segments 1 and 2)	
North-South: EAST 1 ^a	\$27,149,400
Forest Grove to Hillsboro (Segments 3, 4 and 6)	
West-East: RAIL 1 ^b	\$22,169,550
Jobes Ditch Spur Trail (Segment 5)	
HOBBS ^c	\$2,611,500

a Includes WEST option through Banks, and use of Porter/Oak connection to RAIL1. The OR 47/Martin/Quince connection option to RAIL 1 would be part of a larger intersection improvement and is more expensive by \$400,000.

b Includes cost of extension of RAIL 1 to Douglas St in Forest Grove

c HOBBS does NOT include cost of new crossings of OR 8 or UPRR rail line. These costs are assumed to be incurred as part of planned NW Hobbs Rd/N 29th Ave extension, without which HOBBS spur trail is not possible.

Table 11. Cost Estimates by Segment Alignment Alternative

Section	Trail Length (Linear Feet)	Land Acquisition (Linear Feet)	Land Acquisition	Construction ^a	Total
1: BANKS					
WEST	7,629	1,398	\$48,000	\$4,425,200	\$4,473,200
2: WASHINGTON COUNTY NORTH					
EAST 1	39,416	32,171	\$309,000	\$22,367,200	\$22,676,200 ^b
3: FOREST GROVE					
RAIL 1	5,565	N/A	0 ^c	\$4,565,100	\$4,565,100
4: CORNELIUS					
RAIL 1	14,113	N/A	0 ^c	\$9,957,600	\$9,182,600
5: JOBES DITCH					
HOBBS	7,630	3,464	\$120,000	\$2,491,500	\$2,611,500
6: HILLSBORO – WASHINGTON COUNTY EAST					
RAIL 1	8,906	N/A	0 ^c	\$7,646,850	\$7,646,850

a Includes engineering, permitting, contingencies, plus new trailheads in Segments 2, 3, 4, and 6.

b Cost for Porter/Oak connection to Segment 4 (OR 47/Martin/Quince connection option is \$400,000 more expensive).

c Lump-sum trailhead land acquisition cost estimate embedded in overall trailhead cost.

Trail Partners

The CCRT is within the jurisdiction of the cities of Banks, Forest Grove, Cornelius, and Hillsboro, and Washington County. Metro is the regional planning authority (except for Banks). ODOT manages three state highways crossed by the preferred trail alignment (Segments 2, 3, and 5). These are the formal jurisdictional partners for planning and developing the CCRT.

Acquisition Partners

Other governmental authorities such as stormwater and irrigation utility districts, and private entities such as power utilities and railroads, may have to be partnered with on a case-by-case basis. Trail right of way or easements may have to be acquired from private property owners. Right of way acquisition will be conducted on a willing seller basis only, not through powers of eminent domain.

TriMet may be a partner if the MAX line or high capacity transit is extended down RAIL 1. MAX design standards combined with a multiuse trail may require a widened rail right of way. TriMet **does** acquire private property through eminent domain.

Table 12. Possible Acquisition Partners

Segment	Utility	Road Authority	Rail	Parks Authority	Private Owner
1: Banks		X		X	X
2: County	X	X			X
3: Forest Grove	X	X	X	X	X
4: Cornelius	X	X	X	X	X
5: Jobes Ditch		X	X	X	X
6: Hillsboro-County	X	X	X	X	X

Development and Operating Authority

Parks authority is traditionally considered a prerequisite for local governments to participate in trail funding, construction, and maintenance. Increasingly, fully functional transportation systems are defined to include trails. As such, jurisdictions without full service parks programs may consider a road authority to be sufficient basis to undertake building and operating trails. The cities of Banks, Forest Grove, Cornelius, and Hillsboro all exercise full parks authority. Both ODOT and the Oregon Parks and Recreation Department build and operate trails. Washington County authority is more limited (see discussion below).

Portions of all six CCRT planning segments are currently within the jurisdiction of Washington County. The County is not a parks or trail provider. Washington County may partner with neighboring jurisdictions or other parks providers to build and maintain trails in these segments. The County does, however, build and operate bicycle and pedestrian facilities within road right of way. The street-adjacent trails proposed for use in rural sections of the CCRT (primarily Segment 2) may in part be within existing right of way. Any additional property needed would have to be in the form of road right of way contiguous to an existing right of way to qualify for consideration for construction and maintenance under the County’s road authority.

Table 13. Trail Development Authority

Jurisdiction	Segment	Jurisdictional Authority					Challenges
		Parks	Road	Funding	Construction	Operating	
Banks	Portion of 1	Yes	Yes	Yes	Yes	Yes	Limited City funds
County	All of 2, portions 1, 4, 5, 6	No	Yes	Limited	Limited	Limited	Not parks or trail provider, but can build/maintain within road ROW
Forest Grove	All of 3, portions of 4	Yes	Yes	Yes	Yes	Yes	Limited City funds
Cornelius	Portions 4, 5, 6	Yes	Yes	Yes	Yes	Yes	Limited City funds
Hillsboro	Portion of 6	Yes	Yes	Yes	Yes	Yes	Limited City funds
Metro	Areas within UGB only	Yes	Planning authority only	Yes	Limited	Limited	Rural portions of trail not in Metro
ODOT	All segments	No	Yes	Yes	Yes	Yes	Does not typically build/operate urban regional trails

Trail Standards

Jurisdictional and other partner policies, plans, and standards may have a direct bearing on CCRT implementation. Plans and policies for transportation systems, parks and open space, and natural resource and surface water protection may include standards that define or influence trail development.

Key standards are highlighted below. All policies, plans, and standards are subject to periodic updates and revisions. Current versions or new policies should be reviewed and used at the time of trail design and engineering. Additional information can be found in Plan Report No. 1 – Existing Conditions and Plan Report No. 3 – Implementation Strategy.

Oregon Department of Transportation

ODOT has jurisdiction over three state highways crossed or followed by the preferred trail alignments: Oregon 6 (Segment 1), Oregon 47 (Segments 1, 2, and 3), and Oregon 8 (Segment 5). ODOT Rail owns the rail right of way used for the preferred West-East (RAIL 1) CCRT alignment.

Oregon Bicycle and Pedestrian Design Guide

ODOT has adopted the American Association of State Highway Transportation Officials (AASHTO) guidelines for path design standards. The ODOT *Bicycle and Pedestrian Design Guide*¹ includes chapters for on-road bikeways, walkways, street crossings, and

¹ <http://www.oregon.gov/ODOT/HWY/BIKEPED/pages/planproc.aspx>

intersections, as well as “shared-use paths.” Shared-use paths (termed multiuse trails in this master plan) are those used by pedestrians, joggers, skaters, and bicyclists. The Guide notes that trail design must consider the varying needs of different users, and that “there are circumstances where economics or physical constraints make it difficult to meet standards. A reasonable approach must be taken, so extraordinary sums are not spent on a short section of path; nor would the natural landscape be excessively disturbed.”

Table 14 summarizes key ODOT standards. Concrete surfaces are recommended by ODOT for heavily used trails to maximize the longevity of the surface, although asphalt surfaces are acceptable for most paths. The CCRT Master Plan primarily recommends asphalt surfaces.

Table 14. ODOT Trail Width Standards

Two-way Cyclists and Pedestrians (unless otherwise noted)	Trail Width
One-way cyclist or pedestrian	6'
Few users and/or space constraints	8'
Typical minimum in rural area	10'
Urban and suburban mixed use	12'
High mixed use, faster/commuting bicyclists	12'+
High mixed use of multiple modes	Add separate soft surface trail on one side
Very high use by both bicycles and pedestrians	16'
	(two 5' bike lanes and one two-way walking area, striped)
Extremely high use by both bicycles and pedestrians	18'–20'
	(tripled in proportion to expected users; separate paths for each mode)

Adapted from ODOT Oregon Bicycle and Pedestrian Design Guide

Washington County

Community Development Code

Section 408-9, Accessway and Greenway Design, contains design standards applicable to trail design. Modifications to these standards are allowed if strict compliance due to constrained site conditions is not practicable.

- Maximum slope of 5 percent wherever practical.
- 10-foot-wide paved surface to safely accommodate both bicycles and pedestrians.
- Asphalt surfacing according to the Washington County Road Standards or other all-weather surfaces (including pervious paving materials) as approved by the county engineer.
- 9-foot 6-inch vertical clearance to accommodate bicyclists.
- Removable, lockable posts (bollards) that prevent use by unauthorized motor vehicles at all intersections with streets.

Bicycle Facility Design Toolkit (2012)

This toolkit provides guidance in selecting bicycle facility options as well as design summaries, cross sections, and photographs of different options and treatments. Many of the options are similar to those described in the CCRT Master Plan.

Pedestrian Midblock Crossing Policy

The recommended CCRT standard for midblock roadway crossings is the Washington County Pedestrian Midblock Crossing Policy. These standards are also recommended for crossing designs for non-County roads.

Table 15. Midblock Crossing Standards

	Standard Treatments	Additional Treatments to be Considered
Tier 1	Crosses a 2-lane road with or without an island refuge. Install high visibility mounted signs and markings.	Refuge islands, curb extensions, staggered pedestrian refuges.
Tier 2	Crosses a 3-lane road with island refuge. Install high visibility signs and markings.	Flashing beacons, pedestrian-actuated signal/beacon.
Tier 3	Crosses a 3-lane road without island refuge or a 4-lane road with island refuge. Install high visibility signs and markings or pedestrian-actuated signal.	Pedestrian-actuated signal/beacon.
Tier 4	Crosses a 4-lane or greater road without an island/refuge. Install pedestrian-actuated signal or beacon.	Pedestrian-actuated signal, pedestrian over- or undercrossing.

Metro

Green Trails: Guidelines for Environmentally Friendly Trails

Green Trails suggests that natural resource opportunities and challenges should be identified early in trail planning and development processes so trails are designed to preserve sensitive natural resources. Green Trails provides “recommendations to complement existing standards and guidelines adopted by local cities, counties, park providers and watershed groups in the region.” The focus is on “trails in environmentally sensitive areas and recommends strategies for avoiding or limiting the impacts on wildlife, water quality and water quantity.”

The Green Trails chapter on types, dimensions and materials suggests that “trail surface materials reflect the kind and intensity of use expected and the environmental sensitivity of the site.” Tables 16 and 17 illustrate how to select trail widths and surface materials based on level and type of use.

Table 16. Trail Width and Surface Material Based on Level of Use

Level of use and trail type	Very low use (less than 25) ¹	Low (25–100) ¹	Moderate (100–200) ¹	High (200–400) ¹	Very high (greater than 400) ¹
Multiple-use hard surface	8'	8'	8'	10' ²	10' ²
Crusher fines surface, bikes	4'–5'	6'	8'	8'–10'	7'–10'
Natural surface ³	18"–2'	2'–3'	3'–5'	4'–6'	5'–7'

1 Estimated total number of users on a typical busy day in the busiest season.

2 Note to Table 8-2 states that the Portland metropolitan area uses trail widths of “up to 12 feet or more, where practicable.”

3 Note to Table 8-2 also states that natural surfaces may require high and expensive maintenance, and recommends a surface of crusher fines when trails are wider, when hillside cross slopes are more than 20 percent, or when soil is not well-drained.

Table 17. Trail Surface Suitability in Natural Resource Areas

Asphalt	Concrete
Not suitable for wet areas	Holds up well in wet areas
Will deform to accommodate tree roots	Not as prone to buckling from tree roots as asphalt
Porous grades can be used to facilitate infiltration	Better accommodates imperfections in the subgrade

Source: Green Trails: Guidelines for Environmentally Friendly Trails.

Other Metro Guidance

Metro has published two other documents that could be used for reference in designing and engineering environmentally friendly trails:

- **Wildlife Crossings: Providing Safe Passage for Urban Wildlife** (2009).
- **Westside Trail Master Plan, Chapter 6: Wildlife Corridor** (2014). Although this trail master plan concentrates on prairie grassland habitat within a wide power transmission corridor, it contains useful guidelines, practices, and techniques for restoring and conserving other habitats, as well as for wildlife-friendly trail crossing and structure treatments.

Other Jurisdictions

Other government agencies and nonprofit organizations build and maintain regional trails. For instance, Oregon Parks and Recreation operates the Banks-Vernonia Trail at the north end of the CCRT. Governmental agencies and public and private utilities may also indirectly control trail development and operations through regulation or directly through trail corridor ownership. For more information, see Chapter 9 of Plan Report No. 3.

Trail Features and Amenities

Structural and amenity features include bridges, boardwalks, signage, lighting and trail furniture. These features support an overall design framework that communicates a unified sense of place, appearance, and experience. CCRT Master Plan Chapter 4 and ODOT, Metro, and applicable Intertwine² guidelines should be used to support overall consistency in design and construction. At the time of actual engineering of particular trail sections, current standards and updated trail use information should be reviewed, and appropriate changes to recommended CCRT trail types and design made.

² <http://theintertwine.org/>

Americans with Disabilities Act Compliance

CCRT preferred alignments are within the flat valley floor of the Tualatin River Watershed. Longitudinal slopes are primarily under 5 percent and cross slopes under 2 percent. These existing grades allow full compliance with ADA standards without extensive use of special structures or trail meanders and switchbacks.

The limited exceptions are where the trail crosses the West Fork Dairy Creek (Segment 2), Council Creek (Segment 3), and the main stem of Dairy Creek (Segment 6). Stream banks may exceed longitudinal and cross slope maximums. These can be readily mitigated using boardwalk and bridges.

Signage

Guidance on various forms of signing are available from several sources including guidance specific to the Portland metropolitan region. Strong Hispanic community participation in CCRT Master Plan public review processes indicates that native Spanish speakers will be significant trail users. Appropriate wayfinding, educational, and interpretive signage should be bilingual.

- FHWA’s Manual on Uniform Traffic Control Devices and the Oregon supplement provide guidance on regulatory and warning signs. This type of signage needs to be closely coordinated with city, county, and ODOT standards.
- The Intertwine’s *Regional Trails Signage Guidelines* should be used to support a consistent look and feel for wayfinding, educational, and interpretive signage.

Environmental Regulations

The CCRT preferred alignments cross or pass near to streams, wetlands, floodplains, and associated riparian areas. Regulatory compliance requirements will have to be considered, impacts from trail construction mitigated, and restoration or enhancement may have to be undertaken. Engineering, permitting, and construction requirements may vary based on the physical conditions of a given segment, differences in local regulations and processes, and even the source of development funding.

Wetland and Nonwetland Waters

Detailed information on wetlands, nonwetland waters, and floodplains in the larger CCRT study area can be found in Plan Report No. 1. Features potentially impacted by the preferred alternatives are summarized in Table 18. Wetland and stream impacts in Segments 3 and 4 are relatively minor.

Table 18. Wetlands, Nonwetland Waters, and Floodplain Crossings

Segment	Wetlands	Streams	Floodplains	Other
1: Banks	X		X	
2: County	X	X	X	
3: Forest Grove	X	X	X	
4: Cornelius	X	X	X	
5: Jobes Ditch				Tualatin River
6: Hillsboro-County	X	X	X	

Clean Water Services (CWS)

CWS is the surface water management regulatory authority for urban Washington County. Trail development may trigger CWS standards to protect sensitive areas and vegetated corridors, and mitigation and enhancement may be required. Although CWS does not have jurisdiction outside of the UGB, CWS standards are recommended in CCRT's rural unincorporated sections (Segment 2).

CWS standards³ allow pedestrian or bicycle trail crossings of vegetated corridors. Trails have to be designed and constructed to protect water quality and mitigate any impacts to public stormwater systems. Vegetated swales and/or dry basins are required to provide on-site treatment of all stormwater runoff from paved trails. Standards for percent covered by native trees, shrubs and groundcover could particularly apply to trails through riparian corridors. More than 50 percent tree canopy has to be preserved, or variances obtained or off-site mitigation provided. Invasive nonnative species are to be removed, and a native plant revegetation plan developed to restore the corridor to "good condition."

Paths between 12 and 14 feet wide are an allowed use if constructed using low impact development approaches in accordance with Chapter 4,⁴ Runoff Treatment and Control. If these conditions cannot be met, this wider pathway must be permitted in accordance with Section 3.07, Encroachment Standards.⁵ Paths up to 12 feet wide, including any structural embankments, are permitted outright if:

- Constructed to minimize disturbance to existing vegetation and maintain slope stability.
- For the Tualatin River, located no closer than 30 feet from the 2-year, 24-hour design storm elevation.
- For all other sensitive areas, the path is located in the outermost 40 percent of the vegetated corridor.
- The area of the path beyond the first 3 feet of width is mitigated in accordance with Section 3.08, Replacement Mitigation Standards.
- Path construction does not remove native trees greater than 6 inches diameter at breast height.

Other Permitting Processes

Table 19 lists the most likely trail development environmental and use permitting and/or compliance processes. Plan Report No. 1 – Existing Conditions provides additional information to help identify the particular trail sections or structures to which different permitting might apply.

³ <http://www.cleanwaterservices.org/Content/Permit/DAndC%20Chapters/Chapter%203%20DC%20Amendment%20RO%2008-28.pdf>.

⁴ <http://www.cleanwaterservices.org/Content/Permit/DAndC%20Chapters/Chapter%204%20Amendment%20RO%2007-20.pdf>.

⁵ <http://www.cleanwaterservices.org/Content/Permit/DAndC%20Chapters/Chapter%203%20DC%20Amendment%20RO%2008-28.pdf>.

Table 19. Possible Permitting Processes

Agency	Method
Federal	
Federal Highway Administration	National Environmental Policy Act (NEPA)
Executive Orders	EO 11988 Floodplain Management Compliance
	EO 11990 Protection of Wetlands Compliance
	EO 12898 Environmental Justice Compliance
	Endangered Species Act Section 7 Consultation
National Marine Fisheries Service	Magnuson-Stevens Fishery Conservation and Management Act Consultation
	Fish and Wildlife Coordination Act
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 Consultation
	Migratory Bird Treaty Act Compliance
U.S. Army Corps of Engineers	Fish and Wildlife Coordination Act Coordination
	Clean Water Act Section 404 Permit
State of Oregon	
State Historic Preservation Office	National Historic Preservation Act Section 106 Consultation
Department of Environmental Quality	Clean Water Act Section 401: Water Quality Certification
	Clean Water Act Section 404 Permit Review
	National Pollutant Discharge Elimination System Program Construction
	Stormwater Discharge Permit
Department of State Lands	Wetland Delineation Clearance
	Removal-Fill Permit or General Authorization
Department of Fish and Wildlife	Oregon Fish Passage Law Compliance
	Oregon Endangered Species Act Compliance
Department of Transportation	Habitat Mitigation Policy
	Permit to occupy or perform operations upon state highways
Local Government, Special Districts, Railroads	
County, Banks, Forest Grove, Cornelius, Hillsboro	Land use permits and approvals (conditional use, development, and/or environmental)
	Natural resource overlay zone reviews
	Floodplain development permits
Clean Water Services	Roadway construction permits
Tualatin Valley Irrigation District	Environmental review, development review, storm water permits
ODOT Rail/Portland and Western Rail	Must grant permission to follow or cross major irrigation lines
	Must agree to use of rail corridor for rail-with-trail



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6: Phasing Plan

Many factors will influence actual CCRT construction phasing and time frames. The timing and feasibility of property acquisition, which will be exclusively on a willing seller basis, and availability of construction funding are primary drivers. Phasing will also be influenced by changing jurisdictional authority and priorities, public and private development, and evolving regional and local plans. The building of specific trail sections and structures may change phasing priorities over time. Phasing should be periodically reviewed and adjusted in light of such factors.

Phasing Criteria

The following phasing criteria are not in order of importance nor weighted. Higher priority trail segments or sections will demonstrate some combination of the following characteristics:

Table 20. Phasing Criteria

Criterion	Description
Jurisdictional Authority	The trail segment or section is within a jurisdiction with authority to fund, develop, own and/or operate trails.
Funding Availability	Wide range of funding programs are available and adequate to fund a specific trail section or structure.
User Alternatives	There are no practical or safe alternatives for trail users without constructing a specific trail section or structure.
Connectivity and Functionality	<ul style="list-style-type: none"> • Connects to major activity center(s). • Extends built trails • Connects to existing or planned transportation facilities • Functional in and of itself (e.g., if other sections were never built, would still be useful) • Crucial link without which other sections would not be functional.
Overall Benefit/Cost	The benefits of a specific trail section or structure are distinctly greater than the relative length or cost, environmental mitigation or permitting complexity, and other factors.

Corridor Phasing

Development of the West-East Corridor – RAIL 1 (Forest Grove to Hillsboro) has general priority over the North-South Corridor – EAST 1 (Banks to Forest Grove). The reasons for prioritizing RAIL 1 over EAST 1 are:

- RAIL 1 will serve larger urban concentrations of commuting and recreational users of all types and modes.
- There are no suitable interim options for a trail from Forest Grove to Hillsboro.
- There are no land acquisition costs or timing constraints (other than funding availability) on RAIL 1.
- Motorized vehicle traffic volumes along most of EAST 1 are relatively low. Interim shared-use solutions may suffice in the near-term.

Table 21. Trail Phasing Priorities

Near-Term

EAST 1: Banks to Forest Grove	<ul style="list-style-type: none"> • OR 6 undercrossing and approach trail options • Verboort area improvements • Interim on-street shared-use improvements
RAIL 1: Downtown Forest Grove through incorporated Cornelius	<ul style="list-style-type: none"> • Douglas St in downtown Forest Grove to OR 47/Quince St (including new arterial roadway crossing improvement) • OR 47/Quince St to Yew St or N 4th Ave • Yew or N 4th Ave to N 10th Ave • N 10th Ave to N 19th Ave • N 19th Ave to NW Hobbs Rd/N 29th Ave/Ryland Park (this stage could utilize shared-use on N Holladay St as an interim solution)
EAST 1 – RAIL 1 Connection	See page 79.

Near-Term to Mid-Term

RAIL 1: Cornelius (N 29th Ave/Ryland Park) to Downtown Hillsboro	This relatively long section of RAIL 1 would be built last. Due to the need for a new bridge across Dairy Creek, and the challenges with user access and neighborhood impacts if the section were built in multiple stages, this section would probably have to be constructed in a single stage.
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Mid-Term

EAST 1: OR 6 to NW Greenville Rd	Street-adjacent multiuse trail along west side of OR 47 and northeast side of NW Greenville Rd from OR 6 to NW Evers Rd. An at-grade bicycle/pedestrian crossing of OR 47 at NW Greenville Rd may be required.
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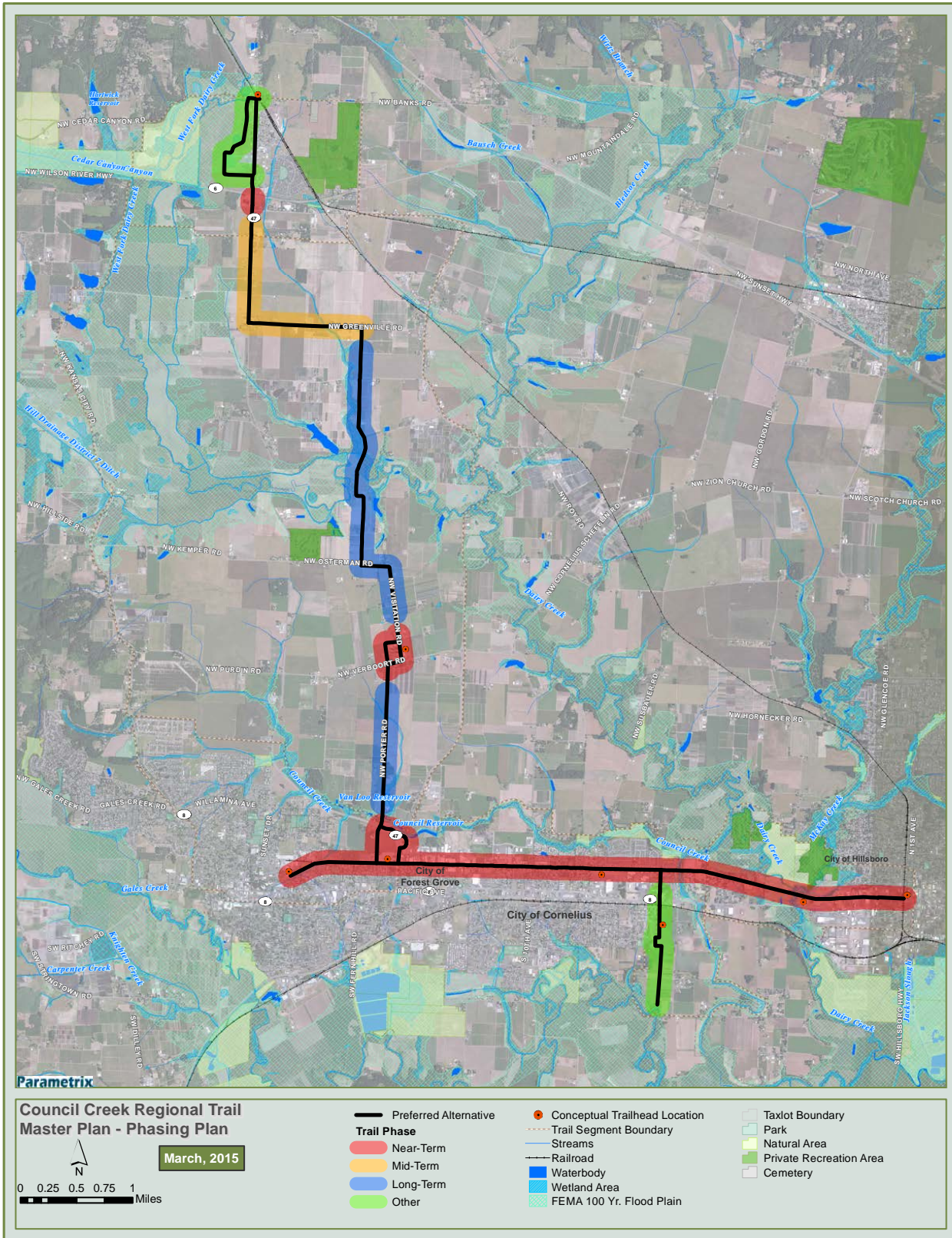
Long-Term

EAST 1: NW Evers Rd to south end of NW Porter Rd	<ul style="list-style-type: none"> • NW Evers Rd – Greenville to NW Osterman Rd • Osterman/NW Visitation Rd – to community of Verboort • NW Porter Rd – community of Verboort to OR 47
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Other

EAST 1: NW Banks Rd to OR 47/Main St	Extends from NW Banks Rd near the Banks-Vernonia Trailhead around the west side of downtown Banks and back to OR 47/Main Street between Sunset Park and the northwest OR 6 ramp. Would be built as part of planned roadway improvements on the west side of the City. City may elect to use improved bicycle lanes and sidewalks along Main St for this section of CCRT,
Jobs Ditch/HOBBS: OR 8 to Tualatin River	Trail development is dependent on a new crossing of OR 8, a new UPRR rail crossing, and development of a new high school immediately south of the UPRR line. The south end of this trail section from the high school site to the Tualatin River can be established as part of planned future urbanization.

Map 14. Phasing Plan



Rail-with-Trail Phasing (RAIL 1)

The phasing of RAIL 1 is complicated by current freight rail service and future MAX or high capacity transit service. The recommended multiuse rail-with-trail improvement has an estimated total cost of over \$22 million and will almost certainly have to be phased. The linear nature of RAIL 1 does not lend to easily defined stages. Although jurisdictional boundaries could be used, staged sections generally defined by major cross streets are suggested.

The staging of RAIL 1 from west to east is recommended. The west and center sections of RAIL 1 primarily cross through urbanized areas with multiple options to enter and exit the trail – cross streets, sidewalks, and bicycle lanes. Higher density urban populations would immediately benefit from a linear trail spanning Forest Grove and Cornelius.

On the east end of RAIL 1 toward Hillsboro, lower densities and fewer cross streets could result in trail users being left with no acceptable options (to both the users and surrounding neighborhoods) to exit and enter the trail until RAIL 1 was completely constructed. In addition, west to east phasing will provide additional time to determine if the existing rail bridge across Dairy Creek (Segment 6) could be re-used, thus saving the \$2.6 million needed for a complex-to-engineer new trail bridge paralleling the existing rail bridge.

North-South Trail Corridor (EAST 1)

Development of the North-South Corridor is generally a LONG-TERM priority. Multiuse trail development for EAST 1 should be managed so that continuous trail sections between major road intersections are built as single stages. For example, the NW Porter Road multiuse trail section should not be built until all required right of way between NW Verboort Road and Oregon 47 is secured.

Staging sections notwithstanding, the actual phasing of the North-South Corridor street-adjacent multiuse trail will be primarily dependent on the acquisition of additional right of way. Partner jurisdictions must be ready to identify and act on opportunities to acquire necessary right of way along the Greenville-Evers-Osterman-Visitation-Verboort-Porter sections of EAST 1, with the long-term goal of assembling enough land to build functional rural street-adjacent multiuse trail sections that gradually replace the near-term interim shared-use solution (see pages 77–78).

Corridor Phasing Exceptions

The following north-south trail sections should be given NEAR-TERM priority.

EAST 1: Undercrossing of Oregon 6 at Oregon 47/Main Street (Banks)

Considerable safety and functionality benefits accrue from a relatively inexpensive (estimated at \$750,000) widening of the Oregon 47/Main Street undercrossing of Oregon 6. Conflicts between bicycle/pedestrian and motorized vehicle traffic crossing under the highway would be significantly reduced, and access to existing bike lanes and sidewalks in downtown Banks and to the Banks-Vernonia Trailhead greatly improved.

This undercrossing improvement would require approach trails on the west side of Oregon 47/Main Street from the northwest ramp of Oregon 6 intersecting with Main

Street to the unsignalized intersection of Oregon 47 and NW Wilkesboro Road just south of Oregon 6. A future extension of a street-adjacent trail on the west side of Oregon 47 and an arterial roadway crossing improvement at NW Greenville Road will be needed to connect to the balance of the future EAST 1 street-adjacent trail.

EAST 1: Community of Verboort

Recommended NEAR-TERM improvements include:

- Shared-use signing and/or pavement markings on NW Heesacker Road, the south 500 feet of NW Visitation Road, and the north 500 feet of NW Porter Road.
- Shoulder widening on NW Visitation Road, and a widened sidewalk on the north side NW Verboort Road, as well as signing and pavement markings.
- Improved arterial bicycle/pedestrian roadway crossing of NW Verboort Road at the intersection with NW Heesacker Road.

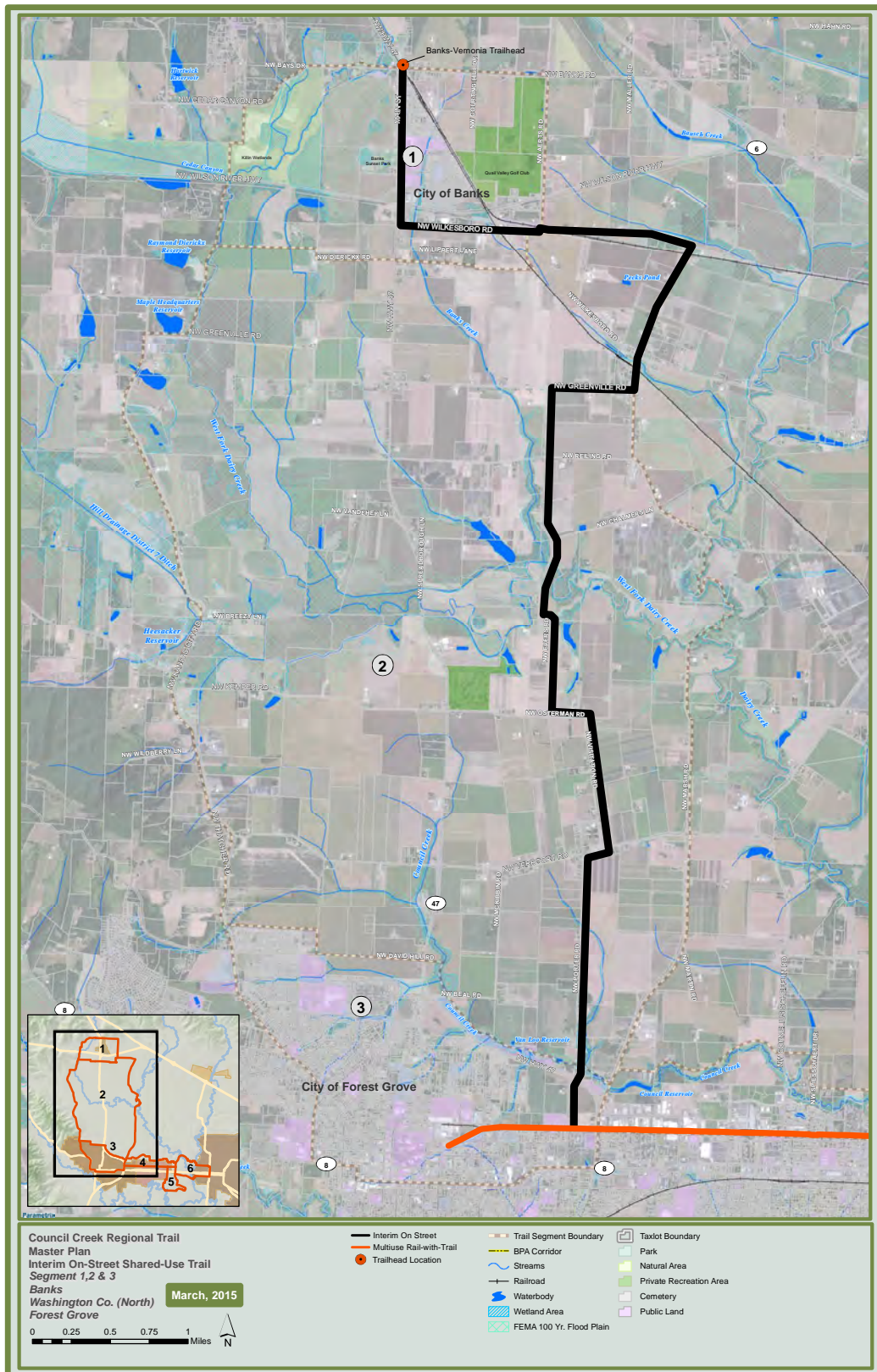
EAST 1: Interim Shared-Use On-Street Improvements

Vehicle traffic volumes along many sections of EAST 1 (NW Evers Road, NW Osterman Road, NW Visitation Road, NW Porter Road, and possibly NW Greenville Road) are low enough that on-street shared-use solutions and/or roadway shoulder widening may be economic and safe trail alternatives. Portions of this route are also along the Tualatin Valley Scenic Bikeway (TVSB), which may be programmed by the County for spot improvements in the NEAR-TERM.

Shared-use is therefore recommended as a practical **interim** solution through Segments 1, 2, and 3 until funding and property is secured to build functional multiuse trail sections.

- Bicycle route signing and/or pavement markings for shared-use should be added or improved along EAST 1 roadways to establish an interim CCRT route generally following the recommended long-term street-adjacent trail alignment between Banks and Forest Grove. The TVSB overlaps with EAST 1 along NW Greenville Road, NW Osterman Road, NW Visitation Road, and NW Porter Road.
- As the Oregon 47 section of EAST 1 (Segment 2) carries higher motorized-vehicle volumes and speeds making shared-use potentially unsafe, the CCRT interim shared-use solution should be temporarily extended along the NW Greenville-NW Roy-NW Wilkesboro section of the TVSB, rejoining Oregon 47 immediately south of the Banks and Oregon 6 interchange at NW Wilkesboro Road.

Map 15. Interim On-Street Shared-Use Trail Segments 1, 2, and 3



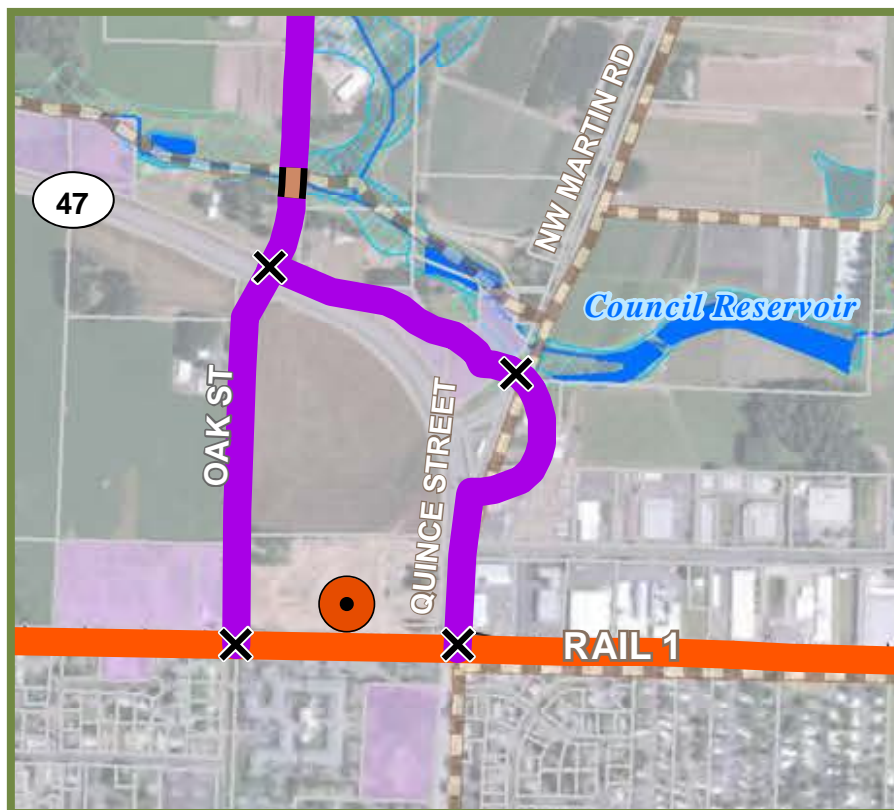
EAST 1 and RAIL 1: Connecting Trail and Highway Crossing

A critical improvement impacting the functionality of the entire CCRT is the need for a new arterial roadway crossing and connecting trail sections between Segments 2, 3 and 4 in the vicinity of the intersection of Oregon 47/Quince Street and NW Martin Road.

Two conceptual connector options are illustrated below (Map 16). Selection will be driven by ODOT determination of new permissible signalized or user-activated crossings and the final design and timing of a planned rebuild of the Oregon 47/NW Martin Road intersection. The Oak Street alternative is simpler and less expensive than the NW Martin Road alternative but requires two new arterial roadway bicycle/pedestrian crossings of Oregon 47 (at Oak Street and the rail crossing). The major future intersection improvements at NW Martin Road will require only one new arterial bicycle/pedestrian crossing.

The cost of bicycle and pedestrian facilities and trail sections associated with the Oregon 47/Martin Road option are estimated to be \$400,000 greater than the Oak Street option, even though Oak will require an additional arterial crossing.

Map 16. Oregon 47 Connection Option





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7: Funding Opportunities

Trail development and enhancement funding sources are summarized in Tables 22 and 23. Terms and conditions will change from time to time, new programs may emerge or others may sunset, and funding cycles and levels will vary. Funding or construction planning should be preceded by a review of current programs and cycles.

Construction Funding

Transportation and parks system development charges (SDC) are assessed by trail partner jurisdictions against new development. Although limited to funding extra-capacity capital improvements to meet the demands generated by new development, SDCs could be available to apply to regional trail development within a jurisdiction's boundary. Other jurisdictions collect street utility fees to underwrite operations and maintenance costs, another possible funding source for trails.

Table 22. Trail Design and Construction Funding Sources

Agency	Program	Funding Cycle	Local Match Percentage	Range of Funds Available
Washington County	MSTIP 3d - Opportunity Funds	5-year cycle	Undetermined	\$5M total
Metro	Metropolitan Transportation Improvement Program (MTIP) Regional Flexible Funds (2016–2018)	3-year cycle	10%	\$94.6M total
ODOT	Statewide Transportation Improvement Program (STIP) – Enhance and Fix-it (2015–2018)	3-year cycle	10% (Enhance)	\$1.3B total (\$720M Fix-It & \$227M Enhance)
ODOT	Oregon Connect (2015–2018)	Each biennium	20%	\$42M

Enhancement Funding

Funding may also be available to underwrite specific elements or types of trail construction, or to provide enhancements or mitigation within trail corridors. Such funds are summarized in Table 23. These funds are sometimes sourced from federal or state government, with state or regional agencies administering allocation and award. Locally sourced funds may also be available.

Table 23. Potential Trail Enhancement Funding Sources

Agency	Program	Funding Cycle	Local Match Percentage	Range of Available Funds
Metro	Restoration and Enhancement Grants	Annual	100%	\$10,000 to \$30,000
	Nature in Neighborhoods Capital Grants	Annual	200%	Minimum of \$50,000
	Natural Areas Bond Acquisition Funds	Varies	Varies	Varies
	Regional Travel Options	Biannual	10%	Minimum of \$50,000
Oregon Parks and Recreation	Local Government Grant	Annual	20% to 50%	\$40,000 to \$1M
	Recreational Trails Grants	Annual	20%	Minimum of \$5,000
	Land and Water Conservation Fund (LWCF)	Annual	50%	Minimum of \$12,500
Oregon Community Foundation	Oregon Historic Trails Fund	Annual	N/A	Up to \$40,000
	Oregon Parks Foundation Fund	Annual	N/A	\$1,500 to \$5,000
Bikes Belong	Bikes Belong Grant	Quarterly	N/A	Up to \$10,000
Cycle Oregon	Cycle Oregon Signature Grant	Annual	N/A	\$50,000 to \$100,000

Appendix A: Plan Report No. 1 – Existing Conditions

Appendix A is a major document ranging upward of 100 pages in length. This appendix can be downloaded from the link below.

<http://www.oregonmetro.gov/public-projects/council-creek-regional-trail-master-plan>



Appendix B: Plan Report No. 2 – Trail Alignment Analysis

Appendix B is a major document ranging upward of 100 pages in length. This appendix can be downloaded from the link below.

<http://www.oregonmetro.gov/public-projects/council-creek-regional-trail-master-plan>



Appendix C: Plan Report No. 3 – Implementation Strategy

Appendix C is a major document ranging upward of 100 pages in length. This appendix can be downloaded from the link below.

<http://www.oregonmetro.gov/public-projects/council-creek-regional-trail-master-plan>



Appendix D: Project Delivery and Quality Control Plan



COUNCIL CREEK REGIONAL TRAIL (CCRT) MASTER PLAN

Project Delivery and Quality Control Plan

Budget and Expenditure Controls

Parametrix shall:

- Produce and submit monthly reports along with invoices to City of Forest Grove and ODOT highlighting key activities for the prior month and documenting project expenditures for the billing period and to-date.
- Use the Parametrix “Crystal Reports” project monitoring system to provide PMT with weekly budget updates as needed. Crystal Reports document project hours billed and other costs accrued on a task and sub-task basis, and are updated every seven (7) calendar days (reports issued every Tuesday).

Master Plan Content QA/QC

The Parametrix Bellevue, Washington Office will provide independent peer review and quality control for each of the Plan Reports (excluding the *Public Involvement Plan*) and for the draft and final versions of the Master Plan.

Review and Acceptance of Deliverables

The City of Forest Grove and ODOT are responsible for the final review and official acceptance of all Master Plan deliverables. The PMT, PAC, and SAC will review and comment on Master Plan deliverables.

Consensus comments by the PAC and SAC, and input from public open houses, on the Master Plan, will be delivered to the PMT in the form of meeting notes prepared by Parametrix. In addition, any additional individual comments or input provided directly by or through PAC or SAC members will be delivered to the PMT. The City of Forest Grove is responsible for consolidating all comments and input and providing formal direction to Parametrix for any modifications to the draft deliverables through a single comment memorandum and/or “track changes” version of the submitted draft deliverable. The project’s WOC further details these processes.

Contingency Tasks

No formal contingencies are contemplated by the project’s work order contract. Contingencies may be considered on a case-by-case basis by ODOT and the City of Forest Grove in consultation with Parametrix, based on agreed to additional project needs and the availability of additional funding.

Appendix E: Advisory Committee Roles and Responsibilities



COUNCIL CREEK REGIONAL TRAIL MASTER PLAN

Committee Roles and Responsibilities

Three advisory committees will assist in developing the Council Creek Regional Trail Master Plan (Master Plan). The Project Advisory Team (PMT) will generally be the initial review body for each Master Plan task deliverable, followed by review by the Stakeholder Advisory Committee (SAC), then review in public open houses as applicable, and finally review by the Project Advisory Committee (PAC). The PAC shall consider input from the PMT, SAC, and from public open houses, and make the final advisory recommendations on the three (3) project task Plan Reports, and on the draft Master Plan that is forwarded to the jurisdictional partners that will adopt the Master Plan.

Committee Responsibilities

The members of all three project committees shall have the following responsibilities. PAC and SAC members may choose an alternate representative but are encouraged to use this representative only when unavoidable circumstances arise. Consistency in committee participation is a key factor in delivering an effective Master Plan.

- Review all meeting materials in advance and attend all meetings.
- Assist in gathering existing conditions information including environmental and land use information and stakeholder contact information.
- Provide advice on Master Plan trail alignment alternatives and other deliverables.
- Assist in public outreach, such as by identifying strategies, venues, and invitees; helping to staff such outreach events.
- Act as project liaisons to the organizations and constituencies they represent. Committee members will be asked to verbally report on their prior liaison activities at each committee meeting.

Committee Types and Membership

PAC and SAC members may choose an alternate representative but are encouraged to use this representative only when unavoidable circumstances arise. Consistency in committee participation is a key factor in delivering an effective Master Plan.

Project Management Team (PMT)

The PMT will help to ensure completion of tasks and deliverables in accordance with the Master Plan scope, schedule and budget; and provide policy and technical guidance. The PMT shall review and comment on draft Plan Reports prior to distribution to the PAC, SAC, appointed and elected officials, and the public.

Four (4) PMT meetings shall be held over the duration of the Master Plan project. PMT meetings shall be held to coincide with delivery of the draft Plan Reports associated with project Tasks 3, 4, and 5, and with delivery of the internal draft Master Plan (Task 6). In addition, the PMT shall participate in the project kick-off meeting. The project kick-off meeting and the meeting for project Task 3 shall be held jointly with the PAC as single meetings. All other PMT meetings will held separate from the PMT and be one (1) hour in length and conducted by teleconference.

The PMT membership shall be the following entities and specific persons:

- City of Forest Grove Derek Robbins (City Project Manager)
- City of Cornelius Dick Reynolds (Collaborative Project Manager)
- Metro Lake McTighe (Collaborative Project Manager)
- ODOT Michele Thom (ODOT Project Manager)
- Parametrix Jim Rapp (Consultant Project Manager)

The City Project Manager shall facilitate the PMT meetings. Consultant shall lead meeting discussions on technical issues. Specific responsibilities of City Project Manager, with the assistance of other PMT members and the Consultant, related to the functioning of the PAC and SAC include:

- Facilitating PAC and SAC meetings to begin and end on time, stay on topic, consider all issues on the agenda, afford all members the opportunity to express their views and concerns, and to the extent possible, reach consensus on Master Plan alternatives and recommendations.
- Providing the PAC and SAC with timely meeting agendas and materials.
- Preparing and distributing PAC and SAC meeting summaries.
- Arriving early and remaining after each PAC and SAC meeting to manage meeting set-up and take-down logistics.
- Providing general Master Plan project updates and information on upcoming project activities and events notices as part of each meeting.
- Sharing agency, stakeholder, and public input; and other information that may have been received between PAC and SAC meetings.

Project Advisory Committee (PAC)

The PAC will provide technical assistance, feedback, review, and provide advisory recommendations on project task deliverables; and provide policy guidance and act as a sounding board over the course of the Master Plan project.

Four (4) PAC meetings shall be held over the duration of the Master Plan project. PAC meetings shall be held to coincide with delivery of the draft Plan Reports associated with Master Plan project tasks 3, 4, and 5, and with delivery of the external draft Master Plan (Task 6). In addition, the PAC shall participate in the project kick-off meeting. The project kick-off meeting and the meeting for project Task 3 shall be held jointly with the PAC as single meetings. All PAC meetings will be two (2) hours in length and be held at City of Forest Grove offices or at other locations convenient to PAC members, as determined by the City.

The PAC membership shall include one (1) representative from each of the following entities. PMT members shall also serve on the PAC. Each jurisdiction shall have one “vote” in arriving at PAC recommendations. The Parametrix representative shall be “non-voting”. PAC representatives for the City of Forest Grove and City of Cornelius are in addition to its member on the PMT. The cities are the local government managing agencies for the Master Plan project, and the additional PAC representation will allow its PMT representative to concentrate on project contractual and management issues.

- City of Forest Grove
- City of Banks
- City of Hillsboro

- City of Cornelius
- Washington County

Stakeholder Advisory Committee (SAC)

The SAC shall advise the PMT and PAC on constituency and community concerns and issues, assist in public outreach, review and provide comment on Master Plan alternatives and deliverables, serve as a forum to provide information and contacts that will help advance the Master Plan, and help to build community consensus on Master Plan recommendations.

Three (3) SAC meetings will be held over the duration of the Master Plan project. SAC meetings shall be held to coincide with the delivery of the draft Plan Reports associated with Master Plan Tasks 4 and 5, and with delivery of the external draft Master Plan (Task 6). All meetings will be two (2) hours in length and be held at City of Forest Grove offices or at other locations convenient to SAC members, as determined by the City. PMT and PAC member participation in SAC meetings shall be ex-officio.

The SAC membership may include but not be limited to one (1) representative from each of the following entities or interests.

- Forest Grove Recreation Commission
- Cornelius Parks Advisory Board
- Forest Grove Economic Development Commission
- Forest Grove Chamber of Commerce
- Cornelius Chamber of Commerce
- Rural Roads Operations & Maintenance Advisory Committee (RROMAC)
- Washington Transportation Association (WTA)
- Citizen Participation Organization (CPO) 15
- Salmonberry Corridor Coalition
- Friends of Yamhelas Westsider Trail Coalition
- Friends of Banks-Vernonia Trail
- Banks Chamber of Commerce
- Washington County Visitors Association
- Washington Co. Bicycle Transportation Coalition
- Tualatin Soil & Water Conservation District
- Hillsboro Chamber of Commerce
- Hillsboro Economic Development Commission
- Tualatin River Watershed Council
- Adelante Mujeres
- Forest Grove Committee for Citizen Involvement
- Verboort Citizen Advisory Board
- Oregon Farm Bureau

Committee Meeting Purpose and Schedule

The three committees will meet several times over the course of the Master Plan process. Meeting dates below are “**the business week of**” and preliminary, and may be subject to modification over the course of the Master Plan process, based on adjusting timing to coincide with key deliverables, to maximize committee participation, or to account for other variables that may arise. Committee decision-making processes, protocols, and limitations are summarized elsewhere in the Roles and Responsibilities document.

- **Kick-off Meeting (Task 1.2.1)**
 - PMT and PAC Week of October 7, 2013

Purpose: Present project history, study area, and overview; review project scope and schedule, “Committee Roles and Responsibilities” and “Project Delivery and Quality Control Plan” documents, and SAC membership.

Materials: Full ODOT-approved project scope, project mapping, draft “Roles and Responsibilities” and “Quality Control” documents.

Outcomes: Modify or accept project schedule, “Roles and Responsibilities” and Quality Control” documents, and SAC membership.

- **Public Involvement Plan, Existing Conditions Report, Trail Alignment Criteria (Task 2.1, Task 3, Task 4.1)**
 - PMT and PAC Week of January 13, 2014

Purpose: Review draft Existing Conditions Report; draft Public Involvement Plan; and draft trail alignment criteria.

Materials: Draft Existing Conditions Report and draft Public Involvement Plan.

Outcomes: Modify or accept Existing Conditions Report, Public Involvement Plan, and Trail Alignment Criteria.

- **Trail Alignment Analysis (Task 4.2)**
 - PMT Week of April 14, 2014
 - SAC Week of April 28, 2014
 - Open House Week of May 27, 2014
 - PAC Week of June 9, 2014

Purpose: Review draft Trail Alignment Report and mapping identifying up to 3 alignments in each of 7 trail segments.

Materials: Draft Trail Alignment Report and Map Atlas.

Outcomes: Modify or accept project schedule, “Roles and Responsibilities” and Quality Control” documents, and SAC membership.

- **Plan Implementation Report (Task 5)**
 - PMT Week of October 27, 2014
 - SAC Week of November 4, 2014
 - PAC Week of November 17, 2014

Purpose: Review Plan Implementation Report, which will include a “preferred” trail alignment for each segment and revised map atlas, trail design typology, cost estimates, and report on other implementation factors.

Materials: Draft Plan Implementation Report

Outcomes: Modify or accept Plan Implementation Report including selection of preferred trail alignment for each trail segment

- **Master Plan Production (Task 6)**

- PMT Week of March 23, 2015
- SAC Week of March 30, 2015
- Open House Week of April 20, 2015
- PAC Week of May 18, 2015

Purpose: Review full draft Master Plan and map atlas.

Materials: Draft Plan Implementation Report

Outcomes: Modify or accept Plan Implementation Report including selection of preferred trail alignment for each trail segment

- **Final Master Plan Submitted to City** Week of June 29, 2015
- **Jurisdictional Reviews** July – September 2015

Committee Meeting and Communication Protocols

Decision-making Processes

All three project committees will strive to reach consensus decisions on Master Plan deliverables and recommendations. The PMT’s Parametrix representative shall be “non-voting”.

- Consensus is defined as the point where all committee members agree on the best option, even if it is not each member’s personal preference.
- If consensus cannot be reached, the committees will be encouraged to narrow the possibilities by making majority/minority recommendation(s). Any committee member that still has a strongly held divergent viewpoint may ask that their position be included in the meeting record.
- While committee input is highly valued and essential to the success of the Master Plan project, all actions of the three committees are advisory. The City of Forest Grove and ODOT reserve the final decision-making authority for all Master Plan recommendations and for directing the activities of Parametrix.

Meeting Agreements

Committee members are volunteers and will have limited time to consider Master Plan findings and deliverables. In addition, the Master Plan project budget and scope is set by contract with ODOT. The ability to extend meetings, re-consider recommendations, or add or extend tasks will be highly constrained. In order to assure that committee meetings are the most productive, the following meeting agreements are suggested:

- Treat fellow committee members, project staff, and audience members, if any, with respect.
- Share the floor – let others speak once before speaking twice. Listen carefully with the intent of understanding the positions and statements of other committee members.
- Collaborate with other committee members, and project staff and consultants, in seeking to find consensus.
- Help create an atmosphere in which differences can be raised, discussed and melded into group decisions. Divergent views and opinions are expected and are to be respected.
- Be an active member of the committee. Make every effort to attend every committee meeting. The committees will not revisit information provided or decisions made in your absence.

- Represent your designated constituents, but ultimately strive to set aside personal or constituent interests in order to seek the best solutions for all stakeholders and future users of the trail.
- Focus questions and comments on the subject at hand and on the published agenda, unless committee members agree by consensus to add or remove agenda or discussion items.
- When discussing agenda items and project issues, apply your comments to the subject at hand, not to personalities or personal disagreements. Raise issues honestly, clearly and early, and share differences of opinion – silence is considered consent.
- Turn off cell phones, pagers, laptops, and other communication devices, except when using such devices will help to move forward issues associated with the agenda.
- Refrain from conducting non-project business during committee meetings. If you must take a priority call or have to conduct a necessary time-specific non-project conversation, please excuse yourself from the meeting and return as soon as possible. The committees will not revisit information provided or decisions made in your absence.
- Notify the City of Forest Grove if you are unable to attend a meeting or project event. Indicate if an alternate representative will be attending in your place.

Communications

Acting as liaisons to constituents, appointed and elected officials, the public, and other groups and stakeholders is a key responsibility of all committee members. Outside communications by committee members on the Master Plan process and findings are encouraged. However these communications need to be consistent. The following guidelines are suggested:

- Members will be expected to report at each committee meeting on their liaison activities and what they are hearing back from constituents and the public.
- Members will not engage in outside actions or discussions in a manner that misrepresents committee processes or decisions. Members are free to express their disagreement or issues with committee decisions, but should do so in the context of accurately representing the decisions and recommendations of the full committee.
- Members will refrain from trying to reverse or change committee decisions or recommendations by engaging with outside parties to unduly influence other committee members. Disagreement or dissent is legitimate but it should be expressed in the context of committee decision-making processes and recorded as a minority or individual position.
- Members can suggest agenda items by contacting the City project manager. Between committee meetings, members should also provide the City project manager with reports of any comments, issues, or concerns they are hearing from outside sources or constituents.
- Members will notify the City project manager about any news media inquiries, and refer requests for official statements or viewpoints.



Appendix F: Public Involvement Plan



COUNCIL CREEK REGIONAL TRAIL MASTER PLAN

PUBLIC INVOLVEMENT PLAN

INTRODUCTION and OVERVIEW

The Council Creek Regional Trail Public Involvement Plan (PIP) serves as a guide for outreach activities throughout the Master Plan process. The PIP will be implemented with two distinct audiences in mind. The first audience includes stakeholders with specific advocacy, location, property, or jurisdictional interests in the Master Plan. The second audience is the general public that may engage as it relates to specific concerns or general interests.

Public involvement activities will include both traditional and social media, a project web site, and coordination with the Master Plan's jurisdictional partners. Targeted interactions with specific groups and interests through key stakeholder interviews and the project's broad-based stakeholder advisory committee, and general interactions at project open houses will be publicized through a variety of media and direct notice activities that will assure a high level of contact with and participation by multiple audiences.

In addition to the specific outreach events described in this PIP, a Stakeholder Advisory Committee (SAC) will meet three (3) times in the course of the Master Plan process to provide advice and recommendations. The SAC will be an important means for engaging stakeholders, encouraging deliberation in the formation of recommendations and building understanding about Master Plan decisions. Details on the SAC's purpose, membership and meeting schedule are included in *Attachment A - Committee Roles and Responsibilities*.

PROJECT GOALS

The Master Plan will recommend a comprehensive strategy for the completion of an uninterrupted 15-mile long regional trail from downtown Hillsboro, Oregon through the cities of Cornelius and Forest Grove, thence north through unincorporated Washington County to the City of Banks. The trail study corridor is divided into seven segments based on the differing attributes along the corridor, which include older neighborhoods, business and industrial areas, riparian stream corridors, and rural farmlands.

PUBLIC INVOLVEMENT GOALS

- Ensure effective coordination and communication between jurisdictional partners and stakeholders and related projects taking place within the trail study corridor.
- Engage local jurisdictions, utilities, neighborhoods, property owners, citizens, bicycle and pedestrian advocates, area non-profits, businesses, and other stakeholders directly in master plan development.
- Guide jurisdictional partners on future planning, design, permitting, and development of the trail.

- Host activities and provide tools that will add value to the project and genuinely engage the community in an open and transparent process.
- Keep the public informed with accurate, up-to-date information.
- Build trust and a long-term relationship with the community.
- Maintain a level of flexibility with the process.

OBJECTIVES and OUTCOMES

In order to achieve the preceding goals, the project will offer multiple opportunities to engage:

One-on One Involvement

Key stakeholder interviews will be a primary strategy for early outreach, enabling the project team to understand the corridor’s opportunities and challenges from a local level. As each stakeholder or group of stakeholders is interviewed, new stakeholders are likely to be identified.

Information Sharing

- Project updates available on the project web site and from links on project partner web sites, as well as by project postcards, newsletters and newsfeeds.
- Formal open houses as specified in the project consultant’s contract.
- Jurisdictional partners will share project information at key milestones via a number of methods depending on the desired audience, information to be shared, feedback needed and timing. This could include outreach by jurisdictional partners at other community events, at community centers, or other community gathering places. The jurisdictional partners may also hold targeted meetings with stakeholders as needed.

Comments and Preferences

Throughout the development of the master plan, the overall public process will allow interested parties to engage with the project. The communication process will provide the public with easy access to project information, the ability to get questions answered and the ability to provide feedback on the plan and process.

AUDIENCES and OUTCOMES

Target and general audiences will be asked to review project information, share it with those they know, engage with each other, and provide comments and preferences in writing or at public open houses.

- Residents/Neighbors – those who live within the trail study corridor that may be impacted most directly by trail route options.
- Businesses – those who operate businesses or work in the trail study corridor.
- Commuters – those who travel through the trail study corridor.

- Advocacy groups – groups with a particular interest in the trail, for example groups focused on increasing travel by foot or by bicycle, etc.
- Underrepresented populations - particularly the trail study corridor’s large Hispanic population.

KEY MESSAGES

Key project messages may be refined as the master plan progresses. Some messages may be emphasized at certain times based on the event purpose, timing and audience. Key messages are:

1. The Council Creek Regional Trail will create new connections within communities and between communities.

Linking diverse community destinations along the trail corridor will increase opportunities to bike and walk for recreational, shopping, and commuter purposes. The trail will provide access between homes, commercial destinations, schools, and transit, as well as provide a continuous bicycle and pedestrian link from the city of Hillsboro to the city of Banks with access to Cornelius, Forest Grove, and farming communities in Washington County in-between.

2. The Council Creek Regional Trail will support increased health and well-being through recreation and exercise, as well as improving air quality by providing for safe and convenient non-motorized transportation options.

Motorized transportation is responsible for nearly 40% of all greenhouse gas emissions, and is a significant source of air pollution. Studies show that households living near a greenway or trail are more likely to meet nationally recognized measures of health.

3. The Council Creek Regional Trail is supported by local communities, and has already been included in nearly all regional and local land use plans in the area.

4. The Council Creek Regional Trail will keep dollars in the local economy by providing safe alternative means to make trips between neighborhoods, shops and jobs.

As automobile, fuel and insurance prices rise, the percentage of household dollars going to transportation significantly increases. Biking and walking are an affordable and healthy alternative. Studies have shown that businesses are investing in locations accessible by trails to attract and retain employees.

5. Local governments are working together with residents, businesses and community organizations to create the Council Creek Regional Trail.

First and foremost, the purpose of this trail is to serve neighborhoods, citizens, businesses, commuters, and recreational users. They serve on the master plan advisory committees and are guiding the process. Local governments and jurisdictional partners include the cities of Banks, Forest Grove, Cornelius and Hillsboro; Washington County; Metro; and the Oregon Department of Transportation.

DIVERSITY OUTREACH

Targeted public outreach activities to the significant concentration of the Hispanic population (see table below) in the vicinity of the project study corridor is a priority. 2010 U.S. Census figures report the City of Cornelius and City of Forest Grove area as having the greatest concentration and highest growth rate of Hispanics in Washington County. The Hillsboro area also has a significant Hispanic population.

Study Area Hispanic Population (2010)

Location	Total Population	Hispanic or Latino(of any race)	% Hispanic
City of Banks	1,777	124	7.0%
City of Cornelius	11,869	5,948	50.1%
City of Forest Grove	21,083	4,874	23.1%
City of Hillsboro	91,611	20,726	22.6%
Washington County	529,710	83,270	15.7%
Oregon	3,831,074	450,062	11.5%

Source: U.S. Census Bureau

Targeted information and notifications to Hispanic communities and populations within the Council Creek Regional Trail Master Plan project area will be accomplished through:

- Publication in the *El Hispanic News*.
- Emailed project notices requesting re-posting to churches specifically serving Hispanic populations in Western Washington County.
- Emailed project notices requesting re-posting to businesses in Hillsboro, Cornelius, Forest Grove and Banks specifically serving Hispanic populations.
- Postings and take home materials distributed to schools and libraries within the Forest Grove, Banks and Hillsboro School Districts with large Hispanic student bodies.
- Postings to on-line calendars to the following non-profits and health centers that serve the Hispanic population in Western Washington County: Adelante Mujeres, Centro Cultural and the Virginia Garcia Memorial Health Clinic.

See *Attachment B – Hispanic Community Outreach* background for more information

TOOLS and TASKS

A successful master plan will reflect the interests and desires of the local community. A variety of public information materials and activities will be developed and refined in the course of master planning and public outreach processes to keep interested parties informed and to invite participation at key milestones. Informational materials (e.g., newsletters and meeting

advertisements) will be disseminated at specific points in the master plan process and made available on an ongoing basis through the project website and other media platforms. A stakeholder database will be developed and expanded as the master plan progresses.

Stakeholder Interviews

Interviews will be conducted with key stakeholders. Interviewed stakeholders will include but are not limited to citizen participation organizations (CPO), other neighborhood associations, utilities and railroads owning or controlling lands within the trail corridor, property owners, governmental service providers not otherwise represented on a project committee, bicycle and trail advocacy associations, and area non-profits.

Stakeholder Advisory Committee

This committee will advise the project team on constituency and community concerns and issues, as well as serve as a forum to provide information and contacts that will help advance the master plan, review and evaluate master plan findings and deliverables, assist in considering options and alternatives, and build consensus recommendation(s) as to draft and final master plan findings and conclusions. Members will also serve as liaisons to their constituents by sharing information and gathering additional input.

Electronic Media

Information will be continually updated on the project web site and the jurisdictional partners will use other social media tools to provide people with an understanding of the current work of the project as well as background and next steps. Opportunities for public engagement will be clearly delineated. Jurisdictional partners will also be encouraged to provide links on their organizational web site to project resources.

Email Alerts

Email addresses available through the project mailing list will be used to send updates at project milestones. The jurisdictional partners may also share information through other communication networks as appropriate.

Media Outreach

The jurisdictional partners will proactively work with local media to describe the project, explain its timeline, highlight opportunities for involvement, discuss relevant issues and frame intended outcomes. Articles, event listings, and public notices will be submitted to community newspapers and newsletters and other media outlets as appropriate.

Presentations

Presentations will be a primary avenue for communications with stakeholders, the public, and the appointed and elected decision-making bodies of jurisdictional partners. Open houses featuring project presentation will be held, and meetings will be scheduled to present the draft master plan to elected or appointed bodies.

Public Events

To share information and request public feedback, the project team will hold an open house at two master plan milestones. Participants will have an opportunity to ask questions and offer comments on project proposals and ideas.

Outreach events associated with the trail alignment alternative and draft master plan milestones will open with presentations on current master plan outcomes and findings at the time of the milestone. The two events will also include a facilitated question and answer session, followed by participant interaction in an “open house” setting. The meetings will include a comment form/online survey to capture public feedback. The project team will also capture public comments at the events.

Meeting Materials

A meeting announcement will be sent in advance of the two outreach events to all property owners within the trail study corridor and to other interested parties that have requested notification or that have been identified by the jurisdictional partners. The following materials will be produced in conjunction with each round of outreach events:

- One project informational postcard, one newsletter article, one Metro newsfeed release, one power point presentation and one public web-based survey.
- Project website content.
- One set of large format informational displays.
- Posters distributed to local businesses and organizations in the project area.

Displays, visual renderings, illustrations

Display boards, PowerPoint presentations, sketches, renderings, illustrations or still photographs may be used to describe potential trail alignments and other master plan findings and recommendation at outreach events.

PROJECT SCHEDULE

Public engagement will be ongoing throughout the entire master plan process. The detailed project schedule is included in *Attachment A - Committee Roles and Responsibilities*.

MEASUREMENT and EVALUATION

A summary of all public involvement activities and outcomes will be compiled at the conclusion of the master plan. The summary will include individual public event records, stakeholder interviews, public comments, survey responses and also describe how public and stakeholder input helped shape the master plan.

Successful communication will be evidenced by a clear understanding of the project alternatives and timeline and participation in opportunities for engagement and the decision-making process. This will be measured by the following:

- The overall attendance and the number of documented direct contacts made with community members at outreach events, and the number of “hits” on the project website.
- The number of community members submitting comments on the master plan through outreach event surveys, the project website, and by other means; and/or requesting follow-up information.
- The outreach participants that indicate that the master plan outreach program was effective based on outreach event surveys, the project website, and from other input.
- An assessment of the degree to which targeted audiences and populations were engaged in project development.
- The level and type (i.e., positive or negative) of media interest in the project.

PIP AMENDMENTS

PIP amendments may be necessary as master plan findings, outcomes and recommendations emerge. Changes will primarily relate to the type, frequency, locations and targeted audiences for outreach events and activities.

Attachments

- A. Committee Roles and Responsibilities
- B. Hispanic Community Outreach Background

COUNCIL CREEK REGIONAL TRAIL MASTER PLAN

Hispanic Community Outreach Background

The Council Creek Regional Trail is located at the western edge of the Portland metropolitan region to serve as a primary transportation and recreational facility for bicycle and pedestrian travel. The Project study area includes four (4) cities and portions of unincorporated Washington County. The study area extends from the City of Hillsboro Regional Center at the existing western terminus of the region's MAX light rail system, through the City of Cornelius, City of Forest Grove and unincorporated Washington County to the City of Banks, a distance of approximately fifteen (15) miles.

Between 2000 and 2010, the population of the cities and counties in the study area has grown at a faster rate than the state average of 12% (Table 1). The smallest jurisdiction in the study area, Banks, has grown by nearly 40% and the City of Hillsboro has seen an overall population increase of 30.5%. Much of this growth is attributed to a large increase in the Hispanic population in the area.

Table 1. Total Population Change from 2000 to 2010

Location	2000 Population	2010 Population	% Change
City of Banks	1,286	1,777	38.2%
City of Cornelius	9,652	11,869	23.0%
City of Forest Grove	17,708	21,083	19.1%
City of Hillsboro	70,186	91,611	30.5%
Washington County	445,342	529,710	18.9%
Oregon	3,831,074	3,899,353	12.0%

Source: U.S. Census Bureau

Oregon's Hispanic population grew by nearly 64% from 2000-2010, and continues to grow (Table 2). The City of Banks had an increase of 150% while the other cities in the study area saw their Hispanic population increase by over 50%. More than 80 percent of Hispanics in Oregon are of Mexican ancestry. Washington County is the metro area's most racially diverse area, with people of color accounting for three of 10 residents (The Oregonian, 2011).

Table 2. Hispanic Population Growth from 2000 to 2010

Location	2000 Population	2010 Population	% Change
City of Banks	49	124	153.1%
City of Cornelius	3,609	5,948	64.8%
City of Forest Grove	3,065	4,874	59.0%
City of Hillsboro	13,262	20,726	56.3%
Washington County	49,735	83,270	67.4%
Oregon	275,314	450,062	63.5%

Source: U.S. Census Bureau

The City of Cornelius has the most diverse population with over 50% of its population being Hispanic. Over 20% of the population in City of Forest Grove and Hillsboro are also Hispanic. Table 3 demonstrates the Hispanic population as a percentage to the total population in each city, county and state.

Table 3. Percent of Population that is Hispanic

Location	Total Population	Hispanic or Latino(of any race)	% Hispanic
City of Banks	1,777	124	7.0%
City of Cornelius	11,869	5,948	50.1%
City of Forest Grove	21,083	4,874	23.1%
City of Hillsboro	91,611	20,726	22.6%
Washington County	529,710	83,270	15.7%
Oregon	3,831,074	450,062	11.5%

Source: U.S. Census Bureau

The Council Creek Trail Master Plan will seek feedback from interested and affected parties, diverse communities and environmental justice populations. Strategies for outreach to the area’s Hispanic populations include posting open house announcements and communications in Spanish to the following sources:

- Adelante Mujeres
- El Hispanic News
- Centro Cultural de Washington County
- Hillsboro Futsal
- Local churches and schools with large Hispanic populations
- Hillsboro Arts & Culture Council

Community events are excellent locations in which to engage the community and there are various located throughout the study area. Farmers markets are popular in Washington County and have high rates of attendance from community members. The follow table lists the farmers markets in the study area. Local athletic events, such as soccer games, are also venues in which large numbers of the community attend, pose as potential venues for outreach.

Table 4. Farmers Markets in the Area

Name	Location	Time	Day / Week	Duration
Forest Grove	Main Street between Pacific and 21st avenues	4 p.m. to 8 p.m.	Wednesday	May 15 - Oct 30
Banks	41905 N.W. Arbor Park Loop	3 p.m. to 7 p.m.	Friday	June 7 - Sept. 27
Cornelius	220 N. Adair St. (Walmart parking lot)	11 a.m. to 3 p.m.	Sunday	May - August
Hillsboro	Downtown Hillsboro (between 1st and 3rd Ave.)	9 a.m. to 1:30 p.m.	Saturday	May 4 - Oct 26

Hillsboro	MAX Orenco Station	10 a.m. to 2 p.m.	Sunday	May 5 - Oct 27
Hillsboro	Tanasbourne (NW Cornell Rd. and Stucki Ave.)	4 p.m. to 7:30 p.m.	Wednesday	June 5 - Aug 28
Hillsboro	Tuality Hospital (Baseline and 8th Ave.)	11 a.m. to 1:30 p.m.	Thursday	July 11 - Aug 22

Adelante Mujeres, a non-profit in Forest Grove that works to educate and empower low-income Latina women, recently completed a “Photovoice” project with Oregon Walks titled “Walking: para vida, familia, y comunidad”. In the project, more than twenty women from Adelante Mujeres’ English class took photos and shared their stories to demonstrate why walking matters and what is needed to make their communities safer and more walkable. Working with Adelante Mujeres will ensure there is participation, input and engagement from the Hispanic community on the Council Creek trail project.

Metro also offers the ‘¡Vámonos!’ project which encompasses a bilingual mapping project to help people in Cornelius, Forest Grove and Hillsboro learn about great places to walk and bike in their communities. The maps are free to the public and highlight points of interest, history, commerce and transit stops as well as highlight parks, trails and natural areas.

Appendix G: Conceptual Community Trails

In recommending preferred regional trail alignments and types, the PAC and SAC also considered the need for additional community and local-scale trails connecting to the CCRT. Such trails could provide access from the CCRT to schools, streams and natural areas, and community services.

As such trails will be the sole responsibility of local jurisdictions or public property owners, the PAC/SAC decided not to make specific recommendations. The committees did, however, direct that a map be prepared conceptually showing the general locations of possible community trail routes and included as an appendix to this master plan report (see Map 17).

In addition, the City of Forest Grove has adopted a trail and bicycle/pedestrian system plan termed the “Emerald Necklace.” See Forest Grove’s Community Trails Plan, Comprehensive Plan, and Transportation System Plan, as well as the Washington County Transportation System Plan for more details on the Emerald Necklace. The cities of Banks and Hillsboro are in the final stages of new trail system plans, and these efforts should also be integrated into the development of the CCRT.



Council Creek



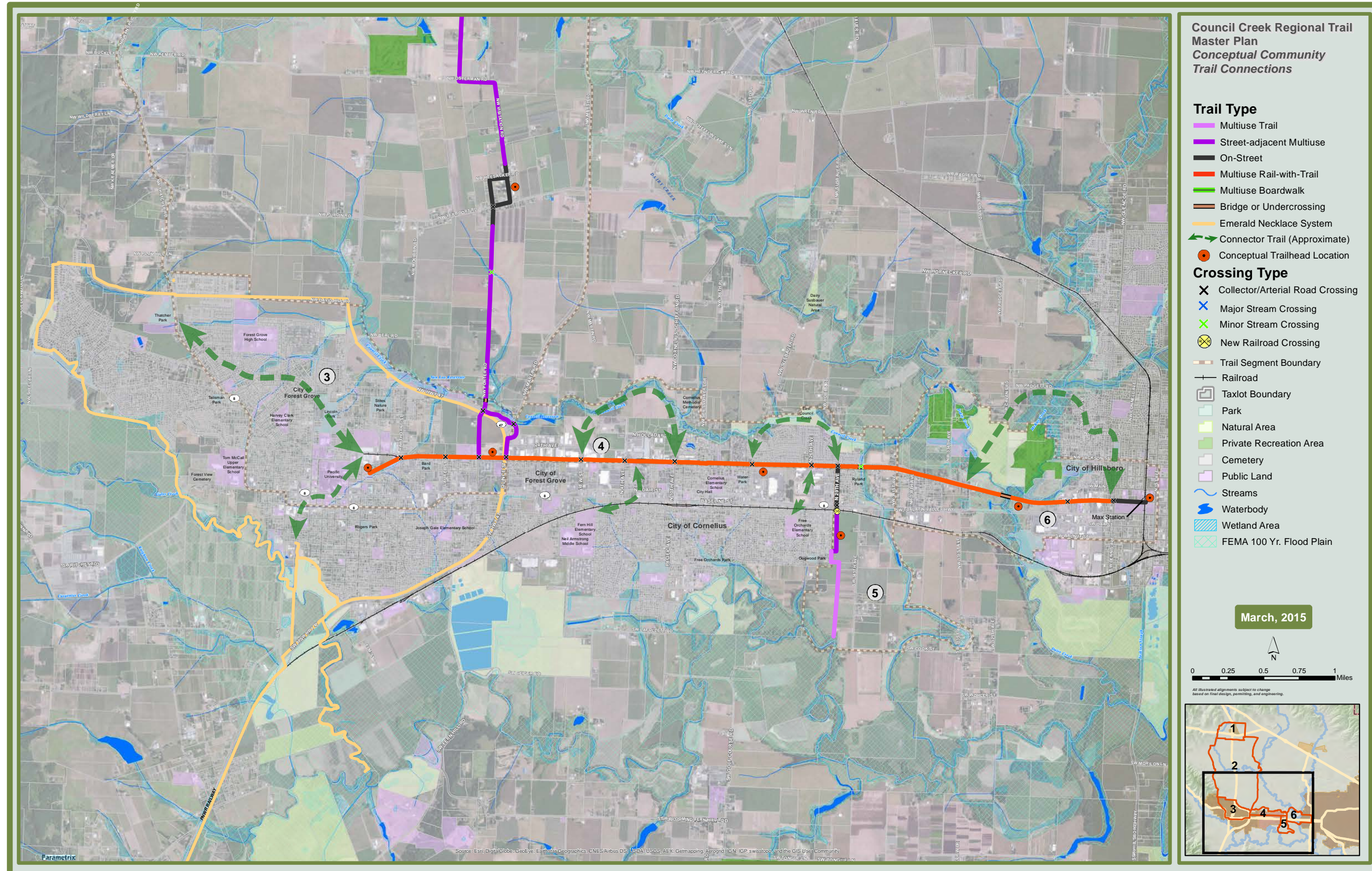
Thatcher Park



Dairy Creek



Map 17. Conceptual Community Trail Connections



2014 UGB NE Expansion Area
Proposed Zoning Alternative #1
(Commerical South of TV Hwy Only)
Draft 5-20-15



150 75 0 150 Feet



Comprehensive Plan / Zoning

Low-density Residential / R-7 (90 Acres)

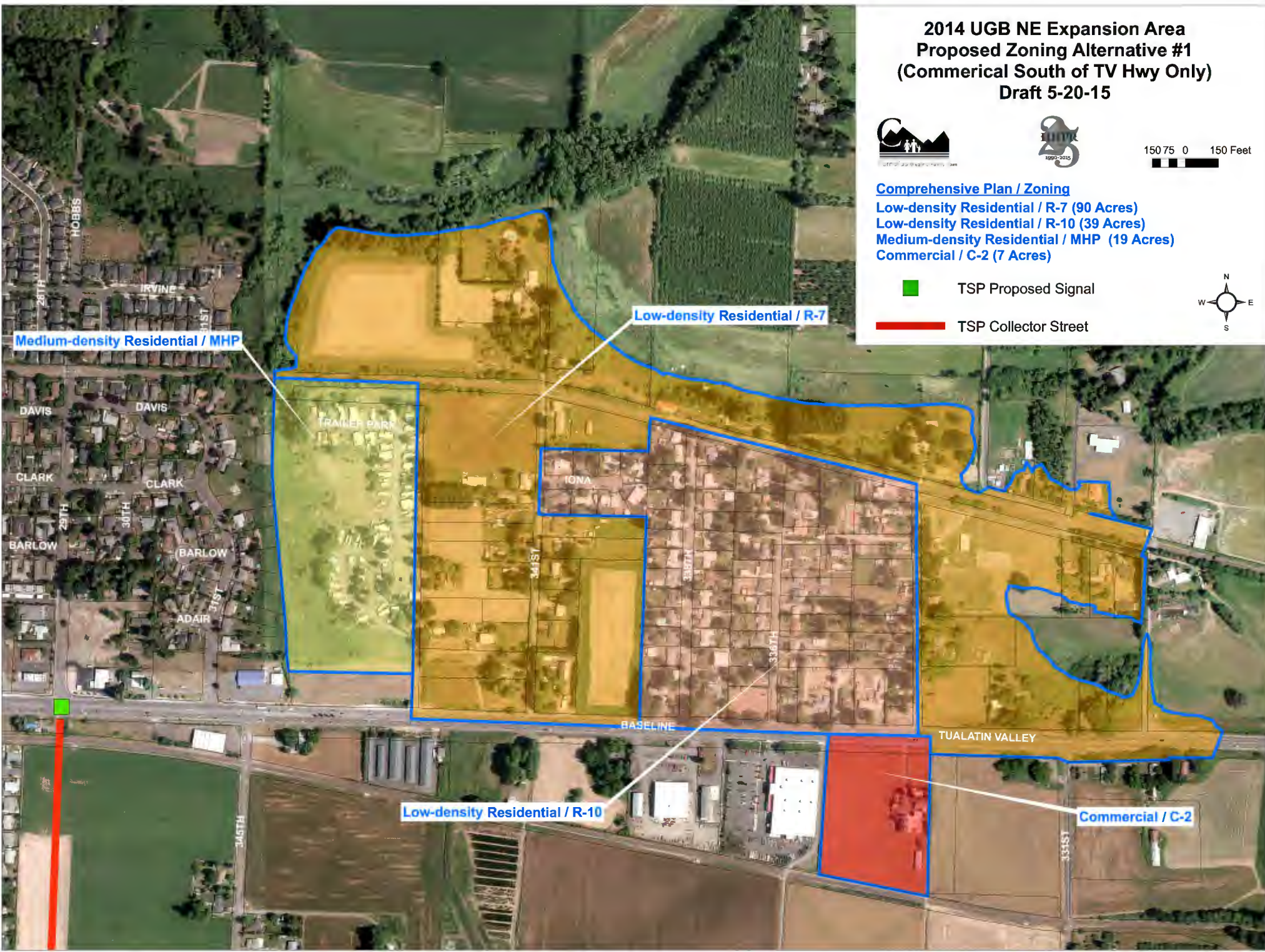
Low-density Residential / R-10 (39 Acres)

Medium-density Residential / MHP (19 Acres)

Commercial / C-2 (7 Acres)

 TSP Proposed Signal

 TSP Collector Street




**2014 UGB SE Expansion Area
Proposed Zoning Alternative
Draft 5-23-15**

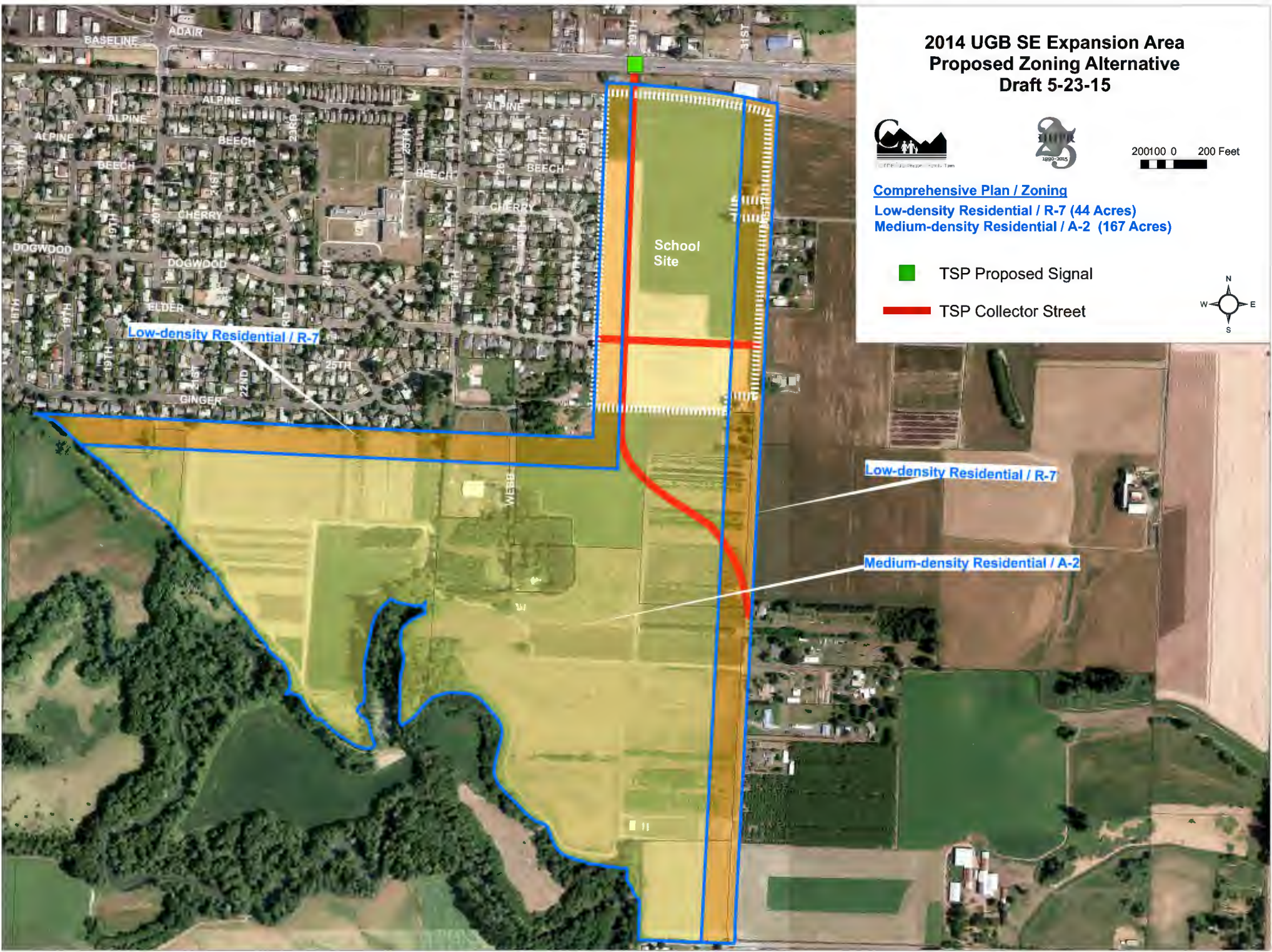


200100 0 200 Feet

Comprehensive Plan / Zoning
Low-density Residential / R-7 (44 Acres)
Medium-density Residential / A-2 (167 Acres)

 TSP Proposed Signal

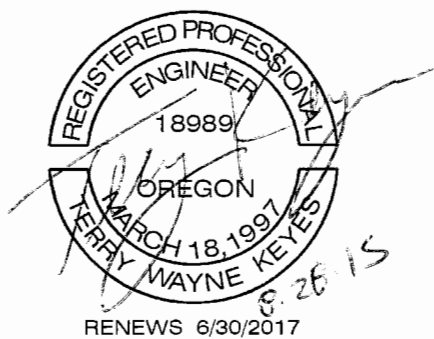
 TSP Collector Street



Cornelius Urban Growth Boundary Expansion

Water Plan

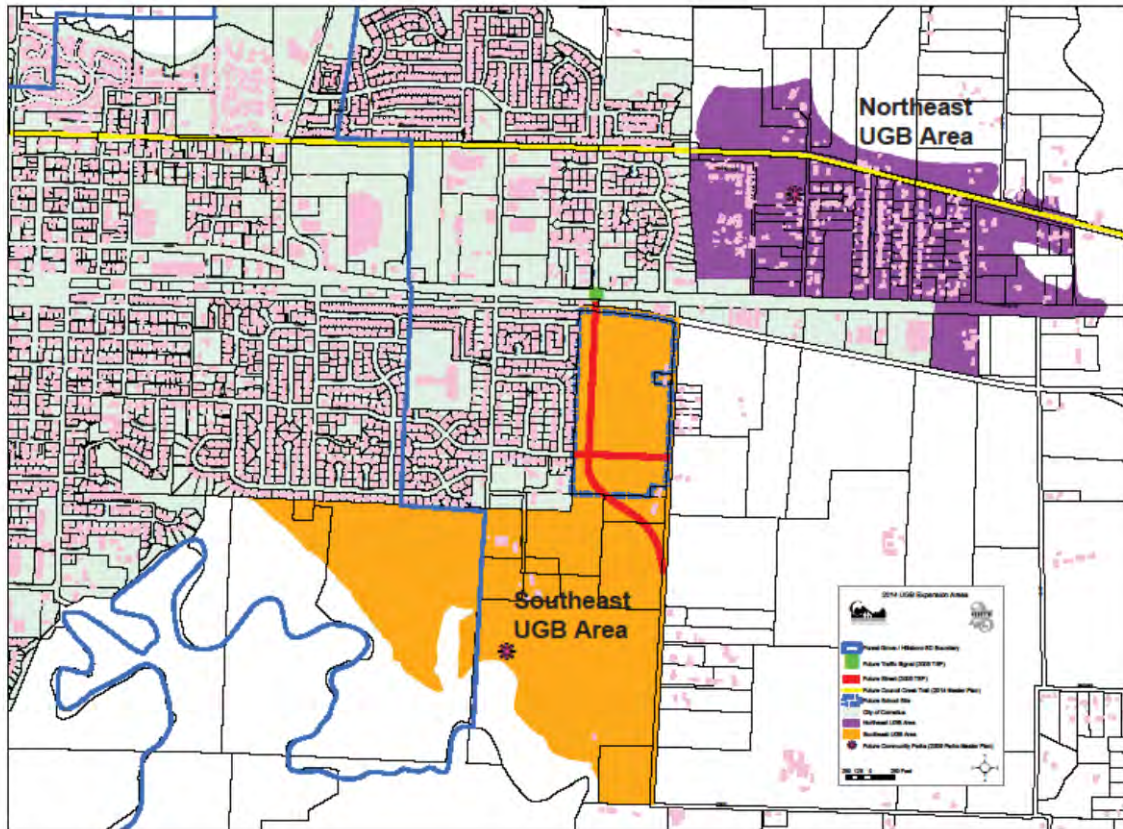
August 28, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



Water Infrastructure – Northeast UGB Area

The City of Hillsboro currently provides water service to the Northeast UGB. Attachment 1 shows the current system. While Hillsboro and Cornelius have had very preliminary talks regarding Cornelius taking over the water system in this area, the City of Cornelius has been cool to the idea because much of the system in the area is undersized and does not meet current standards.

Attachment 2 shows the improvements that are likely needed to bring the water system in this area up to City of Cornelius standards. Most of the improvements involve upgrading the existing lines to 8" and adding fire hydrants. The line on 341st is shown as a 12" line based on the assumption that without a looped system, any significant development north of the railroad will need a 12" line to achieve adequate flow.

The cost of bringing the water infrastructure in this area up to current standards is approximately:

4,000 LF @ \$130/LF = **\$520,000**

This cost cannot be justified based on the limited amount of water user fee revenue the area would produce. Therefore, if the Northeast UGB area is annexed to the City of Cornelius, the annexation will likely occur in small chunks as development occurs. With each annexation, Cornelius will take over the portion of the water system needed to serve that area. The development necessitating the annexation will be primarily responsible for improving the annexed part of the Hillsboro water system to Cornelius standards.

Storage needs for the Northeast UGB area can be easily handled by the City's current 1.5 MG (million-gallons) above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Flow needs for this area can be handled from three sources.

1. 12" Cornelius main line on the north side of Baseline that currently ends at East Lane
2. 12" Cornelius main line on the south side of Baseline that currently ends at the Coastal Farm Store at about 336th Avenue
3. Existing but unused transfer station from the Hillsboro 72" transmission line in Baseline to the Cornelius system at East Lane

In summary, the City of Cornelius can easily serve the Northeast UGB area. The primary concern is the fact that most pipes in this area are substandard. Bringing this area up to current standards is an expensive proposition that is not currently programmed into the Cornelius water rate structure. Therefore, improvements to the water infrastructure in this area will be required at the time of development. Until areas are annexed into the City the system within this area will remain within Hillsboro's service district and will be maintained and operated by Hillsboro.

Water Infrastructure Needs – Southeast UGB Area

The Southeast UGB area represents a clean slate in that the area contains almost no existing water infrastructure. The only public water facility in the area is a 2" plastic line from Baseline south along 345th to serve approximately 8 residents within ¼ mile of Baseline. Since most of these residents are outside the UGB expansion area, the City does not intend to upgrade this 2" plastic line in the foreseeable future. However, the south end of this line may be looped into the new water infrastructure in the UGB area to protect against an emergency such as a line break.

When developed, the Southeast UGB area will be served by 12" mains under the planned collector streets. The collector streets are expected to include: 29th south of Baseline, 26th and 20th south of Ginger, Dogwood east of 28th, and a new east-west collector south of the current city limits that connects 20th, 26th and 29th. All local streets will be underlain with 8" water mains, the minimum standard required by Cornelius.

In addition, to provide adequate flow and pressure to this area at build-out, some improvements in the City's existing water system may be required. The needed improvements will be determined when the City completes its water master plan update later this year. However, the improvements to the existing system that are likely to be needed at full development of the UGB area include:

- 12" line to replace existing 8" line in Dogwood from 18th to 20th
- 12" line to replace 8" line in 20th from Dogwood to Southeast UGB area
- 12" line to replace 8" line in 26th from Dogwood to Southeast UGB area

These improvements are not needed initially, but will be required as the area nears build-out. When the City's water master plan update is completed in late 2015, the amount of development the existing system can support will be determined. For development that occurs before the master plan update is complete, the developer will be responsible for proving that the existing system can provide adequate flow and pressure to the UGB area. If adequate flow and pressure cannot be attained, the developer will need to make the improvements noted above.

Storage needs for the Southeast UGB area can be handled by the City's current 1.5 MG above ground reservoir and its 50+MG Aquifer Storage and Recovery (ASR) System scheduled to come on line in 2017.

Water Infrastructure Costs – Southeast UGB Area

All the new water mains in the Southeast UGB area will be installed and funded by developers. However, the City must pay for oversizing of lines greater than 8" size. In other words, while the developers are responsible for funding the installation of 8" lines under all the streets in this area, the City must fund the additional cost of 12" lines where they are needed. The cost of this upsizing of lines to 12" is estimated to be:

12" oversize cost in UGB area = ~10,000 LF @ \$20/LF = \$200,000

Furthermore, the City must fund improvements to piping outside the UGB area. These improvements are listed above and will cost approximately:

12" replacement lines inside UGB area = ~2,200 LF @ \$140/LF = \$300,000

Water SDCs from the southeast UGB area are expected to be:

1,100 single family residences @ \$3,884 SDC per residence = ~\$4M

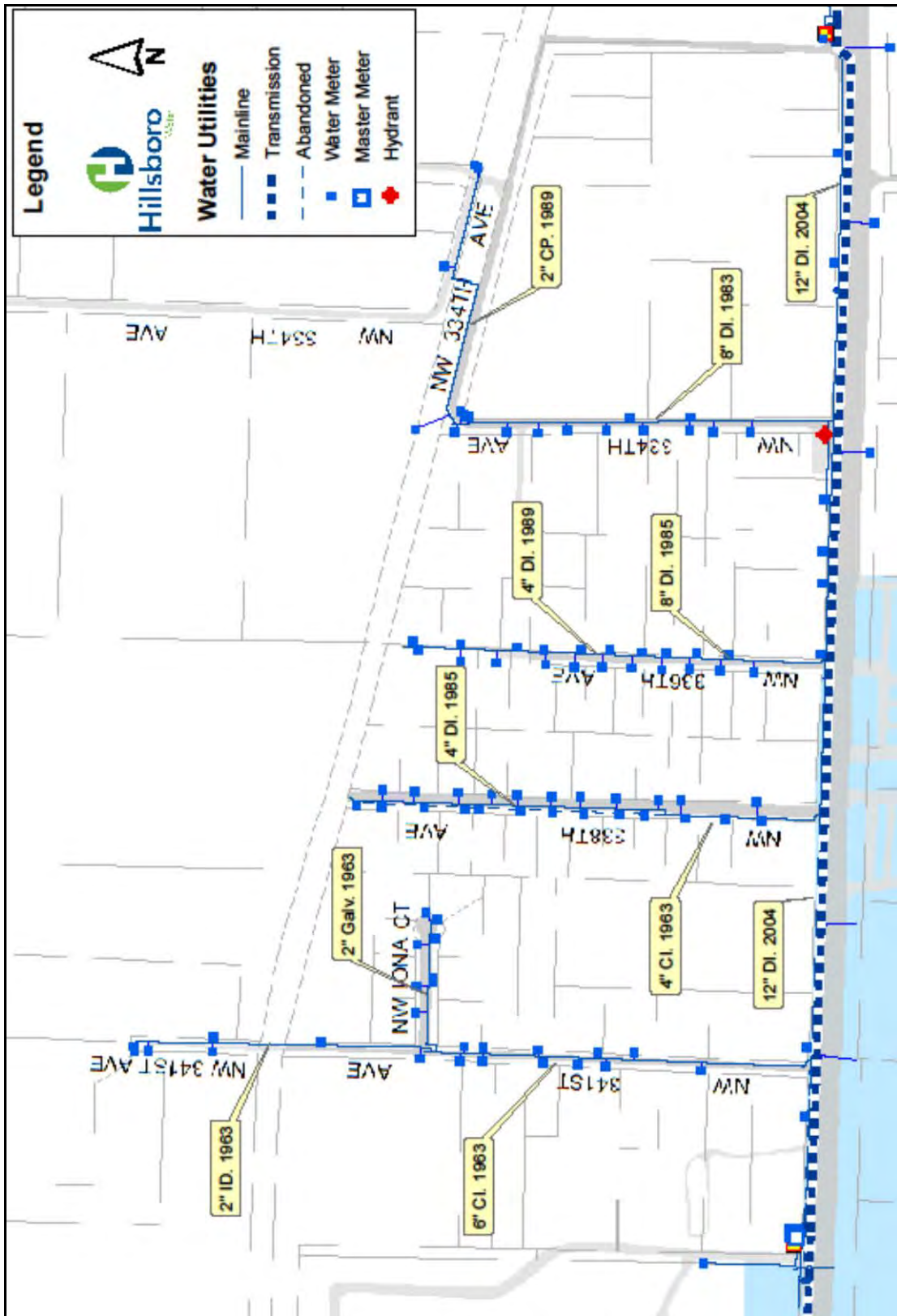
Therefore, the water SDCs captured from the new development in the southeast UGB area are more than adequate to fund the improvements to pipes needed to serve this area.

Recommendations

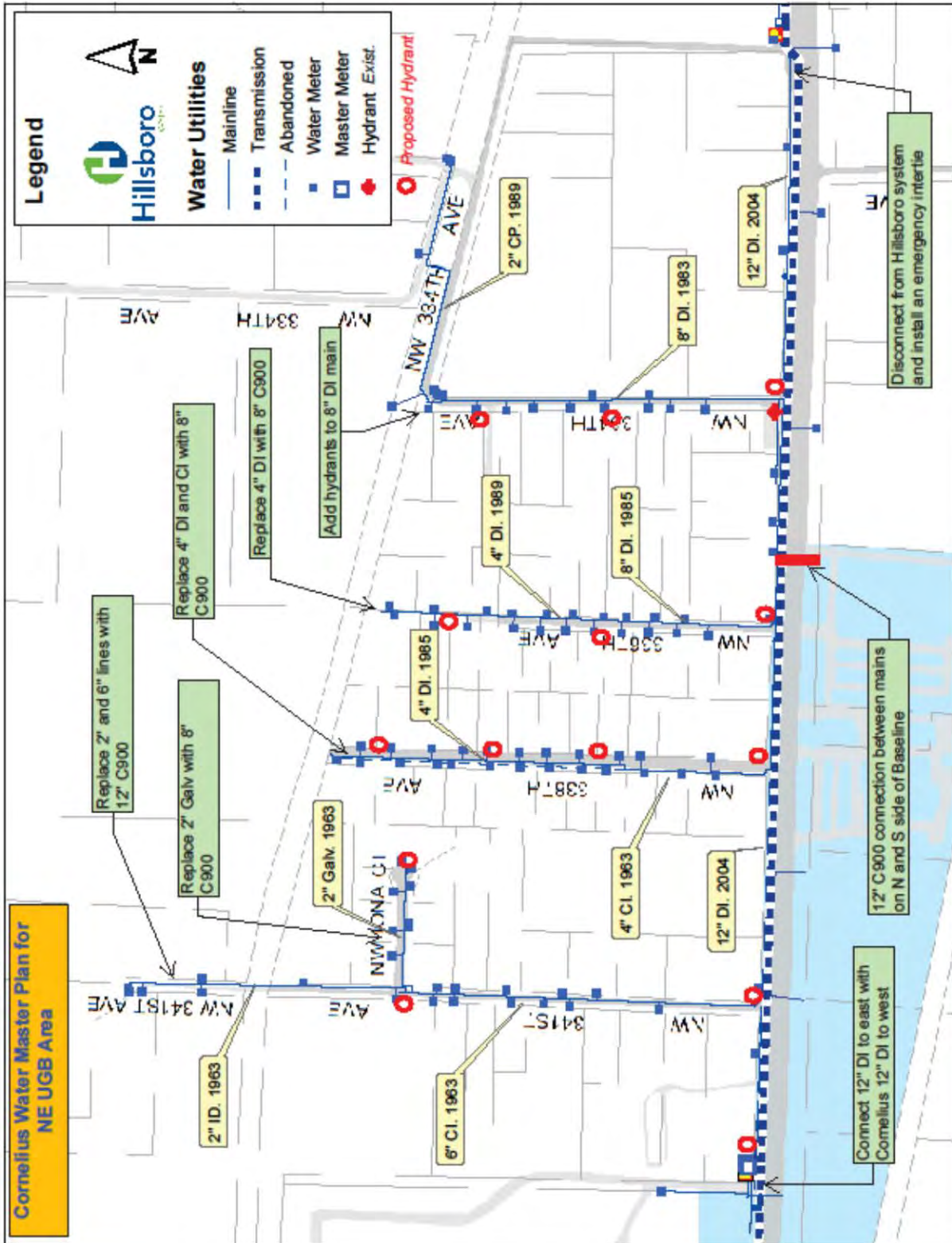
In the Northeast UGB area, staff recommends the area continue to be served by the City of Hillsboro until parcels are annexed. At the time parcels are annexed into the City of Cornelius, Cornelius should take over the portion of Hillsboro's system needed to serve the annexed parcel. Developers should pay for all improvements needed to bring lines up to City of Cornelius standards.

In the Southeast UGB area, developers should design and install all water mains. The City shall pay for oversizing mains under collectors to 12" from the 8" standard size. The City shall also design, build, and fund improvements necessary to the water mains within the current City boundaries.

Attachment 1 – Hillsboro Water System in Northeast UGB Area



Attachment 2 – Cornelius Water Improvement Needs for Northeast UGB Area



TECHNICAL MEMORANDUM

Date: August 10, 2015
To: Michael Cerbone, Community Development Director, City of Cornelius
Terry Keyes, City Engineer, City of Cornelius
From: Ken Condit, ^{KC}PE, through Keith Jones, AICP
Project: City of Cornelius Comprehensive Plan Amendment –
Urban Growth Boundary Expansion Areas
Subject: Conceptual Analysis of Wastewater Facilities Extensions

A. EXECUTIVE SUMMARY – KEY FINDINGS

1. Southeast Urban Growth Boundary Expansion Area

- a. The extension of sewer service to the Southeast Urban Growth Boundary (UGB) Expansion Area (South Area) will require a pump station and force main.
- b. A central location for the South-Area pump station appears feasible and offers the most flexibility in developing the layout of the future South-Area collector sewers.
- c. It is preferable to have the wastewater (WW) generated by the new school in the northeast portion of the South Area conveyed by gravity to the new pump station serving the South Area.
- d. Under this concept, only the northwest portion of the South Area will be served by direct, gravity flow to the City's existing sewer system.
- e. The WW generated in the South Area will be conveyed to the City's existing South Trunk Sewer under Ginger Street. The preferred point of connection to the South Trunk is at 20th Avenue and Ginger.

2. South Trunk Sewer Upgrade

- a. Our analysis confirms that the upper reaches of the South Trunk must be increased in size to handle existing and projected peak flows. These sewer reaches extend from Heather Street, through Free Orchards Park to Emerald Loop, and east along Ginger to 23rd Avenue.
- b. Within the scope of this study, we have identified 3,005 linear feet of the South Trunk that needs to be increased in size. The scope of our analysis excluded the South Trunk reaches downstream of Heather.

3. Northeast Urban Growth Boundary Expansion Area

- a. A conceptual sewer layout has been developed for the Northeast Urban Growth Boundary Expansion Area (North Area) to show the feasibility of extending gravity sewer service to the area.
- b. The conceptual layout divides the North Area into four sewer sub-basins that would convey WW to the existing North-South Trunk Sewer and/or the existing Council Creek Trunk Sewer.

B. INTRODUCTION

This technical memorandum describes the results of the analysis we performed to address sanitary sewer service extensions into the areas covered by the recent UGB expansion. The analysis was performed as part of the Comprehensive Planning process that is required for lands within the UGB.

Planning-level concepts have been developed to document the feasibility of providing WW facilities in the UGB expansion areas and connecting these facilities to the existing WW infrastructure. The projected impacts of connecting these service extensions to the City's existing sewer system have also been identified.

Clean Water Services (CWS) will need to conduct a separate facilities planning process to address the projected impacts on downstream WW components owned by that agency.

C. SOUTHEAST UGB EXPANSION AREA SERVICE CONCEPT

1. General Concept

- a. The sewer service concept for the South Area assumes future developments will generally follow existing local topography.
- b. Due to the general topography (sloping down toward the river), most of the South Area cannot be served by gravity sewers that would be tributary to the City’s existing sewer system. Therefore, gravity sewers for the South Area will need to be tributary to a future South Cornelius Pump Station (SCPS).
- c. The force main for the SCPS will discharge WW into the City’s existing South Trunk sewer located under Ginger Street (see Item 5 below for discharge options).
- d. The alignments of future South-Area gravity sewers and the SCPS force main will be affected by development patterns. Alignments shown in our conceptual layout are provided for illustration purposes.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 1,200 DU
 - Projected Institutional (High School) – 2,500 Students
 - Projected Commercial & Industrial – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - I/I contributions from future developments on currently undeveloped land:
 - Near-term I/I Contribution Factor (25 years for PS planning) – 1,650 gpd/acre (gpad)
 - Long-term I/I Contribution Factor (50 years for sewer planning) – 4,000 gpad
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 3,120 People
 - Projected Average WW Production – 209,000 Gallons per Day (gpd)
 - Projected Institutional (High School) – 30,000 gpd (12 gpd/student)
 - Projected Total Average WW Flow – 239,000 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 3.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 720,000 gpd
 - Peak Infiltration/Inflow Allowances
 - Near-term I/I Contribution – 297,000 gpd (1,650 gpad x 180 net acres)
 - Long-term I/I Contribution – 720,000 gpd (4,000 gpad x 180 net acres)
 - Net acreage excludes low-lying land along southerly boundary of South Area and half of school site that is assumed to be playing fields.
 - Projected Peak Flow –
 - Near-term (25-year) Planning for PS Capacity – 1,020,0000 gpd ≈ 710 gallons per minute (gpm)
 - Long-term (50-year) Planning for Sewer Capacity – 1,440,0000 gpd ≈ 1,000 gpm

3. South Cornelius Pump Station

- a. Concept-Level PS Capacity – 750 gpm (Preliminary Projection for Build-Out and Near-term I/D).
- b. Approximate Minimum Elevation for Development – 156-160 feet
- c. Approximate PS Floor Level (Top of Wetwell) – Elevation 154-158 feet
- d. Approximate Sewer Inverts at Wetwell – Elevation 140-142 feet
- e. Potential PS Sites Identified for Planning (see Exhibit 1)
 - Site 1 – Central Location near swale south of 26th Avenue
 - Site 2 – SE Location between 345th Avenue and Tualatin River
 - Site 3 – SW Location near swale outlet to river
- f. Site 1 is identified as the preferred site for planning purposes.
 - The more centralized site offers more flexibility in developing the tributary gravity sewers.
 - The central site helps to limit the maximum depth of the tributary gravity sewers.
 - The other two sites would probably require a lower inlet invert at the PS wetwell.

4. School Site Service Options

- a. Sewer service to the school can be extended from the new South-Area collection system or potentially from the existing City sewer system to the west (see Exhibit 1).
- b. Gravity Flow South: This option would have WW from the school conveyed by gravity into the sewer system for the South Area tributary to the future SCPS.
- c. Gravity Flow West:
 - This option would have WW from the school conveyed by gravity into the City's sewer system at the east end of existing Dogwood Street.
 - Flows through the Dogwood sewer eventually reach the South Trunk Sewer at 23rd Avenue.
 - The ability to serve the school site from Dogwood would depend on the actual location and elevation of the school, as well as the elevation, capacity and accessibility of the existing sewer in Dogwood.
- d. For planning purposes we show the school being served by the future South-Area sewers and SCPS. The reasons for this assumption are described below.
 - This approach provides a more conservative projection for the PS capacity.
 - There are concerns about accessibility for maintenance if sewer service were extended from Dogwood.
 - Because the WW contribution from the school is a small portion of the overall South-Area WW flow, future impacts on the existing South Trunk Sewer would likely be similar for either option.

5. South-Area Connection to City's Existing Sewer System

- a. South-Area WW can be discharged into the existing South Trunk Sewer at either 20th Avenue or Webb/26th Avenue (see Exhibit 1)
- b. It is preferable to connect to the South Trunk Sewer at 20th Avenue because that is further downstream and will not impact the existing pipe between 26th and 20th.
- c. The force main from the SCPS can discharge to a gravity sewer in the South Area that will extend west and then north to the intersection of Ginger and 20th as shown in Exhibit 1. Based on the preliminary projection for the SCPS capacity and minimum sewer slope, this South-Area outlet sewer will need to be 12 inches in diameter.

6. Assumptions for Conceptual Layout

- a. The layout assumes the gravity sewers tributary to the SCPS would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of about 6 feet.

D. IMPACT OF SOUTH AREA ON EXISTING SYSTEM

1. Scope

Our study of downstream impacts from the South Area was limited to an analysis of the effect the projected peak hourly flow from projected development will have on an upper reach of the existing South Trunk Sewer. This section of the existing sewer extends under Ginger Street, Emerald Loop and the Free Orchards City Park to Heather Street, near 15th Avenue (see Exhibit 1).

2. Background

The 2012 CWS West Basin Facilities Plan (WBFP) previously identified capacity deficiencies in most of the South Trunk Sewer and recommended replacement of about 3,800 feet of this upper reach with larger pipe sizes.

3. Purpose

The purpose of our impact analysis is to provide updated recommendations for pipe replacements. The update is based on the peak flow projections we generated from the current land-use plan for the South Area (see Section C above) and more-recent information on I/I contributions provided by CWS.

4. South Trunk Field Survey

A field survey was performed of the manholes along the upper reach of the South Trunk from Heather Street to 26th Avenue. This survey established current data for existing pipe sizes, invert elevations and manhole rim elevations that were used to generate an updated model of this upper reach. The data is shown in Appendix A.

5. South Trunk Analysis

- a. We evaluated the upper reach of the South Trunk by applying estimates of peak WW and infiltration/inflow contributions from currently developed areas and applying the projected near-term and long-term SCPS flow capacities at the preferred discharge point.
- b. We generated flow estimates from existing, tributary developments using criteria for WW generation listed in the WBFP and updated I/I criteria supplied by CWS. These estimates assume no redevelopment will occur in the tributary areas to significantly increase WW flows.
- c. Breakdowns of the estimated flows into the South Trunk are listed in Table 1 (following page) and shown in Exhibit 2. The projected peak WW flows from developed areas are similar to the WBFP, but do not coincide exactly. The projected I/I contributions are lower than the WBFP because CWS identified a lower, per-acre I/I contribution based on more-recent flow data the agency obtained for the South Trunk sub-basin.

6. Results of Analysis

The pipe replacements identified in our planning-level analysis of the South Trunk are listed in Table 2 (following page). The results of our analysis are further described in the following paragraphs.

- a. Our results generally coincide with the recommendations of the WBFP from Heather (MH #20045) upstream to 20th and Ginger (MH #20034). An 18-inch sewer pipe is needed to convey projected peak flows through these segments for both the near-term and long-term I/I contributions from the South Area.

The 18-inch pipe size assumes the existing, inverted siphons in Free Orchards Park will be replaced with straight, gravity sewers that will be laid aboveground across the low-lying swales. These sewers will need to be supported from pedestrian boardwalks or similar structures through these locations.

Pipe bursting could potentially be used to replace the existing buried 12-inch sewer with an 18-inch pipe. However, the existing South Trunk has a fairly shallow depth of burial under Emerald Loop and where Ginger transitions to 18th Avenue. Consequently, surface heaving could be a major concern with pipe bursting in this stretch. Installation methods will need to be further addressed at a later stage of project development.

- b. Our analysis indicates a 12-inch pipe is needed for the pipe reach in Ginger between 20th and 23rd Avenues based on the average slope. This conclusion contrasts with the WBFP recommendation for a 15-inch pipe along this reach. The difference may result from the lower I/I contribution provided by CWS and a shift of the South-Area sewer connection further downstream along the South Trunk.

It should be noted our survey of the MHs along the South Trunk shows one sewer length in this reach, between MHs #20031 and #20032, has a very mild slope of 0.07%. If this pipe were replaced through pipe bursting, it would continue to have a mild slope, which would reduce the pipe capacity and could promote solids deposition. This issue will need to be considered when evaluating installation methods for this reach.

SFR Land Use Factor = 1,200.0 gpad for existing developments (WBFP, TM 2.3, Table 2)										
Peaking Factor = 3.0 (multiplier applied to residential flow)										
Avg. I/I Contribution = 5,150.0 gpad avg. for Basin FG-6 (CWS Input - July 2015)										
Area	Inlet MH#	Acreage	Flows from Currently Developed Areas (gpm)				Future SCPS Flow (gpm)		Cumulative Flows (gpm)	
			Base WW	Peak WW	Peak I/I	Total Peak	Near Term	Long Term	Near Term	Long Term
1	22461	20	17	50	72	122	0	0	122	122
2	20030	85	74	223	304	527	0	0	649	649
3	20034	20	17	50	72	122	750	1,000	1,521	1,771
4	20036	55	46	138	197	335	0	0	1,856	2,106
5	20043	8	7	20	29	49	0	0	1,905	2,155
		188	160	481	672	1,155	750	1,000	1,905	2,155
									2.75 MGD	3.10 MGD

Pipe Reach	Upstrm MH#	Dnstrm MH#	Location	Existing Size (in.)	Proposed Size (in.)	Reach Length (ft)	Approx. Avg. Slope	Pipe Capacity (gpm) ***
1	20030	20034	23th-20th Ave.	10	12	825	0.25%	775
2	20034	20036	20th-19th Ave.	12	18	510	0.15%	1,780
3	20036	20040	19th Ave-Emerald	12	18	805	0.22%	2,150
4	20040	20043	Emerald-Fawn **	6, 10 & 12	18	420	0.28%	2,425
5	20043	20045	Fawn-Heather **	6 & 10	18	445	0.34%	2,675
Total Length - 3,005							Linear Feet	
12" Pipe - 825							Linear Feet	
18" Pipe - 2,180							Linear Feet	

** Free Orchards Park *** New Pipe w/Max. Depth 80% of Pipe Diameter

E. NORTH EXPANSION AREA SERVICE CONCEPT**1. General Concept:**

- a. The conceptual sewer layout would provide gravity service to the North Area. The layout is shown in Exhibit 3.
- b. The sewer layout is generally based on current development patterns (layout of lots, streets & railroad) with most sewers following an existing R-O-W.
- c. The gravity sewers would be divided into four separate sub-basins: Northwest, Northeast, Southwest and Southeast.
- d. All four sub-basins would be tributary to the Clean Water Services' Council Creek Trunk Sewer.

2. Projected WW Production

- a. Projected Build-Out Development:
 - Projected Residential – 480 DU
 - Projected Commercial – 6 acres
 - Projected Industrial & Institutional – None
- b. CWS Flow Criteria from West Basin Facilities Plan (Carollo, 2012) and other CWS input:
 - Average Residential Occupancy – 2.6 People/Dwelling Unit (DU)
 - Average Per Capita WW Flow – 67 Gallons per Capita/Day
 - Average flow contribution from commercial land – 1,000 gpd/acre (gpad)
 - Long-term I/I contribution from currently undeveloped land – 4,000 gpd/acre (gpad)
- c. Projected Average Dry-Weather WW Flows at Build-Out.
 - Projected Build-Out Population – 1,250 People
 - Projected Residential – 83,620 Gallons per Day (gpd)
 - Projected Commercial – 6,000 gpd
 - Projected Total Average WW Flow – 89,620 gpd
- d. Projected Peak Build-Out WW Flows.
 - Estimated Peaking Factor – 4.0 (Peak-to-Average Flow Ratio)
 - Projected Peak WW Contribution – 358,500 gpd
 - Peak Infiltration/Inflow Allowance – 300,000 gpd (4,000 gpad x 75 net acres)
 - Projected Peak Flow – 660,000 gpd \approx 460 gallons per minute (gpm)

3. Sewer Drainage Pattern

- a. NW Sub-basin
 - This sub-basin would drain to the west along the existing ODOT railroad R-O-W.
 - WW flows would discharge into an existing sewer that extends down from the Trailer Park to the existing North-South Trunk Sewer.
 - The east boundary of the NW sub-basin is limited by a highpoint in the RR line between 338th and 341st Avenues. East of this point the RR grade slopes down to Dairy Creek.

- b. NE Sub-basin
 - This sub-basin would serve areas that generally slope to the north and east toward Council Creek or Dairy Creek.
 - WW flows would discharge through a gravity sewer extending across the RR line and north along 334th Avenue to the existing Council Creek Trunk Sewer.
- c. SW Sub-basin
 - This sub-basin would generally drain west to the existing sewer along East Lane just north of Baseline Street. The service concept is laid out to minimize the amount of area served by the SW Sub-basin due to constraints posed by existing utilities in the Baseline R-O-W.
 - The existing sewer extending along Baseline is on the south side of the R-O-W. Gravity sewer service from the area north of Baseline is prevented from discharging into this existing sewer by the 72-inch water transmission main under the north side of Baseline.
 - Existing utilities along the north side of the Baseline R-O-W limit the space that would be available for a new parallel sewer on the north side of Baseline.
 - The mobile home park on East and West Lanes is currently served by existing gravity sewers.
- d. SE Sub-basin
 - This Sub-basin would serve a small area on the south side of Baseline, east of the current City limit.
 - The area would be served by an extension of the existing 8-inch sewer that extends along the south side of Baseline. The Baseline sewer discharges into the north-south trunk sewer.

4. Approximate Peak WW Flow Distribution to Existing Trunk Sewers

- a. Approximate flow to N-S Trunk (NW, SW & SE Sub-basins) – 290,000 gpd (60%)
- b. Approximate flow directly to Council Creek Trunk (NE Sub-basin) – 195,000 gpd (40%)

5. Assumptions for Conceptual Layout

- a. The layout assumes gravity sewers would be 8 inches in diameter with a minimum slope of 0.5%.
- b. The layout assumes a minimum depth to the sewer invert of 6 feet and a maximum depth of about 15 feet.

F. IMPACT OF NORTH AREA ON EXISTING SYSTEM

1. City’s Baseline Street Sewer

A small amount of additional WW from projected commercial development in the SE Sub-basin will discharge into the City’s existing sewer along the south side of Baseline. This projected WW contribution will be too minor to impact the existing sewer system.

2. North-South Trunk Sewer

The conceptual layout for the North Area would convey projected flows from the NW and SW Sub-basins into the existing CWS North-South Trunk Sewer. CWS records show this line extending from East Lane, just north of Baseline, up to the Council Creek Trunk Sewer. These records also show the line as an 8-inch pipe with most sections between manholes laid at a slope of 0.4%. The North-South Trunk sewer currently receives flows from collector sewers in Baseline and two other City collector sewers north of Baseline.

If future development is evenly distributed throughout the North Area, the NW and SW Sub-basins could carry more than half the projected flows. Since an 8-inch pipe with a 0.4% slope has a capacity of about 0.5 MGD before surcharging, future flows from the NW and SW Sub-basins could surcharge the line. Future CWS facilities planning efforts will need to model the line to verify whether the North-South Trunk will be adequate.

3. Council Creek Trunk Sewer

The sewer service concept for the North Area results in all future WW flows generated in the area being conveyed to the Council Creek Trunk Sewer. The NE Sub-basin will drain directly to this line and the other sub-basins will be conveyed to this line through the North-South Trunk Sewer.

CWS records show the Council Creek line as a 42-inch pipe between the North-South Trunk and 334th Avenue. This existing 42-inch pipe line would need to be at or very near capacity to be impacted at all by the projected WW flows from the North Area. Future CWS modeling of this line will need to address the potential for any impacts from the North Area.

G. ORDER-OF-MAGNITUDE ESTIMATE OF PROBABLE COST

As part of the comprehensive planning process, we developed estimates of the probable project costs for the SCPS, the associated PS force main and downstream South-Area gravity sewer, and the South Trunk Sewer replacements. We used cost information presented in the WBFPP as the basis for the estimates and then applied an inflation factor based on the 20-City Average Construction Cost Index (CCI) published by Engineering News Record (ENR).

The probable project costs include a 30% allowance for construction contingencies and a 35% allowance for non-construction costs (engineering, environmental and legal services and project administration).

Table 3	
Estimates of Probable Project Costs (July 2015 **)	
Project Description	Probable Cost
750-gpm South Cornelius Pump Station	\$ 880,000
8-inch Force Main & 12-inch Downstream Gravity Sewer	\$ 650,000
South Trunk – Reach 1 Replacement (12-inch Sewer)	\$ 280,000
South Trunk – Reach 2-5 Replacement (18-inch Sewer)	\$ 1,450,000
Total Estimated Probable Project Costs	\$ 3,260,000

** July 2015 ENR CCI = 10,037

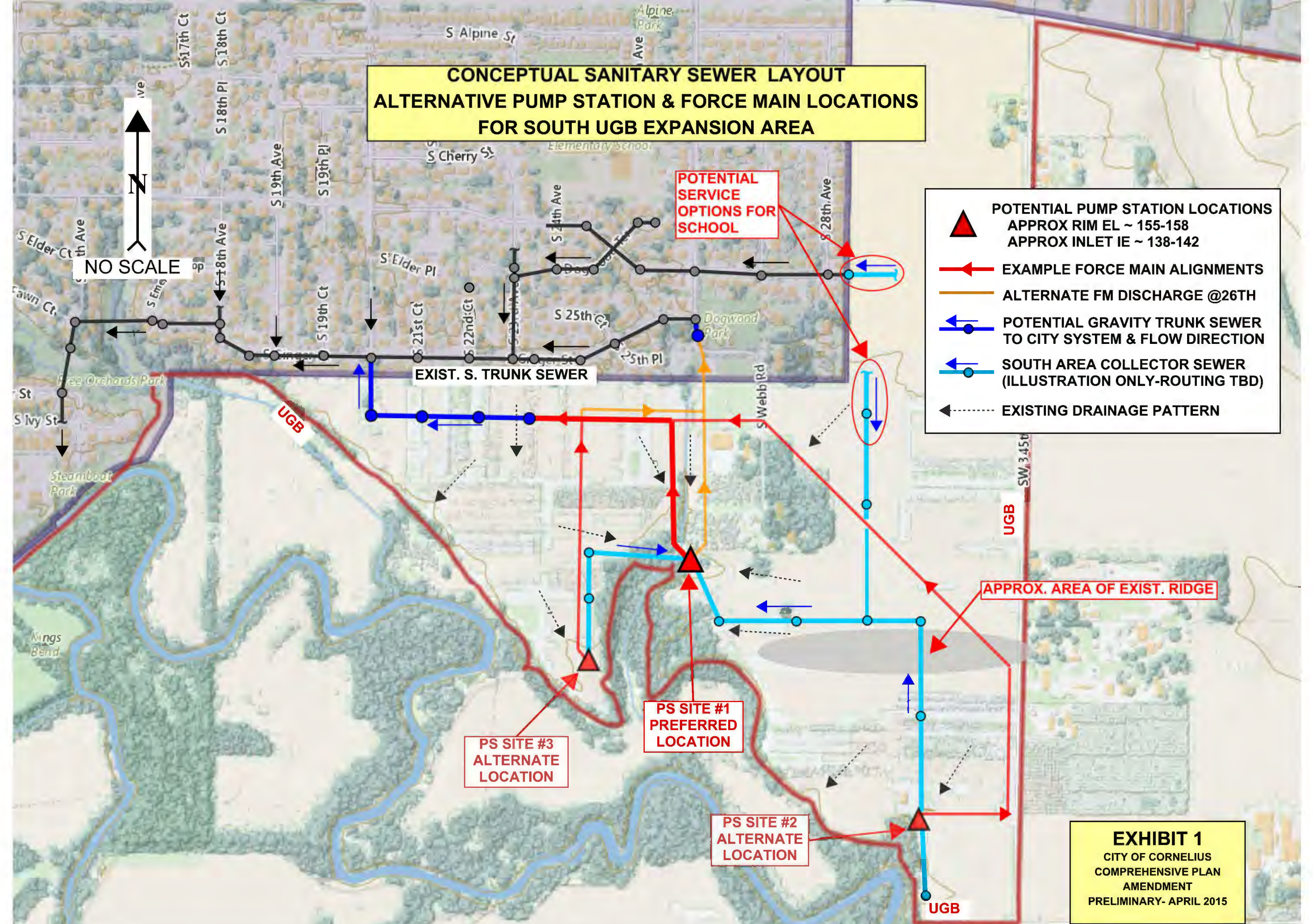
The level of detail of these cost estimates is consistent with Estimate Class 4 described by the Association for the Advancement of Cost Engineering International (Recommended Practice #18R-97, Rev. November 2011). Accordingly, the accuracy is anticipated to be within –25% to +35% of the actual cost.

The actual cost of the improvements will depend on project scope, design development, and actual market conditions at bid time. Costs will also depend on specific site conditions and other variable factors. More detailed estimates of the probable costs will need to be prepared as part of further project planning and design efforts.

**CONCEPTUAL SANITARY SEWER LAYOUT
ALTERNATIVE PUMP STATION & FORCE MAIN LOCATIONS
FOR SOUTH UGB EXPANSION AREA**



NO SCALE



POTENTIAL SERVICE OPTIONS FOR SCHOOL

EXIST. S. TRUNK SEWER

APPROX. AREA OF EXIST. RIDGE

PS SITE #3
ALTERNATE
LOCATION

PS SITE #1
PREFERRED
LOCATION

PS SITE #2
ALTERNATE
LOCATION







-  POTENTIAL PUMP STATION LOCATIONS
APPROX RIM EL ~ 155-158
APPROX INLET IE ~ 138-142
-  EXAMPLE FORCE MAIN ALIGNMENTS
-  ALTERNATE FM DISCHARGE @26TH
-  POTENTIAL GRAVITY TRUNK SEWER TO CITY SYSTEM & FLOW DIRECTION
-  SOUTH AREA COLLECTOR SEWER (ILLUSTRATION ONLY-ROUTING TBD)
-  EXISTING DRAINAGE PATTERN

EXHIBIT 1
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

**SOUTH TRUNK SEWER EVALUATION
ESTIMATED TRIBUTARY AREAS & FLOWS**

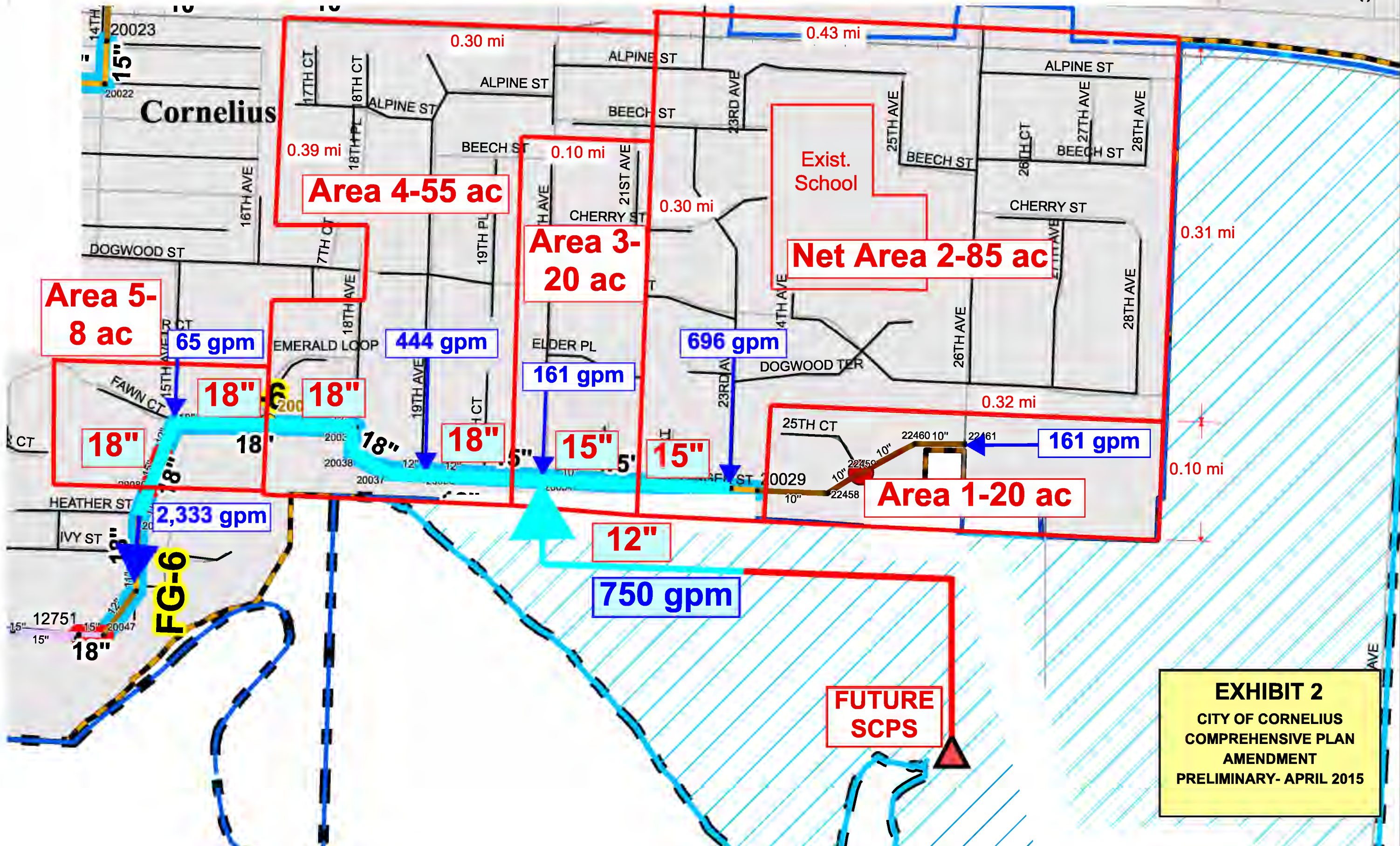
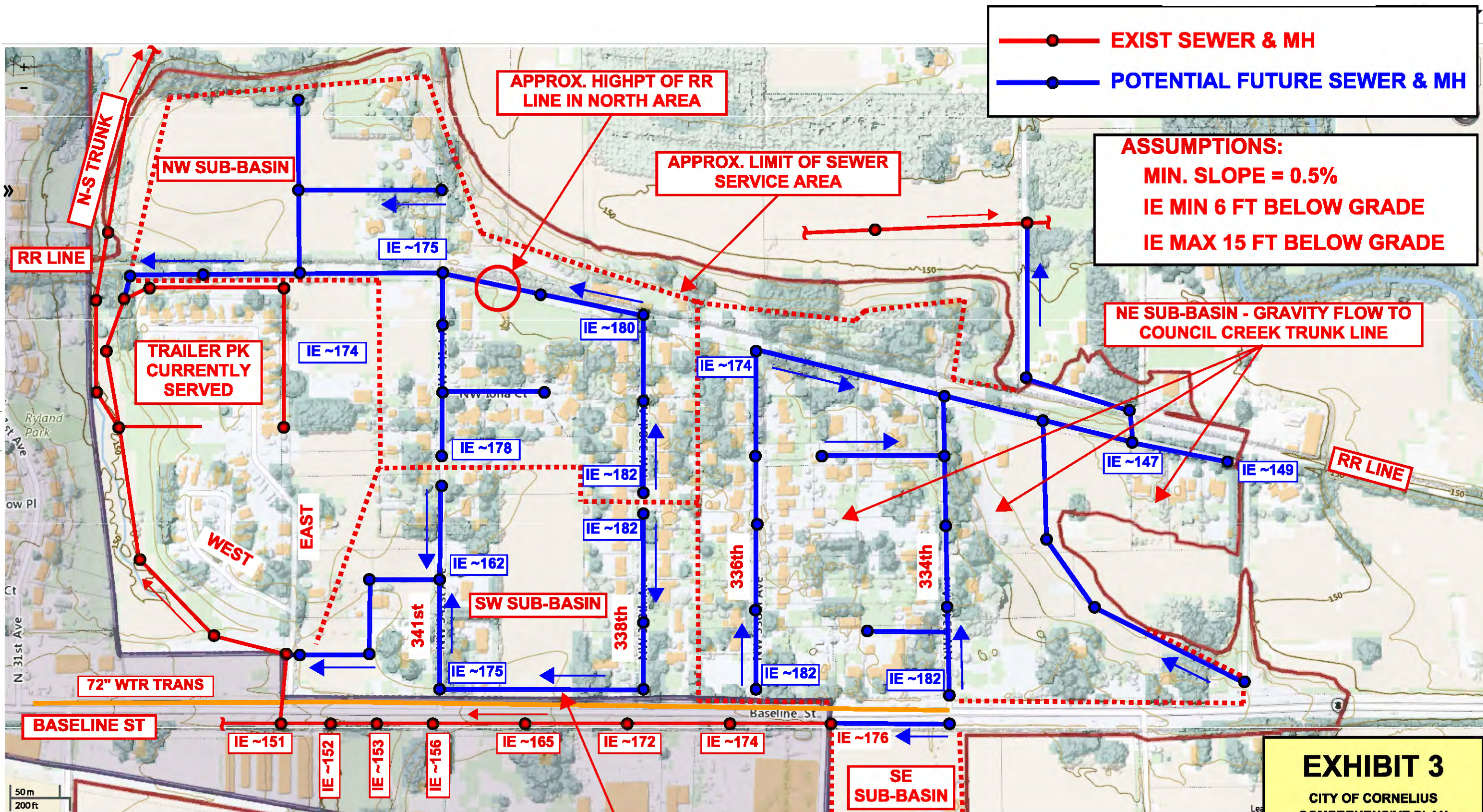


EXHIBIT 2
CITY OF CORNELIUS
COMPREHENSIVE PLAN
AMENDMENT
PRELIMINARY- APRIL 2015

CONCEPTUAL SANITARY SEWER LAYOUT FUTURE SERVICE FOR NORTH UGB EXPANSION AREA



—●— **EXIST SEWER & MH**
—●— **POTENTIAL FUTURE SEWER & MH**

ASSUMPTIONS:
 MIN. SLOPE = 0.5%
 IE MIN 6 FT BELOW GRADE
 IE MAX 15 FT BELOW GRADE

NE SUB-BASIN - GRAVITY FLOW TO COUNCIL CREEK TRUNK LINE

POTENTIAL PARALLEL SEWER IN NEW EASEMENT TO AVOID HWY CROSSINGS & UTILITIES

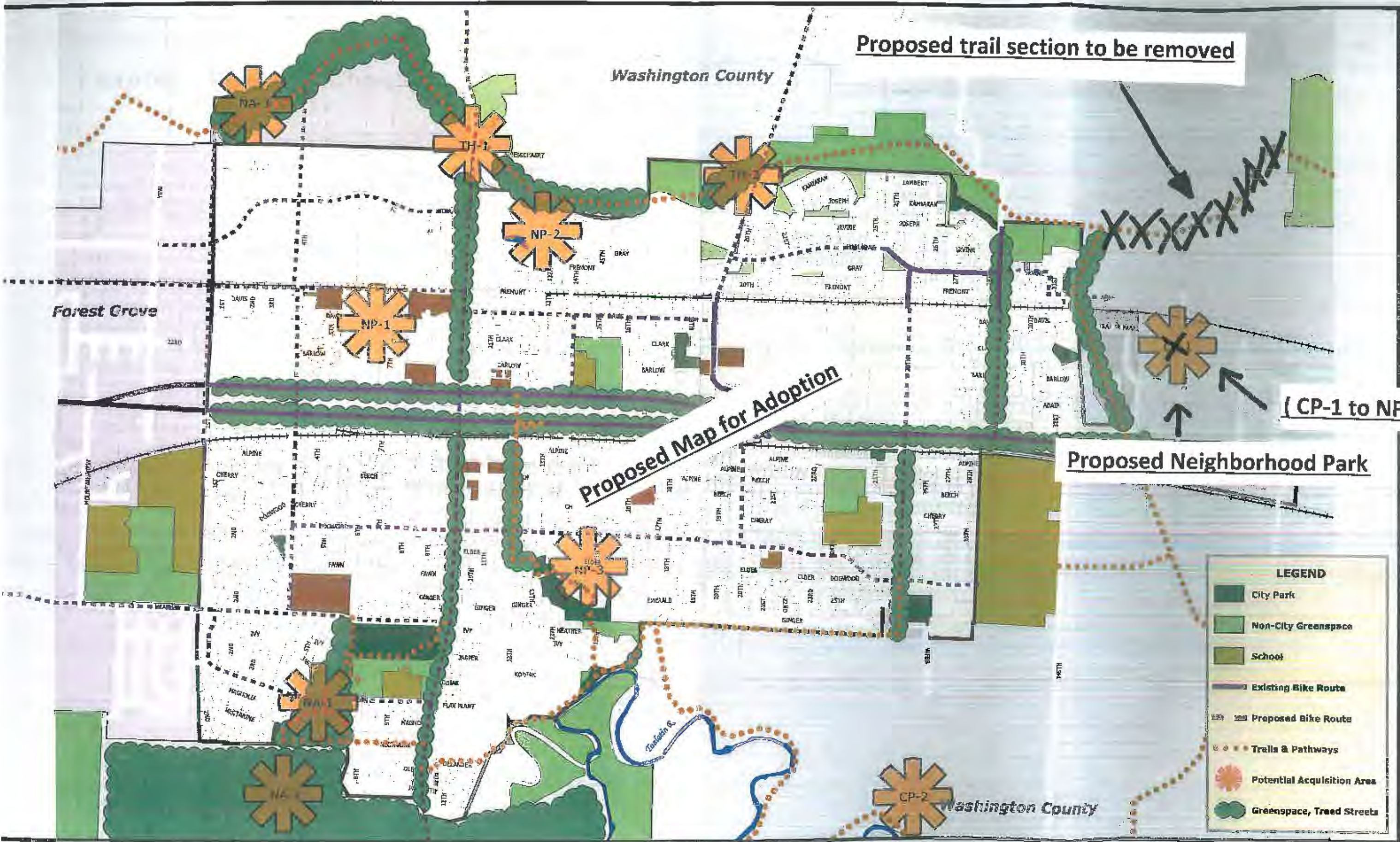
MIN. ALLOWABLE SEWER SLOPES: **
 8" DIA 0.40%
 10" DIA 0.28%
 12" DIA 0.22%
 ** FOR 2.0 FPS VELOCITY

EXHIBIT 3
 CITY OF CORNELIUS
 COMPREHENSIVE PLAN
 AMENDMENT
 PRELIMINARY- APRIL 2015

APPENDIX A

**City of Cornelius
South Trunk Sewer Survey Data**

Model Pipe#	MH#	Location	Rim Elev	MH Inlet			MH Outlet			Run	Slope (ft/ft)
				Size & Mat'l	Dip	IE	Size & Mat'l	Dip	IE		
6122	22461	26th/Ginger	175.77	10"PVC(S)	10	165.77	10"PVC(W)	10.1	165.67	216.61	0.0028
6124	22460		173.21	10"PVC(E)	8.14	165.07	10"PVC(SW)	8.25	164.96	263.44	0.0022
6090	22459	25th/Ginger	174.91	10"PVC(NE)	10.53	164.38	10"PVC(SW)	10.7	164.21	168.04	0.0035
6088	22458		174.25	10"PVC(NE)	10.62	163.63	10"PVC(W)	10.79	163.46	307.38	0.0034
1	20029		173.35	10"PVC(E)	10.95	162.4	10"CSP(W)	11.05	162.3	108.56	0.0027
2	20030	23rd/Ginger	173.23	10"CSP(E)	11.22	162.01	10"CSP(W)	11.29	161.94	260.11	0.0029
3	20031		174.14	10"CSP(E)	12.95	161.19	10"CSP(W)	13.09	161.05	156.34	0.0007
4	20032		173.21	10"CSP(E)	12.27	160.94	10"CSP(W)	12.39	160.82	122.03	0.0029
5	20033		172.54	10"CSP(E)	12.07	160.47	10"CSP(W)	12.19	160.35	282.94	0.0028
6	20034	20th/Ginger	170.84	10"CSP(E)	11.29	159.55	12"CSP(W)	11.39	159.45	254.93	0.0014
7	20035		168.6	12"CSP(E)	9.5	159.1	12"CSP(W)	9.58	159.02	254.70	0.0017
8	20036	19th/Ginger	166.61	12"CSP(E)	8.03	158.58	12"CSP(W)	8.13	158.48	149.79	0.0019
9	20037		163.79	12"CSP(E)	5.6	158.19	12"CSP(NW)	5.7	158.09	152.39	0.0026
10	20038		162.04	12"CSP(SE)	4.34	157.7	12"CSP(N)	4.4	157.64	118.03	0.0038
11	20039	18th/Emerald	164.47	12"CSP(S)	7.28	157.19	12"CSP(W)	7.35	157.12	383.81	0.0019
12	20040	Emerald	160.72	12"CSP(E)	4.33	156.39	12"CSP(W)	4.38	156.34	22.56	0.0080
	20042	Emerald	161.16	12"CSP(E)	5	156.16	10" ??(W) 10" ??(W)	5.15 4.82	156.01 156.34		
13 & 15	<i>(Ignore MH# 20079 - blowoff)</i>									394.50	0.0023
	20043	15th/Fawn	160.34	10"CSP(E)	5.25	155.09	12"CSP(SW)	5.3	155.04		
14				10"CSP(E)	5.25	155.09				130.08	0.0035
	20044	Sou. of Fawn	159.08	12"CSP(NE)	4.5	154.58	12"CSP(SW) 8"CSP(SW)-??	4.4 NOT SURVEYED	154.68		
213 & 16	<i>(Ignore MH# 20079 - blowoff)</i>									313.56	0.0040
	20045	Heather	157.95	12"CSP(NE) 8"CSP(NE)	4.51 4.55	153.44 153.40	10"CSP(S)	4.53	153.42	(Should be 12" Out?)	
???	64144		160.03	12"CSP(N)	6.98	153.05	12"CSP(S)	7.05	152.98	141.59	0.0026

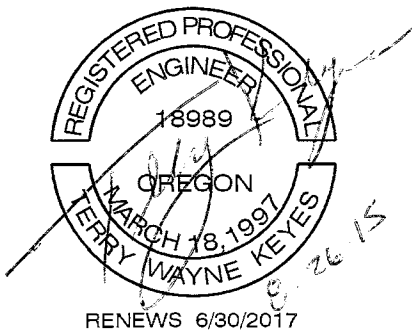


Map 6. Composite Parks Master Map

Cornelius Urban Growth Boundary Expansion

Stormwater Plan

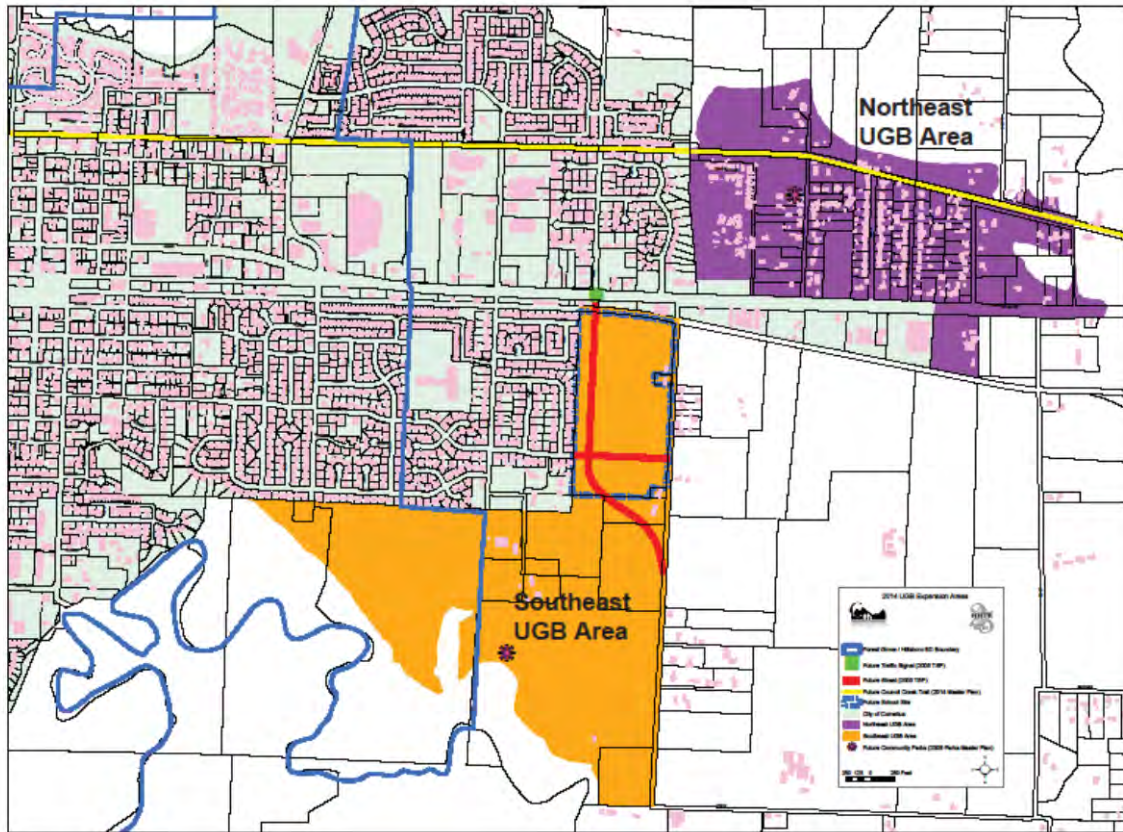
August 26, 2015



Terry Keyes, PE
City Engineer
City of Cornelius

Study Area

The Urban Growth Expansion (UGB) area consists of two parts. The Northeast UGB area is primarily north of Baseline and south of the Council Creek flood plain, just east of the current City limits. The Southeast UGB area is north of the Tualatin River flood plain and west of 345th Avenue. These areas are shown in the map below.



The terrain in these two areas is generally flat. The Northeast area largely slopes to the north toward Council Creek. The only waterway in this area is a large wetland area that separates the UGB expansion area from the current City boundary. This wetland area drains north toward Council Creek.

The Southeast area primarily slopes to the south toward the Tualatin River. The only waterway in this area is an agricultural ditch that starts where 26th Avenue turns into Webb Road and then traverses in a south-southwest direction toward the Tualatin River.

Existing Stormwater Facilities

The only existing stormwater facilities in the Northeast UGB area are roadside and trackside ditches along Baseline, the north-south streets traversing the area, and the railroad north of Baseline.

The stormwater facilities in the Southeast UGB area are limited to the roadside ditches on 345th Avenue and railroad ditches along the railroad south of Baseline.

As development occurs, these facilities are expected to be replaced with facilities meeting current Clean Water Service (CWS) standards.

Stormwater Standards Overview

Any new development in the UGB expansion areas must at a minimum meet the current *Design and Construction (D&C) Standards for Sanitary Sewer and Surface Water Management* issued by CWS.

Some UGB expansion areas in Washington County, notably Tigard's River Terrace and the unincorporated North Bethany, created additional stormwater standards that go beyond the D&C Standards. In the case of River Terrace, severe erosion in the stream corridors coming off the south side of Bull Mountain necessitated a more stringent approach to stormwater control in the area.

In North Bethany's case, CWS desired to incorporate extensive LIDA (low-impact development practices) into the area and pre-built a number of large regional facilities. This was deemed more desirable to the creation of individual stormwater facilities in each development phase.

One downside of the North Bethany approach is that CWS has had difficulty keeping ahead of development with new facilities. Also, by CWS constructing regional facilities rather than each developer constructing their own facilities, North Bethany has a large stormwater fee or system development charge that is unique in Washington County.

Finally, the D&C Standards issued by CWS are expected to change significantly as a result of a new MS4 permit from the State of Oregon, Department of Environmental Quality (DEQ) to CWS. One change in the new MS4 permit will be an increased level of treatment for stormwater. However, the most significant change in the standards is expected to be a requirement to deal with hydro-modification. Instituting this type of requirement is expected to create the need for very large detention and retention facilities on new development sites.

Cornelius Plan

Because Cornelius does not face the problems Tigard does on Bull Mountain and because the City does not have the staff to plan, design, and build regional facilities, as CWS is doing in North Bethany, Cornelius will require developers to meet the current stormwater standards issued by CWS. While this approach is not innovative, it has been used successfully for decades in urban Washington County to manage stormwater runoff.

The only variations from the CWS standards are:

1. Prohibition on the use of proprietary treatment systems, e.g., Stormfilters, for treatment on parts of the system that the City must maintain in the future, i.e., facilities to be dedicated to the City.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

The reason for the prohibition on proprietary systems is the additional maintenance burden these pose for the City at a time when stormwater maintenance funding is extremely limited. Likewise, the single-family lot LIDA facilities require on-going City inspection and oversight that the City does not have funding to undertake.

Costs

Since developers will be responsible for designing and constructing stormwater facilities in the new UGB areas, the City will incur zero capital costs for these systems. The City will, however, incur, increased maintenance costs long-term, but these costs are funded by monthly stormwater fees payable by the new residents and businesses in the area.

Recommendations

Staff recommends the City use the CWS D&C Standards that are applicable at the time of development to address stormwater issues in the UGB areas. Staff further recommends, the following two conditions be placed on all new development in these areas:

1. Prohibition on the use of proprietary treatment systems for treatment on parts of the system that the City must maintain in the future.
2. Unless required by CWS rules, prohibition on single-family residential lot LIDA facilities.

**ORDINANCE NO. 2015-06
CORNELIUS, OREGON**

**AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY
PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE
COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE SOUTHEAST URBAN
GROWTH BOUNDARY IN 2014**

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the Metro Urban Growth Boundary for the benefit of the City of Cornelius.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The State of Oregon acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 after its adoption via Ordinance 500.
4. The City of Cornelius Water Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on March 1st 2004 via the adoption of Ordinance 846.
5. The City of Cornelius Sanitary Sewer System Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on September 20th, 2004 via the adoption of Ordinance 853.
6. The City of Cornelius Transportation System Plan (a component of the Comprehensive Plan) was deemed acknowledged on June 20th 2005 via the adoption of Ordinance 860.
7. The City of Cornelius Parks Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to serve the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements are necessary beyond those currently planned for the future and identified within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community relative to the Urban Growth Boundary expansion and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.
13. The 2014 Urban Growth Boundary Findings and Summary dated October 5, 2015 is incorporated via reference as findings in support of this ordinance.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

- Section 1. The City of Cornelius Comprehensive Plan Map is amended as outlined in Exhibit A
- Section 2. The City of Cornelius Parks Master Plan, Appendix G of the Comprehensive Plan is amended as outlined in Exhibit B.
- Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit C
- Section 4. The City of Cornelius Water Master Plan, Appendix I of the Comprehensive Plan is amended as outlined in Exhibit D.
- Section 5. The City of Cornelius Transportation System Plan, Appendix M of the Comprehensive Plan is amended as outlined in Exhibit E.
- Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit F.
- Section 7. Prior to annexation of land within the SE UGB each applicant shall complete a wetland determination of the property.
- Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of the Tualatin River.
- Section 9. Upon adoption by the Cornelius City Council, this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this 16th day of November, 2015.

City of Cornelius, Oregon

By Jeffrey C. Dalin
Jeffrey C. Dalin, Mayor

ATTEST:

By: Debby Roth
Debby Roth, MMC, City Recorder-Treasurer

**ORDINANCE NO. 2015-07
CORNELIUS, OREGON**

**AN ORDINANCE AMENDING THE CITY OF CORNELIUS COMPREHENSIVE PLAN TO IDENTIFY
PUBLIC IMPROVEMENTS NECESSARY TO ALLOW FOR URBANIZATION AND ESTABLISHING THE
COMPREHENSIVE PLAN DESIGNATION FOR LANDS ADDED TO THE NORTHEAST URBAN
GROWTH BOUNDARY IN 2014**

FINDINGS:

1. On April 1st, 2014 approximately 345 acres of land was added to the Metro Urban Growth Boundary for the benefit of the City of Cornelius.
2. Prior to allowing land within the Urban Growth Boundary to annex into the City of Cornelius the City must demonstrate how utilities and services can be provided.
3. The State of Oregon acknowledged the City of Cornelius Comprehensive Plan on July 3rd 1978 after its adoption via Ordinance 500.
4. The City of Cornelius Water Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on March 1st 2004 via the adoption of Ordinance 846.
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7. The City of Cornelius Parks Master Plan (a component of the Comprehensive Plan) was deemed acknowledged on November 2nd, 2009 via the adoption of Ordinance 911.
8. The City desires to adopt comprehensive plan designations to guide the rezoning of property during the annexation process.
9. The City desires to amend the City of Cornelius Comprehensive Plan and supporting plans to identify future improvements necessary to serve the area of land added to the Northeast Urban Growth Boundary.
10. The City has analyzed the utility needs of the expanded Urban Growth Boundary and has identified public improvements necessary to support urbanization and is amending the Comprehensive Plan to include those improvements.
11. The City has analyzed the Transportation System within the community consistent with The Oregon Transportation Planning Rule and concluded that additional improvements may be necessary beyond those currently planned for the future and identified within the Comprehensive Plan.
12. The City has examined the Parks and Open Space needs of the community relative to the Urban Growth Boundary expansion and has proposed specific amendments to the Parks Master Plan to reflect the need for additional parks facilities.
13. The 2014 Urban Growth Boundary Findings and Summary dated October 5, 2015 is incorporated via reference as findings in support of this ordinance.

NOW THEREFORE, BASED ON THE FOREGOING, THE CITY OF CORNELIUS ORDAINS AS FOLLOWS:

Section 1. The City of Cornelius Comprehensive Plan Map is amended as outlined in Exhibit A

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Section 3. The City of Cornelius Sanitary Sewer System Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit C

Section 4. The City of Cornelius Water Master Plan, Appendix I of the Comprehensive Plan is amended as outlined in Exhibit D.

Section 5. The City of Cornelius Transportation System Plan, Appendix M of the Comprehensive Plan is amended as outlined in Exhibit E.

Section 6. The City of Cornelius Storm Drainage/Surface Water Management Master Plan, Appendix H of the Comprehensive Plan is amended as outlined in Exhibit F.

Section 7. Prior to annexation of land within the NE UGB each applicant shall complete a wetland determination of the property.

Section 8. Land annexed into the City shall have a Natural Resource Overlay Zone applied and be subject to applicable provisions of the Cornelius City Code for those areas that contain wetlands and/or are within the vegetated corridor of Council Creek and/or its tributaries.

Section 9. Upon adoption by the Cornelius City Council, this ordinance shall take effect in 30 days.

PRESENTED AND ADOPTED this 16th day of November, 2015.

City of Cornelius, Oregon

By: Jeffrey C. Dalin
Jeffrey C. Dalin, Mayor

ATTEST:

By: Debby Roth
Debby Roth, MMC, City Recorder-Treasurer



CITY OF CORNELIUS

NOTICE OF PUBLIC HEARINGS

NOTICE IS HEREBY GIVEN that a Public Hearings will be held before the City of Cornelius City Council on Monday, November 2, 2015 at 7:00 PM in the City of Cornelius Council Chambers, 1310 N. Adair, Cornelius, Oregon, to consider the following:

- Request:** Approval of Comprehensive Plan Amendments for properties located within the 2014 Urban Growth Boundary. Amendments are proposed to the City's Comprehensive Plan Map and supporting master plans including the Transportation System Plan (TSP), Water Master Plan, Storm Drainage/Surface Water Master Plan, Sanitary Sewer Master Plan and Parks Master Plan
- Applicant:** City of Cornelius, Oregon
- Review Criteria:** Oregon Statewide Planning Goals 1-14; Section 3.07.1120 of the Metro Urban Growth Management Functional Plan; Oregon Administrative Rule 660-012-0060 (Transportation Planning Rule); the City of Cornelius Comprehensive Plan, City of Cornelius City Code Chapter 18.130 (Comprehensive Plan) and Chapter 18.15 (Review Procedures).

At the time and place listed above all persons will be given a reasonable opportunity to give testimony either for or against the proposal. Testimony may be either in oral or written form and must be relevant to the criteria listed above on which the proposal will be evaluated. At the public hearing(s), the Mayor will open the public hearing, a staff report will be presented, interested persons will be allowed to speak for or against the proposal or to ask questions, Council members will ask any general questions, and the public hearing will be closed. The City Council will either approve, approve with changes or deny the recommendation of the Planning Commission.

In order for an issue to be considered for appeal, it must be raised before the close of the record of the City Council public hearing. Such issues must be raised with sufficient specificity so as to afford the hearing body and the parties an adequate opportunity to respond to each issue. If there is no continuance granted at the hearing, any participant in the hearing might request that the record remain open for at least seven days after the hearing.

A copy of the application(s), all documents and evidence relied upon by the applicant and applicable criteria are available for review at the Community Development Department, 1300 S. Kodiak Circle during regular business hours, at least seven (7) days prior to the scheduled public hearing. Copies may also be purchased at a reasonable cost of 25 cents per page.

If you have questions regarding the application(s) or would like to submit written comments you may contact Michael Cerbone at (503) 357-3011, City of Cornelius, Community Development Department.



CITY OF CORNELIUS

NOTICE OF PUBLIC HEARINGS

NOTICE IS HEREBY GIVEN that a Public Hearings will be held before the City of Cornelius Planning Commission on Tuesday, October 13, 2015 at 7:00 PM in the City of Cornelius Council Chambers, 1310 N. Adair, Cornelius, Oregon, to consider the following:

Request: Approval of Comprehensive Plan Amendments for properties located within the 2014 Urban Growth Boundary. Amendments are proposed to the City's Comprehensive Plan Map and supporting master plans including the Transportation System Plan (TSP), Water Master Plan, Storm Drainage/Surface Water Master Plan, Sanitary Sewer Master Plan and Parks Master Plan

Applicant: City of Cornelius, Oregon

Review Criteria: Oregon Statewide Planning Goals 1-14; Section 3.07.1120 of the Metro Urban Growth Management Functional Plan; Oregon Administrative Rule 660-012-0060 (Transportation Planning Rule); the City of Cornelius Comprehensive Plan, City of Cornelius City Code Chapter 18.130 (Comprehensive Plan) and Chapter 18.15 (Review Procedures).

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In order for an issue to be considered for appeal, it must be raised before the close of the record of the City Council public hearing. Such issues must be raised with sufficient specificity so as to afford the hearing body and the parties an adequate opportunity to respond to each issue. If there is no continuance granted at the hearing, any participant in the hearing might request that the record remain open for at least seven days after the hearing.

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If you have questions regarding the application(s) or would like to submit written comments you may contact Michael Cerbone at (503) 357-3011, City of Cornelius, Community Development Department.



CITY OF CORNELIUS

NOTICE OF DECISION ORDINANCE No. 2015-06 & No. 2015-07

Request: Approval of Comprehensive Plan Amendments for properties located within the 2014 Urban Growth Boundary. Amendments are proposed to the City's Comprehensive Plan Map and supporting master plans including the Transportation System Plan (TSP), Water Master Plan, Storm Drainage/Surface Water Master Plan, Sanitary Sewer Master Plan and Parks Master Plan.

Applicant: City of Cornelius, Oregon

Review Criteria: Oregon Statewide Planning Goals 1-14; Section 3.07, 1120 of the Metro Urban Growth Management Functional Plan; Oregon Administrative Rule 660-012-0060 (Transportation Planning Rule); the City of Cornelius Comprehensive Plan, City of Cornelius City Code Chapter 18.130 (Comprehensive Plan) and Chapter 18.15 (Review Procedures).

ACTION TAKEN:

On November 16, 2015 the City Council based on the facts, findings, conclusions, exhibits, Findings Reports, testimony and evidence presented at the public hearings approved Comprehensive Plan Amendments for properties within the 2014 Urban Growth Boundary.

This decision has been prepared in written form and placed in the file of City records at the Development & Operations building located at 1300 South Kodiak Circle this 17th day of November, 2015 and is available for public inspection. A copy of the approved Ordinances are available on-line at www.ci.cornelius.or.us under the UBG Master Planning tab.

RIGHT OF APPEAL

Parties of record may appeal the decision of the City Council to the Land Use Board of Appeals (LUBA) in accordance with ORS 197.830 to 197.845. The notice of intent to appeal must be filed with LUBA within 21 days of the date of this notice.

For further information, please contact us (503) 357-3011.



Tim Franz
Associate Planner



CITY OF CORNELIUS

NOTICE OF PUBLIC HEARINGS

NOTICE IS HEREBY GIVEN that a Public Hearings will be held before the City of Cornelius Planning Commission on Tuesday, October 13, 2015 at 7:00 PM in the City of Cornelius Council Chambers, 1310 N. Adair, Cornelius, Oregon, to consider the following:

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Applicant: City of Cornelius, Oregon

Review Criteria: Oregon Statewide Planning Goals 1-14; Section 3.07.1120 of the Metro Urban Growth Management Functional Plan; Oregon Administrative Rule 660-012-0060 (Transportation Planning Rule); the City of Cornelius Comprehensive Plan, City of Cornelius City Code Chapter 18.130 (Comprehensive Plan) and Chapter 18.15 (Review Procedures).

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A copy of the application(s), all documents and evidence relied upon by the applicant and applicable criteria are available for review at the Community Development Department, 1300 S. Kodiak Circle during regular business hours, at least seven (7) days prior to the scheduled public hearing. Copies may also be purchased at a reasonable cost of 25 cents per page. The staff report and supporting documents will be posted on the City's website at the following address when available.

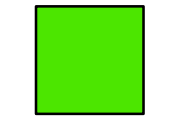

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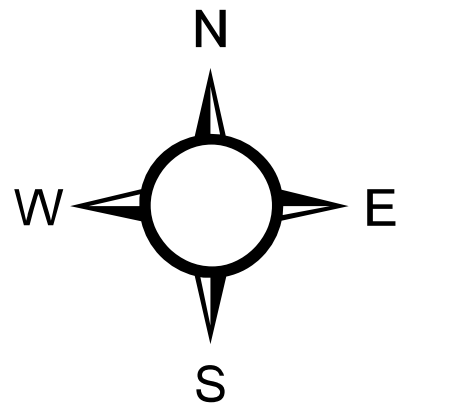
2014 UGB SE Expansion Area Proposed Zoning Alternative Draft 5-23-15



200100 0 200 Feet

Comprehensive Plan / Zoning
Low-density Residential / R-7 (44 Acres)
Medium-density Residential / A-2 (167 Acres)

-  TSP Proposed Signal
-  TSP Collector Street

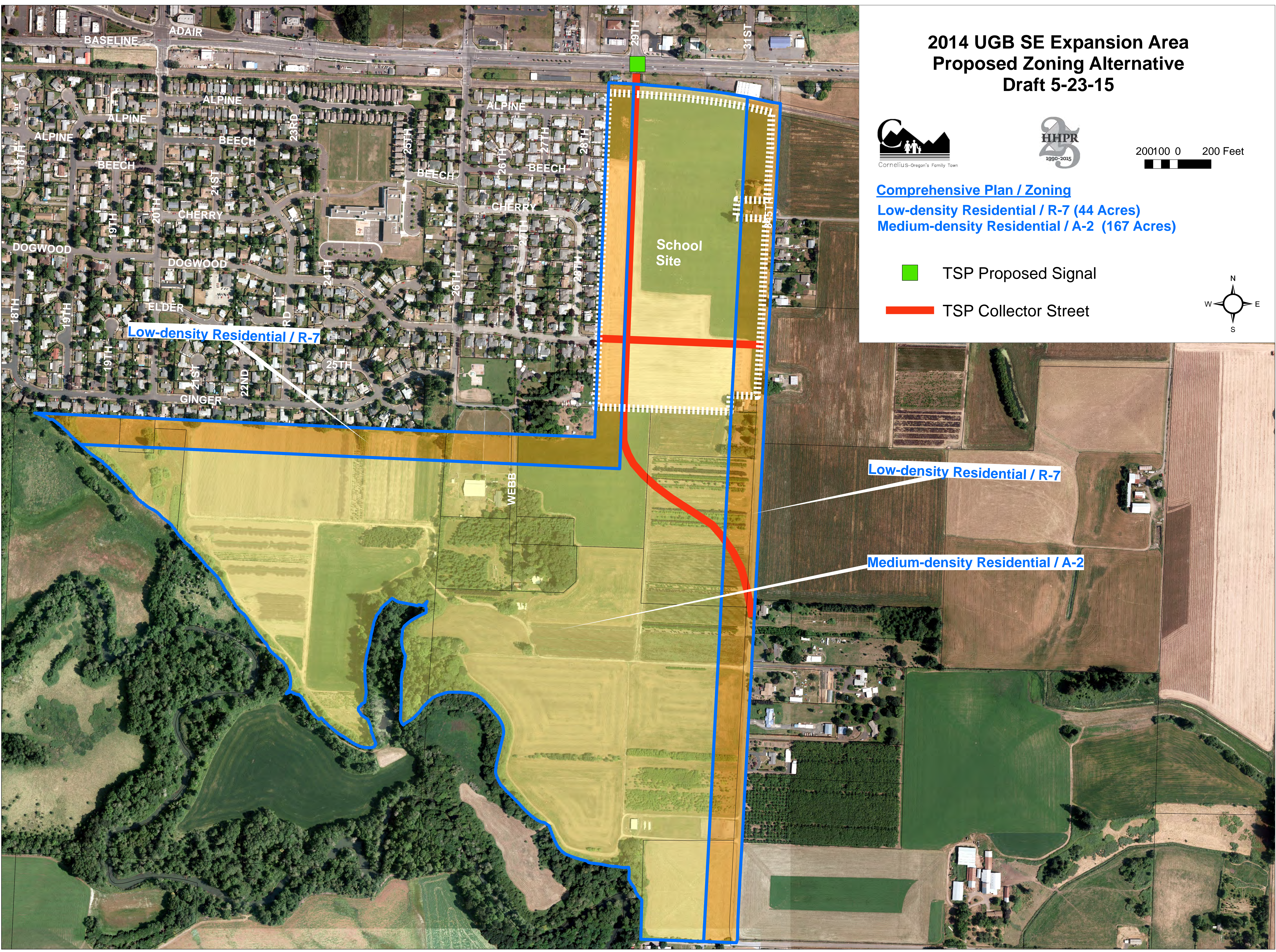


Low-density Residential / R-7

Low-density Residential / R-7

Medium-density Residential / A-2

School Site



**2014 UGB NE Expansion Area
Proposed Zoning Alternative #1
(Commerical South of TV Hwy Only)
Draft 5-20-15**



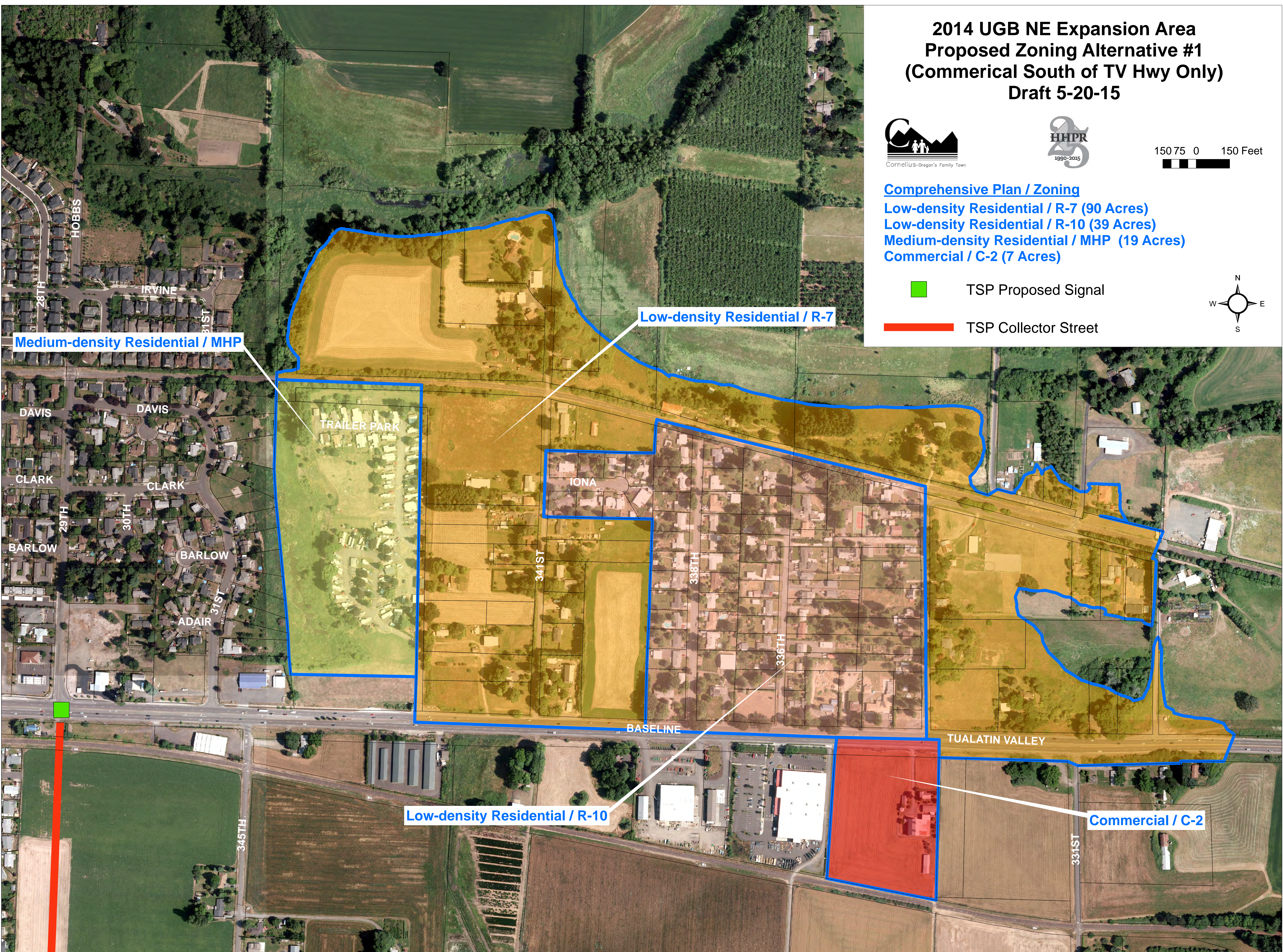
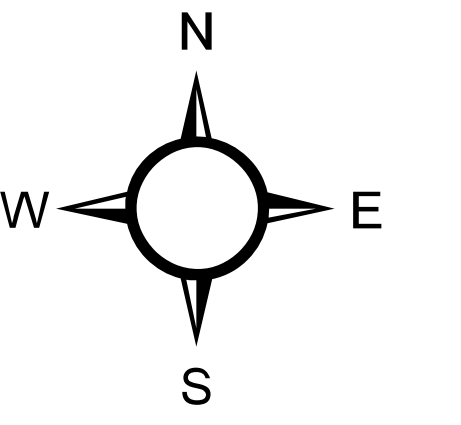
150 75 0 150 Feet

Comprehensive Plan / Zoning

- Low-density Residential / R-7 (90 Acres)
- Low-density Residential / R-10 (39 Acres)
- Medium-density Residential / MHP (19 Acres)
- Commercial / C-2 (7 Acres)

 TSP Proposed Signal

 TSP Collector Street



TLID	RNO	SITESTRNO	SITEADDR	SITECITY
1S303AD02200	R405920	0		CORNELIUS
1S303AD02300	R402530	775	775 SW 345TH AVE	HILLSBORO
1S302C000300	R402282	34005	34005 SW COOK ST	HILLSBORO
1S303AD02400	R405886	865	865 SW 345TH AVE	HILLSBORO
1S303AD02600	R2069144	0		CORNELIUS
1S303A000100	R402497	305	305 SW 345TH AVE	CORNELIUS
1S303A000101	R402503	345	345 SW 345TH AVE	HILLSBORO
1S303C000100	R405831	0		CORNELIUS
1S303C000101	R405859	0		CORNELIUS
1S303C000102	R405868	0		CORNELIUS
1S303D000200	R405895	1020	1020 SW WEBB RD	CORNELIUS
1S303D000201	R405902	0		HILLSBORO
1S303D000400	R405939	0		CORNELIUS
1S303D000401	R405948	965	965 SW WEBB RD	CORNELIUS
1S303D000500	R405957	1353	1353 SW 345TH AVE	CORNELIUS

SITEZIP	A_T_ACRES	PROP_CODE	LANDUSE	TAXCODE	COUNTY	X_COORD
	97113	1.3	500 AGR	7.25	W	7551694
97123-5444		0.34	501 AGR	7.25	W	7552888
97123-5452		73.31	551 AGR	7.25	W	7554205
97123-5446		4.03	551 AGR	7.25	W	7552642
	97113	11.85	550 AGR	7.25	W	7551969
	97113	41.09	551 AGR	7.25	W	7552514
97123-5436		0.44	501 AGR	7.25	W	7552938
	97113	40.84	550 AGR	7.25	W	7548994
	97113	1	500 AGR	15.23	W	7549238
	97113	89.09	550 AGR	15.23	W	7550237
97113-7296		2.47	501 AGR	7.25	W	7551685
	97123	13.31	550 AGR	7.25	W	7552612
	97113	4.55	550 AGR	7.25	W	7551270
97113-7294		4.9	551 AGR	7.25	W	7551285
	97113	76.13	551 AGR	7.25	W	7551911

Y_COORD	JURIS_CITY	GIS_ACRES	STATECLASS
683066	UNINCORPORATED	1.317903	500
683833	UNINCORPORATED	0.367345	501
681264	UNINCORPORATED	78.623477	551
683654	UNINCORPORATED	4.007616	551
683381	UNINCORPORATED	11.86303	550
684738	UNINCORPORATED	41.084378	551
685005	UNINCORPORATED	0.450458	501
682418	UNINCORPORATED	64.057309	550
683645	UNINCORPORATED	0.999997	500
682411	UNINCORPORATED	89.206836	550
682845	UNINCORPORATED	2.454511	501
683069	UNINCORPORATED	13.106285	550
682928	UNINCORPORATED	4.385498	550
683401	UNINCORPORATED	4.751222	551
681839	UNINCORPORATED	76.215414	551

ORTAXLOT

County Zoning within UGB

3401.00S03W03AD--000002200	FD-20
3401.00S03W03AD--000002300	FD-20
3401.00S03W02CO--000000300	FD-20
3401.00S03W03AD--000002400	FD-20
3401.00S03W03AD--000002600	FD-20
3401.00S03W03A0--000000100	FD-20
3401.00S03W03A0--000000101	FD-20
3401.00S03W03CO--000000100	FD-20
3401.00S03W03CO--000000101	FD-20
3401.00S03W03CO--000000102	FD-20
3401.00S03W03D0--000000200	FD-20
3401.00S03W03D0--000000201	FD-20
3401.00S03W03D0--000000400	FD-20
3401.00S03W03D0--000000401	FD-20
3401.00S03W03D0--000000500	FD-20

Proposed Comp Plan Designation within UGB	Area (Acres) Inside UGB
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	7.464
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	5.313
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	48.882
Low Density Residential	
Low Density Residential/ Medium Density Residential	
low Density Residential	
Low Density Residential/ Medium Density Residential	
Low Density Residential/ Medium Density Residential	57.753

NOTICE OF ADOPTED CHANGE – SUBMITTAL INSTRUCTIONS

1. A Notice of Adopted Change must be received by DLCD no later than 20 days after the ordinance(s) implementing the change has been signed by the public official designated by the jurisdiction to sign the approved ordinance(s) as provided in [ORS 197.615](#) and [OAR 660-018-0040](#).

2. A Notice of Adopted Change must be submitted by a local government (city, county, or metropolitan service district). DLCD will not accept a Notice of Adopted Change submitted by an individual or private firm or organization.

3. **Hard-copy submittal:** When submitting a Notice of Adopted Change on paper, via the US Postal Service or hand-delivery, print a completed copy of this Form 2 on light green paper if available. Submit **one copy** of the proposed change, including this form and other required materials to:

Attention: Plan Amendment Specialist
Dept. of Land Conservation and Development
635 Capitol Street NE, Suite 150
Salem, OR 97301-2540

This form is available here:

<http://www.oregon.gov/LCD/forms.shtml>

4. **Electronic submittals** of up to 20MB may be sent via e-mail. Address e-mails to plan.amendments@state.or.us with the subject line “Notice of Adopted Amendment.”

Submittals may also be uploaded to DLCD’s FTP site at http://www.oregon.gov/LCD/Pages/papa_submittal.aspx.

E-mails with attachments that exceed 20MB will not be received, and therefore FTP must be used for these electronic submittals. **The FTP site must be used for all .zip files** regardless of size. The maximum file size for uploading via FTP is 150MB.

Include this Form 2 as the first pages of a combined file or as a separate file.

5. **File format:** When submitting a Notice of Adopted Change via e-mail or FTP, or on a digital disc, attach all materials in one of the following formats: Adobe .pdf (preferred); Microsoft Office (for example, Word .doc or docx or Excel .xls or xlsx); or ESRI .mxd, .gdb, or .mpk. For other file formats, please contact the plan amendment specialist at 503-934-0017 or plan.amendments@state.or.us.

6. **Content:** An administrative rule lists required content of a submittal of an adopted change ([OAR 660-018-0040\(3\)](#)). By completing this form and including the materials listed in the checklist below, the notice will include the required contents.

Where the amendments or new land use regulations, including supplementary materials, exceed 100 pages, include a summary of the amendment briefly describing its purpose and requirements.

7. Remember to notify persons who participated in the local proceedings and requested notice of the final decision. ([ORS 197.615](#))

If you have any questions or would like assistance, please contact your DLCD regional representative or the DLCD Salem office at 503-934-0017 or e-mail plan.amendments@state.or.us.

Notice checklist. Include all that apply:

Completed Form 2

A copy of the final decision (including the signed ordinance(s)). This must include city *and* county decisions for UGB and urban reserve adoptions

The findings and the text of the change to the comprehensive plan or land use regulation

If a comprehensive plan map or zoning map is created or altered by the proposed change:

A map showing the area changed and applicable designations, and

Electronic files containing geospatial data showing the area changed, as specified in [OAR 660-018-0040\(5\)](#), if applicable

Any supplemental information that may be useful to inform DLCD or members of the public of the effect of the actual change