

Cowlitz Rail to Trail: Baseline Conditions and Preliminary Feasibility Report

Prepared for

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1. INTRODUCTION

The purpose of this Baseline Conditions and Preliminary Feasibility Report (Feasibility Report) is to investigate the setting, alignment, existing conditions, and opportunities and constraints for converting a former rail corridor into a multiuse trail. The trail is referred to in this report as the Cowlitz Rail to Trail as a working name for ease of reference. No formal name has been determined, and it is likely a different name may be created through the planning process. This Feasibility Report also provides an estimate of corridor valuation and identifies potential implementation strategies, funding sources, additional needed analysis, and plan-level trail scenario costs.

The Cowlitz County Building and Planning Department convened a Rails to Trails Working Group in 2017 consisting of members from the Cowlitz-Wahkiakum Council of Governments (CWCOG), City of Longview, the Cowlitz County Parks and Recreation Board, and representatives from Cowlitz County departments including the Assessor's Office, Public Works, and Building and Planning. This group identified the Cowlitz Rail to Trail as an important opportunity to expand Cowlitz County's trail system and provide county residents with a 7-mile-long non-motorized transportation and recreation option with access to both urban and rural experiences.

The Cowlitz Rail to Trail project offers a significant opportunity for Cowlitz County and the Cities of Longview and Kelso to turn a now-vacant rail corridor into a vibrant recreational and transportation amenity for both local residents and regional trail users. The potential trail would offer:

- An option for off-road transportation in a busy urban environment
- Regional draw for trail enthusiasts
- Recreation and outdoor exercise options within the urban areas of Longview and Kelso and within the more rural setting in Cowlitz County
- Quality of life enhancement
- Potential connections to other trails and transportation options



Photo 1. Rail corridor in Longview 2018

1.1 Rail Corridor Background

The potential rail to trail corridor is a 7-mile-long section of a rail line sometimes referred to as the Weyerhaeuser Woods Railroad, built in the 1920s. The Weyerhaeuser Woods Railroad was a 100-mile-long rail line that ran from the Weyerhaeuser mill to the Weyerhaeuser Mount St. Helens tree farm. Columbia and Cowlitz Railway, the common carrier for the line established by Weyerhaeuser Company operated the line from the Weyerhaeuser mill in Longview to milepost (MP) 8.5, near the crossing of Ostrander Road (CCR 2017). Patriot Rail Company purchased the Columbia and Cowlitz Railway Company and railroad and purchased the Weyerhaeuser Woods Railroad from MP 8.5 up to the Green Mountain Mill and changed the name of the line to Patriot Woods Railroad. Patriot Rail Company ran the total 31.3 miles of track as one railroad. Over the life of its operation, the railroad at various times carried trash, leachate, logs, finished lumber, wood chips, chemicals, and other products. The line was never operated as a passenger rail (CCR 2017; Patriot Rail 2018).

The railroad has not been active since March 9, 2015, and in August 2017 Patriot Rail Company filed a Verified Notice of Exemption seeking authority to abandon the rail line with the Surface Transportation Board (STB). Cowlitz County filed a request in August 2017 that STB issue a Public Use Condition and a Certificate or Notice of Interim Trail Use rather than allow outright abandonment of the line between MP 1.5 and MP 30. This action began what is known as the railbanking process for the Patriot Woods Railroad. Railbanking was established in 1983 as an amendment to Section 8(d) of the National Trails System Act allowing a voluntary agreement between a railroad company and a trail agency to use an out-of-service rail corridor as a trail as an interim use. This interim use preserves rail corridors in the event that a railroad might be needed in the corridor in the future.

In August 2018, during the negotiation period between Cowlitz County and Patriot Rail Company, Patriot Rail Company removed the railroad from MP 8.5 to MP 30 from further interim trail use discussions. Therefore, this Feasibility Report includes the rail corridor only from MP 1.5 to MP 8.5.



Photo 2. Historic Photos - Weyerhaeuser Woods train crossing the trestle over Westside Highway and the bridge over the Cowlitz River

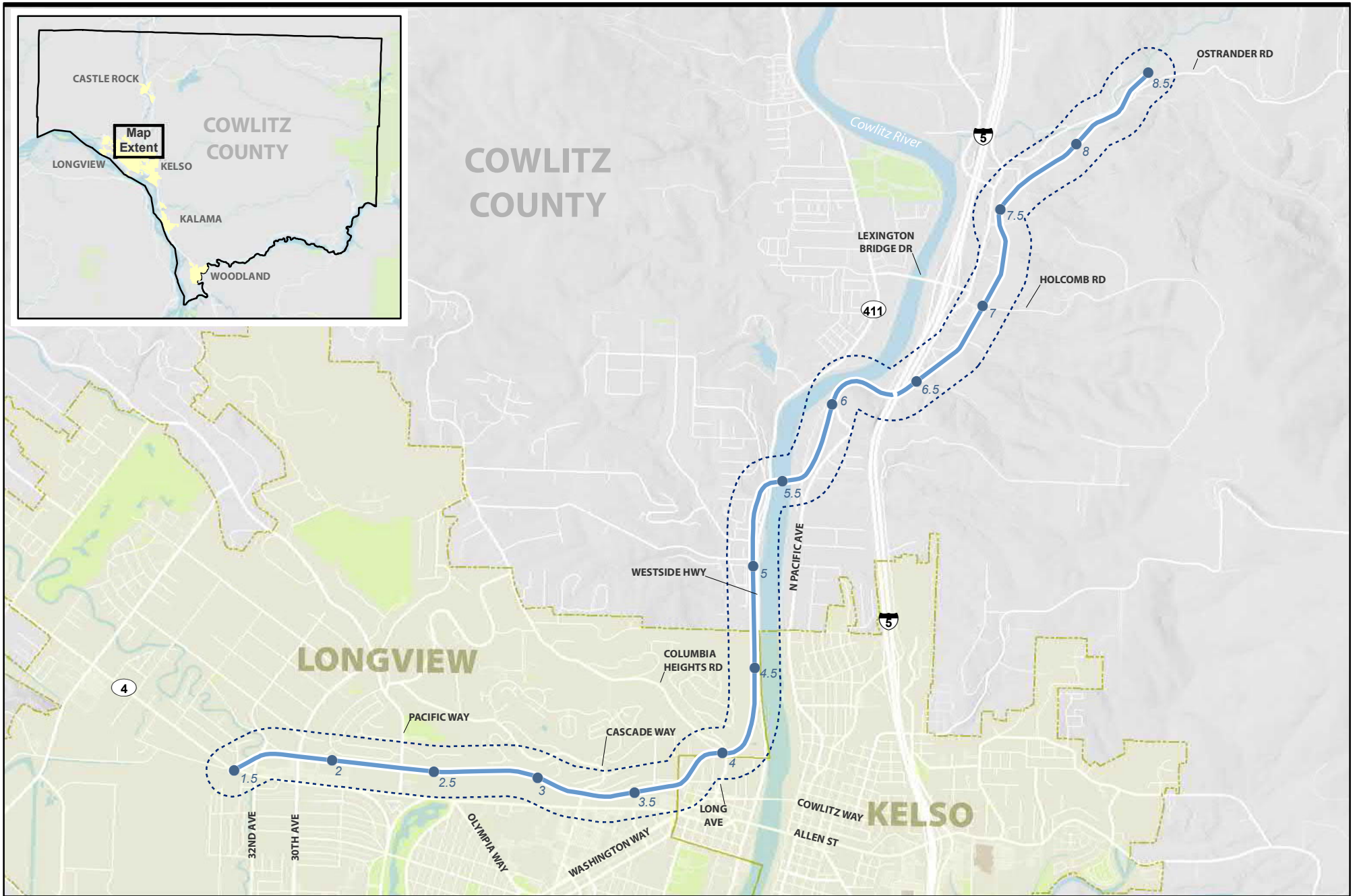
(Cowlitz Historical Society)

2. BASELINE CONDITIONS

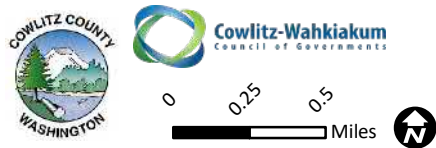
This section of the Feasibility Report identifies the corridor Study Area and describes its existing physical characteristics including the built and natural environments. The Study Area consists of a 1/8-mile area on either side of the railroad tax lots (also referred to as railroad right-of-way [ROW]) to capture adjacent conditions that could affect the trail (see Figure 1). When considering surrounding zoning, land uses, and demographic characteristics, the modified Study Area is a 0.5-mile buffer of the tax lots to provide an understanding of the types of local users most likely to access the trail.

Data were obtained from sources including federal, state, county, city, and other databases and geographic information systems (GIS). Inventory sources are included in Appendix A. Existing spatial data were supplemented with field visits to verify locations and document current conditions.

Baseline conditions are documented spatially in a Map Book of figures included in Appendix B. This Map Book can be used as an independent document for future outreach with the public or as supporting information for future planning efforts.



Date: 10/28/2018 Author: ahmnpis Path: C:\temp\Parcel_Upload\GIS\mapdocs\Existing Conditions\Fig_X_Project_Overview.mxd



- Milepost
- Rail Trail Centerline
- - - Rail Trail Study Area (1/8th-mile)

Figure 1
Cowlitz Rail to Trail Location
and Study Area

COWLITZ RAIL TO TRAIL

2.1 Built Environment

Built environment baseline conditions include documenting zoning, existing land uses, and demographic characteristics; identifying publicly owned lands, existing and planned parks, open space, and trails, historic and cultural resources, utilities, hazardous materials; and mapping connections with the transportation network. Maps for the built environment subjects are included in the Map Book in Appendix B.

Zoning and Comprehensive Plan Designations

(Map Book Figure 2)

Zoning and Comprehensive Plan Designations were evaluated using a 0.5-mile buffer around the railroad tax lots. This identifies the population and uses that will be able to access the trail. Generalized zoning shows that 57 percent of the 4,906-acre modified Study Area is zoned or planned for residential uses and that 6 percent is zoned or planned for commercial uses, including office and mixed use commercial. Only a portion of unincorporated Cowlitz County is zoned. Within the modified Study Area, approximately 255 acres are unzoned. Studies show that increased areas of commercial zoning near trails increase trail usage (Lindsey et al. 2006). However, although the zoning data show only 6 percent of the area is zoned for commercial uses, the rail corridor passes adjacent to two large commercial centers in the City of Longview.

Existing Land Uses

(Map Book Figure 3)

The existing land use maps closely match the zoned uses described above, but are useful to highlight vacant areas and locations of key points of interest near the rail corridor.



Photo 3. Rail corridor near MP 3.5 with adjacent commercial uses, looking southeast.

Demographic Characteristics

Demographic characteristics were evaluated using a 0.5-mile buffer and were obtained from the U.S. Census American Community Survey 2011–2016 Survey Summaries. Within the modified Study Area, the total population is 29,955 with a gross area population density of approximately 6 people per acre. Comparing the modified Study Area with the communities of Kelso, Longview, and Cowlitz County, 0.5 mile area is a very similar population overall. Table 1 shows the percentage of minority populations, the average household income, higher education attainment, and percentages of the population under 5 years old or over 64 years old. These demographic characteristics are important when considering potential future users of a new trail. Among other variables, urban trail use is shown to increase with income, the presence of minority populations, household income, education, and population density, and to decrease with greater young or old populations (Lindsey et al. 2006).

Table 1. Demographic Characteristics

	Kelso	Longview	Cowlitz County	Study Area (0.5-mile buffer)
Population				
Total Population	11,605	39,203	102,854	29,955
Minorities	12%	18%	15%	15%
Income				
Median Household Income	\$35,680	\$39,842	\$48,928	\$45,572
Low Income	54%	46%	36%	35%
Education				
Less than High School Degree	11%	9%	8%	9%
Over 25 with a College Degree	12%	11%	11%	12%
Age				
Under 5 years old	8%	6%	6%	5%
Over 64 years old	14%	20%	18%	20%

Source: 2011-2016 ACS Block Groups via EPA EJ Screen.

Note: Statistics based on American Community Survey Summaries 2011-2016 where block groups intersect the designated geography.

Neighborhoods within one half mile of the corridor include Memorial Park, Mint Farm, Olympic West, Columbia Valley Gardens, Northlake/Corman, Cascade/City View, Old West Side, Downtown, and Columbia Heights East.

Public Lands, Parks, Open Spaces, and Active Transportation

(Map Book Figure 4)

Only a small area of one designated City of Longview park, Kellogg Park, is within the 1/8-mile Study Area near MP 1.5. There are two parks to the north and south of the Study Area at MP 2.5. Lake Sacajawea Park and Japanese Gardens are directly south of the Study Area. This park and gardens are a major recreation resource and focal point in Longview for community events with walking trails, benches, a playground, boating, and Japanese gardens. John Null Park is located directly north of the Study Area, also at MP 2.5 and provides several recreation baseball fields.

The City of Longview Parks and Recreation Comprehensive Plan 2016 identifies proposed trails, one of which is a connection from the north end of Lake Sacajawea Park to the proposed rail to trail project using the Consolidated Diking Improvement District (CDID) #1 drainage ditch referred to as the Lake Bypass Ditch. The proposed route utilizes the land and berms adjacent to the CDID #1 network of drainage ditches and would be a good connection for the rail to trail project. The proposed CDID #1 network would also connect from the rail to trail project to John Null Park.¹

Throughout the remainder of the corridor, there are small to medium parcels in public ownership, distributed across the corridor.



Photo 4. Lake Sacajawea and Japanese Gardens Park, from the north end, looking south.

¹ Refer to Longview Parks & Recreation Comprehensive Plan, Section 4.7 Proposed Trails available at: <http://mylongview.com/modules/showdocument.aspx?documentid=3278> for a conceptual map this trail.

There is one elementary school within the 1/8-mile Study Area, Catlin Elementary, near MP 4. Outside of the Study Area, but within 0.5 mile, there are six schools, including elementary, middle schools, high schools, and Lower Columbia College.

Map Book Figure 4 also includes existing and proposed active transportation bike routes. Many of these facilities intersect the rail corridor.

Historic and Cultural Resources

(Map Book Figure 5)

There are properties or sites listed on the National Register of Historic Places (NRHP) identified within the 1/8-mile Study Area, however Lake Sacajawea Park is identified as a historic resource, directly south of the Study Area at MP 2.5. There is potential for one or more of the railroad bridges and trestle structures to be identified as eligible for listing on the NRHP or by the Department of Archaeology and Historic Preservation (DAHP). If a structure is listed as eligible, compliance with Section 106 of the National Historic Preservation Act or DAHP requirements may be necessary for any changes to the structure. If the corridor is railbanked, Section 106 consultation may not be needed.

The Washington Information System for Architectural and Archaeological Records Data (WISAARD) online system was used to identify potential for cultural resources within the Study Area. All of the corridor tax lots are all within the WISAARD Environmental Factors and Archaeological Resources Predictive Model category of Survey Highly Advised: High Risk. In any areas where excavation will be necessary, consideration for preconstruction archaeological surveys should be included and consultation with local tribes should occur in advance of construction.

Utilities

(Map Book Figure 6)

City of Longview water and sewer infrastructure runs contiguously to, within, and across the rail corridor tax lots throughout the City. Within the City of Kelso, an underground water line runs within the corridor. The only area of the corridor in Longview without co-located water and sewer utilities is the north to south section of track adjacent to Westside Highway. Natural gas pipelines are also co-located with the railroad tax lots throughout the corridor. Within Cowlitz County, the natural gas pipeline continues to be located in the corridor. Where any excavation is necessary, site-specific utility location is recommended.

Hazardous Materials

(Map Book Figure 7)

There are many sites with recorded instances of hazardous materials use or past spills within the 1/8-mile Study Area; however, none is considered to pose a risk to the potential trail corridor (see Appendix C). Additionally, no additional unidentified potential contamination sites were identified during a site visit in August 2018.

In addition to surrounding sites, the evaluation considered the use and infrastructure of the railroad itself. The long-term operation of the railroad and associated infrastructure raises some concern regarding subsurface environmental impacts near and beneath the railroad corridor. These general concerns include transport of potentially hazardous materials (leachate and fuels), use of treated rail ties, maintenance activities along the tracks (rail greasing systems, etc.), and undocumented past spills

or other releases. These potential environmental issues should be considered during planning stages of trail development and their potential impact on construction.

Transportation

(Map Book Figure 8)

This section describes the general transportation system with respect to the 1/8-mile Study Area, including public transit. From MP 1.5 to MP 4, the corridor travels roughly parallel to and approximately 0.10 mile north of Ocean Beach Highway (State Route (SR) 4), a principal arterial and the major east-west route through Longview.

From approximately MP 4 to MP 5.5 the corridor travels adjacent to Westside Highway (SR 411), also a principal arterial and the major north-south route between Longview and communities on the west side of the Cowlitz River. Both Ocean Beach Highway (SR 4) and Westside Highway (SR 411) are also designated truck routes, and Ocean Beach Highway (SR 4) is also a posted City of Longview bike route.

The City of Longview is currently updating its comprehensive plan and is reviewing the transportation network as part of that process. In an April 2016 Transportation Snapshot, Longview noted that Ocean Beach Highway (SR 4) had experienced significant traffic growth and represented 73 percent of accident locations on the National Highway System within Longview. Ocean Beach Highway (SR 4) is also the most frequent location for bicycle and pedestrian accidents in the local National Highway System. The Longview Transportation Snapshot also identifies the need to provide opportunities or increased pedestrian activity and accommodate bicyclists in their system (City of Longview 2016). Developing the rail corridor as a rail to trail project would provide a well-placed east-west pedestrian and bicycle connection that would provide access to the same locations in Longview as the eastern end of Ocean Beach Highway (SR 4).

The corridor intersects with one highway and four local roads in the City of Longview, two local roads in Kelso, and three local roads and one highway in Cowlitz County on the west side of the Cowlitz River. On the east side of I-5, the corridor roughly parallels N. Pacific Avenue and I-5. The corridor intersects eight local County roads on the east side of I-5, five of which are unpaved, and there is no transit service providing connections on this portion of the corridor. Table 2 identifies key information for these intersections.

Table 2. Corridor Road Intersection Details

Road Name	Number of Lanes	Crossing Type	Intersection Alignment	Road Surface	Bike/Pedestrian Facilities	Sight Distance to RR
Ocean Beach Hwy (SR 4)	5	At Grade	Diagonal	Paved	Sidewalks	Unrestricted
32nd Ave.	2	At Grade	Diagonal	Paved	Partial Sidewalk	Unrestricted
30th Ave.	2	At Grade	Perpendicular	Paved	Sidewalks / Planned Bike Lane	Unrestricted
Pacific Way	2	At Grade	Perpendicular	Paved	Sidewalks & Bike Lanes	Unrestricted
Cascade Way	2	At Grade	Perpendicular	Paved	Partial Sidewalk / Planned Bike-Ped	175 ft.
Clark St.	unstriped	At Grade	Diagonal	Paved	Partial Sidewalk	Unrestricted
Fishers Ln.	unstriped	At Grade	Diagonal	Paved	None	Unrestricted
Long Ave.	2	At Grade	Perpendicular	Paved	None / Planned Bike Lane	Unrestricted
Nevada Dr.	2	Bridge	Perpendicular	Paved	None / Planned Bike-Ped	N/A
Alpha Rd.	2	Bridge	Perpendicular	Paved	None	N/A
Beulah Dr.	unstriped	Trestle	Perpendicular	Paved	None	N/A
Beacon Hill Rd.	2	Trestle	Slight Angle	Paved	None	N/A
Westside Hwy (SR 411)	2	Trestle	Slight Angle	Paved	None / Planned Bike-Ped	N/A
Cowlitz Gardens Rd.	2	Trestle	Slight Angle	Paved	None / Planned Bike-Ped	N/A
N. Pacific Ave.	2	Bridge	Diagonal	Paved	None / Planned Bike-Ped	N/A
I-5	6	Below Bridge	Slight Angle	Paved	None	N/A
Kitchen Dr.	1	At Grade	Slight Angle	Unpaved	None	100 ft.
Nicholson Rd.	1	At Grade	Slight Angle	Unpaved	None	Unrestricted
Evergreen Spur Rd.	1	At Grade	Slight Angle	Unpaved	None	Unrestricted
Evergreen Rd.	1	Bridge	Perpendicular	Paved	None	N/A
Holcomb Rd.	2	Below Bridge	Slight Angle	Paved	None / Planned Bike-Ped	N/A
Misty Mountain Rd.	1	At Grade	Slight Angle	Unpaved	None	250 ft.
Guier Rd.	1	At Grade	Perpendicular	Unpaved	None	80 ft.
Ostrander Rd.	2	Bridge	Diagonal	Paved	None	N/A

Note: N/A – Not Applicable.

Transit routes and stops in Longview are located on Ocean Beach Highway (SR 4). Connections to transit within Longview from the rail corridor are located with 0.10 mile at MP 1.5, MP 2, MP 2.5, MP 3.5, and MP 4.

2.2 Natural Environment

This section describes the existing conditions in the 1/8-mile Study Area for surface waters, wetlands, fish and wildlife, and geologic hazards. Maps for the natural environment subjects are included in the Map Book in Appendix B.

Surface Waters and Fish and Wildlife

(Map Book Figure 9)

The 7-mile corridor crosses the Cowlitz River, eight fish-bearing streams, and four non-fish-bearing streams. Eleven of these crossings have culverts, and three are crossed by trestles or bridges. Several of the streams identified as fish bearing are part of the CDID #1 drainage ditch system and are also identified as wetlands. In addition to the streamside wetlands, there are larger wetlands identified along the rail corridor as well. At MP 3 on the south side of the trail, there is an approximately 5.5-acre wetland area, and between MP 3.5 and MP 4, there is an approximately 1.5-acre wetland area on the west side of the corridor; however, standing water was observed on both sides of the rail line on the site visit in August 2018. Two other areas of standing water along the rail were located immediately east of the I-5 undercrossing and between MP 7.5 and MP 8.

Wildlife habitat is present in the vegetated riparian areas along the streams and is protected by the Critical Areas Ordinances and Shoreline Master Programs within the City of Longview and Cowlitz County. There are several species of wildlife and plants identified as Threatened under the Endangered Species Act within the Study Area (see Table 3) (USFWS 2018). No critical habitats for any of these species are identified within the Study Area.

Table 3. Threatened Species Under the Endangered Species Act

Mammals & Fish	Birds	Flowering Plants
Columbia White-tailed Deer <i>Odocoileus virginianus leucurus</i>	Marbled Murrelet <i>Brachyramphus marmoratus</i>	Golden Paintbrush <i>Castilleja levisecta</i>
Bull Trout <i>Salvelinus confluentus</i>	Streaked Horned Lark <i>Eremophila alpestris strigata</i>	Kincaid’s Lupine <i>Lupinus sulphureus</i> ssp. <i>kincaidii</i>
	Yellow-billed Cuckoo <i>Coccyzus americanus</i>	Nelson’s Checker-Mallow <i>Sidalcea nelsoniana</i>

Source: U.S. Fish & Wildlife Service

Geologic and Landslide Hazards

(Map Book Figure 10)

Topographic contours at 20-foot intervals, known historical landslides, steep slopes, and Washington Department of Natural Resources potentially unstable slopes are shown on Map Book Figure 10. Cowlitz County has a history of landslide activity, so it is important to evaluate the corridor for potential geologic hazards. Between MP 4 and 4.5, the corridor travels at the base of a steep slope area mapped as potentially unstable. This is a heavily forested steep hillside, with no previously identified landslides.

On the west side of Rocky Point, steep slopes are identified, and past and recent rockfalls were observed in the field in two locations. This is an area of concern for trail user safety.

Between MP 7.5 and the Ostrander Road crossing, there are mapped deep-seated landslides² and areas of steep slopes within the Study Area, on the east side of the trail.

2.3 Corridor Infrastructure

This section describes the rail corridor infrastructure and location. See Map Book Figure 11 and Appendix D for details. The infrastructure included here includes:

- Bridge and trestle locations and lengths
- Rail berm areas of concern
- Culvert locations
- Potential encroachment locations

Rail Bridges

There are no bridges on the corridor until approximately MP 5, where the corridor crosses Nevada Drive. Including Nevada Drive, the corridor crosses twelve features as described in Table 4.

Table 4. Rail Bridge Characteristics, MP 5 to MP 8.5

Milepost	Feature Crossed	Approximate Length	Approximate Clearance Height	Surface	Walkway/Railing
5.04	Nevada Dr.	49 ft.	11 ft. 8 in.	N/A	N/A
5.14	Alpha Dr.	250 ft.	13 ft. 11 in.	Open Ties / Wood	Yes / Yes
5.19	Beulah Dr.	160 ft.	13 ft. 2 in.	Open Ties / Wood	Yes / Yes
5.42	Beacon Hill	165 ft.	16 ft. 3 in.	Open Ties / Wood	Yes / Yes
5.44	Westside Hwy (SR 411)	65 ft.	19 ft. 8 in.	Open Ties / Wood	Yes / Yes
5.48	Cowlitz River	720 ft.	Unknown	Steel / Wood / Concrete	Yes / Yes
5.74	Cowlitz Garden Rd to end of Trestle	1810 ft.	Unknown	Open Ties / Wood / Steel	Yes / Yes
6.02	N. Pacific Ave.	194 ft.	14 ft. 7 in.	Open Ties / Wood	Yes / Yes
6.27	BNSF Railroad	93 ft.	Unknown	Open Ties / Wood	No
6.82	Evergreen Rd. & Unnamed Creek	240 ft.	Unknown	Open Ties / Wood	Yes / Yes
8.33	Ostrander Rd. & Ostrander Creek	380 ft.	15 ft.	Ballast / Wood	Yes / Yes

Note: Nevada Dr. bridge is no longer in place.

² Deep-seated landslides are those in which the bulk of the slide plane lies below the roots of forest trees.



Photo 5. Rail bridge over Cowlitz River, looking north.

Rail Berm Areas of Concern

There were few areas where the rail berm or ballast condition itself presented a concern for potential future trail development. During the site visit in August 2018, the width of the top of the ballast was measured at various locations when it appeared to be either wider than typical or narrower than typical. It is anticipated that Patriot Rail Company would remove the rail tracks and ties and leave the ballast in place. Because of this, interim trail use could potentially be established utilizing the existing ballast as a walking surface. Narrow areas in the width of the ballast would likely require additional engineering solutions.³ Overall, the average width of the top of the ballast was approximately 11 to 12 feet. Figure 2 identifies locations with either wide or narrow top-of-ballast measurements. There are three narrow areas between MP 1.5 and MP 4, a very wide area between MP 4.5 and MP 5, and a few wider areas between MP 7 and MP 8.5. Descriptions of these locations can be found in Section 2.4, Corridor Description.

In addition to the width of the ballast, there were areas with standing water directly adjacent to the rail ballast (at approximately MP 2, MP 3.75, MP 6.4, and MP 7.6) and one location where a side retaining wall is in disrepair (at approximately MP 6.6). Additional descriptions of these locations can be found in Section 2.4, Corridor Description.

³ Interim trail use would include re-grading the ballast to fill in holes and even out the surface left after Patriot Rail Company removes the tracks and ties. This solution would probably deter the use of road bikes and mobility devices and even make walking somewhat difficult on the rough surface.

Culverts

Approximately 19 culverts exist under the railroad. The culverts were identified using stream and drainage databases to identify potential locations, mapping data from the City of Longview, and field location. Culverts starting at approximately MP 6 are identified in the field with numbered posted signs; however, not all signs remain in place. Patriot Rail Company owns and maintains all of the culverts along the corridor.



Photo 6. Culverts near MP 4

Notable large culverts include those allowing passage of CDID #1 facilities near 32nd Avenue and at the Lake Bypass Ditch west of MP 2.75.

Additionally notable is the culvert for the unnamed stream crossing under the railroad at approximately MP 4.5. There are three culverts at this location: two side-by-side concrete culverts and one corrugated metal culvert above the other two. These culverts pass under the rail berm to a deep, large hole in the ground where they are visible again, and then pass under Westside Highway (SR 411). It appears that part of the deep hole may be partly within the rail corridor tax lot.

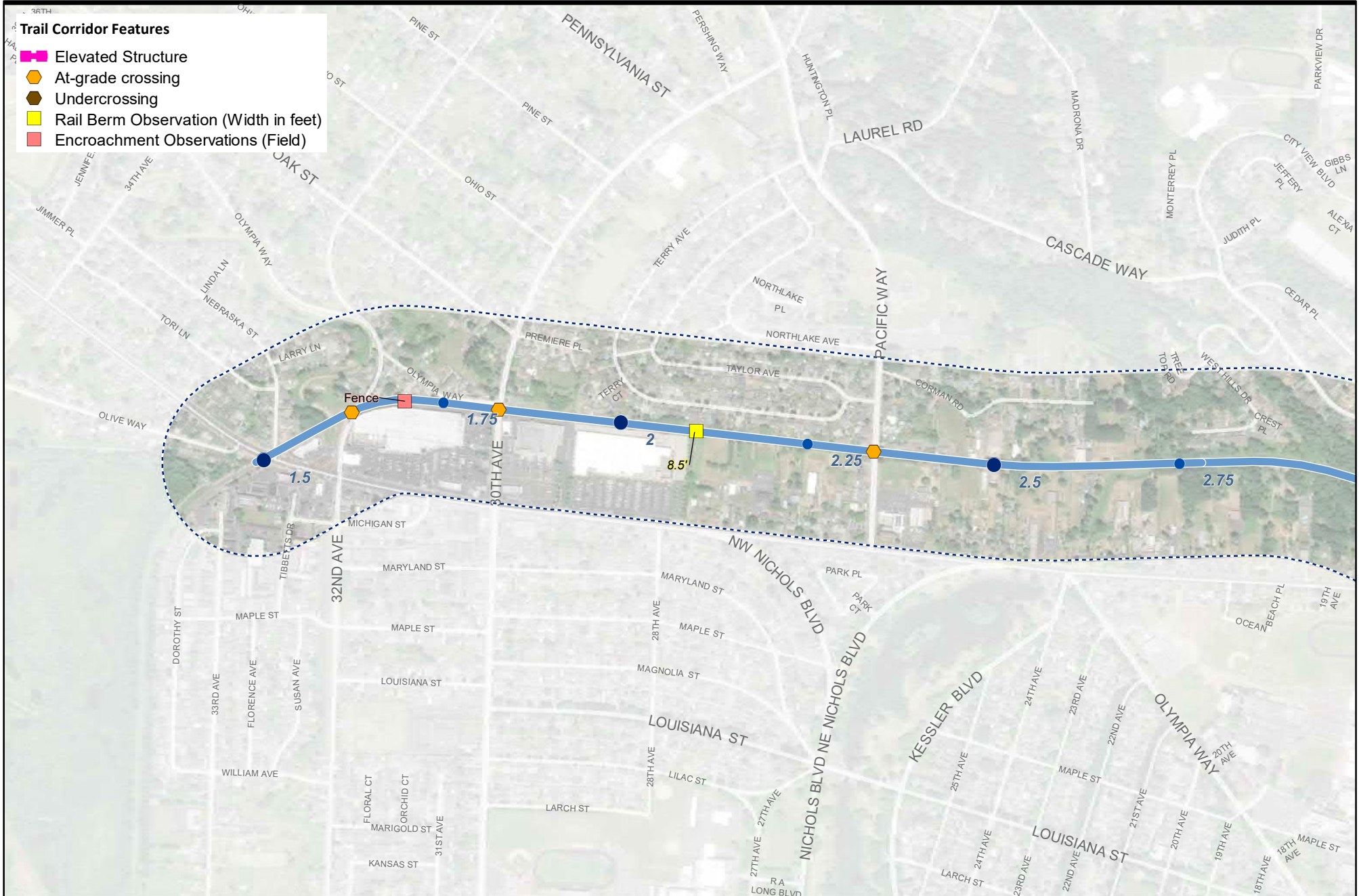
Generally, the remainder of the culverts visually confirmed are 12- to 24-inch-diameter corrugated metal. Those observed were in fair to poor condition based only on their visible openings. Many culvert locations were not located due to berm height, vegetation, and the need to leave the rail corridor tax lot to visually look for a culvert.

Encroachments

There were few potential encroachment locations identified either via aerial photographs or via the field visit. Most identified potential encroachments are fences or portions of buildings that appear to be within the rail corridor tax lot (see Figure 2). None of the encroachments would completely preclude use of the rail corridor as a trail. Detailed investigation of the adjacent tax lots and survey of building or fence locations would be required to determine the full extent of any encroachments.

2.4 Corridor Description

The consultant team spent 2 days walking the 7-mile rail corridor in August 2018. This section of the Feasibility Report describes the character of the corridor from its start at MP 1.5 moving east and then north to MP 8.5. Descriptions also include a high-level discussion of the condition of the rail berm and other infrastructure along the route.



Trail Corridor Features

- Elevated Structure
- ◆ At-grade crossing
- Undercrossing
- Rail Berm Observation (Width in feet)
- Encroachment Observations (Field)

Date: 11/6/2018 Author: ahmarques Path: L:\P\Port\Progress\Clients\0415-Cowlitz\City\273-2415-028 Pair of Woods Rail Trail\GIS\mapdocs\Existing Conditions\Fig_11_TrailMap_Corridor.mxd

Milepost

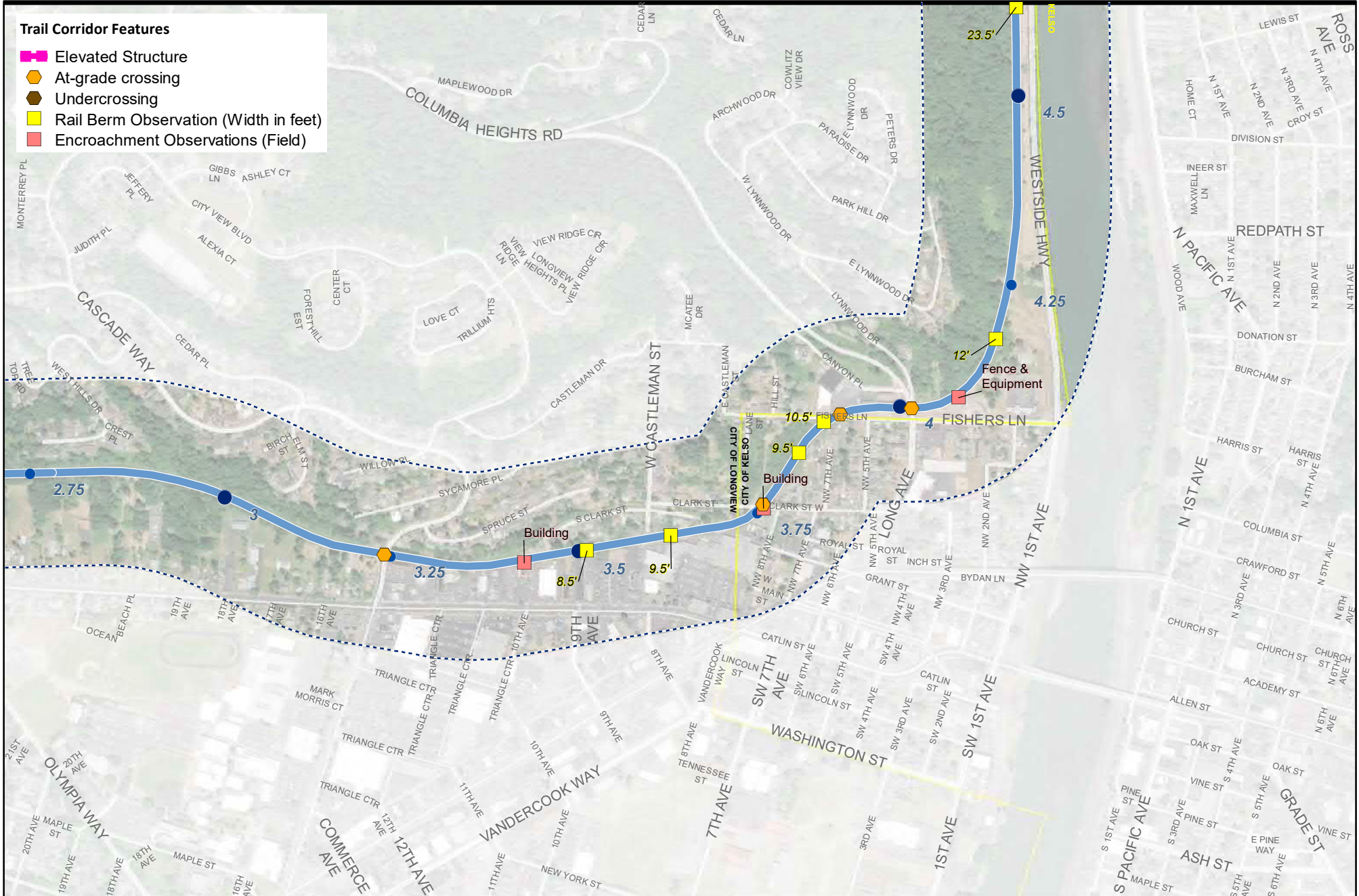
- Half
- Quarter

— Rail Trail Centerline

Rail Trail Study Area (1/8th-mile)

Figure 2
 Trail Corridor Observations
 Map 1 of 5

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix



Date: 11/6/2018 Author: ahmarques Path: U:\P\Rail\Progress\Clients\0415-Cowlitz\City\273-2415-028 Path\cd\WoodRail\Top\09185\vecGIS\mapdocs\Existing\Condition\Fig_11_TweetMap_Corridor.mxd

COWLITZ COUNTY
WASHINGTON

Cowlitz-Wahkiakum
COUNCIL OF GOVERNMENTS

0 500 1,000 Feet

Milepost

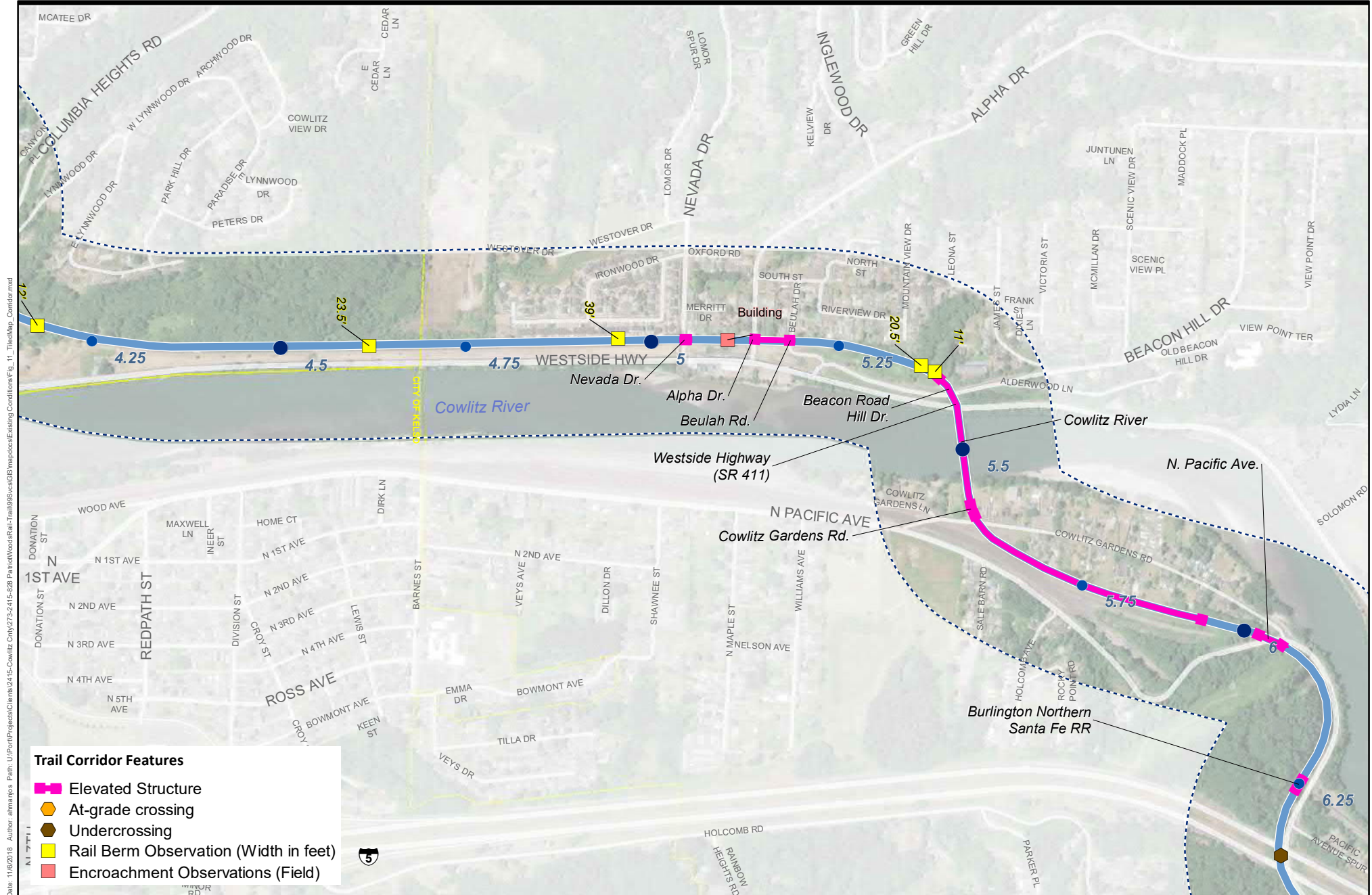
- Half
- Quarter

— Rail Trail Centerline

Rail Trail Study Area (1/8th-mile)

Figure 2
Trail Corridor Observations
Map 2 of 5

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix



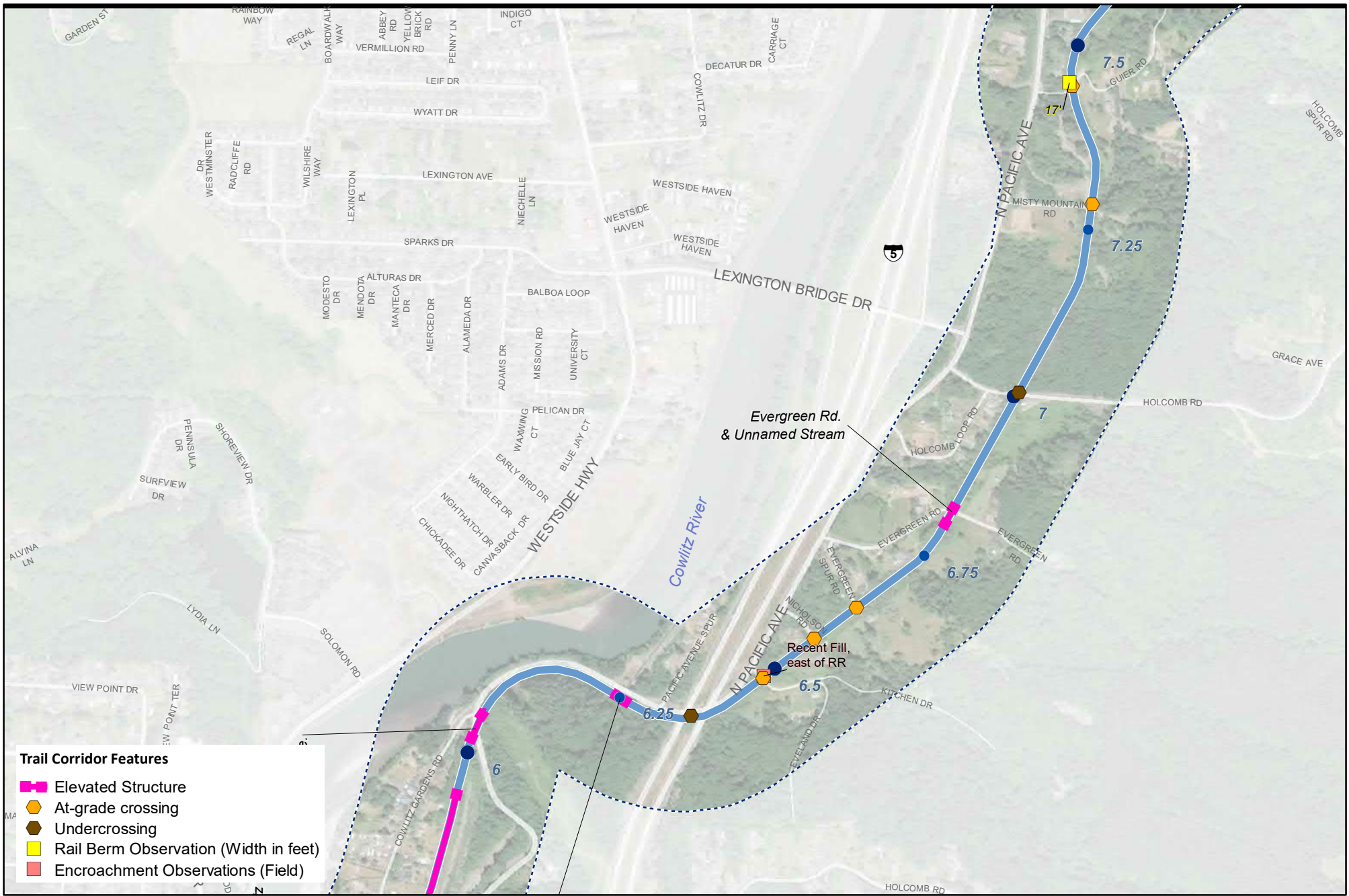
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Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

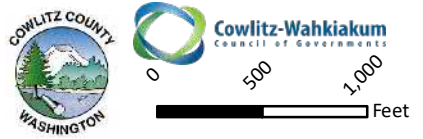
Figure 2
 Trail Corridor Observations
 Map 3 of 5
 COWLITZ RAIL TO TRAIL

Date: 11/6/2018 Author: ahmanjcs Path: U:\P\Proj\Progress\Clients\0415-Cowlitz\City\273-2415-028 Pair of Woods\Rail\Tom\0908\vecGIS\mapdocs\Existing Conditions\Fig_11_TileMap_Corridor.mxd



Trail Corridor Features


-  Elevated Structure
-  At-grade crossing
-  Undercrossing
-  Rail Berm Observation (Width in feet)
-  Encroachment Observations (Field)



COWLITZ COUNTY
WASHINGTON

Cowlitz-Wahkiakum
COUNCIL OF GOVERNMENTS

0 500 1,000 Feet



Milepost





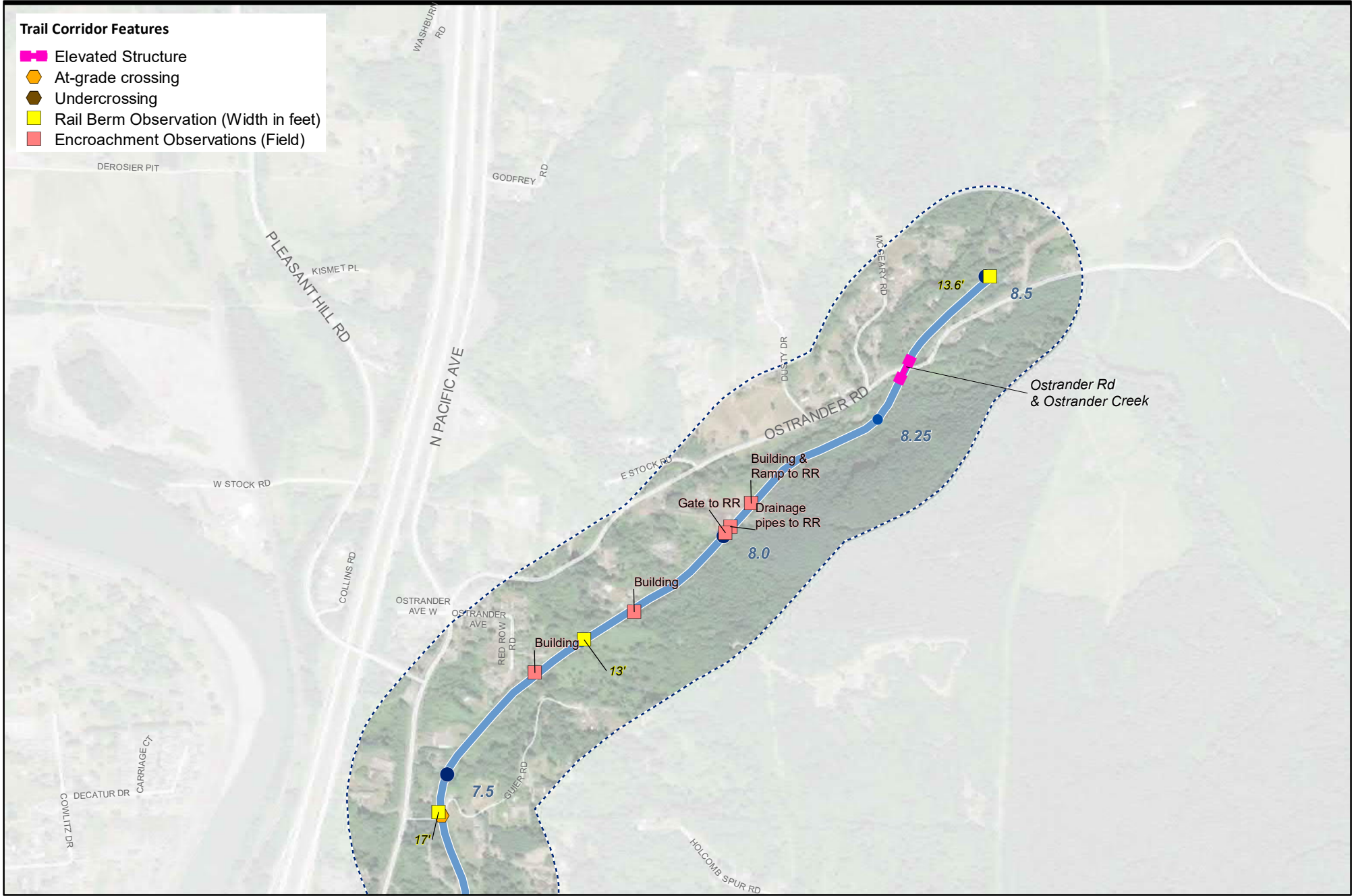
-  Half
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-  Rail Trail Centerline
-  Rail Trail Study Area (1/8th-mile)

Figure 2
Trail Corridor Observations
Map 4 of 5

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

- Trail Corridor Features**
- Elevated Structure
 - At-grade crossing
 - Undercrossing
 - Rail Berm Observation (Width in feet)
 - Encroachment Observations (Field)



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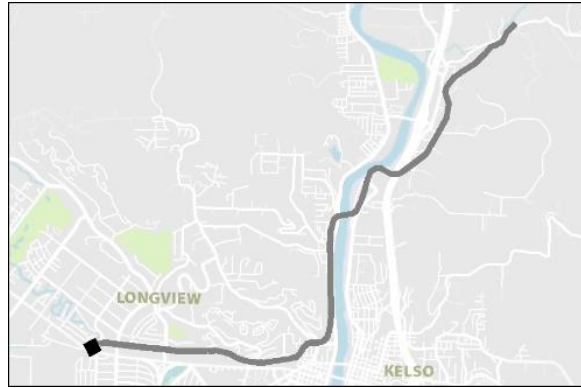
- Milepost**
- Half
 - Quarter
- Rail Trail Centerline
- Rail Trail Study Area (1/8th-mile)

Figure 2
Trail Corridor Observations
Map 5 of 5

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Ocean Beach Hwy to 32nd Avenue

The corridor officially begins at MP 1.5, on the south side of Ocean Beach Highway (SR 4). Ocean Beach Highway (SR 4) has four lanes and a turning lane at this location and crosses the railroad at a diagonal. The rail ballast is wide and flat at the MP marker. On the north side of Ocean Beach Highway (SR 4), the ROW tax lot is approximately 50 feet wide, and the rail ballast has a slight slope on either side as you move northwest. CDID #1 drainage ditch passes under the rail through a culvert, and the corridor has an open feel with residences, the busy highway, and a retail use at the south end, and open field areas at the north end, with the crossing of 32nd Avenue, a two-lane road crossing the railroad at a diagonal.



Approximate location of photos



Photo 7. MP 1.50 at the beginning of the corridor, looking south.



Photo 8. Looking south across Ocean Beach Highway (SR 4).



Photo 9. CDID #1 drainage facility and commercial uses, looking southeast.

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32nd Avenue to CDID #1 Lake Bypass Ditch

Beginning at 32nd Avenue, the rail corridor is adjacent to large commercial retail buildings to the south and single-family residences to the north. The rail ballast is generally level with slight slopes on either side, and the ROW tax lot width is approximately 50 feet. There is an area that appears prone to water inundation along the boundary with Lowe's Home Improvement (see Photo 10).

Just west of Lowe's Home Improvement, the top of the rail ballast narrows to 8.5 feet wide, such that the ballast drops off at the edge of the rail ties. It remains this narrow for approximately 500 feet, where it widens out again to approximately 11 feet. In this area, the corridor passes between single-family residences to the north and open fields to the south with trees and shrubs along both sides (see Photo 11).

The rail corridor crosses Pacific Way, a two-lane local road perpendicular to the railroad, with single-family residences to the north and a school property to the south. MP 2.5 is approximately 800 feet west of the Pacific Way Crossing (see Photo 12 and Photo 13). The top of the rail ballast is approximately 9 to 10 feet wide, and the berm slopes off to either side. The corridor is between low density residences with large open field areas and feels open and somewhat rural. This section ends at the CDID #1 Lake Bypass Ditch which passes under the rail in a culvert.

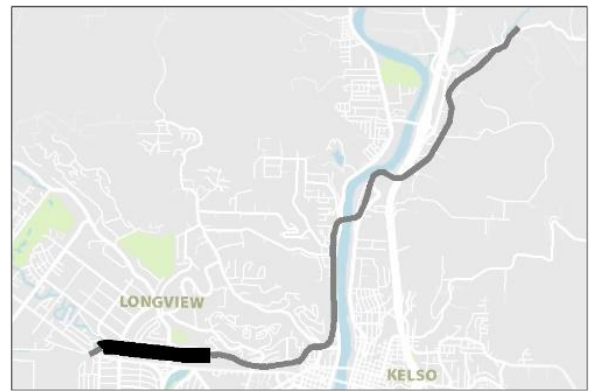


Photo 10. Area prone to water inundation, looking southwest.



Photo 11. Rail corridor, looking east.



Photo 12. Rail corridor at MP 2.5, looking west.



Photo 13. Rail corridor at MP 2.5, looking east.

CDID #1 Lake Bypass Ditch to Cascade Way

MP 2.75 is approximately 700 feet west of the CDID #1 ditch (see Photo 14 and Photo 15). The wider ROW tax lot area combined with a forested slope and drainage ditch to the north and forested large lots to the south give the rail corridor here a more remote and natural feeling (see Photo 16). The top of the rail ballast is generally 9 to 12 feet wide and slopes down on either side.

The rail corridor is crossed by an overhead electrical utility approximately halfway between the CDID #1 ditch and Cascade Way connecting to a substation to the south, visible from the corridor (see Photo 17). Approximately 165 feet to the west of the utility crossing, evidence of subsistence camping was noticeable on the south side of the corridor within a forested area.

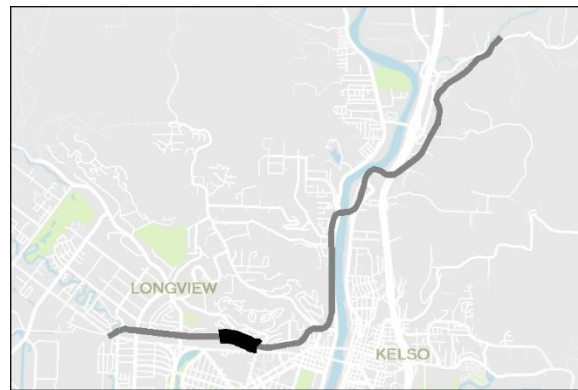


Photo 14. MP 2.75, looking southeast.



Photo 15. Beginning of natural area character in this section, looking west.

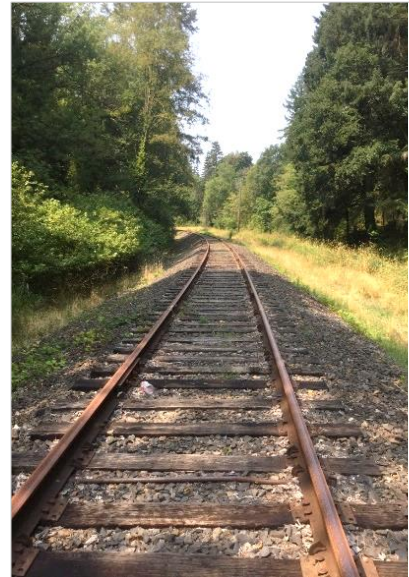


Photo 16. Continued forested character, looking east.

About 630 feet from the crossing with Cascade Way, the tax lot width narrows again to approximately 50 feet. Cascade Way crosses the railroad with a perpendicular intersection. Just west of Cascade Way, the corridor tax lot is clear and level to the north of the rail, and is used to access the CDID #1 drainage ditch. To the south of the rail, the corridor is graded and maintained as access to the back of the adjacent properties (see Photo 18).



Photo 17. Electric utility and substation, looking south



Photo 18. Wide open graded areas adjacent to the rail at Cascade Way, looking west.

Cascade Way to Clark Street

Moving east from Cascade Way at MP 3.25, the rail corridor continues in a 50-foot-wide tax lot, and the top of the rail ballast is approximately 9 to 11 feet wide with a gentle slope on either side. The corridor has an urban feeling here with commercial uses and large parking lot areas directly south of and level with the corridor (see Photo 19 and Photo 20). The drainage ditch and backyards of single-family residences border the corridor to the north. The visible portions of the commercial area primarily consist of paved areas, recycling and garbage receptacles for the retail establishments, and the back walls of the buildings with little to no identification of what businesses are within them.

At approximately MP 3.5, the top of the rail ballast is narrow at about 8.5 feet wide, while the berm slopes gently down on either side and stays narrow for approximately 600 feet where it widens out to approximately 9 to 11 feet wide again.

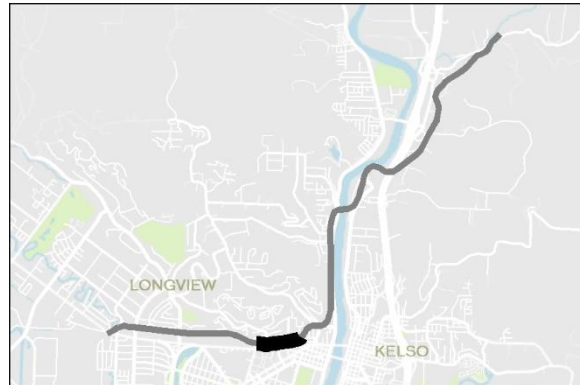


Photo 19. MP 3.25 and commercial uses adjacent to corridor, looking east.



Photo 20. Parking lots to the south of the corridor, looking east.

The corridor curves gently to the north just before the diagonal Clark Street crossing. MP 3.75 is approximately 60 feet southwest of Clark Street (see Photo 21 and Photo 22).



Photo 21. MP 3.75 and Clark Street crossing, looking northeast.

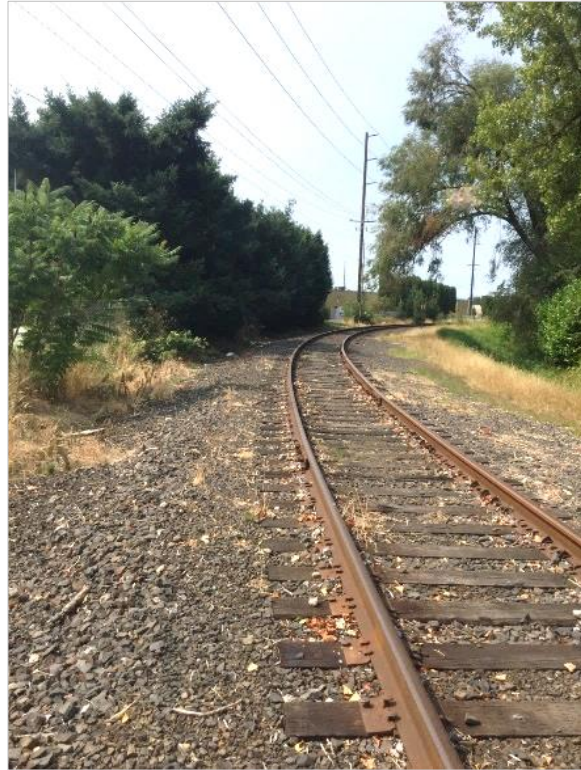


Photo 22. Corridor looking south from MP 3.75.

Clark Street to Fishers Lane

The section between Clark Street and Fishers Lane is a short stretch, entirely within the City of Kelso city limits. This section is bordered on the west by a wetland area forested with willows and other shrubs with standing water visible during the field visit in July. On the east, the corridor is bordered by a narrow band of similar vegetation and standing water behind backyards of single-family residences. The top of the rail ballast is approximately 9 to 9.5 feet wide between the standing water areas (see Photo 23).

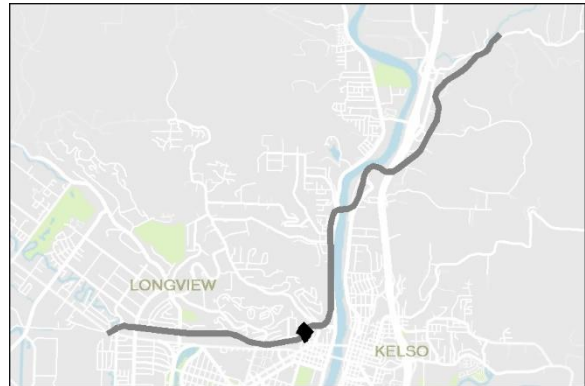


Photo 23. Corridor between standing water vegetated areas, looking north from Clark Street.

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Fishers Lane to CDID #1 Levee

The rail corridor crosses Fishers Lane at a diagonal and travels at an east-west orientation for approximately 585 feet. The corridor tax lot is irregular in this location, ranging from 50 feet to 100 feet in width. There are no trees in or along this area, and the corridor is generally flat and open (see Photo 24).

The corridor turns north near the Catlin Cemetery as the land slopes upward to the northwest of the rail. There were several areas of subsistence camping observed in the forest on the hillside below the cemetery. In this area, the tax lot is approximately 50 feet wide, and the top of the rail ballast is approximately 12.5 feet wide.

After the turn north, the tax lot widens to approximately 150 feet wide. The railroad bed cuts through a CDID #1 levee berm and then the rail splits into two tracks and is approximately 23 feet wide.

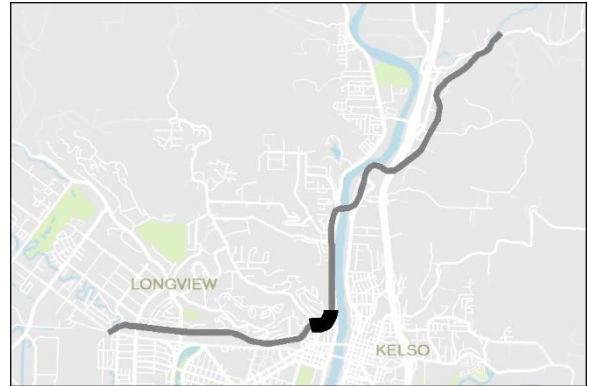


Photo 24. South side of rail corridor, looking east toward Long Avenue.

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CDID #1 Levee to Nevada Drive

This section of the corridor is a wide, mostly flat area between a wide forested slope and the Westside Highway (SR 411), which sits just above the Cowlitz River. The river can occasionally be seen across the road and through the narrow band of trees along the bank (see Photo 25).

Approximately 660 feet after MP 4.5, the rail splits into three rails, and the top of the ballast is approximately 39 feet wide at the widest point (see Photo 26). At the north end of the forested hillside, a stream crosses under the rail corridor and enters large culverts that drain to the Cowlitz River (see Photo 27 and Photo 28).

North of the forested hillside, the corridor is bordered by a single-family residential development with a fence facing the corridor. The railroad narrows again to one track, and at Nevada Drive, the corridor is elevated above the roadway. The railroad bridge was damaged and has been removed and placed on top of the tracks just south of the crossing (see Photo 29).

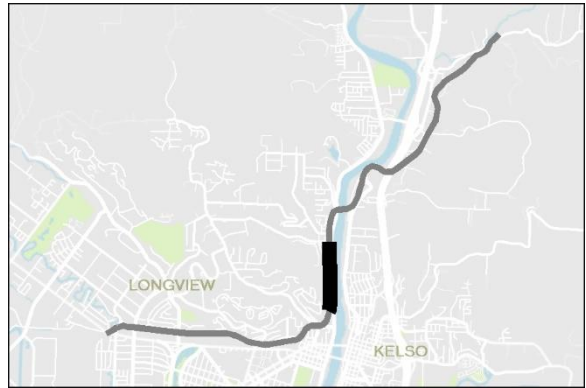


Photo 25. View of Cowlitz River, looking east.



Photo 26. Corridor with three tracks, looking north.



*Photo 27. Stream along east side of corridor,
looking north.*



*Photo 28. Culverts on east side of corridor,
looking east.*



*Photo 29. Nevada Drive with no bridge,
looking north.*

Nevada Drive to Beulah Drive

The rail corridor between Nevada Drive and Beulah Drive travels first on an elevated berm approximately 15 to 20 feet above the surrounding landscape with single-family residences on the west and small commercial businesses on the east (see Photo 30). Then the corridor travels on a 415-foot-long wooden trestle that crosses Alpha Drive and Beulah Drive with 13-foot 11-inch clearance and a 13-foot 2-inch clearance, respectively. The tax lot width between Nevada Drive and Alpha Drive is approximately 80 feet wide, and an average of 150 feet wide between Alpha Drive and Beulah Drive. The land is vacant and unimproved adjacent to the trestle on the east side, though this area appears to be used for parking for trucks and other non-railroad-related vehicles (see Photo 31 and Photo 32).

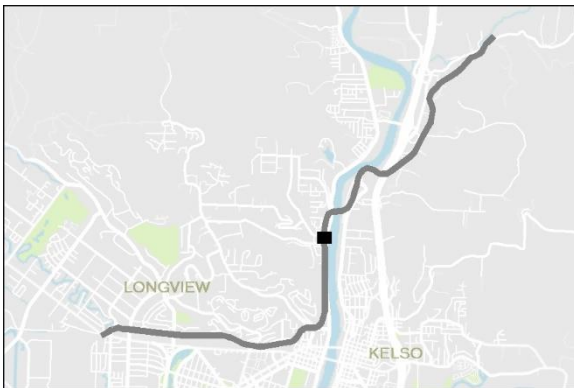


Photo 30. Rail corridor, looking north from north side of Nevada Drive.



Photo 31. Trestle at Beulah Drive, looking southwest.



Photo 32. Trestle bridge over Beulah Drive, showing vehicle parking in corridor tax lot to east, looking south.

Beulah Drive to West End Cowlitz River Bridge Trestle

MP 5.25 is approximately 310 feet north of the Beulah Drive trestle (see Photo 33). Just north of Beulah Drive, the corridor has a sloped gravel and dirt drive from the road grade up to the rail bed. The ROW tax lot widens out to approximately 220 feet and includes a vegetated slope down to Beacon Hill Drive. The top of the rail ballast here is approximately 11 to 12 feet wide and curves slightly to the east as it travels between two forested small hillsides with stretches of rail ballast up to 20 feet wide across the top.

When the rail comes out from between the trees, the corridor offers views of the river and trestle (see Photo 34 and Photo 35). There is also a waterway draining toward the river that passes through a culvert under the river that passes through a culvert under the rail berm, Beacon Hill Drive, and Westside Highway.

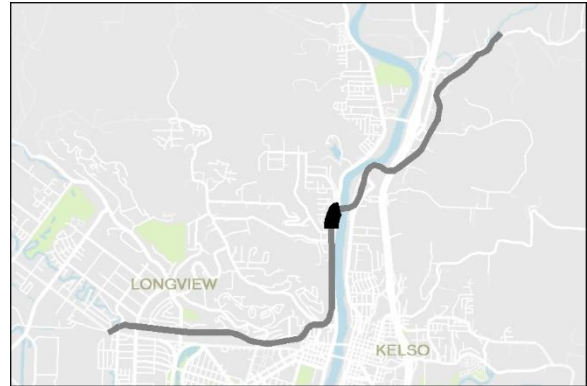


Photo 33. MP 5.25, looking south.



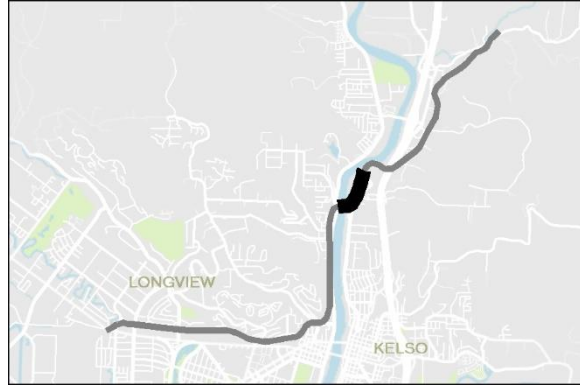
Photo 34. View of Cowlitz River from corridor, looking southeast.



Photo 35. View of trestle over Beacon Hill Road, looking northeast.

West End Cowlitz River Bridge Trestle to N. Pacific Avenue

The trestle before the Cowlitz River Bridge crosses over Beacon Hill Drive and Westside Highway (SR 411) and is approximately 340 feet long. A natural gas pipeline (owned by Nippon Dynawave) is attached to the trestle and crosses the river attached to the bridge (see Photo 36). After crossing the railroad bridge over the Cowlitz River, the corridor continues on a 0.4-mile-long trestle, partly on concrete and steel supports and partly on a wooden trestle (see Photo 39). The trestle provides views of the river and the low density residential neighborhood next to the river. The rail corridor tax lot east of the trestle is large undeveloped area that includes a dirt and gravel road that connects to N. Pacific Avenue. There are mapped wetlands and a culverted waterway within the tax lot.



Continuing north, the railbed is slightly grown over with grasses and small tree saplings, and the rail splits in two, with one track heading south down the slope adjacent to the trestle (see Photo 40). MP 6 is approximately contiguous with the south end of the N. Pacific Avenue trestle.



Photo 36. Natural gas pipeline on north side of the trestle, looking south



Photo 37. Cowlitz River railroad bridge, looking north.



*Photo 38. View of rail bridge over
Cowlitz River, looking east.*



*Photo 39. View of wooden trestle,
looking northwest.*



*Photo 40. View of double track
north of trestle with slight
vegetation growth, looking south.*

N. Pacific Avenue to I-5 Undercrossing

After crossing N. Pacific Avenue, which includes a short trestle and bridge (see Photo 41), the corridor enters a unique area. The track travels around Rocky Butte approximately elevated above the adjacent roadway with a concrete retaining wall with steep-sloping rocky and forested slopes immediately adjacent to the east. Since 2015, when Patriot Rail Company stopped running trains on the rail line, there have been at least two rockfalls completely covering the tracks and ties (see Photo 42, Photo 43, and Photo 44). The hillside is covered with chain link fencing to control and/or slow slides, but will need in-depth evaluation for additional safety measures.

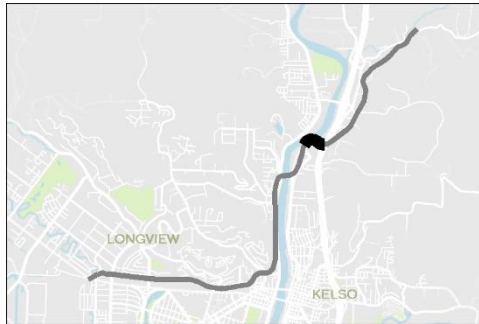


Photo 41. Bridge over N. Pacific Avenue, looking south.



Photo 42. Rockfalls on track along Rocky Butte, looking north.



Photo 43. Southern rockfall on track along Rocky Butte, looking south.



Photo 44. Northern rockfall on track along Rocky Butte, looking south.

This section, although potentially difficult for trail safety, presents views of the river and interesting topography and setting. Rounding to the north side of the butte, the trail continues on the elevated rail bed with grasses filling in the track and ties and mossy rock outcroppings next to the trail (see Photo 45). Next, the corridor crosses a bridge over a Burlington Northern Santa Fe (BNSF) Railroad line that passes through Rocky Butte in a rail tunnel. This bridge does not include railings or metal grating (see

Photo 46). Beyond the bridge, the rail bed is currently overgrown with tree saplings and other vegetation until it passes under I-5 (see Photo 47).



Photo 45. Corridor on north side of Rocky Butte with mesh rock protection, looking west.



Photo 46. Rail bridge over BNSF Railroad with I-5 overpass in the background, looking east.



Photo 47. Vegetation growth over rail with I-5 overpass in background, looking east.

I-5 Undercrossing to South End of Evergreen Road Trestle

Passing under I-5, the corridor takes a gentle turn to the northeast and passes by areas of standing water next to the rail berm. Then the corridor leaves N. Pacific Avenue and from this point northwest, travels with no vehicle road or commercial areas adjacent to the route. It becomes more rural and provides more solitude than the segments of the corridor within the urban environment (see Photo 48).

At Kitchen Drive, the railroad crosses a dirt road with a slightly angled intersection where the rail corridor tax lot is approximately 100 feet wide and has some open flat areas. Approximately 90 feet northeast of Kitchen Drive, the corridor reaches MP 6.5 and then crosses Nicholson Road, again with a slightly angled intersection, where the tax lot has irregular widths between 100 feet and 150 feet, and the top of the rail ballast varies between 10 to 12 feet wide with gentle slopes on either side and vegetation growing along the sides and sparsely within the tracks (see Photo 49).

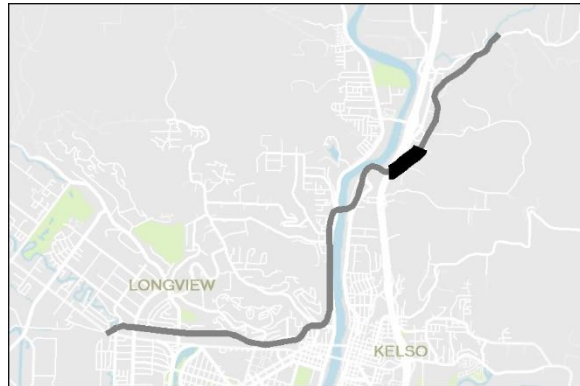


Photo 48. Corridor moves away from N. Pacific Avenue, looking north.



Photo 49. At-grade crossing on Evergreen Spur Road, looking south.

Approximately 320 feet north of Evergreen Spur Road, there is a section of rail berm supported by rail ties on a downward slope. The slope appears to need additional stabilization (see Photo 50). The top of the rail ballast is between 9 to 12 feet wide (see Photo 51). At MP 6.75 the corridor turns further north and travels between tree-lined hillsides until the hill slopes down to a creek and Evergreen Road.



Photo 50. West side of rail berm with rail tie retaining wall, looking south.



Photo 51. Rail corridor at MP 6.75, with chopped wood in the foreground and fallen trees across the track in the background, looking south.

Evergreen Road Trestle to Holcomb Road

An approximately 200-foot-long wooden rail trestle crosses the creek and bridges over Evergreen Road, and the tax lot width in this area is 165 feet (see Photo 52). On the north side of Evergreen Road, the rail sits on top of a high berm with steep slopes on either side, though only the east side of the slope is exposed with a large area of riprap to support the slope (see Photo 53).

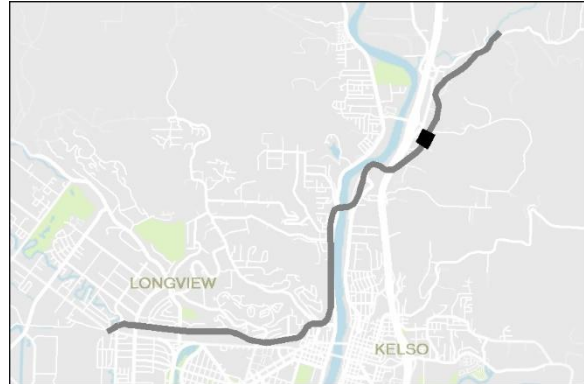


Photo 52. Top of trestle over an unnamed creek and Evergreen Road, looking north.



Photo 53. Riprap on slope on east side of rail berm, looking east and down.

Moving north, the corridor is overgrown with blackberry, sapling trees, and other vegetation for approximately 215 feet (see Photo 54). The corridor then travels north to the undercrossing below Holcomb Road where the adjacent surrounding land is 20 to 25 feet above the rail elevation, and the adjacent hillsides are thickly forested (see Photo 55).



Photo 54. Overgrown stretch of track, looking north.



Photo 55. Rail corridor beneath Holcomb Road, looking south.

Holcomb Road to Guier Road

North of Holcomb Road the track bends to the north further, passing through a densely forested area providing shade along the corridor. At Misty Mountain Road, the tax lot widens to 180 to 200 feet and includes a side dirt access road (see Photo 56). Misty Mountain Road intersects the railroad with a slight angle. The corridor feels exposed to the sparsely located adjacent residences, and there is evidence of residents accessing and using the corridor (see Photo 57).

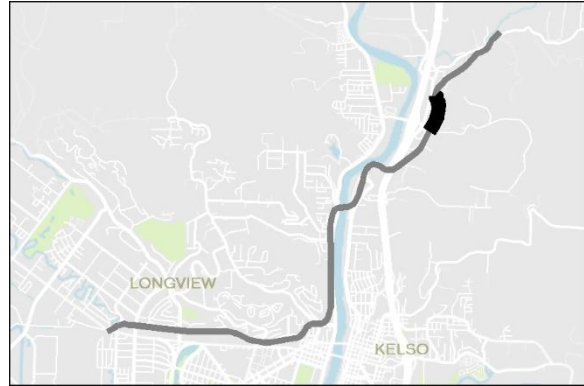


Photo 56. Side road and wide area of rail corridor at Misty Mountain Road, looking northwest.



Photo 57. Large woodpile in rail corridor, looking south.

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Guier Road to Milepost 8.5

The corridor crosses Guier Road, a perpendicular dirt and gravel road, at grade and continues with a curve to the northeast. MP 7.5 is about 290 feet beyond Guier Road. The corridor is bordered by trees and high shrubs, and the top of the rail ballast is approximately 11 feet wide, (see Photo 58). The corridor is uniform along this section with brief, occasional glimpses of residences to the west. In some areas, the rail berm is elevated with steeply sloping sides beyond the vegetated borders of the corridor. Near MP 8.0, the corridor is approximately level with an adjacent residential property. There is no vegetation or topographical boundary between the rail and the property, making both uses very visible (see Photo 59).

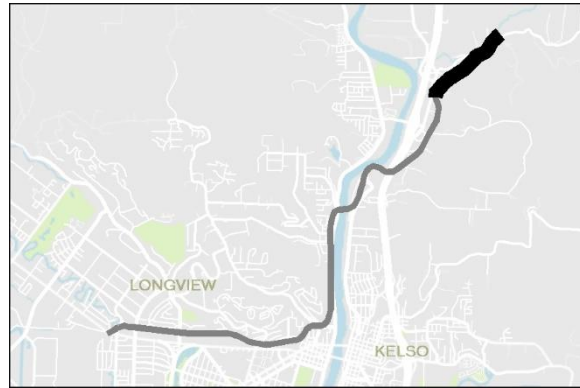


Photo 58. MP 7.5 adjacent to the corridor, looking south.



Photo 59. Corridor with adjacent residential development near MP 8.0, looking south.

North of this property, the corridor enters a densely forested, shady area as it approaches the South Fork of Ostrander Creek (see Photo 60). A 200-foot-long rail trestle and bridge crosses the South Fork of Ostrander and Ostrander Road (Photo 61 and Photo 62). The corridor travels beyond Ostrander Road for approximately 850 feet to MP 8.5 (see Photo 63). This location on the trail is surrounded by shady, dense forest. Beyond this location, the rail tax lots are owned by Weyerhaeuser Corporation.



Photo 60. Corridor heading to Ostrander Road through a shaded area, looking north.

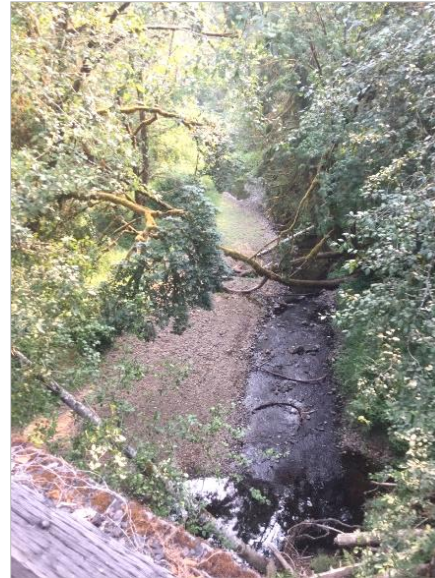


Photo 61. View from rail trestle over the South Fork of Ostrander Creek, looking east.



Photo 62. Bridge crossing Ostrander Road, looking south.



Photo 63. Milepost 8.5 at the northern terminus of the Patriot Woods Rail corridor, looking north.

3. VALUATION SUMMARY

Epic Land Solutions prepared a preliminary cost estimate for the rail corridor taking ownership type, known easements, and encumbrances and improvements into consideration. The 7-mile-long rail line is made up of eight tax lots totaling approximately 95 acres. The land value per tax lot was determined by the zone and use of property adjacent to each tax lot. Adjacent properties were broken into four broad categories: residential (\$25,000/ac), rural or agricultural (\$4,000/ac), commercial (\$50,000/ac), and industrial (\$25,000/ac) based on comparable sales. The value per acre applied to each rail tax lot is a weighted average of these categories weighted by the length of linear feet adjacent to the rail tax lot.

Known easements consisted primarily of utility and access easements and were considered to discount the value per acre of a rail property by 5 percent. Improvements on each tax lot were valued separately and include bridges, trestles, crossing gates, and track and ties. Based on the STB filings, Patriot Rail Company is expected to remove the rail track and ties, so that value has been removed from this estimate (see Appendix E for the full preliminary cost estimate). Table 5 shows the tax lots, acreage, price per acre, improvement value, and preliminary cost estimate.

Table 5. Preliminary Value Estimate

Tax Lot Number	Acres	Value Per Acre	Easement Discount	Adjusted Value per Acre	Improvements	Preliminary Value Estimate
R039212	1.17	\$ 27,500	0%		\$ 10,000	\$ 42,175
R045222	39.92	\$ 4,500	5%	\$ 4,275	\$ 310,399	\$ 481,057
R043757	14.88	\$ 50,000	5%	\$ 47,500	\$ 307,260	\$ 1,014,060
R033868	24.65	\$ 22,000	5%	\$ 20,900	\$ 70,000	\$ 585,185
R045217	1.23	\$ 50,000	5%	\$ 47,500		\$ 58,425
R045226	9.90	\$ 25,000	0%			\$ 247,500
R045227	1.20	\$ 25,000	0%			\$ 30,000
R012228	1.76	\$ 25,000	0%			\$ 44,000
Total					\$ 697,659	\$ 2,502,402

Source: Epic Land Solutions

This value estimate is not an appraisal. It is a potential net liquidation value for the Patriot Woods railroad parcels within the corridor from MP 1.5 to 8.5 and does not include negotiation costs, title transfer fees, appraisal fees or other legal fees. It will be instrumental for the County and its potential trail partners as they consider feasibility of the rail to trail project. Improvements included in each tax lot can be found in Appendix D.

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4. PRELIMINARY FEASIBILITY

Potential rail to trail feasibility depends on many factors. This section of the Feasibility Report considers important opportunities, constraints, and risks presented by the rail corridor's baseline conditions, discusses alternative implementation strategies, identifies trail development costs based on different trail scenarios, and discusses potential funding sources for the Cowlitz Rail to Trail project.

4.1 Assessment of Opportunities, Constraints, and Risks

Trails function as places to experience the outdoors, opportunities to exercise, a way to get from one place to another, a refuge from busy motor vehicle traffic, space to connect with neighbors, and an attraction for visitors. The Patriot Woods Columbia and Cowlitz rail corridor is ideally situated to accomplish all of these functions. At the same time, each of these functions of a trail would also encounter constraints and risks for trail development, management, and use within the rail corridor. This section addresses the opportunities, constraints, and potential risks for the Cowlitz Rail to Trail project.

Access

Within Longview the trail corridor can be accessed via local road intersections providing direct access from four neighborhoods:

- Columbia Valley Gardens neighborhood at 32nd Avenue and 30th Avenue
- Northlake/Corman neighborhood from 30th Avenue and Pacific Way
- Downtown from 15th Avenue/Cascade Way
- Cascade/City View neighborhood from Cascade Way Clark Street, and Fishers Lane

The trail would add significant active transportation options for local residents to access jobs, shopping, medical services and to meet other daily needs. In addition to these direct neighborhood connections listed above, because the trail corridor is within 200 feet to 0.15 mile from and parallel to Ocean Beach Highway (SR 4), a major east-west route in Longview, it is accessible from all parts of the City and surrounding areas. The northern portion of the corridor, though only directly accessible from smaller County roads, is at most only 1.4 miles driving distance from an I-5 exit. This easy local and regional accessibility provides an opportunity to easily serve both local and regional users.

In addition to getting to the trail corridor, it is important to consider what destinations the trail provides access to. Because the corridor passes adjacent to two commercial centers in Longview, users, including commuters, could access these centers from their neighborhoods on foot or by bike via the trail and local roads instead of using Ocean Beach Highway (SR 4). These centers include grocery stores, large big-box retail stores (such as Lowe's Home Improvement), fitness gyms, restaurants, and other services.

Trails can also be good ways to access schools. There is one elementary school within the 1/8-mile Study Area, Catlin Elementary, near MP 4. Outside of the Study Area, but within 1/2 mile, there are six schools, including elementary, middle schools, high schools, and Lower Columbia College. Connections to these schools could be made using the trail in combination with intersecting roads.

Public access to the rail corridor as a trail can also be seen as a risk by adjacent property owners. Some property owners could be concerned that trail users may trespass onto or otherwise damage their

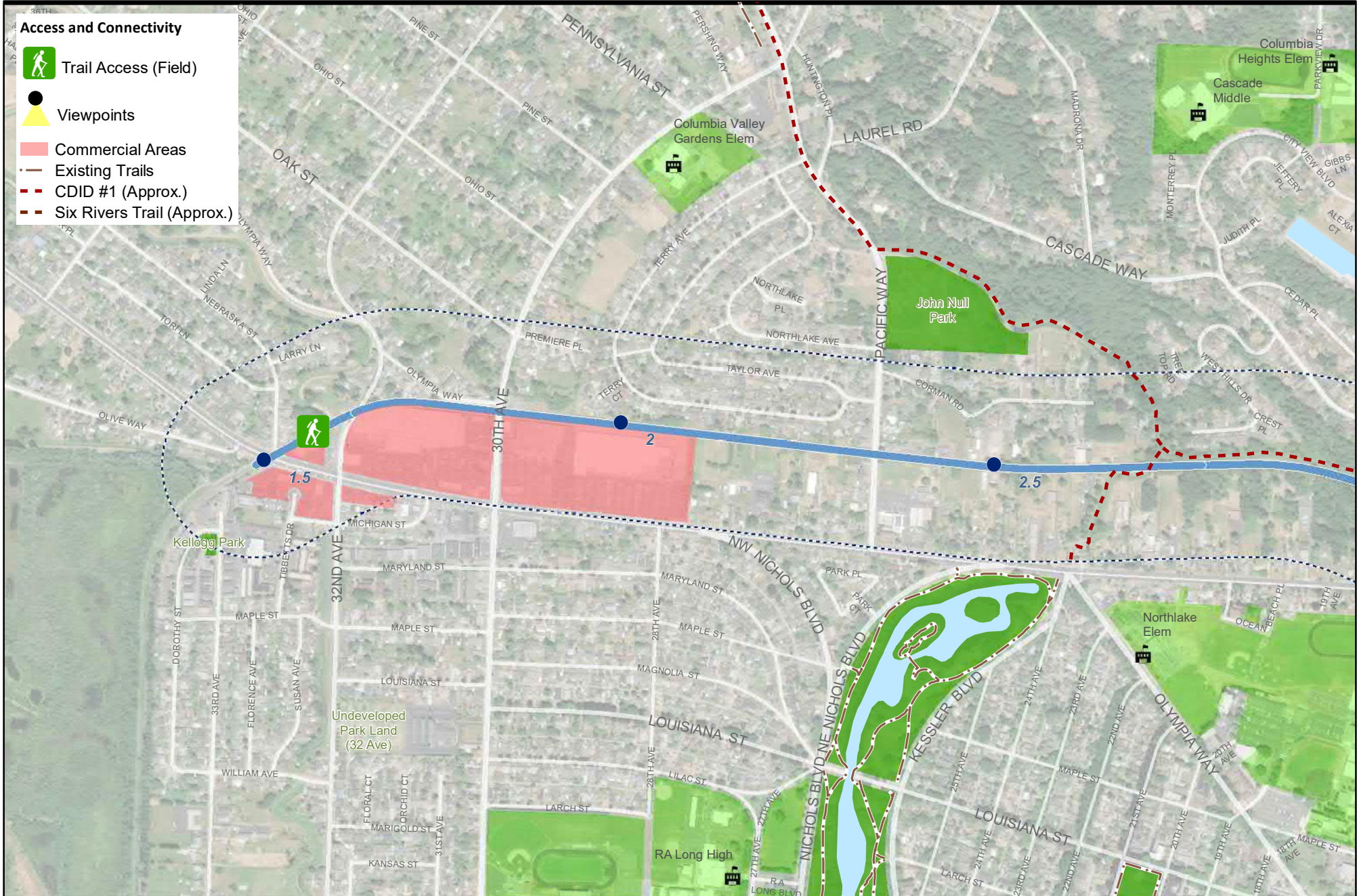
property. They may also have concerns that allowing public access could lead to increased homeless camping along the trail or the presence of trail users on the trail at all hours of the day. Where the trail is open and visible from road intersections or commercial areas, this is less of a concern than where the trail will have long stretches of limited visibility from outside of the trail. While the logic is not always accepted by neighbors, improvements that allow more public access increase the number of eyes on the corridor and can often deter unwanted activities.

Trailhead Opportunities

Potential trailhead opportunities were identified using field observation along with review of railroad tax lot and adjacent tax lot data. Urban sections of trails can be accessed wherever the trail intersects with a public roadway. These access points are important and provide local users flexibility and require little more than signage for wayfinding. Regional users need additional facilities commonly found at trailheads. Trailhead access options vary widely and can include parking areas, agreements and marking for shared parking with nearby facilities, signage and mapping, restrooms (from the portable variety to permanent buildings), and more. This portion of the study evaluated the potential for trailhead opportunities that could be developed with very minor facilities or have potential for larger, more intensive facilities. Rail corridor crossings where the railroad tax lot is wide and the ground is relatively level and clear, present the best sites for larger more developed trailheads and are important to identify early. Potential trailhead locations are described in Table 6 and shown on Figure 3. A 7-mile-long trail would not need trailheads at all of the locations discussed below, and options for minimal development, low impact development, and shared parking and other facilities can be evaluated as trail planning continues.

Table 6. Potential Trailhead Locations

Milepost	Crossing Road	Comments
1.5	Ocean Beach Hwy (SR 4)	Tax lot is 50 feet wide, rail corridor is flat. Potential for one-way drive with head-in parking from SR 4 to 32nd Ave. as trailhead with parking and trail amenities.
3.25	Cascade Way/ 15th Ave.	Tax lot is 50 feet wide, rail corridor is flat. Gravel access drive to CDID #1 drainage facility on the north side of rail and gravel access drive to private property on the south side of rail create a wide open area. Potential for many trail amenities.
4.0	Columbia Heights Rd./ Long Ave.	Tax lot is 70 feet to 108 feet wide to the east and west of this intersection, and the rail corridor is flat. Potential for parking, signage, and other trail amenities.
5.25	Beulah Dr.	Tax lot is 120 feet to 175 feet wide north and south of Beulah Dr. South of Beulah Dr., there is a flat undeveloped portion of the tax lot adjacent to a trestle portion of the railroad, and north of Beulah Dr., the tax lot is vegetated and sloping, with a gravel access road leading up to the rail. Both of these areas could potentially be developed for parking, signage, and other trail amenities.
6.5	Kitchen Dr. or Nicholson Rd.	Tax lot is 100 feet wide at Kitchen Dr. and 125 feet wide at Nicholson Rd. These crossings are approximately 460 feet apart. The Kitchen Dr. crossing is closer to N. Pacific Ave. and an adjacent tax lot is owned by WSDOT, so there may be potential for an access easement for parking and other trail amenities. Nicholson Rd. has a wider tax lot area, but is slightly more of a slope and is closer to residential uses.
7.25	Misty Mountain Rd.	Tax lot is 100 feet to 200 feet wide near Misty Mountain Rd. This width presents the opportunity for parking, signage, and other trail amenities.
8.0	Near Ostrander Rd.	County-owned tax lots exist adjacent to Ostrander Creek and Ostrander Rd with one adjacent to the rail corridor (see Map Book Fig. 4). These tax lots could be evaluated as trailhead close to the end of the trail, but would need a trail crossing for Ostrander Creek.



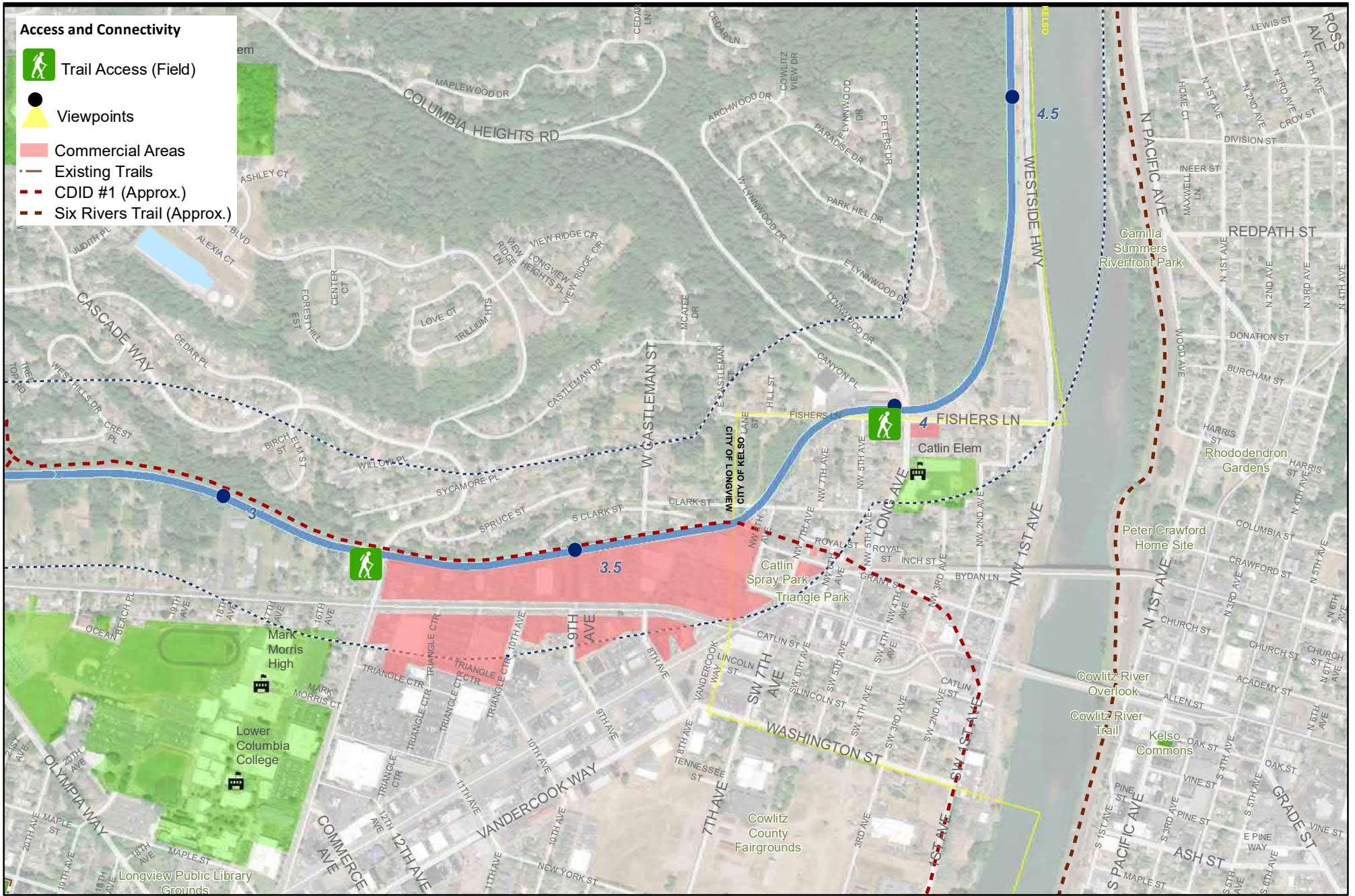
- Access and Connectivity**
- Trail Access (Field)
 - Viewpoints
 - Commercial Areas
 - Existing Trails
 - CDID #1 (Approx.)
 - Six Rivers Trail (Approx.)

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- Milepost
- Rail Trail Centerline
- Rail Trail Study Area (1/8th-mile)

Figure 3
 Access and Connectivity
 Map 1 of 5

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix



- Access and Connectivity**
- Trail Access (Field)
 - Viewpoints
 - Commercial Areas
 - Existing Trails
 - CDID #1 (Approx.)
 - Six Rivers Trail (Approx.)

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- Milepost
- Rail Trail Centerline
- Rail Trail Study Area (1/8th-mile)

Figure 3
Access and Connectivity
Map 2 of 5
 COWLITZ RAIL TO TRAIL

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

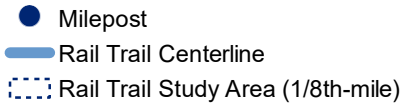
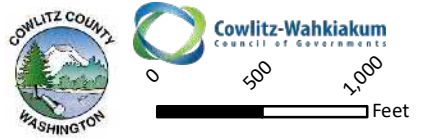
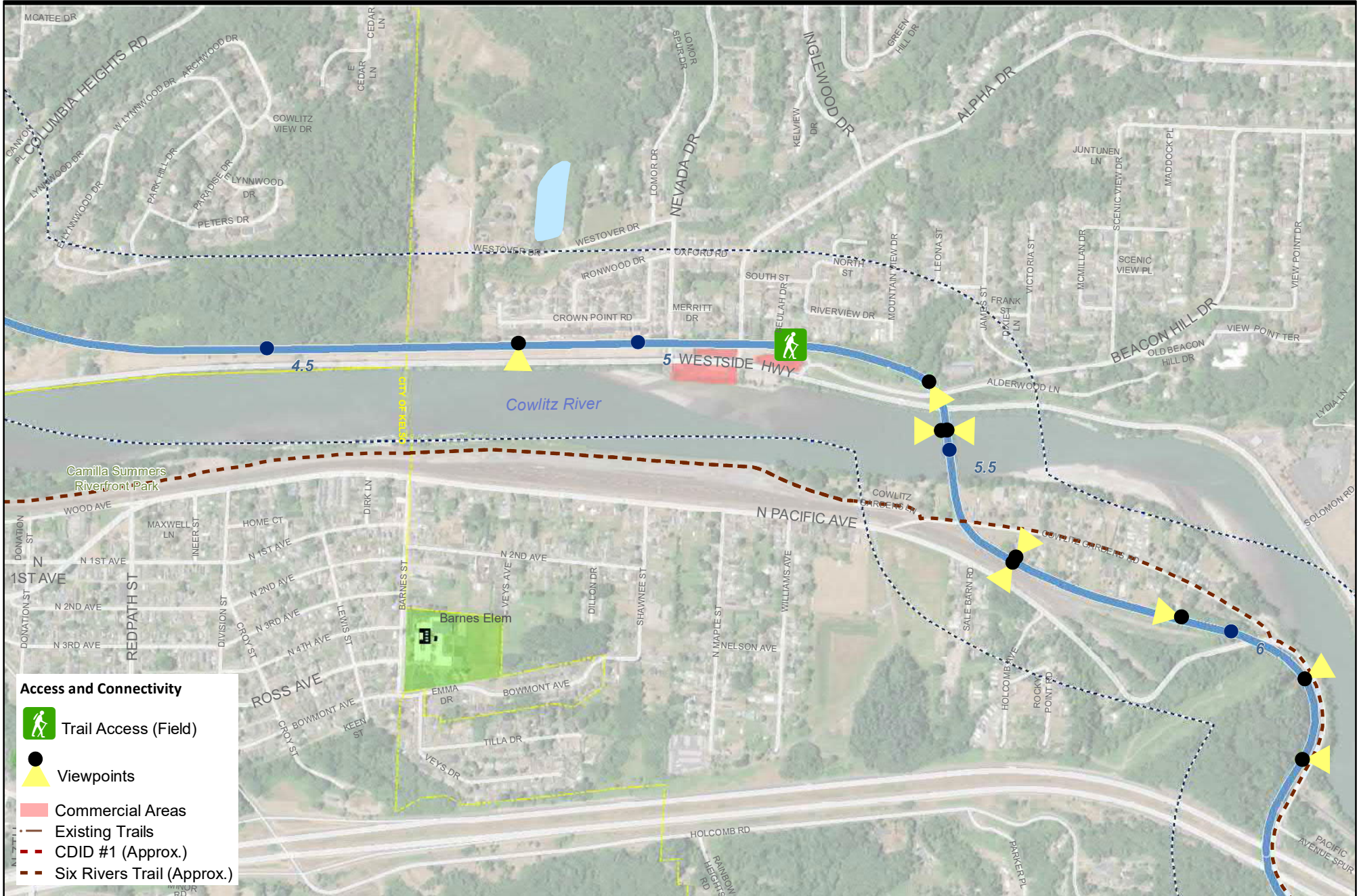


Figure 3
Access and Connectivity
Map 3 of 5
COWLITZ RAIL TO TRAIL

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

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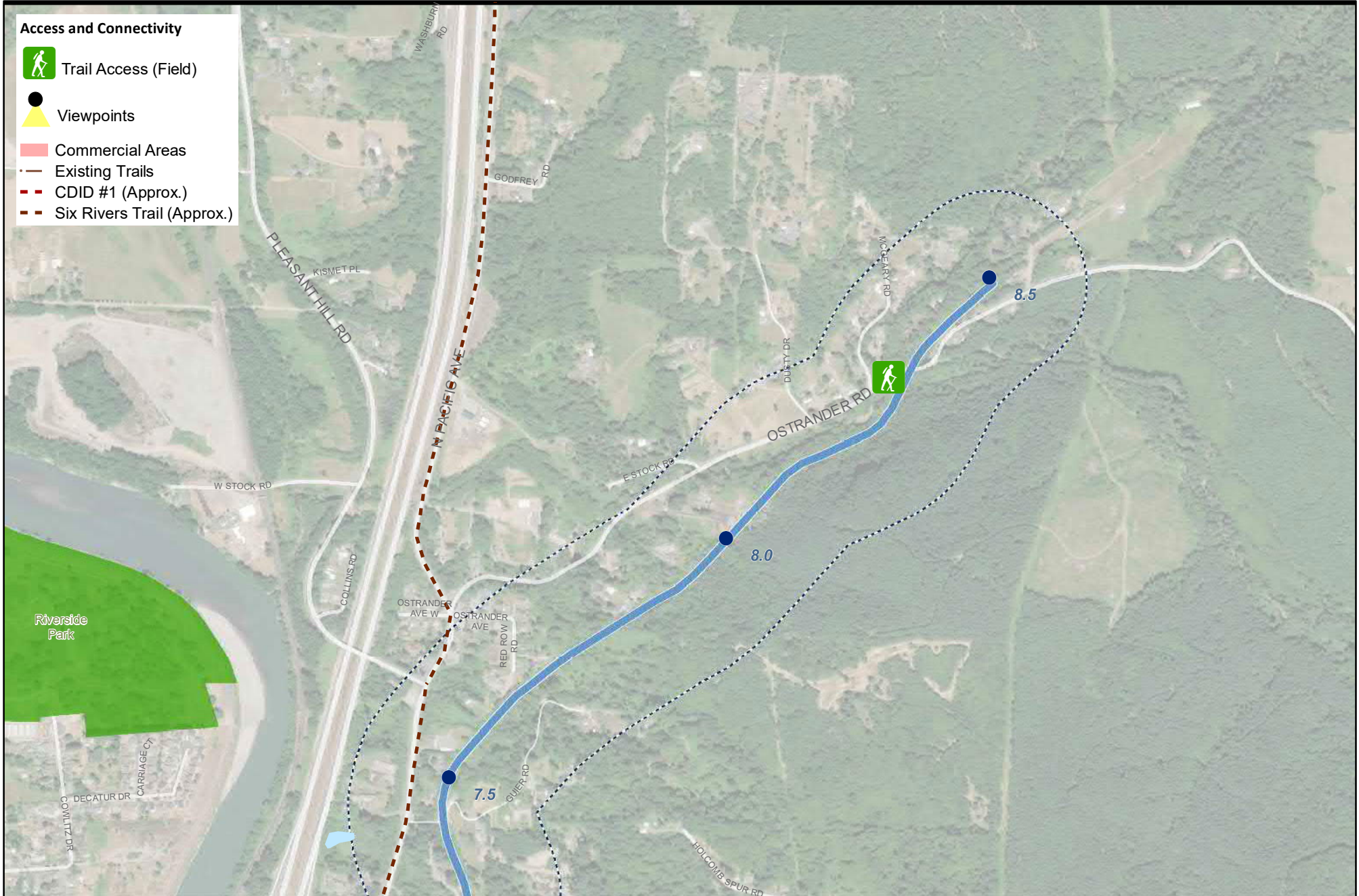


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Figure 3
Access and Connectivity

Map 4 of 5

COWLITZ RAIL TO TRAIL



- Access and Connectivity**
- Trail Access (Field)
 - Viewpoints
 - Commercial Areas
 - Existing Trails
 - CDID #1 (Approx.)
 - Six Rivers Trail (Approx.)

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0 500 1,000 Feet

- Milepost
- Rail Trail Centerline
- Rail Trail Study Area (1/8th-mile)

Figure 3
 Access and Connectivity
Map 5 of 5
 COWLITZ RAIL TO TRAIL

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

Connectivity

Trails are used more recreationally when they provide connections to other pedestrian and bike pathways and other recreation resources, because users can create a variety of routes to connect to recreation experiences and destinations. The Cowlitz Rail to Trail project could connect to planned and potential recreational trails.

Lake Sacajawea

The City of Longview Parks and Recreation Comprehensive Plan 2016 identifies proposed trails, one of which is a connection from the north end of Lake Sacajawea Park to the proposed rail to trail project using the CDID #1 drainage ditch referred to as the Lake Bypass Ditch. The proposed route utilizes the land and berms adjacent to the CDID #1 network of drainage ditches, and would be a good connection for the rail to trail project opening significant connections throughout the community for active transportation. Connecting to Lake Sacajawea Park gives users the opportunity to walk or bike on the 3.5-mile loop trail, access neighborhoods surrounding the park, or access R.A. Long High School from the park. The potential connection along the CDID #1 network could require property or easement acquisition to make a complete connection between the rail to trail project and Lake Sacajawea, and would need to cross Ocean Beach Highway (SR 4) at an intersection with three roads: SR 4, Olympia Way, and Kessler Boulevard. Introducing a trail crossing at a three-road intersection could present risks and would require coordination with the Washington State Department of Transportation (WSDOT).

John Null Park

The proposed CDID #1 trail network would also connect the rail to trail project to John Null Park, approximately 0.3 mile northwest along the proposed CDID #1 route. This park has five baseball diamonds, a playground, and four tennis courts.

Potential CDID #1 Trail

In addition to providing routes to connect to Lake Sacajawea Park and John Null Park, the potential CDID #1 trail would encircle the City of Longview if fully implemented, providing access to the Mint Valley Golf Course and connecting to Barlow Point and Seventh Avenue Park.⁴

Potential Six Rivers Trail

CWCOG is planning for a potential north-south trail through Cowlitz County starting in the north at the Lewis County line and ending in the south at the Clark County line.⁵ Preliminary maps show the Six Rivers Trail travelling adjacent to I-5 on Bond Road and N. Pacific Avenue. This route would parallel the Cowlitz Rail to Trail alignment from Ostrander Road to the railroad bridge crossing the Cowlitz River, and is an opportunity to provide an off-road segment to the Six Rivers Trail by co-locating the trails for this segment. Even if the trails did not co-locate, users could easily connect from west Longview to the north-south Six Rivers Trail via the Cowlitz Rail to Trail project which would expand potential destinations to all the cities in Cowlitz County along the I-5 corridor.

⁴ Refer to Longview Parks & Recreation Comprehensive Plan, Section 4.7 Proposed Trails available at: <http://mylongview.com/modules/showdocument.aspx?documentid=3278> for a conceptual map this trail.

⁵ Refer to CWCOG map of the Six Rivers Trail available at: http://www.cwcog.org/documents/Six_Rivers_Trail_Overview_000.pdf.

Trails also provide alternative methods for the work force and students to commute from home to work or school. This trail would connect the community’s residential neighborhoods with commercial centers that are centers of employment and education within the City of Longview. When both commuting users and recreational users are active in a trail system, the time of day and day of week usage is spread out throughout the week and is not just limited to primarily weekends.

Natural Resources

Where the trail corridor passes through or adjacent to waterways or natural forested areas, there is an opportunity to provide education about natural resource stewardship, both through sensitive trail design and through educational interpretive signage about the resources.

Enjoyment of the natural areas through views is also a key feature in some areas (see Figure 3). The Cowlitz River is an important natural resource and can be seen from the rail corridor along Westside Highway (SR 411), while crossing the Cowlitz River rail bridge and trestle, and from Rocky Butte. The Cowlitz River is a Shoreline of Statewide Significance in the Cowlitz County Shoreline Master Program (SMP), and preserving views of the shoreline through public use of the corridor as a trail supports the goals and policies found in SMP Section 4.4, Conservation and Restoration, to “Preserve the scenic and aesthetic qualities of shorelines and vistas.”

The areas observed on the trail corridor with standing water and those mapped as wetlands could be opportunities for wetland restoration with boardwalks over the wetlands instead of a solid-surface trail with surface water flows handled with culverts. Maintaining surface water flows in a natural state is preferred from the aspect of water quality.

The natural setting along the trail in one area also create a safety risk to trail users and present a trail management challenge. Where the past and recent rock falls on the west side of Rocky Butte have covered the railroad, additional rockfall prevention and frequent monitoring of that section of the trail will be necessary.

Partnerships

Trails with regional significance spanning multiple jurisdictions and serving a variety of populations of users require collaboration and partnerships with many agencies and organizations. These partnerships are vital to different aspects and phases of trail development including concept planning, outreach to user groups, trail design, funding for design and construction, and long-term trail monitoring and management.

The Cowlitz Rail to Trail project is at the very early stages of planning, and with the Rail to Trail Working Group is already involving the City of Longview, CWCOG, Cowlitz County Parks and Recreation Board, and representatives from Cowlitz County departments including the Assessor’s Office, Public Works, and Building and Planning. Potential additional partners could include the following:

- **CDID #1** – Coordinate on future trail connections and management needs for drainageways adjacent to the trail in Longview.
- **City of Kelso** – Coordinate for the small section of trail in Kelso.
- **Southwest Washington Regional Transportation Planning Organization (SWRTPO)** – Coordinate with planned regional transportation initiatives and projects.
- **City of Longview and Cowlitz County Law Enforcement and Emergency Services** – Identify security, safety, and emergency access concerns and solutions.

- **City of Longview or Cowlitz County** – Consider potential for a paid or volunteer Bicycle/Pedestrian Coordinator.
- **Neighborhood Associations** – Generate interest, ideas, and opinions about the future trail.
- **Pathways 20/20 & Cowlitz On the Move** – Promote health benefits of trail use.
- **Kelso Longview Chamber of Commerce** – Coordinate with business groups for commercial areas along the trail.

Corridor Management

Patriot Rail Company has continued to maintain the rail corridor after all train operations ceased in 2015; however, access above the rock falls at Rocky Butte has limited the types of maintenance possible. Because train operations ended only 3 years ago and maintenance has continued since then, the rail bed and corridor are in good condition with the exception of a few areas of vegetation overgrowth, two rock falls, and one damaged bridge. This means when Cowlitz County or another agency completes the purchase of the corridor, the immediate management needs can be focused more on maintaining the current condition than on large areas of repair.

The maintenance considerations will include controlling vegetation growth, inspecting and maintaining operation of all culverts, and enforcing access control. There is evidence of homeless camping near MP 3, MP 4.1, MP 4.25, and MP 4.4. These are all wooded areas west of the Cowlitz River. On the east side of the river, although no campsites were observed, corridor usage either by adjacent property owners or by the transient population was observed. At MP 7.2, there is a large pile of chopped wood and tarps covering and alongside the track, at MP 7.6 a homemade rail cart was observed on the tracks and appeared to be used to haul goods up and down the track (see Photo 64), and at MP 8 there is a ramp built from the adjacent property down to the railroad. There is a potential for an increase in similar uses after the rail corridor becomes public land, so consistent monitoring and management approaches will be necessary. Periodic signage can be a simple and cost-effective method for reminding the general public and neighbors of the public ownership.



Photo 64. Unofficial track cart near MP 7.6.

4.2 Implementation Strategies

The Cowlitz Rail to Trail project may not be built as a single project. A phased approach to development can help secure funding, focus outreach to user groups, and serve local needs sooner than would otherwise happen if construction waited until planning and funding for the full trail was complete. Phasing would be influenced by the availability and timing of funding. Other factors would include changing jurisdictional authority and priorities and evolving regional and local plans. The building of specific trail sections, types, and structures could also change phasing priorities over time. Phasing concepts should be periodically reviewed and adjusted based on changes over time. This section presents phasing criteria as a starting point to guide trail planning work and cannot be fully applied until additional technical analyses and public involvement have occurred.

Selecting sections for phased trail development can be based on several criteria including section complexity, independent functionality, and need or opportunity.

Phasing Criteria

Complexity

This criterion includes relative overall cost compared to other trail sections, the need for multiple special structures (bridges, tunnel, etc.), length of the section, and probable complexity of permitting.

Independent Functionality

This criterion asks the question whether a given section can function adequately and meet a distinct transportation or recreation need *independent* of other sections of the trail being built. Examples are trail sections that connect trailheads or a section that connects to another destination, e.g., a public park or commercial center. Conversely, a possible trail section that simply dead-ends and leaves trail users nowhere to go until additional sections are planned or built, would not suggest its selection for a near-term priority.

Need/Opportunity

This dual criterion is not applied in the same manner as complexity or independent functionality.

- Need – Circumstances where, although a section may be relatively inexpensive or easy to permit, other alignments or improvement options are available and there is no pressing need to immediately proceed.
- Opportunity – Circumstances where construction funding availability, prior design/engineering, or even other shovel-ready projects in the vicinity of the trail could significantly accelerate the development of and/or reduce the cost of trail elements.

Potential Segments

On a broad scale, the Cowlitz Rail to Trail project could be broken into three segments based on potential user experience and surroundings. Within these segments individual sections can be evaluated against the criteria described above. The potential segments are shown on Figure 4 and are described below.

Longview Segment

The Longview Segment is approximately 2.5 miles long starting at Ocean Beach Highway (SR 4) and ending at Long Avenue (at approximately MP 4). There are opportunities for trailheads at both the start and end points. This potential segment is the most urban and passes by or connects to commercial areas and accesses schools and parks. Opportunities for additional trailheads within this segment also exist and would be good additions.

River Segment

The River Segment is an approximately 2.5-mile-long trail roughly parallel to the Cowlitz River, including the dramatic crossing of the river on the railroad bridge and long wooden trestle. Users would have views of the river for much of this segment, though no direct opportunities for river access are available from the trail. There is good opportunity for a trailhead facility at MP 4 at Long Avenue. Trailhead opportunities at the north end are not immediately clear. There is limited space for a trailhead or limited

access location at Kitchen Drive (approximately MP 6.5). Better trailhead access may be available at Nicholson Road based only on tax lot width, but Kitchen Drive is adjacent to N. Pacific Avenue and WSDOT ROW, so could have opportunities for shared access easements. Opportunities for additional trailheads within this segment also exist and would be good additions.

Ostrander Segment

The Ostrander Segment is the most rural and offers users more solitude and a feeling of riding or biking through farm and forest land. This segment would be approximately 2 miles long, starting at MP 6.5 and ending at MP 8.5, north of Ostrander Road. Trailhead location at the beginning and end of this potential segment is not immediately clear (see above discussion regarding Kitchen Road for the south end). At the north end, at MP 8.5, the trail ends due to the change in ownership from Patriot Rail Company to Weyerhaeuser. Users could access the trail up to that point, but there is no option for a trailhead or connection to another existing trail facility right at MP 8.5, so users would have to turn around and head back down the trail. There are two potential options for trailheads, one at MP 8.0 and one at Misty Mountain Road at approximately MP 7.25 (see Figure 3 and Table 6). There is a potential for a future connection with the planned Six Rivers Trail near Ostrander Road, but that trail may be an on-road biking facility in that location and not ideal for other users. Thus, more consideration about how this segment of the trail could function will be necessary.

Alternative Phasing – Surface Progression

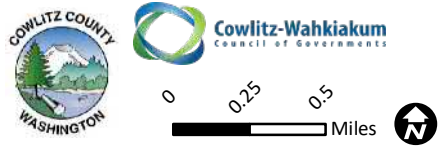
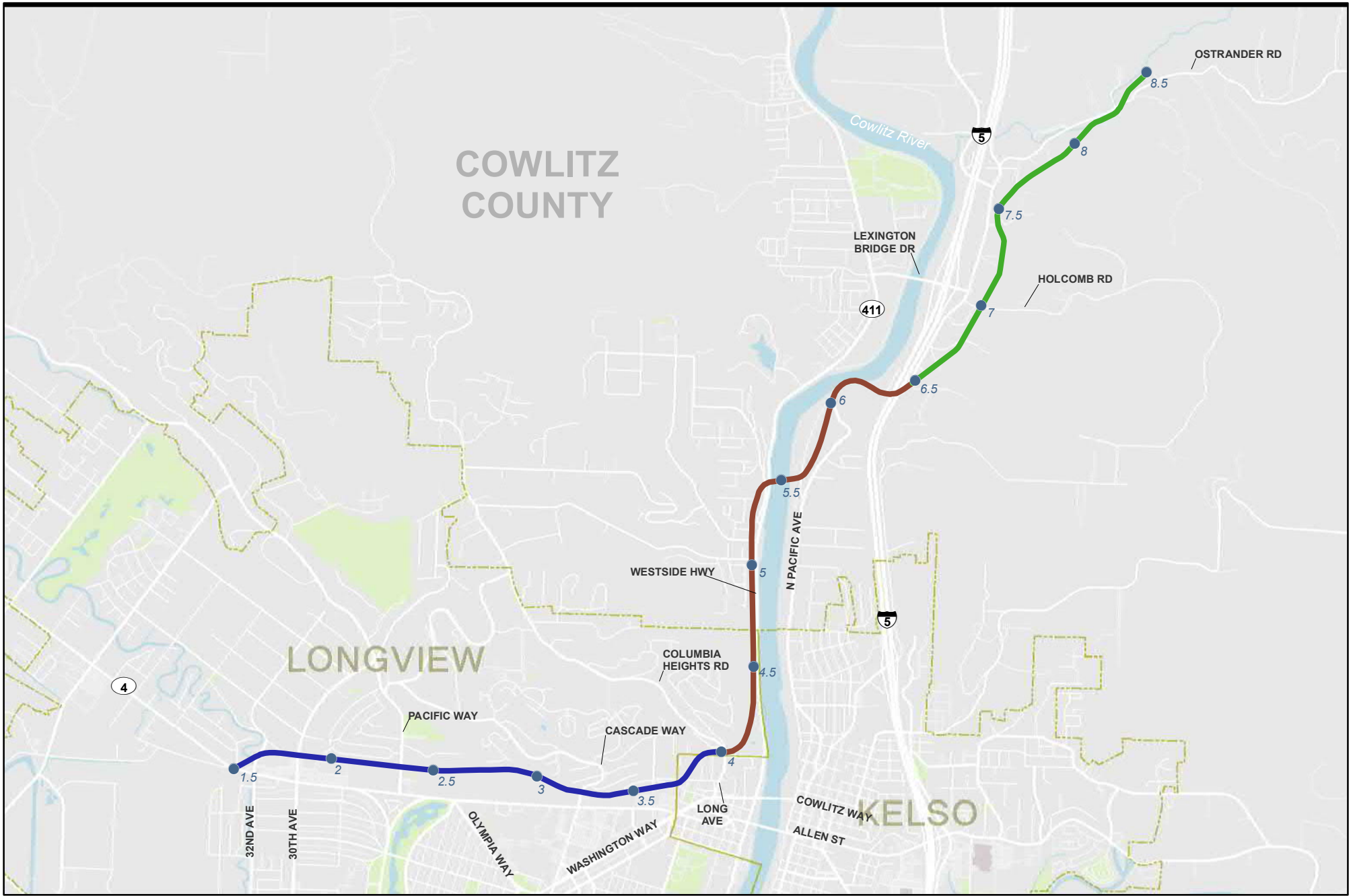
Phasing can also be implemented by staging the types of physical improvements to a given section or segment. The most common approach to this sort of staging or phasing is incremental upgrades to trail surfaces. A variety of surfaces can be used to mitigate costs and to get users out on a trail to help build awareness and provide trail benefits that can translate into support for higher cost upgrades to a paved multiuse trail.

Non-paved surfaces could be used as staged or permanent solutions – graded rail ballast, gravel, natural surface/compacted soil, wood chips, etc. These surfaces could, however, preclude or challenge use by narrow-tire road bikes and mobility conveyances, and would also require more maintenance and more frequent replacement over time. Also, use of non-paved surfaces, even as an interim solution, may preclude state/federal multiuse trail construction funding.

Caution should be exercised in assuming development of a minimally improved trail pathway would be as simple (and relatively inexpensive) as removing rail infrastructure and grading the bed/berm. Removal of rails and ties and ballast grading will leave an uneven rail bed/berm. More significantly, the removal of ballast rock will tend to destabilize the rail bed or berm surface, even if the resulting soil surface is compacted. Ballast should be re-graded after rail and tie removal, but the resulting surface would be rough.

Variations in trail surface width can also be used in phasing of a trail, but the incremental cost to go back later and widen trails is usually not cost-effective when compared to initial development to the full planned width.

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- Longview Segment
- River Segment
- Ostrander Segment
- Milepost

Figure 4
Potential Segments

Source: Mapbox, OpenStreetMap, Cowlitz County, Parametrix

4.3 Trail Development Costs

Unit costs for different trail types were developed based on prior experience with, and construction cost documentation for, similar trails.⁶ The direct experience of Parametrix trail planners and engineers in Washington and Oregon and the experience of government agencies that plan and build trails were referenced. These agencies include Tualatin Hills Park and Recreation District, Metro, City of Portland, other local municipalities in Washington and Oregon, Oregon Department of Transportation, Oregon Parks and Recreation, King County Parks (WA), and WSDOT.

The following estimates primarily assume the entire trail will be 14 to 16 feet wide including a 10- to 12-foot-wide paved path with 2-foot-wide shoulders to accommodate pedestrian, bicycle, and other mobility device users. The cited estimates below for various features are construction cost only. The percentage factors for design/engineering and permitting outlined below have to be added to these construction costs.

Once a trail alignment and type analysis is conducted, and linear trail pathway lengths and trail types or features are determined, these unit costs can be multiplied by estimated GIS-based linear distances or the number of each given type or feature. Costs associated with modifying or replacing rail bridges and trestles for trail purposes will be based on future individual assessments of each bridge or crossing.

All the following factors and unit costs were given a peer review by a professional engineer not associated with this trail planning study.

Trail Pathway

Trail pathway construction cost estimates are based on the accepted standard bicycle/pedestrian cross section for a multiuse trail. In scenarios with a paved surface, the assumed section is a 10- to 12-foot-wide asphalt pathway with 2-foot-wide gravel shoulders. Bridges, trestles, and boardwalks are assumed to be 14 feet wide. Sections with ballast or gravel surfacing are assumed to be an average of 10 feet wide.

Trail Pathway on Rail Berm

\$225 / linear foot

Rail berm height and the width of the rail berm crown varies across the study area. At the time of full design/engineering costing, this may mean that the widening factor for some trail sections may prove less (or more) expensive than our average cost multiplier. The average construction cost multiplier is

⁶ All trail cost multipliers are based on circa 2016–2018 factors. In recent years, bid prices on multiuse trail construction projects have been escalating in the range of 5%+ annually. Estimated cost multipliers should therefore be fully re-evaluated in advance of securing construction funding.

Final engineered-level trail alignments and structures and associated construction costs will be determined by preliminary and final design/engineering, actual permitting requirements, and construction factors and other contingencies at the time of development.

Since the timing and phasing of trail construction remains an open question, and market escalation could slow or reverse, the application of an annual cost index is not useful.

all-inclusive – berm repair and widening, removal and ballast, re-grading and asphalt paving with a width of 10 to 12 feet.

Trail Pathway using Retaining Walls

\$335 / linear foot

Assumes a 3-foot-high average wall height, plus flexibility in siting within the widened berm with rails removed. There may be some narrow and/or constrained areas (by streams, wetland or abutting development, for instance) where retaining walls would be preferable. The average construction cost multiplier is all-inclusive – retaining wall, berm repair and widening, removal and ballast, regrading and asphalt paving with a width of 10 to 12 feet.

Trail Pathway using Existing Ballast

\$10 / linear foot

This option assumes re-grading of existing ballast only with no paving. The condition of the rail berm may require additional repairs and improvements. A ballast surface can also be very rough and uneven and may limit accessibility by the full range of potential trail users.

Additional Trail Pathway Surface/Type Estimate

- Gravel surface *\$150 / linear foot*
- Street-adjacent pathway *\$250 / linear foot*

Trail Structures

Modified Rail Bridges

Once an analysis of existing bridges and trestles is completed, bridge modification costs can be based on site-specific factors such as length and condition of the bridge/trestle. Modifications typically include any needed structural repairs, removal of rail infrastructure, installation of new decking, and safety railings.

New Trail Bridge

Costs would be based on site-specific factors such as bridge length, features crossed, and user accessibility. All new bridges are assumed to be prefabricated.

Boardwalks

\$800 / linear foot

Boardwalks may not be required, but a cost multiplier is included anticipating that future alignment and type analysis may find areas where such structures might be useful. Boardwalks are costed as steel and concrete structures, not wood.

Culverts

\$125,000 / each

Culverts conveying stormwater under older rail berms are often found to be undersized and/or in deteriorated condition. Therefore, culvert replacement should be programmed into any overall cost estimate. A more robust assessment should be completed as part of future alignment evaluation or engineering. Costs may vary considerably based on the length and capacity of the new culvert. It may

also be desirable to replace culverts with small bridges for water quality, flow, and fish passage purposes.

Street Crossings/Routes

Existing Intersections

\$375,000 / crossing

Collector and arterial street at-grade intersection crossings requiring new signals or beacons.

Shared Use

\$2,000 / every 1,000 linear feet of roadway (\$2 / linear foot)

Pavement markings and safety signing for shared use of public street by motorized vehicles and bicycle/pedestrian traffic.

Local Street Crossings

\$5,000 / crossing

Assumes a lump sum for simple safety improvements at each local street crossing in the Study Area. Improvements could include high-visibility pavement markings, warning or stop signage, and minor re-grading and surface improvements. Not all local streets are paved and in some cases major re-grading and intersection paving could be required. Such major re-grading/paving is not included in this local street crossing lump sum.

Collector and Arterial Crossings

Midblock street crossing costs include a refuge island. Midblock crossings are differentiated by a flashing beacon (collector) or a user-activated signal (arterial). All crossings could be upgraded to user-activated signals at the time of trail construction if traffic volumes so dictate.

- Midblock collector *\$375,000 / crossing*
- Midblock arterial *\$400,000 / crossing*

Trail Amenities

\$5,000 / every 1,000 linear feet

Wayfinding and informational signs, benches, trash containers, etc. Multiplier is a flat amount and may vary depending on the number and location of amenities. This cost multiplier may appear to be high but, for example, weather- and vandal-proof benches can run into \$1,000s per bench.

Trailheads

A wide variety of features and treatments can be applied to trailhead design and construction. A trailhead can be as simple as a small gravel parking lot, portable restroom facilities, and simple directional and informational signing. Trailheads can also include paved parking lots, permanent restroom facilities, informational signing and kiosks, bicycle storage equipment, and picnic areas. Vehicular parking lots can also vary considerably in size (and cost), as can the requirements for sufficient land to site the trailhead. By way of example, during planning for the Salmonberry Trail, an 84-mile-long

multiuse rail to trail extending from the west side of Portland Oregon to the Oregon Coast, three levels of trailhead improvements were estimated:

- 10- to 15-space gravel parking lot with limited features \$75,000
- 30+ space gravel parking lot with limited features \$150,000
- 60 to 100 paved parking spaces with equestrian spaces and full features \$300,000 to 500,000

Design/Engineering and Contingencies

Trail design and engineering, and construction contingencies, are estimated as percentage of construction cost:

- Preliminary engineering 15 percent
- Construction engineering 10 percent
- Construction contingencies 20 percent

Permitting

Trail permitting is estimated as a percentage of the construction cost, with an additional calculation applied for areas where environmental permitting is anticipated to be especially complex, such as through wetlands or across streams and sloughs. "Base" permitting is embedded in the preliminary engineering (PE) percentage (see above). Base permitting includes land use approvals, construction permits, etc. "Complex" environmental permitting is assumed as a separate 5 to 10 percent of construction cost.

Permitting for the re-decking of existing rail bridges/trestles is assumed to involve only base permitting. Permitting for new trail bridges may also only involve base permitting, *if* bridges are prefabricated off-site and/or can be installed by placing or constructing bridge support structures outside of ordinary high water or any other regulated water body boundaries.

4.4 Potential Funding Sources

Because trail planning and construction is costly, most cities, counties, or other government agencies seek outside funding sources, such as grants. Table 7 identifies potential grant sources for the Cowlitz Rail to Trail project.

The County could also consider a variety of additional funding partnerships. For example, trails offer enormous public health benefits, and public health agencies and medical institutions may be interested in partnering. Additional grant opportunities related to public health may be available.

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Table 7. Potential Sources of Grant Funding

Name of Grant	Administered by	Description	Typical Projects	Grant caps	More Information	Best Cowlitz Application
Recreational Trails Program (RTP)	Washington State Recreation and Conservation Office (RCO)	The Recreational Trails Program provides funds to rehabilitate and maintain recreational trails and facilities that provide a backcountry experience for motorized and non-motorized uses.	<ul style="list-style-type: none"> • Clearing overgrown brush and fallen trees from trails • Repairing trail damage from floods and fires • Replacing bridges and drainage structures 	\$150,000 for each general project	https://www.rco.wa.gov/grants/rtp.shtml	Best for corridor management once the rails are removed and in the more rural area east of I-5.
Washington Wildlife and Recreation Program (WWRP)	RCO	Provides funding for a broad range of land protection and outdoor recreation, including park acquisition and development, habitat conservation, farmland and forestland preservation, and construction of outdoor recreation facilities.	<ul style="list-style-type: none"> • Protecting wildlife habitat and recreation opportunities • Developing regional trails • Building waterfront parks 	Past applications appear to range up to \$2.4M.	https://www.rco.wa.gov/grants/wwrp.shtml	Grant categories include trails, water access, riparian protection, and more.
Land and Water Conservation Fund (LWCF)	RCO	Provides funding to preserve and develop outdoor recreation resources, including parks, trails, and wildlife lands.	<ul style="list-style-type: none"> • Renovating community parks • Building new skate parks, tennis courts, swimming pools, and trails • Protecting wildlife habitat • Building athletic fields 	\$500,000 State program	https://www.rco.wa.gov/grants/lwcf.shtml	Need to check status because Congress allowed this program to lapse. Land must be kept in recreation use in perpetuity.
LWCF Outdoor Recreation Legacy Partnership Program	RCO	Provides grants to acquire or develop public lands for outdoor recreation in areas with 50,000 or more people, or in areas with too few parks and significant populations of people who are poor, minorities, or young. Each state may submit two proposals for national competition.		\$720,323 Legacy program	https://www.rco.wa.gov/grants/lwcf.shtml	Acquisition of railroad hardware, trestles, or yards is not eligible. Land must be kept in recreation use in perpetuity.
Pedestrian Bicycle and Safety Grant	WSDOT	Enhance safety and mobility for people who walk or ride bikes. The next call for projects will be in 2020.	<ul style="list-style-type: none"> • Installing bicycle and pedestrian counters • Developing regional trails • Improving signalized intersections, crosswalks, bike lanes and sidewalks 	Past selected projects range up to \$1.5M	https://www.wsdot.wa.gov/LocalPrograms/ATP/funding.htm	Cowlitz Rail to Trail project will have local and regional significance and will serve pedestrians and bicyclists.
Safe Routes to School Grant	WSDOT	Improve safety and mobility for children by enabling and encouraging them to walk and bicycle to school.	<ul style="list-style-type: none"> • Developing and administering surveys and educational program • Developing regional trails • Improving signalized intersections, crosswalks, bike lanes and sidewalks 	Past selected projects range up to \$1.7M	https://www.wsdot.wa.gov/LocalPrograms/SafeRoutes/funding.htm	Project must be within two miles of an elementary, middle, or high school. Next call for applications is in 2020.
Transportation Alternatives Program (TAP)	Cowlitz-Wahkiakum Council of Governments (CWCOG)	Provides federal funding for program and projects defined as "transportation alternatives," including pedestrian and bicycle facilities. Also provides funding for recreational trails planning, studies, acquisition and construction.	<ul style="list-style-type: none"> • Developing or improving pedestrian and bicycle facilities • Developing turnouts, overlooks, viewing areas • Developing trailheads 	Varies by jurisdiction size	http://www.cwcog.org/documents/2013TAPPProgramObjectives.pdf	Applicable to many parts of trail development.

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5. FUTURE PLANNING

5.1 Near-Term Actions

In developing the Cowlitz Rail to Trail project, several near-term actions are recommended including technical analysis, public involvement and coordination, and corridor management.

Technical Analysis

This Feasibility Report provides an inventory and description of baseline conditions for the trail corridor, but more in-depth analysis is needed in a few key areas, potentially before completion of the corridor purchase.

- **Structural Evaluation** – The bridge and trestle structures in the corridor should be evaluated by a structural engineer to identify any necessary repairs, replacements, or relocation and considerations for resurfacing for trail usage.
- **Environmental Corridor Study/Phase 1 Environmental Site Assessment** – A Phase I Environmental Site Assessment is an investigative report that identifies potential or existing environmental contamination liabilities at a site. The report is prepared following American Society for Testing and Materials standards. The environmental professional preparing the report will include a review of historical records of the site (aerial photos, fire insurance maps, city directories, etc.), a review of environmental government database records as provided by the US EPA and state environmental agency, an interview with current and/or past site owners, a site reconnaissance, and review of city, county, and state property records (past ownership, environmental liens, permits, etc.). As part of this Feasibility Report, Parametrix has conducted a site reconnaissance and reviewed government database records.
- **Utility Due Diligence** – All culverts and utility crossings and equipment within the corridor should be inspected to identify any necessary repairs and conflicts for potential construction.
- **Property Appraisal** – The value estimate provided in this Feasibility Report is a preliminary estimate and is not an appraisal. An appraisal is typically necessary as part of any acquisition grant funding and may be required by Patriot Rail Company prior to a purchase agreement.
- **Safety Analysis** – This analysis should include three components: (1) Detailed evaluation of each trail intersection with a roadway for pedestrian safety, (2) User safety within the trail (e.g., rock fall area, low visibility areas), and (3) Mitigation of safety issues before the trail is open to any users.

Consistency with Planning Documents

As a regional trail, the Cowlitz Rail to Trail project needs to be a part of long-range planning within Cowlitz County, Longview, Kelso, CWCOCG, and the state. This is important not only for coordination but for potential funding sources that require a project to be in adopted plans prior to granting funding. A review for consistency should include at least the following documents:

- Cowlitz County, Longview, and Kelso
 - Comprehensive plans
 - Parks and recreation plans
 - Active transportation plans
 - Shoreline master programs
- CWCOG
 - Regional Transportation Plan
 - Bicycle/pedestrian assessment updates
 - Cowlitz County regional trails plan updates
- Washington State
 - Recreation and Conservation Office (RCO) – State Trails Plan

Public Involvement and Coordination

When planning for a new trail, connecting with the public early and often is important for several reasons. Knowing what kinds of activities the public is excited about; the features of a trail they would prefer; their concerns about location, visibility, security, and safety; and their ideas for connections will lead to better trail planning, construction, and long-term use. To facilitate the best outcome, designing a public outreach and involvement plan is a key near-term action. This step could include:

- **Public Survey** – Identify interested user profile, preferences, locations, concerns, potential frequency of use, potential time of day, day of week, and seasonal use preferences.
- **Open Houses** – Invite residents, organizations, and businesses to discuss the trail and provide feedback.
- **Project Website** – Provide a place the public can find maps and planning documents, and where they can find out what’s happening with the project.

Most agencies and organizations providing grant funding for trail acquisition and/or development require applicants to demonstrate how the public has been involved and provide an assessment of community support. These near-term public involvement steps along with the agency coordination and partnerships described in Section 4.1 of this Feasibility Report will assist in demonstrating community support.

Corridor Management

If Cowlitz County becomes the owner of the rail corridor, the County will need to assume all management responsibilities and should have a management plan ready for implementation. Corridor management could include signage and potentially fencing at limited locations to restrict access, vegetation control including manual removal and potentially controlled spraying, culvert inspection and maintenance including debris clearing, and periodic inspection of structures, culverts, vegetation, and areas subject to homeless camping.

5.2 Long-Term Planning

After transfer of ownership or control of the rail corridor is complete, the next steps involve detailed analysis and design to carefully plan all aspects of the trail. This section discusses these steps to provide a guide for long-term planning for the Cowlitz Rail to Trail project.

- **Alignment and Phasing Planning** – Concept planning to confirm the existing alignment of the railroad is the best approach for all portions of the trail. This baseline report did not identify any areas where it seems necessary to create a new route, but a careful consideration with connections to other trails and destinations in the area should be undertaken to finalize the alignment. Additionally, as discussed above, there are multiple options for how to phase development of the trail. Choosing a phasing plan that works for trail development partners will facilitate the best future for the trail.
- **Trail Design** – This step includes comprehensive trail design engineering covering surface types, width, and slope; associated railings; bridge improvements; maps and wayfinding; interpretive signage; intersection crossing design features; locations, type, and design of benches, fencing, and lighting; and many other details. This work should consider user accessibility consistent with ADA standards, the aesthetic design and compatibility with surrounding neighborhoods, and safety and ease of use while creating a signature look and feel for the trail.
- **Permitting Needs Analysis** – Review of potential permitting requirements should occur simultaneously with trail design so that if any complex issues arise, early coordination can occur with permitting agencies and the design can evolve on an iterative basis resulting in a permittable and constructable design that also meets the needs of the project.
- **Cost Estimate of Design** – The cost estimate can also occur on an iterative basis, developing the first construction cost estimate at 30% design and refining it in tandem with further refinement of the trail design. The planning-level cost estimates provided in Section 4.3 of this Feasibility Report provide a starting point when considering different design options.

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6. REFERENCES

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Appendix A

Inventory Sources

Appendix B

Map Book

Appendix C

Hazardous Materials Memorandum

Appendix D

Rail Corridor Tax Lots

Appendix E

Corridor Preliminary Valuation

