Westside Trail Feasibility Study: An Analysis of Opportunities and Constraints

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Westside Trail Feasibility Study
An Analysis of Opportunities and Constraints

A Planning Workshop project completed June 2007 in fulfillment of requirements for the Master of Urban and Regional Planning degree at Portland State University

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An Analysis of Opportunities and Constraints

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Executive Summary

Following a 225-foot wide Bonneville Power Administration (BPA) power line corridor, the proposed Westside Trail will travel from the Tualatin River, north for 17 miles, to the Willamette River. The trail has the potential to be either a well-traveled commuting and recreational trail or an under-used strip of asphalt that passes, unnoticed, by suburban backyards and parking lots. It is the intent of this report to point the trail's master planning process towards the former outcome. This report will provide an informed analysis of how the trail may best connect to and serve existing and future residents, communities, retail centers, and employers. Because the Westside Trail has been identified as a high priority for Metro’s Natural Areas Bond Measure acquisition program and land purchases are likely to begin relatively soon, now is a critical time to consider the trail's opportunities and constraints.

Trail Goals and Objectives

The primary goals of the trail are to provide enjoyable outdoor recreation opportunities and viable alternative transportation options to the region's residents and employees. In order for the trail to meet these goals, it must provide greater connectivity with existing and proposed trails and parks, transit stops and stations, schools, employment centers, neighborhoods, and retail areas. Consistent with the attributes of a regional trail, the trail should be safe and inviting to people of all ages and abilities, allowing for limited and controlled interactions with automobile traffic and following a continuous, easily-navigated route.

Opportunities and Constraints

The proposed Westside Trail passes through densely populated communities that are currently underserved by safe bicycle and pedestrian routes. The BPA corridor provides a rare chance to create a major regional trail in an area that is largely built out. Aerial photos of this 17 mile long swath of green surrounded by urban uses provide a compelling picture of this unique opportunity. The existence of this corridor also provides the opportunity to negotiate with a very limited number of land owners to assemble a substantial trail corridor that links together many parks, schools, employers, and retail areas.

If the trail is to meet the above goals, it will not suffice to merely pave a path the length of the power line corridor. The trail must cross numerous busy roads, the MAX light rail line, a private railroad line, and traverse steep slopes and wetlands. In crossing these barriers, the trail's goals must be remembered. For instance, if the trail is diverted so that it only crosses roads at existing intersections, the result will be a trail that lacks continuity, renders bicycle and pedestrian uses as secondary to automobile uses, attracts low numbers of users, and ultimately fails to serve its stated purposes.
Recommendations

Two primary concerns are increasing the trail's bicycle and pedestrian connectivity with surrounding communities and ensuring that the trail's intersections with major roads are safe. These considerations are critical to the trail's ability to support Metro's 2040 Growth Concept and, on a more practical level, for securing Metropolitan Transportation Improvement Program (MTIP) funds.

In order to achieve this success, Metro must take an expansive view of the trail. Whether or not the trail is well-used, depends not only on how the corridor itself is designed, but how surrounding communities relate to the trail. The Westside Trail must be part of a larger network of transit, bike lanes, and sidewalks. Bike racks must be readily available at likely trail destinations such as schools, employers, and retail areas. Attractive park facilities, natural areas, and trail head staging areas must be located along the trail corridor. Many of these elements already exist in some form. However, there are many opportunities for improvement.

Trail Segment Prioritization

Given the length of the proposed trail, it is likely that its completion will take a number of years. A strategic approach should be taken in prioritizing which trail segments to complete first. For the purposes of analysis the corridor was divided into four major segments and subsequently divided into 15 sub-segments. The four major segments are numbered from 1 in the south, at the Tualatin River, to 4 in the north, at Forest Park. It is recommended that Segment 2, in Beaverton, be completed first as it serves the largest number of users and has the potential to serve as both a commuting route and as a recreational facility. It serves areas with higher-than-average concentrations of low-income residents, minorities, and children. It also connects several major recreational facilities and employers.

Segment 1 should be prioritized next after Segment 2. Segment 1 has significant concentrations of both elderly residents and children, and connects several natural features including the Tualatin River and Bull Mountain. Segments 3 and 4 should be built last because of their low population densities, sensitive habitats, steep slopes and, consequently, an unresolved trail alignment. However, it should be noted that Segments 3 and 4 contain areas that are urbanizing (North Bethany) or are likely to urbanize. Metro should stay abreast of such developments in order to ensure that trail alignment opportunities are not missed and that the trail is included as a prominent part of nearby community planning.

Land Acquisition

Preliminary analysis indicates that, with the exception of the section that passes through the Nike campus, BPA owns fee simple title to the entire power line corridor. There are a number of unrecorded agricultural easements dating back to 1940 when BPA condemned the power line corridor. The power line also traverses a number of open spaces maintained by homeowners associations. It is likely that these homeowners associations hold easements for park use of the corridor. Metro will need to work with these property owners and homeowners associations to ensure them that increased public access will not be detrimental. These initial contacts will be critical to easing any fears associated with increased public access to what many of these land owners consider to be their backyards. In addition to contacting the above potential easement holders, Metro will need to negotiate with BPA for a trail easement.
Finally, the passage of the 2006 natural areas bond measure and the creation of the Westside Trail give Metro and local park districts the opportunity to expand their park systems and to provide connections between new and existing parks. Using RLIS data and site visits, a number of properties have been identified for possible public acquisition. These properties may serve a variety of purposes from athletic fields to trail head staging areas to natural areas. The results of this inventory are included in the full report.

Safe Street Crossings

The means to create safe street crossings will necessarily vary by location. Generally, it is recommended that safe street crossings be provided at the intersection of the trail with a street. This is at odds with Beaverton’s current policy that trails should only cross streets at existing street intersections. Diverting the trail to an existing intersection will likely result in a disjointed, confusing, and under-used trail. Specific street crossing conditions are noted in the trail segment reports, included herein. However, it is worth mentioning critical crossings and proposed solutions:

Canyon Road / TV Highway - Because of traffic volumes and the raised grade of Canyon Road, a pedestrian/bike tunnel is recommended at this location.

Burlington-Northern Railway and MAX track crossings - Freight trains park on the tracks for extended periods of time, blocking pedestrian or bike crossings. A pedestrian/bike bridge is recommended at this location.

Highway 26 - A pedestrian/bike bridge will be necessary for this crossing.

Trail Construction Funding

Metropolitan Transportation Improvement Program (MTIP) funds are a primary source of funding for trail construction. However, representatives of Tualatin Hills Parks and Recreation District (THPRD), having had experience meeting the federal eligibility standards for MTIP funds, indicate that following federal standards may double trail costs. These added costs are a result of federally mandated construction practices, bid award processes, right-of-way acquisition procedures, and project permitting. These requirements substantially increase the amount of paperwork and construction time for trail projects. Given the varied geography of the Westside Trail corridor, it will not always make sense to follow federal standards. In particular, this may be the case in some of the steeper sections of the trail such as Bull Mountain, Mt. Williams, and the ascent into Forest Park.

MTIP funding is aimed, generally, at congestion relief, alternate modes (bikes, pedestrian, transit), support of 2040 Growth Concept land use goals, safety hazard correction, and cost effectiveness. Extra consideration is given to projects that create safe routes to schools. Much of the report that follows addresses these criteria. It is recommended that these MTIP criteria also be kept in mind during the trail’s master planning process.

Habitat Areas

The primary environmental concerns along the trail corridor are the numerous wetlands that it crosses (throughout trail segments 1, 2, and 3) and sensitive habitat areas in the Forest Park’s North Management Unit (trail section 4). Because of these sensitive habitat areas and the presence of steep slopes, it is likely that the trail will not follow the power
line corridor through Forest Park. Other routes through the park will need to be considered.

It is recommended that the wetlands along the trail be considered an asset. These areas are often the last vestiges of natural habitat in an otherwise urbanized setting. They present a great opportunity for restoration and enhancement projects and environmental education. The trail must, however, avoid degradation of these wetlands. In some areas, it may be possible for the trail to steer clear of wetlands while still remaining in the power line corridor. In other locations, the trail would have to be substantially diverted outside the corridor to avoid the wetlands. Under such circumstances, the use of an elevated boardwalk through the wetland is one way to provide access to nature while minimizing disturbance. The wetlands associated with Bronson Creek in section 21 are a good example of such an opportunity.

As mentioned above, a number of vacant lots have been identified along the trail corridor. Many of these lots are wetland areas. The public acquisition of these properties may be desirable in some cases to ensure their long-term protection.

Pearls

The identification of points of interest (pearls) along the trail will lend identity to the trail. Signage should be used to direct trail users to these pearls or to provide additional information about the pearl. Pearls may include, for instance, historic sites, natural areas, connections to other trails, and parks. A number of pearls are identified in the report. Some of the more notable pearls include the Tualatin River National Wildlife Refuge, Tualatin Hills Nature Park, Bronson Creek wetlands, scenic viewpoints from Bull Mountain and Mt. Williams, Metro's Ancient Forest property, the Willamette River, and a potential information kiosk relating the history of the BPA and the legacy of hydroelectric projects.

Partnerships and the Surrounding Community

Though much can be done within the trail corridor to create an inviting trail, the trail's connections to the surrounding community are perhaps even more important. A quick glance at Metro's "Bike There" map depicts surrounding communities that lack bicycle connectivity. Efforts to improve the safety of existing bike lanes and to site new bike lanes and paths must continue in order for the Westside Trail to fulfill its vision. The creation of complementary safe routes will serve to link schools, retail areas, employment centers, and neighborhoods to the Westside Trail.

In addition to the improvement of surrounding bike routes, much more can be done to increase the likelihood that the trail will be well-used. A survey of bike parking at schools and retail areas throughout the study area found both sites with ample bike parking and sites with serious deficiencies. Alliances between Metro, school districts, and private business should be pursued to make the trail's destinations more bike-friendly.

Much can also be done with Metro's public and private partners to publicize the existence of the Westside Trail itself and bicycle/pedestrian connections thereto. None of the schools within the study area have a Safe Routes to School program. There is a great opportunity for the Westside Trail to fill this void and spur these schools to implement such programs. These safe routes to schools and school-based programs to encourage physical activity are critical to forwarding the trail objective of improving public health.
Opportunities for public/private partnerships abound. There are a number of major employers within close proximity of the trail. Included here are Nike and Columbia Sportswear. It is likely that many employees of these companies will want to commute to work via the trail. Metro should work with these companies to ensure that sufficient bike parking and other facilities (such as locker rooms) are available on site. Given the links between employee health and productivity, many employers are likely to be receptive to such suggestions. Metro need not act alone in this bicycle/pedestrian advocacy role. Aside from alliances with the business community, a number of organizations with sympathetic goals exist. Those potential partners are detailed herein.

It is hoped that the report that follows will provide both information and inspiration for making the Westside Trail a great success.
Introduction

Project Purpose

The following analysis is intended to provide Metro with a basis for the trail's master planning process. In addition to providing an assessment of conditions along the power line corridor, this report is intended to provide a picture of the communities surrounding the trail and the requirements of the bicyclists and pedestrians that will use this trail. This will be done by establishing trail goals and objectives, developing criteria by which to assess the study area, highlighting opportunities and constraints for meeting the trail's goals and objectives, and making recommendations for achieving trail goals and objectives. Accompanying this written report is a Google Earth tour of the trail that highlights opportunities and constraints. It is intended that the Google Earth tour be used in future public participation processes in order to elicit further public input.

Project Background

The passage of Metro's 2006 natural areas bond measure has afforded the region with a rare opportunity to preserve habitats, ecosystems, and recreational areas. The Westside Trail, pictured above in figure 1, will follow a 225 feet wide Bonneville Power Administration (BPA) corridor from the Tualatin River to the Willamette River, is one such opportunity. Ample justification for the creation of the Westside Trail can be found in existing federal, state, regional, and local policies. The policy context for the trail is explained in Appendix B.

Area History

Previously home to the Atfalati Native American tribe, the Tualatin Valley was abundant with timber, beavers and other wildlife. During the last century, the Tualatin Valley, with its fertile farming soil, provided the Portland area with a variety of produce; this agricultural heritage remains evident through the several nurseries and farms still in business throughout eastern Washington County.

The first settlers of the area established homesteads in the 1840s. The present day Canyon Road follows the old plank road, completed in 1860. The plank road provided access to the larger city of Portland. In 1893, within 25 years of the arrival of its first railroad, the area was incorporated into the City of Beaverton. As the population grew so did the need for irrigation and power resources (City of Beaverton, 2007).

History of the BPA Power Line

The U.S. Congress created the Bonneville Power Administration in 1937 to distribute power from the Bonneville Dam on the Columbia River. The BPA took on major power generation and transmission projects from the 1940s through the 1960s. As a part of this expansion, in 1940 the BPA condemned what is now the proposed Westside Trail corridor. At the time, these lands were largely in agricultural uses. Upon condemnation of the lands, the BPA granted agricultural easements back to the farmers from whom land was purchased. The Keeler-Oregon City #2 line now carries 115kV over what will become the Westside Trail. In the ensuing 67 years since the power lines' construction, much of this area...
has been urbanized, but the power line corridor remains as a swath of green traversing remnant farmlands, suburbs, city centers, and open spaces (BPA, 2007).

Power Line Corridors as Open Space and Trails

Throughout the country, power line corridors are used to provide recreational opportunities and connectivity in the form of trails. Amidst urban development, these corridors sometimes present the last opportunity to create a substantial bicycle/pedestrian trail. While these corridors can safely accommodate uses other than electrical transmission, there are certain precautions that should be considered. Amongst these concerns are the unknown effects of prolonged and repeated exposure to electromagnetic fields and the more immediate threat of downed power lines. These concerns are addressed more thoroughly in Appendix A.
Goals & Objectives

Trail goals and objectives were developed, based upon a review of other trail plans and public input and are consistent with Metro's forthcoming update of the Regional Transportation Plan. These goals and objectives summarized here were used to identify potential opportunities and constraints presented by the trail.

**Goal 1 - Expand bicycle and pedestrian transportation and recreation opportunities in the region**
- Enhance connectivity with existing trails and transit
- Provide connectivity with retail areas
- Provide connectivity with employment areas
- Provide continuous, easily-navigated route
- Provide bicycle and pedestrian connections between existing and potential parks/natural areas
- Minimize interactions with automobiles and provide safe crossings of roads
- Improve public health through outdoor recreation activities and bicycle commuting.

**Goal 2 - Accommodate a wide range of users**
- Provide access to people of all physical abilities when topography allows
- Provide access to pedestrians and bikes
- Provide recreation and transportation opportunities for lower income residents
- Provide safe routes to schools

**Goal 3 - Design a trail that is environmentally sensitive**
- Minimize the trail's adverse environmental impacts on wetlands and streams
- Minimize the trail's adverse impacts on upland habitat

**Goal 4 - Provide trail users with an enriching experience**
- Integrate educational, natural, historical and cultural elements (pearls) into trail design and alignment
Trail Planning Context

The analysis in this document is a preliminary stage of a large planning process, described in the figure below.

**Metro's Involvement**

Because the Westside Trail is designated as a regional trail, Metro is taking a lead role in the planning effort. This role includes managing the refinement process (wherein specific land acquisition priorities are identified), land acquisition, and bond measure funding. Metro will also conduct a public involvement process, with workshops beginning in June 2007, to guide the trail's planning. Metro is also coordinating a Westside Trail Working Group which meets quarterly. This group provides additional guidance in the trail's planning process.

**Local Agency Involvement**

In most sections, trail design, construction and maintenance will be undertaken by local jurisdictions. For over half the trail's length, THPRD will fill this role. Major concerns of local jurisdictions include the source of funds for construction and maintenance, particularly the cost of major street crossings. A discussion of trail construction costs and funding is included in the major conclusions and recommendations section.
Plan Process

It is likely that the completed trail will draw users from a distance. However, given the length of the trail, it was necessary to establish limits for the study area. A buffer surrounding the trail was used for analysis purposes. Metropolitan Transportation Improvement Program criteria for bike trail funding are, in part, based on population and employment forecasts within a half mile of a trail. A half mile is also a standard distance that pedestrians are, on average, willing to walk to get to a destination (Weinstein et al., 2007). In the case of the trail, the trail itself is not necessarily a destination, however. It is likely that its users will display a willingness to walk or bike further to get to it. That said, a half mile buffer offers a considerable amount of geography for analysis and was deemed sufficient for assessing the trail’s primary opportunities and constraints.

Having established the half mile buffer, the 17-mile long power line corridor was divided into four major lengthwise sections. These sections were further divided into 15 segments, using major street crossings as boundaries. These segments were identified in order that our analysis could differentiate between conditions along the length of the trail.

This trail analysis had three primary elements. These elements, detailed below, include public participation, background research, and ground-truthing.

Public Participation Overview

The primary focus of the public participation process was to gather input about the potential opportunities and constraints presented by the Westside Trail. Given that Metro has its own public involvement process for this project and the need to avoid duplication, we used two specific methods to gather key information from stakeholders of this project.

The first process was to gather information through interactive presentations at meetings where representatives of local jurisdictions and trail interest groups were present. These included meetings of the Westside Trail Working Group, a coalition of staff from the City of Tigard, the City of Beaverton, Forest Park, Portland Parks and Recreation, the Tualatin Hills Park and Recreation District (THPRD), and Metro. Input was also solicited from the THPRD Trails Advisory Committee, a volunteer organization of citizens who are interested in promoting trail construction and use in the area.

The second process targeted key stakeholders for individual interviews. Interviews were conducted from January through May of 2007, both in-person and over the phone. Interviewees represented the following organizations: the city of Tigard, Washington County, Tualatin Hills Park and Recreation District, THPRD’s real estate consultant, Friends of Forest Park, the Oregon Department of Transportation, and Portland Urban Mountain Pedalers (PUMP, a mountain biking activist group).

Public Participation Findings

Overall, public input indicates a great level of enthusiasm for the Westside Trail among its stakeholder groups. This trail is seen as having the potential to significantly add to the recreational opportunities and commuting options of the area and to emphasize some of the major features alongside it. Below are the general findings from both the meeting presentations and the interviews.
General findings from interactive presentations at meetings include:

- There are many opportunities to connect significant natural features and open spaces in this trail corridor.
- The trail should provide access to a wide variety of users and for a wide variety of purposes.
- There is definite potential to improve connectivity in the corridor study area, particularly once the entire trail is completed and connects to other proposed trails.
- There are many construction challenges involved in this trail, including but not limited to environmentally sensitive areas, and road crossings.
- BPA is very willing to allow trail usage in their corridor, but existing easements over the power line corridor may complicate coordination among landowners.

General findings from stakeholder interviews include:

- There is an interest and demand for unpaved mountain biking "spur trails" that connect to the Westside Trail, particularly in the northern section.
- ODOT needs to be involved early on in the trail planning process in order to coordinate street crossings.
- There is a need for particular attention and coordination in the Bull Mountain area.
- No trail should be built in the northern section of Forest Park because of the need to protect wildlife habitats.

Background Research

The trail's goals and objectives were used to inform the selection of several initial research areas. In some instances, the results of these tasks have been included in this report's appendices. Below is a brief description of these research tasks:

Safe Street Crossings (Appendix C): To determine what traffic improvements may be necessary for bicycle and pedestrian safety.

Socio-Economics (Appendix D): A review of literature and case studies in the U.S. was conducted to document evidence of trail contributions to local economic development and the well-being of local communities.

Forecasted Population and Employment (Appendix E): An analysis of projected population growth by the year 2030 was conducted in order to determine where additional transportation and recreation opportunities will be most needed. Future population and employment data for 2030 were collected from Metro for all Transportation Analysis Zones (TAZ) that intersect the half-mile trail buffer.

Demographics (Appendix F): To determine what types of trail users might exist in different trail segments. This analysis included all census block groups that intersect the half-mile trail buffer. Data are from the 2000 Census, Summary File 1. Raw census outputs were normalized by population to create the percentages listed in this document.

Commuting Patterns (Appendix G): An analysis of existing commute patterns was undertaken to provide guid-
For how the trail might be used for commute purposes. Data on commuting patterns by block group came from 2000 Census Summary File 3. A map is included in Appendix L.

**Active Living by Design (Appendix H)**: A literature review and case study research was conducted to analyze the relationship between the built environment and public health.

**Physical Accessibility (Appendix J)**: A summary of trail design considerations for compliance with the American's with Disabilities Act.

**Trail Head Design and Pearl Location Criteria (Appendix J)**: A review of typical criteria for pearl and trailhead locations.

**Safe Routes to Schools (Appendix K)**: A review of approaches to creating safe routes to schools.

**Land Uses and Ownership**: To assess whether or not BPA owns the entire power line corridor, whether there are private open spaces in the trail corridor, and where retail areas are located. RLIS data was used for this analysis.

**Vacant Lands Analysis**: To identify lands for potential public acquisition that could be used for trail head staging areas, active or passive recreation, or preserved as natural areas. Vacant lots over ½ acre were identified using February 2007 RLIS tax lot data. 67 such lots were identified for further ground truthing. Site visits were conducted to eliminate from consideration lots that are not vacant, are inaccessible, or do not warrant public acquisition.

**Environmental Assessment**: Using RLIS data, the locations of wetlands, streams, 100 year flood plain, and steep slopes (over 25%) were mapped.

**Transit**: RLIS data was used to determine the locations of existing transit lines and stops in the vicinity of the trail.

**Trail Connectivity**: Using RLIS data, the locations of other trails (existing and proposed) in the vicinity of the Westside Trail were mapped.

**Parks**: Existing parks were identified using RLIS data.

**Schools**: RLIS data was used to identify schools within a ½ mile buffer of the trail corridor.

**Ground-Truthing**

Having delineated the 15 trail sections and having completed initial background research, a ground-truthing template was developed. This ground-truthing template and the ensuing trail analysis are distinct from the traditional planning process in which alternatives are weighed against criteria. In the case of the Westside Trail, it was assumed that the trail would follow the power line corridor; with the exception of Segment 4 in Forest Park (because of steep slopes and habitat concerns), alternative routes were not considered. Thus, our criteria were developed in order to provide a means of assessing the trail’s opportunities and constraints in meeting the stated goals and objectives. For instance, connectivity to schools was analyzed by assessing whether or not bicycle and pedestrian routes between schools and the trail are safe. This safety was gauged by noting automobile traffic levels at crossings, whether or not street crossings...
are marked and have pedestrian signals, and whether or not bike lanes and sidewalks exist between the schools and the trail.

A template was developed for applying the criteria to conditions along the corridor. This template was used to inspect all of the trail segments in a ground-truthing exercise. The template that was used for ground-truthing is as follows:

1. Is the trail paved? Describe sections where it is and where it isn’t, if applicable.

2. Are there transit stops within 200 feet of the trail intersection? If yes, describe where they are.

3. Are there fenced off areas or signs in the trail corridor that may indicate that there is an easement (agricultural, private open space, other)?

4. Are there stream crossings/wetland crossings? If yes, are there ways around them? Would an alternate route be preferable/safe?

5. Are there topographic constraints to the trail? If yes, describe where they are and take pictures of any major slopes.

6. Examine trail head opportunities along this segment. Are there places to park cars? Places to put trail amenities, like signage or bathrooms? What is the quality of the street, does it need to be repaired? Is there any habitat that would be impacted by placing a trail head here, or is the site already impacted (buildings etc.)? Would you feel safe parking your car here?

7. Do you see evidence of erosion anywhere near the trail? If yes, describe where.

8. Are there nearby commercial hubs nearby that someone could safely walk or bike to from the trail? Apply the safe crossing criteria from number 12, below.

9. If there are schools in this segment: how could people safely walk or bike to the trail from the school? Apply the safe crossing criteria from number 12, below.

10. If there are major employers in this segment: how could people safely walk or bike to the trail from the worksite? Apply the safe crossing criteria from number 12, below.

11. Examine the vacant lots that have been identified on the map. Is the lot still vacant? Is it flat? Is it next to the trail corridor? Is it visible from the trail? Is it easily accessible from the trail? What might be some of the potential uses of this vacant lot? Any limitations or constraints to using it as a public park/open space or staging point?

12. Examine any street crossings. Is there a sidewalk? Are there markings on the pavement, caution signs, traffic signals? Are there impediments to visibility (turn in the road, vegetation)? Are there high traffic volumes or speeds? Can I cross safely?

13. Examine any scenic viewpoints already identified and those that you think should be included as pearls.

14. Identify any informal footpaths in the proposed trail corridor.

15. Are there any additional public health opportunities that are appropriate for this segment, particularly as it relates to the population of the surrounding areas?
Major Conclusions & Recommendations

The BPA power line corridor presents a rare opportunity to build a significant regional trail in an already urbanized area. How the trail is designed and how it relates to surrounding communities are of great importance. These considerations are critical to the trail's ability to support the 2040 Growth Concept and, on a more practical level, for securing Metropolitan Transportation Improvement Program (MTIP) funds. For the purposes of this report, the recommendations that follow will draw upon the trail's principal goals:

**Goal 1:** Expand bicycle and pedestrian transportation and recreation opportunities in the region  
**Goal 2:** Accommodate a wide range of users  
**Goal 3:** Design a trail that is environmentally sensitive  
**Goal 4:** Provide trail users with an enriching experience

In order to meet these goals, Metro must take an expansive view of the trail. It will not suffice to merely pave a path the length of the power line corridor. The trail must cross numerous busy roads and the MAX light rail line, and traverse steep slopes and wetlands. Bicycle and pedestrian facilities must not be an afterthought to the automotive road network. For instance, the trail should not be diverted to cross streets at existing intersections. Instead, safe crossings should be provided at the points where the power line corridor meets roads. Electing to do otherwise will result in a trail that lacks continuity and navigability, introduces potentially unsafe decision points for users, renders bicycle and pedestrian uses as secondary to automobile uses, attracts low numbers of users, and ultimately fails to serve its stated purposes.

Whether or not the trail is well-used also depends on how surrounding communities relate to the trail. The Westside Trail must be part of a larger network of transit, bike lanes, and sidewalks. Bike racks must be readily available at likely trail destinations such as schools, employers, and retail areas. Attractive park facilities, natural areas, and trail head staging areas must be located along the trail corridor. Many of these elements already exist in some form. But, there are many opportunities for improvement. Below are specific recommendations for achieving the trail's goals and objectives.

Prioritize Segments for Completion

Given the length of the proposed trail, it is likely that its completion will take a number of years. Metro can utilize the information gathered during this planning process as well as the goals and objectives presented earlier to prioritize the order in which the trail's segments are completed. Each segment of the trail will likely have different user groups, needs, and geographical characteristics. By considering each segment's opportunities and constraints, Metro may most effectively achieve the trail's goals and objectives.

**Segment 2** is a key link in the Westside Trail and should be given first priority for completion because it forwards all of the goals and objectives outlined in this plan. The completion of Segment 2 supports Goal 1 by serving as both a commuting and a recreational route. It connects several major recreational facilities and parks, major employers, dense residential areas, and existing bicycle connections. The trail has been completed or is scheduled to be completed in several stretches of Segment 2 (1.6 miles near Canyon Road are currently scheduled to be built). Filling in existing gaps in Segment 2 would be an effective means of fulfilling trail Goal 1 (expand bicycle travel opportunities and encourage modal shift toward bicycle use).
and pedestrian opportunities). Concentrating efforts in this segment will serve to build upon those existing stretches and may spur neighboring jurisdictions to complete additional segments. Because this segment of the trail has the highest population densities, its completion supports Goal 2 (accommodate a wide range of users). Segment 2 is largely urbanized. Thus, its completion is unlikely to result in significant environmental degradation, thereby forwarding trail Goal 3 (design a trail that is environmentally sensitive). Finally, the completion of Segment 2 supports trail Goal 4 (provide trail users with an enriching experience) by providing numerous opportunities for parks such as Mt. Williams, Tualatin Hills Nature Park, and the H.M Terpenning Recreation Center.

Segment 1 should be prioritized next after Segment 2. Though less densely populated than Segment 2, Segment 1 has significant concentrations of both elderly residents and children. A number of trail goals and objectives will be fulfilled by providing bicycle and pedestrian recreation opportunities for these residents. Because of this segment's typically flat terrain (with the notable exception of Bull Mountain), the trail will support Goal 2, accommodate a wide range of users. The completion of Segment 1 will also support Goal 4 (provide trail users with an enriching experience) by connecting a significant area of Washington County to the Tualatin River, Graham Oaks Natural Area (a Metro property), and the Tualatin River National Wildlife Refuge. The completion of this segment will improve trail connectivity in the region by providing linkages with the proposed Tonquin Trail (also following the BPA corridor, south to Wilsonville) and Tualatin River Greenway Trail, thereby supporting Goal 1 (expand bicycle and pedestrian opportunities).

Segments 3 and 4 should be completed last. There are many outstanding questions regarding the trail's alignment through these two segments. Once built, however, these segments will forward trail Goal 1 by expanding bicycle and pedestrian recreation opportunities through improved access to Forest Park. Because of this segment's low population densities, these segments of the trail will serve relatively few residents. It should, however, be noted that with the development of the North Bethany area in segment 3, there will be a significant increase in the segment's population. This new development does add some urgency to the need to plan these two trail segments. It should also be noted that these segments pass through sensitive wetland and upland habitats and steep topography, making it more challenging to design a trail that meets Goal 3 (design a trail that is environmentally sensitive). It is likely that, because of these environmental and topographical constraints, the trail will not follow the power line corridor through the length of segments 3 and 4. Alternate alignments will need to be considered in greater depth.

Land Acquisition

Based on a preliminary analysis, it appears that, with the exception of the section that passes through the Nike campus, BPA owns fee simple title to the entire power line corridor. However, when BPA condemned the power line corridor, it granted agricultural easements back to the property owners from whom BPA purchased fee simple title. Few of those agricultural easements were recorded. To date, THPRD has negotiated in good faith with the holders of these easements despite the fact that most current owners are unaware that they hold easements. THPRD has paid nominal amounts for quitclaims to these easements. This process of contacting potential easement holders has proven time-consuming, but is essential to maintaining good relations with surrounding landowners. These initial contacts will be critical to easing
Table 1: Vacant Land Acquisition Possibilities

<table>
<thead>
<tr>
<th>Trail Segment</th>
<th>Site ID</th>
<th>Acres</th>
<th>Structures?</th>
<th>Paved?</th>
<th>Vegetation</th>
<th>Adjacent to trail?</th>
<th>Topography</th>
<th>Potential Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>64</td>
<td>10.0</td>
<td>none</td>
<td>no</td>
<td>grassy/open</td>
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<td>flat</td>
<td>passive recreation, natural area</td>
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<tr>
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<td>grassy/open</td>
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<tr>
<td>2A</td>
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<td>no</td>
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<td>no</td>
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<td>passive recreation</td>
</tr>
<tr>
<td>2A</td>
<td>50</td>
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<td>mixed grassy/trees</td>
<td>no</td>
<td>steep</td>
<td>passive recreation</td>
</tr>
<tr>
<td>2E</td>
<td>45</td>
<td>74.01</td>
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<td>natural area</td>
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<tr>
<td>2E</td>
<td>46</td>
<td>5.24</td>
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<td>wetland, grassy/open</td>
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<tr>
<td>2F</td>
<td>43</td>
<td>5.48</td>
<td>none</td>
<td>no</td>
<td>grassy, scattered trees</td>
<td>yes</td>
<td>flat</td>
<td>trail head</td>
</tr>
<tr>
<td>2I</td>
<td>41</td>
<td>12.09</td>
<td>none</td>
<td>no</td>
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<td>yes</td>
<td>flat</td>
<td>natural area</td>
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<tr>
<td>2I</td>
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<td>no</td>
<td>grsasy wetland</td>
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<td>flat</td>
<td>natural area</td>
</tr>
<tr>
<td>3A</td>
<td>1</td>
<td>6.10</td>
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<td>yes</td>
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<td>3A</td>
<td>2</td>
<td>12.26</td>
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<td>trail head</td>
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<tr>
<td>3B</td>
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<td>no</td>
<td>-</td>
<td>-</td>
<td>flat</td>
<td>trail head</td>
</tr>
</tbody>
</table>
any fears associated with increased public access to what 
many of these land owners consider to be their back yards.

The corridor also traverses a number of open spaces 
maintained by homeowners associations. The frequent pres­
ence of no trespassing signs and fences indicate that it is like­
ly that these homeowners associations hold easements for 
park use of the corridor. Metro will need to work with these 
homeowners associations to ensure them that increased 
public access to these parks will not be detrimental. In ad­
dition to working with these homeowners associations to 
ampel their easements, Metro will need to negotiate with 
BPA for a trail easement.

A number of vacant lots along the trail corridor may 
be suitable for public acquisition. Vacant lots larger than 5 
acres were identified using RLIS and were inspected in the 
field. Following is a general summary of the vacant lot analy­
sis. More site specific information and photographs are pre­
sented within the individual segment analyses. 13 lots were 
identified as having potential to be used as open space or 
public parks. The majority of these 13 sites can be described 
as having a flat topography and are accessible from the trail 
corridor. Four general types of uses, summarized below, were 
considered for the identified lots.

**Trail heads:** Vacant lots that are not directly adjacent to a 
residence are preferable for trail head use. To accommodate 
this use, lots should be flat and should allow easy automobile 
access and parking lot or restroom placement. These sites 
may also be used for information kiosks. These access points 
would forward trail Goal 2 by accommodating a wide variety of users.

**Wetlands / natural areas:** The public acquisition of wet­ 
land or other natural areas would allow for restoration activi­
ties and public access, where appropriate. Public acquisition 
of natural areas along the trail corridor would be in support 
of trail Goal 4 (provide users with an enriching experience).

**Passive Recreation Use:** This use is preferred for larger 
sites with existing natural areas that are located far away 
from heavy traffic corridor. The acquisition of vacant lots for 
this purpose would work in concert with the trail to promote 
trail Goal 1 by providing recreational opportunities.

**Active Recreational Uses:** This use is appropriate for 
larger vacant lots with flat open space that may serve, for in­
stance, as an athletic field. The acquisition of vacant lots for 
this purpose would work in concert with the trail to promote 
trail Goal 1 by providing recreational opportunities.
Safe Street Crossings

To maximize the use of the trail, the creation of a safe environment for users is a paramount concern. As a user travels along a trail, road crossings can be barriers to the next section of trail. If crossings do not provide adequate safety, it is likely that trail users will become frustrated and will make unsafe crossing decisions or choose other routes or modes of transportation.

Strategies to create safe street crossings will necessarily vary by location. Generally, it is recommended that safe street crossings be provided at the intersection of the trail with a street. Diverting the trail to an existing intersection will likely result in a disjointed, confusing, and under used trail. Table 2 provides general recommendations for handling common crossing situations:

<table>
<thead>
<tr>
<th>Street Crossing Objective</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce speed</td>
<td>Install traffic calming measures, speed reduction</td>
</tr>
<tr>
<td>High Pedestrian Volumes</td>
<td>Install pedestrian actuated signal</td>
</tr>
<tr>
<td>Reduce crossing length</td>
<td>Install curb extensions or median island</td>
</tr>
<tr>
<td>Enhance visibility</td>
<td>Provide signage, striping, brush cutting</td>
</tr>
<tr>
<td>ADA accessibility</td>
<td>Install curb ramps, detectable waqrmings</td>
</tr>
<tr>
<td>At-grade crossing prohibitive</td>
<td>Cross at existing pedestrian crossing location construct grade-separated crossing</td>
</tr>
</tbody>
</table>

Specific street crossing conditions have been noted within the trail segment reports, included herein. However, several critical street crossings deserve particular attention as they will likely demand pedestrian bridges or underpasses. These crossings are listed below along with proposed solutions:

- **Canyon Road / TV Highway**: Because of high traffic volumes and the raised grade of Canyon Road, a pedestrian/bike tunnel is recommended at this location.

- **Burlington-Northern Railway and MAX track crossing**: Located in Trail Segment 2E, freight trains park on the tracks for extended periods of time, blocking pedestrian or bike crossings. A pedestrian/bike bridge is recommended at this location.

- **Highway 26**: A pedestrian/bike bridge will be necessary for this crossing.

Trail Construction Funding

Metropolitan Transportation Improvement Program (MTIP) funds are a primary source of funding for trail construction. Applications for MTIP funding are solicited for various categorical types, including capacity, green streets, boulevards, trails etc. and scored on a variety of criteria against other projects in the appropriate category. Once a project is selected for inclusion in the MTIP, it is automatically included in the STIP.

Securing MTIP funds involves a lengthy application process, competition against other regional trail projects and the requirement that all Federal Highway standards for land...
acquisition and construction be followed. Federally mandated construction practices, bid awarding processes, right-of-way acquisition procedures, and project permitting increase the amount of paperwork and construction time for trail projects. Anecdotal evidence from Tualatin Hills Parks and Recreation District suggests that following federal standards may have the effect of doubling trail project costs. However, MTIP funds are frequently critical to the completion of regional trails.

The RTP is currently accepting project applications for the 2007-11 plan. MTIP evaluation criteria are currently being updated.

**General project selection considerations include:**

- Inclusion in the regional transportation system
- Consistency with the regional policy framework
- Leveraging of 2040 land use design type
- Meets jurisdictional investment targets
- Meets public involvement requirements
- Meets project cost targets
- Meets federal transportation air quality

For bicycle projects, past MTIP considerations have included:

- Potential ridership based on travel shed, existing socio-economic data and existing travel behavior survey data
- Total forecast year population and employment within one-half mile of the project
- System connectivity (project completes a gap in the Regional Bikeway System)
- Project addresses an existing deterrent to bicycling. Multi-use paths are awarded additional points
- Regional Bikeway System Hierarchy from RTP (Regional access functions are awarded the most points)
- Region 2040 Land Use Designation (higher points are awarded for centers, lower for inner neighborhoods)
- Economic and Community Development
- Cost effectiveness
- Safe Routes to Schools

A primary purpose of this report is to demonstrate how this trail meets many of the above criteria. The Westside Trail promises to rank well in many of these areas. It is recommended that these criteria and the goals and objectives set forth in this report be kept in mind throughout the master planning process in order to increase the likelihood of securing MTIP funds.
Habitat Areas

Goal 3 of this trail is to design a trail that is environmentally sensitive. The primary environmental concerns along the trail corridor are the numerous wetlands that it crosses (throughout Segments 1, 2, and 3) and sensitive habitat areas in the Forest Park’s North Management Unit (Segment 4). Because of these sensitive habitat areas and the presence of steep slopes, it is likely that the trail will not follow the power line corridor through Forest Park. Other routes through the park will need to be considered.

It is recommended that the wetlands in segments 1, 2 and 3 of the trail be considered an asset. These areas are often the last vestiges of natural habitat in an otherwise urbanized setting. They present a great opportunity for restoration and enhancement projects and environmental education. The trail must, however, be built to avoid degradation of these wetlands. In some areas, it may be possible for the trail to avoid wetlands while still remaining in the power line corridor. In other locations, the trail would have to be substantially diverted outside of the corridor to avoid the wetlands. Under such circumstances, the use of an elevated boardwalk trail through the wetland is a way to provide a continuous trail route while minimizing disturbance to wetlands. The wetlands associated with Bronson Creek in section 2I are a good example of such an opportunity for a boardwalk. Clean Water Services (CWS), the surface water utility provider in Washington County, should be consulted by Metro and trail planners when determining alignment alternatives. CWS will likely be interested in acquiring land to mitigate its release of treated water that exceeds stream temperature requirements.

It is a primary goal of the trail to avoid damaging the sensitive habitats in the North Management Unit of Forest Park. This may mean that the trail through Forest Park will not be built to regional trail standards, but instead will follow existing roads, firelanes, or unpaved paths. These options will need to be explored in much greater depth during the master planning process. It is clear, however, that there are irreconcilable constraints associated with the trail following the power line corridor in Segment 4. NW Newberry Road and Old Springville Road are recommended for consideration as alternative routes through Segment 4.

Pearls

Using the metaphor of a necklace, the Westside Trail can be seen as a chain that connects one end to the Tualatin River and the other to the Willamette River. Along this chain are pearls, those points that stand out as features. For a location to be considered a pearl, it must be an identifiable destination for users because of the presence of a structure, location of historical significance, environmental feature, scenic viewpoint, or major recreation spot. It is the intent that a pearl may be identified by users as a marker for travel, a place to meet, a turn-around point on a jogger’s route, an opportunity for education, an interesting viewpoint or a natural wetland. Trail Goal 4 strives towards a trail which will create an enriching experience. Pearls will serve as destinations to highlight the experience.

Pearls are generally located on or adjacent to the trail, yet may be located off the trail alignment. These featured locations should be taken into consideration by Metro when planning the trail and when acquiring land. The trail design process should also take these sites into consideration in order to make them appealing to trail users.
Westside Trail Pearl Recommendations

Segment 1A: Tualatin River Greenway trail (proposed), Tualatin River National Wildlife Refuge, Cook Park, King City Park

Segment 1B: Scenic viewpoints from Bull Mountain, Progress Quarry Lake

Segment 2B: Metro's Cooper Mountain Natural Area, Jenkins Estate

Segment 2C: Mt. Williams Park (future)

Segment 2E: THPRD Nature Park, MAX stations, TVWD Athletic Fields

Segment 2F: Beaverton Creek, NIKE Campus

Segment 2G: H.M. Terpenning Recreation Center

Segment 2H: Hunters Woods wetlands

Segment 2I: Bronson Creek wetlands, Bronson Creek Greenway Trail (proposed) and Rock Creek Trail

Segment 3A: Scenic viewpoints of the Willamette and Tualatin Valleys

Segment 3B: Scenic viewpoints of the Willamette and Tualatin Valleys, gateways to Forest Park

Segment 4: Scenic views of Willamette River, Forest Park, historic rail trestle on McNamee Road, Metro's Ancient Forest property, Willamette River Greenway Trail (proposed), Sauvies Island, 40-Mile Loop connection

General: Information kiosk about the history of the BPA and the legacy of hydroelectric projects.
Partnerships

Though much can be done within the trail corridor to create an inviting trail, the trail's connections to the surrounding community are perhaps even more important. A quick glance at Metro's "Bike There" map depicts surrounding communities that lack bicycle connectivity. The Westside Trail will be a critical component of improving bike and pedestrian connectivity from south to north, but east to west bike routes are lacking. These deficiencies became yet more obvious during field surveys. Many existing bike lanes are along streets with high automobile traffic volumes. Efforts to improve the safety of existing bike lanes and to site new bike lanes and paths must continue in order for the Westside Trail to fulfill its vision. The creation of complementary safe routes will serve to link schools, retail areas, employment centers, and neighborhoods to the Westside Trail.

In addition to improvements in surrounding bike routes, much more can be done to increase the likelihood that the trail will be well-used. A survey of bike parking at schools and retail areas throughout the study area found both sites with ample bike parking and sites with serious deficiencies. Alliances between Metro, school districts, and private business should be pursued to make the trail's destinations more bike-friendly.

Much can also be done with Metro's public and private partners to publicize the existence of the Westside Trail itself and bicycle/pedestrian connections thereto. None of the schools within the study area have a Safe Routes to School program. There is a great opportunity for the Westside Trail to fill this void and spur these schools to implement such programs. This report makes an initial effort to identify some of the opportunities and constraints surrounding safe routes between the trail and schools. These safe routes to schools and school-based programs to encourage physical activity are critical to forwarding the trail objective of improving public health.

Opportunities for public/private partnerships abound. There are a number of major employers within close proximity of the trail. Partnerships with these businesses should be pursued to encourage trail usage. The health of their employees has an impact on productivity and employee incentives for bicycle or pedestrian commuting are one way to improve employee health. As with schools and retail areas, Metro should take an active role in encouraging local employers to provide on-site bicycle facilities such as bike parking and locker rooms. Given the connection between employee health and productivity, it may even be worth soliciting financial assistance from nearby companies for the construction of the trail or connections thereto.

Metro need not act alone in this bicycle/pedestrian advocacy role. A number of local organizations with sympathetic goals exist.
Potential partners include:

- Active Living By Design, Portland Chapter
- Portland United Mountain Pedalers (PUMP) mountain biking club
- Transportation Options (Metro, PDOT and other city and county chapters)
- THPRD
- Project for Public Spaces
- Senior centers or other community centers
- Fitness clubs (for example, the Sunset Athletic Club)
- Oregon Road Runners Club
- Beaverton Bicycling Club
- Portland State University Cycling Club
- Portland Triathlon (HQ in Beaverton)
- Safe Routes to School programs
- Local health providers or hospitals
- Bicycle Transportation Alliance
- Parent/Teacher Associations
- Willamette Pedestrian Coalition
- Portland Parks and Recreation
- Friends of Forest Park
Trail Segment Analysis

Using the aforementioned ground-truthing template, the entire Westside Trail corridor (and a ½ mile buffer on either side) was examined in the field. The results of those field visits are summarized in the following trail segment reports. The reports begin with Segment 1A at the southern end of the trail at the Tualatin River and move north to the Willamette River.
Opportunities and Constraints Map Legend

**Trails**
- Westside Trail
  - Trail Alignment
  - Half Mile Buffer
- Regional Trails
  - Existing
  - Proposed
  - Proposed Greenway Corridor
  - Funded - Scheduled for Construction

**Transit Systems**
- Transit Center
- Park & Ride
- Existing
  - Bus Stops
  - MAX Lines
  - Bus Routes
  - Railroads

**Features**
- Schools
- Library
- Hospital
- Parks
- Community Centers
- Vacant Lots (5+ acres)

**Environmental Resources**
- Slopes (25+ degree)
- 100-year Flood Plain
- Wetlands
- Streams / Rivers

**Opportunities and Constraints**
- Potential Trail Heads
- Opportunities
- Constraints

**Bike Lanes**
- Existing Bike Lanes
- Planned Bike Lane
1. Poor visibility and crossing challenges
2. Requires a bridge construction

Opportunities
1. Connectivity to Tualatin River National Wildlife Refuge
2. Potential site for a park or open space (ID = 64)
3. Safe routes to Deer Creek Elementary School
4. Connectivity to the proposed Tenquin trail
**Trail Segment 1A: Bounded by the Tualatin River and Beef Bend Road**

**Jurisdiction:** King City, Tigard  
Length: 0.79 miles

<table>
<thead>
<tr>
<th>Table 1A: Summary of Opportunities and Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opportunities</strong></td>
</tr>
<tr>
<td>• Connections with Tonquin Trail and Tualatin River Greenway Trail</td>
</tr>
<tr>
<td>• Safe route to Deer Creek Elementary School</td>
</tr>
<tr>
<td>• Potential trail head on SW Beef Bend Road</td>
</tr>
<tr>
<td>• Improved community connections between Edge Water on the Tualatin and Autumn Hills neighborhoods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trail Elements/ Design Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Road crossing at SW Beef Bend Road needs safety improvements</td>
</tr>
<tr>
<td>• Potential trail head parking or access point off SW Beef Bend Road</td>
</tr>
</tbody>
</table>

**Description and Narrative:**

This 0.79 mile long trail segment links two suburban, single-family home communities: Edge Water on the southern end of the city of Tualatin and the Autumn Hills community on the northern end. The topography of this segment is generally steep, with slopes exceeding 12% towards the Autumn Hills neighborhood.

This segment is primarily residential and has a high concentration of both elderly people and children (over 30%). The household median income of residents is about $50,000 and, according to Metro projections, the number of households and jobs in this area will increase by 17% and 45%, respectively by the year 2030. Currently, 62% of the residents work in Washington County and 23% work in the central city of Portland. The residents of Segment 1A primarily rely on automobiles for commuting. Only 1% of the commuters use a bicycle, 2% use transit, and 12% carpool.

As well as providing commuting alternatives, a well-connected and accessible trail will provide public health benefits, especially to the elderly. The trail corridor might also be used as a park by the adjacent communities, since there is currently no public park in this segment. The flat, vacant lot #64 near SW Myrtle and SW 146th Avenues (shown in photo 1A-1) is another potential site for use as a park or open space; however, accessibility is an issue that will have to be addressed. The paved dead-end road lying on the southern end of SW Beef Bend Road, immediately to the west of the trail corridor, seen in photo 1A-2, is a potential opportunity for a trail access/staging point or trail head parking for the

MLP - Westside Trail Feasibility Study
Deer Creek Elementary is the only school within a half-mile of the trail in this segment. It is located about 600 feet east of the trail, along SW Beef Bend Road. Access to the trail will be safe and convenient especially for children from the Autumn Hills and Edge Water on the Tualatin neighborhoods via existing paved sidewalks and bicycle lanes on SW Beef Bend Road (Photo 1A-3). Provision of more bicycle parking facilities at this school might encourage more students to use bicycle when commuting to school.

The Westside Trail will also make the nearby pearls, including King City Park, the Tualatin River, and the Tualatin River National Wildlife Refuge, shown in photo 1A-4, more accessible by bike or foot. On the southern banks of the Tualatin River lies a large natural area owned by Metro.

There is need for traffic calming where the trail crosses SW Beef Bend Road. The traffic speed along this street exceeds 35 mph, and there are no crosswalks or traffic signals. The terrain and curves in the street inhibit visibility. Additionally, there are no cuts in the street curbs, making it difficult for bicyclists and wheelchairs to cross the street.

The Westside Trail will also make the nearby pearls, including King City Park, the Tualatin River, and the Tualatin River National Wildlife Refuge, shown in photo 1A-4, more accessible by bike or foot. On the southern banks of the Tualatin River lies a large natural area owned by Metro.

There is need for traffic calming where the trail crosses SW Beef Bend Road.
Opportunities
1. Viewpoint - Eagles View

Constraints
1. Steep slopes (25+ degree)
2. Narrow and steep trail corridor at Bull Mountain Road - ADA compliance challenge
3. Crossing Bull Mountain Road is difficult because of heavy traffic - lack of crossing signals
From Beef Bend Road to Scholls Ferry Road

Opportunities
1. Connectivity to commercial retail areas
2. Connectivity to Progress Quarry Lake
3. Potential rest area
4. Connectivity to transit stops on Scholls Ferry Road

Constraints
1. Steep slopes (25+ degree)
2. Wetlands
3. Wetlands

Segment 1B-B

Matching Line to Segment 1B-B
Trail Segment 13: Bounded by SW Beef Bend Road and SW Scholls Ferry Road
Jurisdiction: Tigard, Bull Mountain community
Length: 2.42 miles

Table 18: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Mountain and Eagle's View scenic viewpoints</td>
<td>Steep slopes on Bull Mountain; switch-backs may be impractical with narrow power line corridor</td>
</tr>
<tr>
<td>Connection between neighborhood parks, North View Park, Barrows Park, and the Murray Hills Park</td>
<td>Steep terrain may not be feasible for ADA compliance</td>
</tr>
<tr>
<td>Connections to bus line on SW Scholls Ferry Road</td>
<td>No transit service within 1/4 mile except near Murray-Scholls Town Center</td>
</tr>
<tr>
<td>Connections to retail areas</td>
<td>Fenced homeowners association parks present right-of-way challenges</td>
</tr>
<tr>
<td>Vacant lot at SW Menlo and SW Barrows could be used as a trail head or open space</td>
<td></td>
</tr>
<tr>
<td>Connection of surrounding communities to Progress Quarry Lake</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

- Potential pearls at Bull Mountain Road and Eagle's View highlighting scenic viewpoints

Description and Narrative:

This 2.42 mile segment starts at SW Beef Bend Road and runs through the Bull Mountain and Progress Ridge communities. Further north it progresses through the Scholls wetlands and Murray Hill Park. Topography in this segment is generally steep, with slopes on Bull Mountain exceeding 25%. With the exception of the 15 feet of paved trail at SW Barrows Road (Photo 1B-1), the entire length of the trail is unpaved and covered with shrubs and other vegetation.

This segment is primarily residential. Residents in this portion of the trail have high incomes with the median income over $70,000. Metro forecasts a 63% increase in households and a 47% increase in employment by the year 2030. Over 30% of the population in the communities surrounding this corridor are children, but surprisingly, there is no school that falls within the corridor. Currently, residents of this segment primarily commute by automobile. Only 1% of the commuters in this segment use bicycle, 4% use transit, and 11% carpool. Overall, about 60% of residents in this portion work in Washington County and 29% work in the central city of Portland.

There are two business hubs in this section: Murray-Scholls Town Center and a retail establishment along SW Barrows Road. An inventory at these business centers revealed that there are limited bike parking facilities; the future provision of these facilities may encourage potential bicycle users to use a bike or walk, especially for short trips. In general, the trail corridor will make walking and biking commute modes available and much more attractive in this segment.
Around SW 141st Avenue and SW Eagles View, the trail corridor is very well-maintained and is currently being used by the surrounding residential community as a park (photo 1B-2). This park has some scenic viewpoints. There is a fence under the power line at SW 141st Avenue and SW Eagles View (photo 1B-4).

Further north, at SW Chardonnay Avenue and SW 144th Avenue, the trail corridor is also contained by a wire fence and is gated (photo 1B-3) by the neighboring family which has been maintaining this part of the segment for years. These fenced off areas under the power line indicate that there are easement and right-of-way challenges that Metro must address during the master planning process.
There are four parks and one recreational site that will be connected by this trail. The trail provides an opportunity to connect the scenic viewpoints along Bull Mountain Road and SW 134th Avenue. This viewpoint is largely designed for automobile throughput, as the site does not have a parking area for vehicles, bikes, or even pedestrians to stop and enjoy the beautiful views. The provision of vehicle pull-outs, bike facilities or benches might make this area more attractive and visitor/user-friendly.

1B-2: At SW 141st Avenue & SW Eagles View, a private park exists under the trail corridor where the houses are oriented towards the park.

1B-3: Near SW Chardonnay Avenue & SW 144th Avenue, a wire fence across the corridor indicates a potential easement challenge.

1B-4: Fencing runs across the trail corridor at SW 141st Avenue & SW Eagles View.

1B-5: Progress Quarry Lake sits near SW Barrows & SW Menlor. This site will be a pearl along the Westside Trail.
Opportunities:
1. Adjacent to Murrayhill Rec. Center
2. Near Murrayhill Open Space
3. Near Molly Park Open Space
4. Near Murrayhill Creek Open Space
5. Connectivity to Nancy Ryles Elementary School
6. Connectivity to Murray-Scholls Town Center
7. Connectivity to Murray-Scholls secondary retail
8. Access to transit on Teal St.
9. Access to transit on Scholls Ferry Rd.
10. Signalized crossing nearby
11. Good bicycle connections

Constraints:
1. Accessory use easement
2. Steep terrain, high vegetation
3. Misaligned road crossing at Weir Rd
4. Need transit stop at Teal St.
5. Poor provision of bike racks at school
6. Poor connectivity at south & west of Teal St.
Trailing Segment 2A: Bounded by SW Scholls Ferry Road and SW Weir Road  
Jurisdiction: City of Beaverton, Murray Hill Homeowners Association, THPRD  
Length: 0.95 miles

Table 2A: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Entire length of trail is paved asphalt</td>
<td>• Easements at nearby apartment complex for accessory parking, waste disposal</td>
</tr>
<tr>
<td>• Transit stops nearby on SW Scholls Ferry Road</td>
<td>• Steep terrain</td>
</tr>
<tr>
<td>• Transit available on SW Teal Boulevard</td>
<td>• No crosswalk or signal at SW Weir Road crossing</td>
</tr>
<tr>
<td>• Signalized crossings within 250-feet with good visibility at Scholls Ferry Road</td>
<td>• No transit stop on SW Teal Boulevard near trail</td>
</tr>
<tr>
<td>• Local road crossings have sidewalks and are striped</td>
<td>• Poor provision of bike racks at school</td>
</tr>
<tr>
<td>• Access to Murray-Scholls Town Center shopping area (retail, employment)</td>
<td>• Poor connectivity to neighborhoods south and west of SW Teal Boulevard near SW Scholls Ferry Road</td>
</tr>
<tr>
<td>• Visible park area, well established</td>
<td></td>
</tr>
<tr>
<td>• Room for trail head location</td>
<td></td>
</tr>
<tr>
<td>• Tennis courts, children’s play structure</td>
<td></td>
</tr>
<tr>
<td>• Several neighborhood access points</td>
<td></td>
</tr>
<tr>
<td>• Access to Murrayhill community center</td>
<td></td>
</tr>
<tr>
<td>• Connections to existing open spaces</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

• Potential auto parking site off of SW Scholls Ferry Road or within Murray-Scholls Town Center shopping area
• Public health can be encouraged by installing “fitness mile” equipment
• Designated dog area can serve as a social interaction place for both dogs and their owners

Description and Narrative:

This 0.95 mile long segment of the trail paved for its length and runs through Murrayhill Park, operated by THPRD. The terrain is challenging as it dips into valleys and over hills. The vegetation is well kept, but, because of its height and density, it creates a claustrophobic feeling at times. The nearby Murray-Scholls Town Center is a hub of commercial activity and includes a fitness center. The surrounding neighborhood is a mixture of large single-family homes and multi-family housing.

The paved trail begins on the north side of Scholls Ferry Road. To the south of Scholls Ferry, the trail is not complete. Thus, a trail crossing does not exist at this street. Two signalized crossings flank either side of the trail and are very close to the trail to encourage safe crossings. However, a grade-separated crossing would provide the ideal crossing...
at Scholls Ferry Road. The road sits higher than the park land on either side, providing an opportunity for a trail under-crossing. With such a crossing, trail users from the south side of Scholls would no longer fear crossing the busy street.

The other street crossings in this segment have lower vehicular speeds and volumes. There are two local street crossings between Scholls and Weir: SW Teal Boulevard and SW 155th Avenue. All maintain easily identifiable crossings for trail users, shown in photo 2A-2. The streets are classified as collectors or local roads, keeping the speeds at 30 mph or less. In this section, the Westside Trail is accessible via transit. TriMet operates transit line #62 along Scholls Ferry and Teal and the #92 along SW Murray Boulevard. There are stops on both sides of Scholls Ferry Road within 250-feet of the trail head.

Throughout this segment, approximately 5% of commuters prefer transit as the mode of choice. This trail serves as a direct connection to the two bus routes.

While Nancy Ryle Elementary is the only school within this segment, recreation sites for children are still of high importance. The communities surrounding this segment of the trail have a high percentage of school-age children. Currently, there are only two bike racks at the school; the provision of such facilities may encourage students to use the Westside Trail for their ride to school. Access from the trail to the school can be accomplished via four spur trails and/or continuous sidewalks at a road crossing. Metro and Washington County expect the number of households in this segment to increase by 9% of the next 20 years, creating further need for safe corridors for children.

THPRD's Murrayhill Park maintains tennis courts and children's climbing equipment, shown in photo 2A-1. Additionally, the trail follows very close to the Murrayhill Community Center and park lands; this space is designated for neighborhood residents' use only, but access is not physically blocked. The adjacent neighborhoods are well connected to the Westside Trail via short spur trails leading between houses to the exterior street network. However, the area west of Teal is not well-connected; future street construction or spur trails will connect those residents to the Westside Trail.

Access to this trail by bicycle is possible from the bike lanes on Scholls Ferry Road and Weir Road, as well as by the widened travel lanes on Teal. These roads are also designated as bike routes on the City of Beaverton Bicycle Master Plan. This segment of the trail can be accessed by the striped bike lanes on Murray, Scholls, and Weir. However, continuity of the striping is
marginal around the Westside Trail; future striping improvements will be needed to encourage bicyclists to find the Westside Trail. These improvements are identified in the City of Beaverton Bicycle Master Plan. Since only 2% of this segment's commuters use bicycle as their preferred mode, a paved trail and contiguous bike routes may drive that number higher.

Over the next 20 years, employment within Segment 2A is expected to increase by 40%. Currently, much of the employment is focused at a retail area at the intersection of Scholls Ferry Road and Murray Boulevard. This space contains several restaurants, cafes, a workout facility, private medical practices, and general convenience shopping. The mixture of businesses is conducive to bicycle and pedestrian traffic. There are plenty of bicycle racks throughout the commercial development. This commercial area is directly adjacent to the Westside Trail, served by two spur trails wrapping to the northern side of the development. A sidewalk runs the entire length of Scholls Ferry Road, providing additional pedestrian and bicycle connections to the Westside Trail.

A second retail area is located at the intersection of SW Teal and SW Murray Boulevards. This area contains a large grocery store, as well as a mixture of small businesses which are conducive to bicycle and pedestrian traffic. While this retail area is further from the Westside Trail, connections can still be made via the aforementioned spur trail and via SW Teal Boulevard.

The vacant lands within Segment 2A are both set for housing development in the near future. Currently, the lands are in agricultural use (one is a Christmas tree farm), but the proposed zoning is tract land and residential use. Since the surrounding community is well served by community centers, parks, and trails, the entirety of the vacant parcels do not need to be set aside for park or open space; perhaps, a portion could be used for park land. Additionally, because of the terrain of the Murrayhill area, open space is relatively abundant; steeply sloping land and streams with the requisite vegetative buffer are already designated as open space.
**Opportunities**
1. Paved portion of the trail
2. Connection to Summer Crest trails
3. Enhanced park with amenities
4. Transit connection of Hart Road
5. Commercial retail area
6. Future trail connection to parks
7. Good bicycle connections

**Constraints**
1. Existing wetlands
2. No connection to Sexton Mountain Elementary School
3. Gate across corridor
4. Unpaved portion
5. Few bicycle parking access at school
**Trail Segment 2B: Bounded by SW Weir Road and SW Hart Road**

**Jurisdiction:** City of Beaverton, THPRD  
**Length:** 1.26 miles

**Table 2B: Summary of Opportunities and Constraints**

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Paved portions</td>
<td>• Wetlands between SW Nora Road and SW Satterberg Road</td>
</tr>
<tr>
<td>• Transit stops on SW Hart Road</td>
<td>• Absence of ramps or markings at street crossings</td>
</tr>
<tr>
<td>• Established park areas</td>
<td>• No options for auto parking/trail head location</td>
</tr>
<tr>
<td>• Future park / open space areas near Sexton Mountain School</td>
<td>• Marginal bicycle connectivity</td>
</tr>
<tr>
<td>• Connection to secondary parks and trails</td>
<td></td>
</tr>
<tr>
<td>• Tennis courts, children's play structure</td>
<td></td>
</tr>
<tr>
<td>• Several neighborhood access points</td>
<td></td>
</tr>
<tr>
<td>• Several existing parks and potential wetland enhancements serve the community well, offers many connection points</td>
<td></td>
</tr>
<tr>
<td>• Commercial/retail area on SW Hart Road</td>
<td></td>
</tr>
</tbody>
</table>

**Trail Elements/ Design Consideration**

- Complete the bicycle routes proposed in the City of Beaverton Bicycle Master Plan
- Complete the trails proposed in the THPRD Master Plan
- Complete connections to Sexton Mountain Elementary School
- Preserve existing wetlands in their natural state to the greatest extent possible
- Provide connection to Morrison Woods Park
- Public health can be encouraged by installing “fitness mile” equipment or providing trail loops (via the surrounding parks) for distance walkers/runners
- Designated dog area could serve as a social interaction place for both dogs and owners
Description and Narrative:

This 1.26 mile-long segment of the Westside Trail encounters a variety of topographic conditions. The southern portion is paved as it follows the east edge of an agricultural easement containing holly trees. The topography is not as steep as in Segment 2A, but the mid-segment wetland area is a significant constraint. In the northern portion, the trail is paved through Burntwood and Hart Meadows Parks, operated by THPRD; both parks span the power line right-of-way with low, well-kept vegetation. The only commercial activity in the segment is located in a small retail center on Hart Road. The surrounding neighborhood is a mixture of large single-family homes and dense single-family housing.

This segment is characterized by large household sizes and a high concentration of children. Metro and Washington County expect that by the year 2030 there will be a 25% increase in the number of households as existing vacant lands are converted to residential uses. Employment is also expected to grow by 31%. A fair percentage of commuters are already choosing alternative modes, such as carpooling, but few are traveling by bike. It is likely that this is a consequence of incomplete bike routes connecting to major transit lines.

28-1: A footpath through the wetland area shows that open spaces are well used by residents.
The paved trail continues north from Segment 2A at Weir Road. Sidewalks exist on both sides of Weir with good visibility of the oncoming traffic from either direction. The crossing is not striped and there are no accessible ramps at this location. The next crossing is SW 160th, which has sidewalks, ramps, and crossing markings on the street. On the north side of SW 160th, the trail is not paved; the vegetation is low and an informal footpath has been worn through the property. The terrain may be slightly steeper than the standard 5% but will not inhibit construction of a trail in this area; however, at the crossing with SW Nora Road, there exists a lowland area with standing water and footpaths within the segment; see photo 2B-1.

SW Nora Road is the next crossing; this road appears to be incomplete and there are no sidewalks or crossing markings. On the north side of Nora, there are gates erected with "No Trespassing" signs attached, see photo 2B-2. It is unclear why the gate exists, other than to keep pedestrians and bicyclists from traveling through this segment; the water level is quite high through this area, even during dry weather. The wetlands pose a significant constraint for this segment of trail. Travelers must use 160th or 155th as bypass routes. Should a jurisdiction put forth additional funding to design and construction bridges or boardwalks, the wetlands can be presented as an opportunity to bring nature closer to the residents and trail users. Wetlands also exist between the two road crossings to the north, Flagstone and Satterburg (future).

2B-2: Local jurisdictions must understand and modify existing easements prior to siting a trail through portions of the power line corridor.
Travelers can rejoin the power line corridor near SW 160th and Satterburg. It is at this point where the boundary for Hart Meadows Park begins. The trail is unpaved in this area, but an informal footpath exists, see photo 2B-3. This may have been created by trail users walking to Sexton Mountain School which lies two blocks east of the trail. Before the next roadway crossing at Rigert Road, THPRD maintains a pair of tennis courts. The street crossing at Rigert is basic; there are sidewalks on both sides with good visibility, but no ramps and no street markings. Additionally, the trail entrances do not align with one another across Rigert.

From Rigert north to Hart Road, the trail is paved. It is also within this area that the Westside Trail connects with the trails in Summercrest Park. A final crossing before Hart lies at Bridle Hills Street. This crossing also has sidewalks and ramps with good visibility, but no markings. The streets are classified as collectors or local roads, keeping the speeds at 30 mph or less.

Because of the relatively high number of street crossings as well as the spur trails, the neighborhoods in this segment are well-connected to the Westside Trail. For transit users, TriMet operates line #88 with stops very near to the trail on both sides of Hart Road. Access can also be made by vehicle along Hart Road; recent improvements included vehicle pull-outs or parallel parking spaces and striped bike lanes. The City of Beaverton recently completed bike lane improvements on SW 155th from Nora to Hart Road, a street that parallels the trail only 1,200 feet east. Future plans call for a continuation of bicycle improvements on SW 155th Avenue as well as on Nora Road up to Kemmer and 170th. The next segment to the north has a need for bicycle lanes and the completion of the trail so that bicyclists may connect to major transit lines.

The communities surrounding this segment of the trail have a high percentage of school-age children. While Sexton Mountain Elementary is the only school within this segment, additional recreation sites and safe routes for children are still of high importance. There is only one bicycle parking rack at the school. The provision of additional bike parking may encourage students to use the Westside Trail for their ride to school. In choosing safe routes to school, this segment has fairly good connections to the school via the trail and existing sidewalk system. The connection to Sexton Mountain School from the southwest has yet to be constructed. Upon final installation of this section of trail or city street system, the connectivity for school children will greatly improve.
Segment 2B is well-served by parks and open spaces, many of them containing recreation amenities. THPRD's Hart Meadows Park maintains tennis courts and children's climbing equipment. Additionally, the trail connects with Summercrest Park. The nearby Morrison Woods Park may serve as a destination point for recreation; future bike improvements and trail connections proposed by THPRD will connect the Westside Trail to the Park. A new park is planned for construction at the southwest corner of Sexton Mountain and 155th.

A small retail area is located on Hart Road, approximately 1000-feet west of the trail. The retail area contains several restaurants and cafes, veterinary services, and general convenience shopping. The mixture of businesses is conducive to bicycle and pedestrian traffic, yet there are no existing bicycle parking spaces. This commercial area is connected to the Westside Trail via Hart Road. However, trail users are given no information that this commercial area is nearby, as it is not visible from the trail. Signage could be used to inform trail users of the retail area, thereby encouraging walking or bicycling for short trips.

The vacant lands within Segment 2B both lay on steep terrain. Houses are being constructed on the properties surrounding vacant lot #48 and it is likely that lot #47 will follow suit. Lot #47, however, overlaps with the existing Morrison Woods Park. It is highly likely that this lot will be subdivided for park use in the future, as portions of the lot are undevelopable because of the presence of a stream and steep terrain. However, portions of lot #47 are showing signs of home construction. Similar to Segment 2A, this segment has an abundance of parks and open spaces. Conversion of these vacant lands to parks is unnecessary, except where the terrain and natural features warrant protection.
Opportunities
1. Paved portion of the trail
2. Children's play structure
3. Future park to be developed on Mt. Williams
4. Good bike connections on Davis Rd. and Hart Rd.
5. Transit connections on Hart Rd.
6. Future connections to existing parks
7. Scenic viewpoints on Mt. Williams
8. Signalized crossing available nearby

Constraints
1. Poor neighborhood connectivity
2. Steep terrain and gated access prevent trail access from Davis Rd.
3. Steep terrain, narrow width from trail
4. Poor road crossing

From Hart Road to Davis Road
Trail Segment 2C: Bounded by SW Hart Road and SW Davis Road
Jurisdiction: City of Beaverton, THPRD
Length: 0.64 miles

Table 2C: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Paved portions</td>
<td>• Incomplete sidewalk ramps at SW Hart Road crossing</td>
</tr>
<tr>
<td>• Transit stops on SW Hart Road</td>
<td>• Poor crossing at Burntwood</td>
</tr>
<tr>
<td>• Signalized crossing nearby on SW Davis Road</td>
<td>• Trail does not align with street crossing location at SW Davis Road</td>
</tr>
<tr>
<td>• Local roads have sidewalks and crossings are marked</td>
<td>• Steep terrain for ADA access</td>
</tr>
<tr>
<td>• Established park area</td>
<td>• Undeveloped Mt. Williams creates a barrier between the neighborhoods</td>
</tr>
<tr>
<td>• Children's play structure</td>
<td>• Unpaved portions</td>
</tr>
<tr>
<td>• Future Mt. Williams recreation area</td>
<td>• Poor neighborhood connections</td>
</tr>
<tr>
<td>• Scenic viewpoints on Mt. Williams</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/Design Consideration

• Complete the trails proposed in the THPRD Master Plan
• Provide trail loop via Lowami Hart Woods/Brookhaven Parks and to Thornbrook/Burntwood West/Tallac Terrace Parks
• Potential auto parking site within Mt. Williams area
• Public health can be encouraged by installing alternative recreation trails for hikers and mountain bikers
• Existing stormwater detention pond can be enhanced with vegetation or seating
• Designated dog area could serve as a social interaction place for both dogs and owners
• Potential pearl at Mt. Williams viewpoint

Description and Narrative:

This 0.64 mile long segment of the trail is paved from Hart Road to Burntwood Road through THPRD's Burntwood Power Line Park. The park contains a children's play structure near the road crossing. After crossing Burntwood Road, the terrain is becomes steep as it climbs the face of Mt. Williams. Currently, the trail is a footpath worn by hikers and mountain bikers, and the occasional utility service vehicle. The vegetation consists of high grasses and large growths of Himalayan blackberry. The north face of Mt. Williams contains shrubs and large trees. It is here where the trail intercepts an existing gravel driveway. There are no commercial sites in this segment; an elementary school is located across Davis Road in Segment 2D. The surrounding neighborhood consists of single-family homes.

The paved trail begins on the north side of SW Hart Road. The crossing at Hart was recently improved along with the rest of the street. There are sidewalks, a center median,
and crossing signs and markings, see photo 2C-1 and 2C-2. There is good visibility from either crossing location; however, there is no ramp to align with the crossing on the north side of Hart Road. Hart is considered a collector street, with vehicle speed posted at 30 mph. With the enhancements to the road and the crossing, this crossing is adequate for the users. The other street crossing is Burntwood, a local street. There are sidewalks on either side, but no ramps or markings. As Mt. Williams Park is developed, trail enhancements must include road crossing improvements.

The trail will eventually cross Mt. Williams Park; this park land was recently acquired by THPRD with the help of local businesses. Future plans include a trail system that is ADA accessible. Once complete, the Westside Trail and Mt. Williams Park will no longer be a barrier to the neighborhoods to the north. Connections will be available to park users and bicycle commuters. Once the Mt. Williams trails are built, this will also provide connectivity to the nearby Thornbrook, Burntwood West Upper, Burntwood West, and Tallac Terrace Parks; an existing trail system already connects these parks to one another. The views from Mt. Williams span a substantial part of the Tualatin Valley, as shown in photos 2C-3 and 2C-4.

It will be challenging to find suitable sites for formal trail heads and automobile parking areas in this segment; few vacant areas exist near the road crossings or schools. In fact, current pedestrian use is restricted as residents continue to occupy the Mt. Williams land. There is a gate across the driveway at Davis Road, prohibiting trail use. Additionally, the adjacent neighborhoods do not have good access to the Westside Trail or the Mt. Williams park area; future development of the park must provide more connections to improve accessibility to the surrounding residents. Automobile access is best achieved from the existing driveway off Davis Road. But, depending on THPRD’s master plan for this site, auto access may not be desired.

Forecasts show growth in employment, and nearly 10% are already using alternative modes for commuting. Although the trail is not complete for long distance bicycle commuting, some residents may choose to walk the trail to access TriMet transit line #88 along Hart Road; there are stops on both sides of the street within 230-feet of the trail head. Bicycle access to and from the trail is possible from the bike lanes on Hart and Davis Roads. Future bike lane striping improvements on SW 155th Avenue will provide a parallel route to the Westside Trail.
Demographic research reveals that this segment is densely populated. Because much of the land is already built out, only an 11% increase in households is expected by 2030. The communities surrounding this segment of the trail have a high percentage of school-age children. THPRD's Burntwood Park maintains children's climbing equipment. There is one daycare/school within this segment. However, because of the terrain and land uses, there are no connections between the trail corridor and this school.
1. Nearby school for safe routes
2. Paved trail
3. Future trail
4. Good signalization / Crossing
5. Existing Park & Ride site for trailhead parking
6. Retail / Commercial shopping area
7. Community gardens provide alternate use for corridor

**Constraints**
1. Poor neighborhood connections
2. Difficult connection for smooth continuity
3. Wetlands
4. Easements for residential/agricultural use
Trail Segment 2D: Bounded by SW Davis Road and SW Canyon Road (Tualatin Valley Highway)
Jurisdiction: City of Beaverton, THPRD
Length: 1.15 miles

Table 2D: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Paved portions</td>
<td>- Adjacent homes have agricultural uses in corridor</td>
</tr>
<tr>
<td>- Transit stops on Farmington Road and Canyon Road</td>
<td>- Adjacent apartment complex has community gardens in corridor</td>
</tr>
<tr>
<td>- Signalized crossings within 700-feet at Canyon Road, 300-feet at Farmington Road</td>
<td>- Wetland area between Farmington and Canyon Roads</td>
</tr>
<tr>
<td>- Local roads have sidewalks and crosswalk markings</td>
<td>- Trail does not align with street crossing location at Canyon Road</td>
</tr>
<tr>
<td>- Access to K-Mart shopping area on Murray/Canyon (retail, employment)</td>
<td>- Few destinations for non-resident trail users, few park amenities</td>
</tr>
<tr>
<td>- Established park area</td>
<td>- Poor neighborhood connections</td>
</tr>
<tr>
<td>- Flat terrain, good ADA access</td>
<td></td>
</tr>
<tr>
<td>- Plenty of room for auto parking, enhanced trail head location at Canyon Road</td>
<td></td>
</tr>
<tr>
<td>- Plenty of vertical clearance at Canyon Road for a pedestrian tunnel</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

- Complete the bicycle routes proposed in the City of Beaverton Bicycle Master Plan
- Potential auto parking site off of Canyon Road at retired TriMet park and ride lot
- Public health can be encouraged by installing recreation equipment, landscaping, and seating for users
- Existing stormwater detention pond can be enhanced with vegetation or seating
- Designated dog area can serve as a social interaction place for both dogs and their owners

Description and Narrative:

This 1.15 mile long segment of the trail is paved at its southern end, from Davis Road to Village Street; this portion of the trail runs through Schuepbach Park, operated by THPRD. The trail paving was recently completed in this section and winds, via switchbacks, from Davis Road down to Village Street. The remaining portion of this segment contains gently sloping terrain that is perfect for an ADA accessible trail. The vegetation is low and well kept for the majority of the segment. There is one nearby shopping area at the intersection of Murray and Canyon. Two schools are located within this segment, and the surrounding neighborhood is a mixture of large single-family homes and multi-family housing.
The paved trail begins on the north side of Davis Road. The southern portion is not complete over Mt. Williams, thus a trail crossing does not exist at this location. However, Davis Road is low speed and low volume because of the presence of two schools within 250-feet of the trail. The visibility at the road crossing for the trail is very good. Pedestrians looking for added safety can cross at the pedestrian-actuated signal at SW 155th. With the exception of Farmington Road, the other street crossings in this segment are similar to Davis with low vehicular volumes and speed. There is not a road crossing at the power lines' intersection with Farmington. However, a signal at SW 160th and Farmington is within 250-feet and could provide safe crossing opportunities. During the peak hours, Farmington can be a very busy street when all five lanes are filled with vehicles.

Between Farmington Road and Canyon Road, the trail is not yet constructed. In this area, there is a wetland following the power line corridor. The upland areas are drier. Adjacent apartment complexes maintain community gardens, shown in photo 2D-4, within the corridor and their easements (if they exist) may need to be re-negotiated. Trail users could use SW 160th as a parallel route to the Westside Trail. However, this road has high speeds and intermittent sidewalks; drivers tend to use this road as a bypass to the Murray Boulevard congestion. This is a poor alternative to the completion of the Westside Trail.

At the north end of Segment 2D, Canyon Road, as it climbs above a railroad crossing, sits much higher than the Westside Trail, as shown in photo 2D-1. Because of the vertical clearance and the low groundwater table, this crossing would be ideally made via a pedestrian tunnel beneath Canyon Road. Trail designers would have to work closely with the railroad company and ODOT to complete such a crossing, as the track location and staging of railcars limit the opportunities for a trail at this time.

Providing the trail in this location would also create easy auto access via the TriMet Park and Ride Lot that lies below Canyon on the south edge. The lot is currently blocked off, but a trail head could provide a new use for this land with little to no cost for conversion.

Access to the Westside Trail can be accomplished via transit. TriMet operates transit line #52 along Farmington and the #57 along Canyon Road. There are stops on both sides of the street within 250-feet of the trail head on Farmington; the distance is nearly 1000-feet on Canyon. A completed trail may increase the number of transit commuters in this segment, already at 7%. Bicycle commutes may also rise from the current level of 2%.
The communities surrounding this segment of the trail have a high percentage of school-age children. There are three schools located within this segment: Educare, Chehalem Elementary, and St. Mary's of the Valley. Unfortunately, other than the schools grounds, there is a lack of recreation sites for children. THPRD's Schuepbach Park is a grassy open space with a paved trail, but there are no other amenities for users, as shown in photo 2D-3. This park could benefit from a variety of landscaping, play structures for children, or seating opportunities. Within this park lies a stormwater detention facility that could also be enhanced for aesthetics and seating opportunities. Besides nearby Mt. Williams Park, there are only two other parks through this segment, Lilly K. Johnson Park and Barsotti Park, both of which are several blocks from the trail.

The adjacent neighborhoods are not well-connected to the Westside Trail, as short spur trails leading between houses do not exist. Pedestrian and bicycle access is limited to the roadway crossings only. Access to this trail by bike is possible from the bike lanes on Davis, Farmington, and Canyon Roads. These roads are also designated as bike routes on the City of Beaverton Bicycle Master Plan. There does not appear to be any bicycle parking at the nearby school, however. The provision of such facilities may encourage students to use the Westside Trail for their ride to school. Additionally, since the adjacent neighborhoods are relatively close in proximity to major transit sources, a trail would make those connections much faster and safer.

2D-3: Recently completed Schuepbach Park, facing north.

2D-4: Community gardens may present a constraint to trail construction, as easements for such activities may not be recorded. Protection of the gardens from trail users may also pose additional concerns.
Segment 2E

From Canyon Road to Jenkins Street

Opportunities:
1. Connections to Nature Park
2. Connections to Beaverton Creek Business Park
3. Connections to Beaverton Creek Wetlands Park
4. Connection to MAX stations
5. Access to transit on Jenkins Rd and Canyon Rd
6. Good bicycle connections
7. Future access to Beaverton Creek Greenway Trail

Constraints:
1. Wetlands and stream
2. Crossings of railroad tracks and MAX tracks
3. Wetlands and stream
4. Intersection with poor pedestrian treatments
Trail Segment 2E: Bounded by SW Canyon Road and SW Jenkins
Jurisdiction: City of Beaverton, THPRD
Length: 1.40 miles

Table 2E: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Two MAX stations located within a half mile</td>
<td>• Dangerous crossing at SW Canyon Road</td>
</tr>
<tr>
<td>• Connectivity to bus lines</td>
<td>• Crossing multiple railroad tracks</td>
</tr>
<tr>
<td>• Connectivity to Tualatin Hills Nature Park Interpretive Center on SW Millikan Street</td>
<td>• Crossing the MAX tracks</td>
</tr>
<tr>
<td>• Connectivity to Beaverton Creek Wetland Park</td>
<td>• Large wetlands to cross through Beaverton Creek Wetland Park</td>
</tr>
<tr>
<td>• Connectivity to major employment centers: Beaverton Creek Business Park and NIKE</td>
<td>• Stream intersects the trail at two locations</td>
</tr>
<tr>
<td>• Connections to existing bike lanes on Canyon Road and multi-use paths within Nature Park and Wetland Park</td>
<td>• Trail crossing of SW Jenkins within 100-year floodplain</td>
</tr>
<tr>
<td>• Connectivity to the proposed Beaverton Creek Greenway Trail</td>
<td></td>
</tr>
<tr>
<td>• Sidewalks constructed on most streets within a half mile of the trail</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/Design Consideration

- Potential trail head on SW Millikan Street, near entrance to Nature Park
- Crossing of railroads and MAX tracks
- Crossing of SW Canyon Road
- Tualatin Hills Nature Park and Beaverton Creek Wetland Park serve as potential pearls
- Environmental considerations for wetlands and streams intersecting the trail

Description and Narrative:

This 1.40 mile long segment is located adjacent to the Tualatin Hills Nature Park. A large portion of this trail segment (from SW Canyon Road to the MAX tracks) is scheduled for construction; it will be 10-12 feet wide when completed.

The communities surrounding this segment consist of a high percentage of minorities and renters. The share of transit commuters is also high at 20%. This can be explained by the ample transit options within this segment, including bus and light rail services. Commuters are also drawn to this segment by the surrounding employment centers, NIKE and Beaverton Creek Business Park. Two MAX stations are located within a half mile of the trail: Beaverton Creek and SW Merlo Road/SW 158th Ave. Two bus routes also provide east-west travel opportunities to the surrounding communities. TriMet Route #57 runs on SW Canyon Road with bus stops located

MLP - Westside Trail Feasibility Study
near trail. Route #67 also runs on SW Jenkins Street, with bus stops within a walking distance from the trail.

This segment is well-connected with the existing bike network. Bike lanes are installed on SW Canyon Road and on SW Jenkins Street. The regional multi-use path that runs through the Beaverton Creek Wetland Park will connect with the Westside Trail. Trails running though the Nature Park also can be connected with the Westside Trail. The proposed Beaverton Creek Greenway Trail will also provide a regional access point to the Westside Trail when it is completed. Tualatin Hills Nature Park and Beaverton Creek Wetlands Park are potential park sites. The entrance to the Nature Park is located south of the Merlo Rd/SW 158th Ave MAX station. Another entrance to the park is located on SW Millikan Street, about 100-feet west of the Westside Trail. The Nature Park's Interpretive Center is used for community events and has restroom facilities and a medium-sized parking lot, which makes the Millikan Street intersection feasible for a trail head.

Two vacant lots are located within a half mile of the Westside Trail. One is a large taxlot located east of the Westside Trail, north of the Beaverton Creek MAX Station. This 74-acre taxlot is owned by NIKE. It is mostly covered by trees, providing significant natural resources to the community. Although no informal footpaths were observed on the site, this property could be a potential park destination. The other vacant taxlot is located to the east of the Beaverton Creek Wetlands Park. This 5.2-acre site is in private ownership and is mostly covered by wetlands and the 100-year floodplain. The Beaverton Creek Greenway Trail is proposed to be developed in the northern section of the site. This taxlot could be used to expand the Beaverton Creek Wetland Park.

Consideration needs to be given to two large wetland areas. Streams intersect the trail at two locations: one is north of SW Canyon Road, the other south of SW Jenkins Street. A picture of the stream is shown in photo 2E-1. The streams are surrounded by the 100-year floodplain that coincides with the trail alignment. These factors should be considered during trail planning.

Crossing railroad and MAX tracks are the major constraints in this segment. The railroad is used by Burlington-Northern for carrying and storing freight. THPRD currently has a design for the trail in this segment that utilizes the existing traffic signal at Canyon Road to divert trail users away from the rail line. Further north, plans call for an at-grade pedestrian of the MAX tracks. A temporary solution is to divert...
trail users to SW 153rd Drive, a minor parallel street located east of the trail which makes use of an existing track crossing.

Crossing SW Canyon Road is another major issue. In the short term, the trail users need to be diverted to the intersection of SW Canyon Road and SW Millikan Street, where push-button pedestrian signals are installed. This diversion is a major constraint of this project and is a potential barrier that would discourage some users from using the segment of the trail, such as bike commuters or runners looking for a continuous path. Since SW Canyon Road sits much higher than the trail, there is the possibility for an undercrossing at trail grade.

A variety of users are expected to use this segment. Although no schools are located within a half mile of the trail, families with school-age children visiting the Nature Park are expected to use the trail. Other expected user types include commuters to/from the Beaverton Creek Business Park and NIKE. The surrounding communities consist of a higher percentage of low-income families and renters, who are more likely to be transit-dependent. Local residents are expected to use the trail to access to the nearby transit stops and other major destinations along the trail. The flat topography makes this segment suitable for running and leisure walking; in fact, many runners, hikers and dog owners were observed during the inventory.
Opportunities
1. Paved trail
2. Connections to NIKE campus
3. Connections to business parks
4. Transit access on Walker St and Jenkins St
5. Connections to bike lanes
6. Potential site for a rest area

Constraints
1. Wetlands and stream
2. No crossing improvements
Trail Segment 2F: Bounded by SW Jenkins Street and SW Walker Road
Jurisdiction: City of Beaverton, THPRD
Length: 0.60 miles

Table 2F: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Connectivity to NIKE campus</td>
<td>• Existing wetlands</td>
</tr>
<tr>
<td>• Connectivity to Woodside Corporate Park</td>
<td>• Presence of 100-year floodplain</td>
</tr>
<tr>
<td>• Connectivity to existing bike lanes on SW Jenkins Street and on SW Walker Road</td>
<td>• NIKE Campus Open Space between SW Jenkins Street and SW Jay Street</td>
</tr>
<tr>
<td>• Connectivity to TriMet bus lines #59 and #67</td>
<td>• No pedestrian crossing at SW Walker Road</td>
</tr>
<tr>
<td>• Potential connections to NIKE’s trails</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

- Environmental considerations for large wetlands and streams intersecting the trail
- Improve pedestrian crossing at SW Jenkins Street
- Need pedestrian facilities to cross SW Walker Road
- NIKE serves as a potential pearl

Description and Narrative:

A large portion of the Westside Trail in this segment is already paved and provides a glimpse of what other segments of the Westside Trail will look like when completed. It provides access to surrounding businesses, including NIKE and various employers in Woodside Corporate Park. The segment is actively used by runners, dog owners and commuters. Photo 2F-1 shows this paved segment.

The surrounding communities consist of a higher percentage minorities and renters. Approximately 21% of the residents commute to work by carpool, less than 1% of the residents commute by bike, and only 5% of the residents commute by transit. This indicates that the trail is not used as a commuting route by local residents but rather as a leisure walking or a running path. In fact, runners and dog owners were observed during the inventory but not cyclists.

Vacant lot #43, located adjacent to the trail, has a footpath connecting the trail and Burlington Street. Employees of the businesses in the Woodside Corporate Park have direct access to the trail from their site via paved and unpaved paths. Also, on-street parking on Burlington and Jay Streets provide trail users with spaces to park their cars. One potential use of this vacant lot is to convert it into a picnic area with a paved path connecting Burlington Street and the Westside Trail.

This section also has a high connectivity with the
The existing Westside Trail between SW Jay Street and SW Walker Road is near the public transit system. TriMet bus line #57 runs on SW Walker Road, with bus stops located at the nearest intersections. Bus line #67 runs on Jenkins Street, and bus stops are located at the intersection of Jenkins and Jay Streets. However, the south side of Jenkins Street from SW 153rd Avenue to Jay Street does not have a sidewalk. The bus stop located at the southwest corner of Jenkins Street and Jay Street does not provide a waiting space for transit users. Similarly, the intersection of SW 153rd and SW Jenkins Street needs improvements for safe pedestrian crossing. Crosswalks with push-button pedestrian signals are installed at the intersection, but there is little space for pedestrians to safely stand and wait.
The trail also has a good connectivity to the existing bike network. Bike lanes are installed on Walker Road, Jenkins Street, SW 158th Avenue and Murray Blvd, providing access opportunities from all directions. Also, bicycle and pedestrian paths on the NIKE campus can be accessed easily.

A 1000-foot long segment of the trail from Jenkins Street to Jay Street is not yet constructed. This large area is vacant and privately owned. The Nike Campus Open Space is located on the east side of the trail and contains managed wetlands that drain to nearby Beaverton Creek. The picture of the open space is shown in photo 2F-2. Special environmental considerations should be given to this area.

On the south side of Jay Street, as the roadway heads west from the intersection with Jenkins, is a small business park. The trail is paved from the innermost point along the parking area, waiting for a future extension across the wetlands to Jenkins. This section of paved trail sees little use, as it is hidden from northbound trail users; southbound trail users will quickly understand that it is a dead end.
Opportunities
1. Safe Routes to School - Meadow Park Middle School
2. Connection to H.M. Terpenning Recreation Complex
3. Park with children's play structures
4. Connections to large employers
5. Connections to commercial retail on 185th Ave
6. Transit access on Greenbrier St.
7. Safe Routes to School (Sunset High School)
8. Connection to Columbia Sportswear
9. Gravel parking lot under power line is potential trail head parking
10. Trail access for residents of apartment complex
11. Access to commercial retail areas
12. Access to Sunset Swim Center Park

Constraints
1. No access point between Walker and Pioneer
2. Stream crossing
3. Parking lot underneath the powerline
4. Crossing of Hwy26
Trail Segment 2G: Bounded by SW Walker Road and NW Cornell Road  
Jurisdiction: City of Beaverton, THPRD  
Length: 0.90 miles

Table 2G: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Connectivity to THPRD's H.M. Terpenning Recreation Complex</td>
<td>• Crossing SW Walker Road currently requires out-of-direction travel</td>
</tr>
<tr>
<td>• Access to Pioneer Park</td>
<td>• Despite there being a bike lane, heavy traffic on NW Cornell Road makes bike commuting to Sunset High School difficult</td>
</tr>
<tr>
<td>• Access to Meadow Park Middle School</td>
<td>• Limited bike parking spots at Sunset High School</td>
</tr>
<tr>
<td>• Safe routes to Sunset High School</td>
<td>• No existing pedestrian crossing at Highway 26</td>
</tr>
<tr>
<td>• Access to large employers</td>
<td>• Parking lot underneath the power line at Greenbrier Parkway</td>
</tr>
<tr>
<td>• Access to retail areas on SW 158th Avenue and NW Cornell Road</td>
<td>• Lack of continuous sidewalks on nearby streets</td>
</tr>
<tr>
<td>• Transit stops on SW Walker Road and Greenbrier Parkway</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/Design Consideration

• Pedestrian facilities (such as a median refuge island) recommended at SW Walker Road
• Spur trails needed to connect the trail to the neighborhood
• Pioneer Street can be a potential trail head, providing access to Pioneer Park and H.M. Terpenning Recreation Complex
• Greenbrier Parkway can be a potential trail head, providing access to the large employment centers and transit

Description and Narrative:

This 0.90 mile long section is surrounded by communities with a high percentage of renters and minorities. Metro has forecasted that the number of households will increase by 16% by 2030. Also, a 43% increase in employment is forecasted by 2030. Alternative commute modes are 5% for bike, 7% for transit, and 11% for carpool. The completion of the Westside Trail will provide opportunities to increase a mode share of bike commuting by connecting residential areas and major business parks.

A large portion of this segment is surrounded by single-family residential houses. The trail alignment runs behind private residential properties, yet a segment about 3,500-feet long from Walker Road to Pioneer Street does not have an access to any local neighborhood streets. Spur trails from residential streets should be created so that local residents will have easy access to the trail.

Most streets in the neighborhoods have low traffic volumes. This creates a safe and comfortable environment for
pedestrian and cyclists. However, sidewalks are not installed on most streets, and where they are installed, they are not continuous because of inconsistent setback requirements at the time of home construction. Additional safety measures, such as crosswalk markings, traffic calming devices, or other pedestrian treatments are not installed on the neighborhood streets.

The H.M. Terpenning Recreation Complex is a major destination in this area. The east side entrance to the park is located on Pioneer Street, a local residential street with a low traffic volume but lacks a continuous sidewalk. Pioneer Street is shown in photo 2G-1. Pioneer Park is also located on Pioneer Street, adjacent to the trail alignment. This park has playground facilities, picnic tables and benches, and a basketball court. Creating a trail head on Pioneer Street will provide access to the Recreation Complex as well as to Pioneer Park which can be used by trail users as a rest area.

Another major destination in this segment is Meadow Park Middle School. The entrance is located on Walton Street. To access Walton Street, students use either Meadow Street or SW 114th Avenue. These streets are small with low traffic volumes, but they lack continuous sidewalks. No access points are created on the trail from Walker Road to Pioneer Street; students traveling on the trail from the south will be required to cross Walker Road, a five-lane arterial with very high traffic volumes. No pedestrian facilities are installed at the point where the trail and Walker Road intersect.

The distance to the closest signalized intersection is approximately 350-feet. An at-grade crossing (crosswalk, signal, or median) could be installed at the trail's intersection with SW Walker Road to create a continuous trail network.

Sunset High School, Sunset Swim Center and Columbia Sportswear (a major employer) are located to the east of the Westside Trail on Cornell Road. Connections between these sites and the Westside Trail should be carefully considered. Though there are bike lanes and sidewalks on Cornell, the street has high traffic volumes and no crosswalk or signal at Sunset High School. Students would need to travel several hundred feet to the west to reach the crosswalk at SW 143rd. Providing crossing improvements at the school should be a priority. Given the volume of automobile traffic along Cornell, a multi-use path connecting the school to the Westside Trail may be warranted.

A large business park is located west of the trail, south of Highway 26. Employers in the business park include Syma-
tec Corporation and Leupold & Stevens Incorporated with more than 500 employees; Timberline Software Corporation with 450 employees; Fox 12 Production with 100 employees; and various businesses in the Cornell Oaks Corporate Center off Greenbrier Parkway. The trail alignment crosses a private parking lot for the surrounding businesses which could be a constraint. Greenbrier Parkway will be a great trail head for this area, providing access to the surrounding businesses; this is a small residential street that feeds into SW 158th Avenue, a major arterial. Sidewalks are installed continuously on both sides. Also the TriMet bus line #67 runs on Greenbrier Parkway. A picture of the trail at Greenbrier is shown in photo 2G-2. Currently, the area under the power line is used as a medium-size parking lot for the surrounding employers. Relocation of the parking lot may be required when constructing the trail, or the trail may have to be constructed around the parking area.

One of the most significant constraints of this project is crossing Highway 26. Though costly, a pedestrian bridge would be the most desirable solution. The nearest roadway crossings/interchanges to the trail are Cornell Road, over half a mile to the west, and Murray Boulevard, over half a mile to east.

A retail area is located on the south side of Cornell, approximately 500-feet to the west of the trail. This retail area contains several businesses that may lend themselves to bicycle and pedestrian traffic: a pizza restaurant, brew pub, dentist, etc. However, there are currently only two bike parking spots serving the retail area. Additional bike parking would complement the completion of the trail.
1. Access to Sunset Athletic Club
2. Access to bus service on Cornell Rd
3. Existing trail that provides safe connection between Terra Linda Elementary School and the Westside Trail
4. Connections to Oak Hills Open Space

Constraints
1. Crossing at Cornell Rd. No crosswalk or signal at intersection with trail
2. Teufel Nursery is using land in corridor
3. Wetlands
4. No Trespassing signs and chains blocking access to Oak Hills Open Space

Map showing opportunities and constraints in the area from Cornell Road to West Union Road.
Trail Segment 2H: Bounded by NW Cornell Road and NW West Union Road
Jurisdiction: City of Beaverton, Oak Hills Homeowners Association
Length: 1.08 miles

Table 2H: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Connections to transit on Cornell Road and Oak Hills Dr.</td>
<td>• No trespassing signs at perimeter of Oak Hills open space. Homeowners may have an easement over BPA corridor</td>
</tr>
<tr>
<td>• Bicycle and pedestrian connections to Sunset Athletic Club</td>
<td>• Heavy automobile traffic on Cornell Road makes bike commuting to Sunset High School and Columbia Sportswear potentially dangerous</td>
</tr>
<tr>
<td>• Safe Routes to Terra Linda Elementary</td>
<td>• Automobile traffic on NW 143rd may present a hazard to students from Terra Linda Elementary School</td>
</tr>
<tr>
<td>• Connect existing parks (Oak Hills open space, Terra Linda Park) and natural areas (Clean Water Services wetland restoration in Hunters Woods open space)</td>
<td>• Westside Trail would need to traverse wetlands at Hunters Woods</td>
</tr>
<tr>
<td>• Potential trail head parking area at NW Cornell Road (gravel lot under power line currently being used by Lifeworks NW for parking; see picture 2H-2)</td>
<td>• Limited bike parking spots at Terra Linda Elementary School (24 counted)</td>
</tr>
<tr>
<td>• Access to trail for multi-family residences on Cornell Road</td>
<td>• Teufel Nursery use of land beneath power line just north of Cornell Road</td>
</tr>
<tr>
<td>• Ample trail access via residential streets and through existing parks</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

• Road crossing at NW Cornell Road
• Wetlands crossing at Hunters Woods open space (potential pearl)
• Potential trail head parking on south side of NW Cornell Road (currently a flat, gravel lot used by Lifeworks NW)

Description and Narrative:

Section 2H is approximately 1.08 miles long and passes through a commercial corridor at NW Cornell Road and then proceeds northerly through the Hunters Woods and Oak Hills subdivisions. The trail is paved, though only three feet wide, as it passes through the Oak Hills subdivision. The terrain in this section is gently rolling with no slopes greater than 25%. The power line corridor crosses a small wetland area in the Hunters Woods subdivision. This wetland is being restored by Clean Water Services.

Section 2H is primarily residential and has high population densities. Metro forecasts indicate a 13% increase in households and a 34% increase in employment by the year 2030. Currently, residents of Segment 2H rely primarily on automobiles for commuting. Only 2% commute using a bicycle, 6% use transit, and 8% carpool. 59% of this section's
residents work in Washington County and 37% work in the central city. The completion of the trail would make bicycle or mixed alternate commuting modes more viable for current and future residents. In addition to providing commute alternatives, the use of the trail by residents could provide public health benefits and access to natural areas.

Though the power line corridor is owned by the BPA, both the Hunters Woods and Oak Hills residential areas have private open space areas that include the power line corridor. It is likely that these homeowners associations have easements allowing these uses. No trespassing signs or fences are good indicators that a homeowners association regards these areas as off-limits to non-residents. Though there is no such sign in the Hunters Woods open

2H-1: Trail crossing at NW Cornell Road (Oaks Apts and Lifeworks NW parking lot) looking north.

2H-2: Pathway provides safe access from Terra Linda Elementary School to Burton Road.
space, there is a no trespassing sign and chain restricting access in the Oak Hills open space (see photo 2H-8). This sign and chain are directly below the power line. It is likely that Metro will need to further research the existence of easements over the power line corridor. It is also likely that Metro will need to work with these homeowners associations to address any concerns with increased access by non-residents. The Westside Trail would connect to an existing internal trail network within the Oak Hills neighborhood association open space.

The communities surrounding this segment of the trail have a high percentage of school-age children. There is one school within 1/2 mile of the trail, Terra Linda Elementary. Opportunities exist to provide pedestrian and bicycle connections between the school and the trail. Terra Linda Elementary School students may most safely access the Westside Trail via a paved multi-use path (see photo 2H-5) that heads north from the school, through the adjacent Terra Linda Park, to Burton Road. Burton Road is a low-traffic residential street with sidewalks that may be followed to the west for approximately 1/2 mile to the Westside Trail. Students would cross NW 143rd at an intersection with crosswalks and a pedestrian signal. NW 143rd has relatively high traffic volumes. The addition of crossing guards before and after school would lend additional safety if they are not already provided.

Sunset Athletic Club is located to the east of the trail, on NW Cornell Road. Connections between this site and the trail should be carefully considered. Though there are bike lanes and sidewalks on Cornell, the street has high traffic volumes.
Opportunities
1. Possible Metro acquisition (wetland property)
2. Possible Metro acquisition (wetland property)
3. Potential trail head parking on PG+E or THPRD property
4. Access to sizeable wetland habitat area
5. Ped/Bike access to retail area
6. Paved access between Stoller Middle School and trail
7. Paved access between Jacob Wismer Elementary School and trail
8. Connection with Rock Creek trail

Constraints
1. Heavy auto traffic at intersection with West Union. No crosswalk or signal.
2. Heavy traffic on Kaiser. No crosswalk or signal. Blind curve to the east.
3. Heavy auto traffic on Laidlaw. No crosswalk or signal.
4. "no trespassing" sign.
Trail Segment 21: Bounded by NW West Union Road and NW Springville Road
Jurisdiction: City of Beaverton
Length: 1.75 miles

Table 21: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bicycle and pedestrian connections to existing parks and Bronson Creek wetland area, see photo 21-18</td>
<td>• No transit access within 1/2 mile</td>
</tr>
<tr>
<td>• Connections to the Rock Creek Trail, which in turn connects to the Waterhouse Power Line Trail, approximately 1 mile to the west</td>
<td>• Heavy automobile traffic on NW West Union, NW Kaiser, and NW Laidlaw Roads. No crosswalks or traffic signals at these intersections. Blind curve at Kaiser Road</td>
</tr>
<tr>
<td>• Safe Routes to Schools: Stoller Middle School and Jacob Wismer Elementary</td>
<td>• Westside Trail would need to traverse wetlands at Bronson Creek (see photo 21-18)</td>
</tr>
<tr>
<td>• Potential trail head parking area on PGE or THPRD properties at NW 147th and NW Kaiser Road</td>
<td>• Steep section (though short) between Lilium Drive and Wendy Lane</td>
</tr>
<tr>
<td>• Existing bicycle parking at Stoller Middle (54 spots) and Jacob Wismer Elementary (64 spots) schools</td>
<td>• &quot;No Trespassing&quot; sign in field south of NW Springville Road suggests that there may be an agricultural easement over power line corridor</td>
</tr>
<tr>
<td>• Ample paved trail access points from surrounding residential areas (see photo 21-12 for an example)</td>
<td>• Residential backyard use under power line at NW Silverleaf and Meadowridge may indicate ownership questions</td>
</tr>
<tr>
<td>• Bicycle and pedestrian connections to retail area at NW Laidlaw and NW Bethany</td>
<td>• Vacant land at trail's intersection with NW Springville could be used for park space or trail head parking</td>
</tr>
<tr>
<td>• Incorporate trail into siting of new homes to be built north of NW Greenwood</td>
<td>• Trail Elements/ Design Consideration</td>
</tr>
<tr>
<td>• Vacant land at trail's intersection with NW Springville could be used for park space or trail head parking</td>
<td>• Road crossings at NW West Union Road (see photo 21-2), NW Kaiser and NW Laidlaw need safety improvements</td>
</tr>
<tr>
<td></td>
<td>• Crossing wetlands at Bronson Creek Greenways may require a raised boardwalk</td>
</tr>
<tr>
<td></td>
<td>• Potential trail head on THPRD or PGE properties at 147th and Kaiser or at trail intersection with Springville Road</td>
</tr>
</tbody>
</table>

Description and Narrative:

Segment 21 is approximately 1.75 miles long and passes through single-family residential areas. Between NW Laidlaw Road and NW Wendy Lane, the trail is paved, though it is only five feet wide. The terrain in this section is gently rolling with no slopes of 25% or greater. There is, however, one small, but steep hill between Lilium and Wendy. It will
be necessary to provide switchbacks in that location in order to achieve ADA compliance.

The power line corridor crosses a sizable wetland area in the Bronson Creek area, midway between West Union and Laidlaw (see photo 21-18). This wetland provides an opportunity for bikers and walkers to enjoy nature. Portions of this wetland area are public open spaces, but there are also a number of vacant private properties in this same wetland area. These vacant lots are identified as #40 and #41 on the map of this segment. Providing a pedestrian/bike crossing over these wetlands will require additional consideration. In order to avoid damaging the wetlands, the construction of a raised boardwalk may be necessary for this section of the trail. Alternatively, the Westside Trail could be diverted to Kaiser Road for a short section. However, given the volume and speed of automobile traffic along Kaiser Road, that alternative seems less desirable than a raised boardwalk through the wetlands.

Segment 21 is entirely residential and has low population densities. Incomes in this section are high and there are a relatively high percentage of minority residents. Metro forecasts indicate an 8% increase in households and a 39% increase in employment by the year 2030. Currently, residents of section 21 rely primarily on automobiles for commuting. Only 1% of the commuters in this segment commute using a bicycle, 3% use transit, and 8% carpool. 66% of this section's residents work in Washington County and 37% work in the central city. The completion of the Westside Trail would make bicycle or mixed alternate commuting modes more viable for current and future residents. In addition to providing commute alternatives, the use of the trail by residents could provide public health benefits and access to natural areas both within this segment and further north in Forest Park.

There is a definite need for additional safety measures where the Westside Trail crosses West Union, Kaiser, and Laidlaw roads. Currently, there are no crosswalks or traffic signals and automobile traffic along these streets exceeds 35 mph. Each of these streets had a fairly continuous stream of traffic. East of the trail, Kaiser Road curves to the south, making it difficult to see automobiles approaching from that direction.

There are two schools within ½ mile of the trail in segment 21: Jacob Wismer Elementary and Stoller Middle Schools. There are excellent bike and pedestrian connections between these two schools and the Westside Trail. Students from Jacob Wismer Elementary School may safely access the Westside Trail via Wendy, a low-traffic residential street with sidewalks. The Westside Trail is approximately 300 feet away from the school. There are 64 existing bike parking spots at Jacob Wismer Elementary School. Adjacent to the elementary school is Stoller Middle School. A paved access path from the school to Lillium, a low-
traffic residential street with sidewalks, puts the Westside Trail within close and safe reach for Stoller students. Stoller Middle School is approximately 575 feet from the Westside Trail. There are 54 existing bike parking spots at Stoller Middle School. Given the impressive number of bike parking spots at both of these schools and their close proximity to the trail, these schools seem to be ideal locations to incorporate trail activities into the P.E. curriculum. Incentives for biking or walking to school could also be promoted.

A retail area is located at NW Laidlaw and NW Bethany Roads, approximately ½ mile to the west of the Westside Trail. This retail area contains several businesses that may lend themselves to bicycle and pedestrian traffic: a Chinese restaurant, a QFC supermarket, a Walgreens, a bank branch, etc. Ensuring adequate bike parking here would complement the completion of the Westside Trail. The retail area is connected to the trail by Laidlaw Road. While there are sidewalks along Laidlaw Road, there are no bike lanes.
Opportunities

1. Vacant lot (but steep, wet and overgrown)
2. Old Germantown road is used by numerous cyclists, ideal access point for this group
3. All street crossings have high visibility and adequate traffic gaps

Constraints

1. Wetland crossing entire corridor and into neighboring fields
2. Steep slopes / drainage down corridor makes this very muddy
3. Neighbors report elk sightings in this area, this could be a danger to trail users and trail could disrupt
Trail Segment 3A: Bounded by NW Springville Road and NW Germantown Road
Jurisdiction: Unincorporated Washington County
Length: 0.89 miles

Table 3A: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
</table>
| - Good hiking and mountain biking terrain  
- Low traffic, good visibility at all road crossings  
- Potential to integrate North Bethany planning efforts to locate parks near the trail  
- Vacant lots 1 and 2 could become a trail head / park  
- Scenic views | - Segment is prohibitively steep and overgrown in places  
- No transit access  
- Evidence of recent elk habitation underneath power lines  
- Wetlands throughout alignment |

Trail Elements/ Design Consideration

- Views of the Tualatin and Willamette Valleys  
- Significant open space at vacant lots near the base of the west hills

Description and Narrative:

Segment 3A runs for 4,700 feet from NW Springville Road north to NW Germantown Road. The first half of the segment runs north along the valley floor to the base of the west hills. This southerly portion of the trail segment is very wet but trail traffic could be routed down a newly paved road which lies directly west of the power line corridor.

The power line runs northwest, crosses a creek and dips into a wetland before cutting straight up the west hills. The slopes are prohibitively steep, measuring greater than 25% in some cases. The presence of the wetland, steep slopes and overgrowth will present considerable challenges to meeting accessibility (ADA) standards. As the trail gains altitude, views open up to the south.

Neighbors report having seen elk traveling through the area recently. Some residents keep a log of sightings and report seeing the herd of 38 - 40 elk regularly roaming between Springville and Skyline roads underneath the power lines. Construction of a trail could upset elk migration patterns and disrupt other animal habitat.

Road crossings along this trail all have good visibility and low traffic volumes. The posted speeds at the crossings range from 30 - 40 miles per hour. Crossings are unimproved and the future residential growth projected for the area combined with the posted speed limits may eventually necessitate crosswalks.

Several vacant lots on this segment could make good trail heads. Notably, lots 1 and 2 at the base of the hills could provide enough open space to build parking, restrooms, signage and other park amenities. It may be appropriate to provide a trail head here as the character of the trail chang-
es from open fields and moderate density to hilly, forested lower density land. Lots with topographic or environmental considerations may serve as key parcels for short spurs of single track or natural surface loops for adventurous hikers.

3A-1: NW Springville Road crossing, facing north, shows signs of agricultural easements.

3A-2: Vacant lots 1 and 2 at the base of the West Hills provide possible trail head; photo taken facing north.
This segment currently has a low population density and high percentage of minorities. About 24% of people work in the central city and 74% work in the county. While most people drive alone to work, this area is projected to see a 62% increase in households by 2030. Though there are no major employers in the area, a trail in this segment could serve a significant commuting function for local trips and regional trips in the future.

Currently, the roads around this area are popular locations for recreation activities including horseback riding, motorcycle touring, bicycling and walking. A trail linking Springville to Skyline will enhance the recreation opportunities in this region and provide potential health benefits to current and future users.
Segment 3B

Opportunities
1. Provide access to Fireland and Wildwood Trail

Constraints
1. Significant drainage down lower half of segments. Plants such as horsetails show this area wet year round.
2. Evidence of erosion
3. Prohibitively steep slopes

From Germantown Road to Skyline Blvd

Potential Trail Head

Legend:
- Opportunities
- Constraints
- Potential Trail Head

Scale: 0 250 500 1,000 Feet
Trail Segment 3B: Bounded by NW Germantown Road and NW Skyline Boulevard
Jurisdiction: City of Portland Parks and Recreation
Length: 0.85 miles

Table 3B: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good hiking and mountain biking terrain</td>
<td>• Overgrown and steep, with water drainage in corridor</td>
</tr>
<tr>
<td>• Low traffic, good visibility at all road crossings</td>
<td>• No transit access</td>
</tr>
<tr>
<td>• Scenic views</td>
<td>• Evidence of erosion</td>
</tr>
<tr>
<td>• Some parking on NW Germantown and NW Skyline</td>
<td>• Wetlands throughout alignment</td>
</tr>
<tr>
<td>• Direct connection to Forest Park and Fire Lane 15</td>
<td>• Slopes exceeding 25%</td>
</tr>
<tr>
<td>• Preserve existing rural feel of area by limiting access points</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/ Design Consideration

• Views of the Tualatin and Willamette Valleys
• Connections to Forest Park

Description and Narrative:

Segment 3B runs for 4,500 feet from NW Germantown Road north to NW Skyline. This segment is steep for its entire length, with slopes measuring greater than 25% in some cases. Segment 3B is steeper and more overgrown than 3A. Open water observed near Germantown Road along with wetland plants suggests that this area is wet year round. Parcels on both sides of the alignment show evidence of erosion along the cliff face. The presence of the wetland, steep slopes and dense vegetation will present considerable challenges to meeting accessibility (ADA) standards.

Road crossings along this trail all have good visibility and low traffic volumes. The posted speeds at the crossings range from 30–40 miles per hour. Though the crossings are unimproved, the projected residential growth combined with the posted speed limits may eventually necessitate crosswalks.

Potential access points exist along Skyline and Germantown Road. Paved shoulder areas provide parking for several cars in each location. Limited parking will provide access for a small number of visitors on these portions of the trail. This may help to preserve the rural character of this portion of the trail. As the population density of this area and the region as a whole grows, lack of parking may prove to be a significant limitation to trail access.

An additional access point exists in the residential neighborhood under construction off Old Skyline Boulevard. A cul-de-sac cuts across the power line corridor providing excellent curbside parking. Neighborhood residents may object to promotion of this location as a public access point because of privacy concerns.
This segment currently has both low population density and high median incomes. About 59% of people work in the central city. Therefore, a path connecting to the central city could serve as a commuting option. While most people drive alone to work, this area is projected to see a 62% increase in households by 2030.

38-1: Wetlands exist within the trail alignment compounded with steep slopes on the north side of Germantown Road.
Currently, the roads around this area are popular locations for recreation activities including horseback riding, motorcycle touring, bicycling and walking. A trail linking Germantown to Skyline will enhance the recreation opportunities in this region and provide potential health benefits to current and future users. Potential pearls in this segment include 180-degree views of the Tualatin and Willamette valleys and connections to Forest Park, the Wildwood Trail and Fire Lane 15.

38-2: View opportunities at the top of the West Hills facing south.
I

CD Opportunities

Potential Routes

From Skyline to Willamette River

Opportunities
1. Connectivity to other trails
2. Improved access to Forest Park

Constraints
1. Steep topography
2. Sensitive habitat
3. Crossing at Highway 30
Trail Segment 4: Bounded by NW Skyline Boulevard and the Willamette River or Multnomah Channel
Jurisdiction: Varies
Length: Varies

Table 4: Summary of Opportunities and Constraints

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Scenic views of Forest Park, the Willamette River, and the Tualatin Valley</td>
<td>- Slopes and uneven terrain</td>
</tr>
<tr>
<td>- Connectivity to existing trails in Forest Park, Metro's Ancient Forest Park (adjacent to the Multnomah Channel), and the 40-mile loop</td>
<td>- Landslides, erosion, and other environmental concerns</td>
</tr>
<tr>
<td>- NW McNamee and NW Newberry Roads have low traffic volumes</td>
<td>- Few parking areas on NW Newberry and NW McNamee Roads</td>
</tr>
<tr>
<td>- Numerous vehicle pull-outs on NW Germantown Road</td>
<td>- Inability to connect directly across Skyline to power line corridor</td>
</tr>
<tr>
<td>- Connectivity to the Linnton commercial area</td>
<td>- Sensitive elk habitat</td>
</tr>
<tr>
<td>- Connectivity to industrial employment centers</td>
<td>- High traffic volumes on NW Skyline and NW Germantown Roads</td>
</tr>
<tr>
<td>- Served by Tri-Met Bus Route 17 on Highway 30</td>
<td>- Lack of existing pedestrian connection across Highway 30</td>
</tr>
<tr>
<td>- Connectivity to Sauvies Island</td>
<td></td>
</tr>
</tbody>
</table>

Trail Elements/Design Consideration

- Historic railroad trestle on McNamee Road
- View of North Bethany area from McNamee Road
- View of Willamette River/Multnomah Channel from Newberry or Germantown Roads
- Trail head at Willamette River or Multnomah Channel
- Connections to Sauvies Island

Description and Narrative:

This is the most northerly segment of the trail and connects Skyline Boulevard to the Willamette River or Multnomah Channel (depending on the crossing chosen). This is a challenging segment to plan for several reasons: it crosses Forest Park and, because of sensitive environmental conditions, must do so alongside an existing roadway; it has steep slopes and dense vegetation, which will pose both construction and ADA compliance challenges, and it has a major crossing at Highway 30 which will require a new signalized intersection or crossing treatment.

Because the trail must cross through Forest Park using an existing roadway, three options were considered: McNamee Road, Newberry Road, and Germantown Road. These were chosen based on their proximity to the power line corridor crossing at Skyline Boulevard, and their ending points...
along Highway 30. This segment will provide the best regional connectivity if it can connect to the 40-Mile Loop Trail. Also, because the segment of the trail immediately south of this one will terminate at Skyline Boulevard, it is important that the next segment not be too far from the intersection of the power line corridor and Skyline. Skyline Boulevard is designated as 40 miles per hour at the crossing of the power line corridor, and therefore it would not be ideal to have the trail travel along Skyline for longer than absolutely necessary.

McNamee Road is the northernmost connection alternative. It has scenic viewpoints to the west and north, and connects to Ancient Forest Park and the Multnomah Channel. There is a historic railroad trestle near the intersection with Highway 30 that could be an interesting focal point of this segment (see photo 4-1). However, it is the farthest connection from the Westside Trail intersection at Skyline and would not provide a direct connection to the 40-Mile Loop Trail as its outlet to Highway 30 is approximately three miles north of the Sauvies Island Bridge.

Germantown Road is south of both Newberry Road and the power line intersection at Skyline. It is very steep and narrow at several points. It does have many areas for cars to park and has a well-marked Wildwood Trail crossing. Also, this road intersects with Highway 30 at the St. John's Bridge, making it the most directly connected route to the 40-Mile Loop Trail.

Newberry Road crosses Skyline to the south of McNamee and to the north of the power line crossing. This road is much shorter in length than McNamee and provides a connection to the Wildwood Trail. It is steep and has few existing parking areas, however, making both auto accessibility and trail head parking construction a challenge. Because it is somewhat less steep than Germantown and is shorter and more direct than McNamee, preliminary analysis would suggest that Newberry Road is the best option for the trail crossing through Forest Park. Photo 4-2 shows the intersection of Newberry Road and Highway 30, and photo 4-3 shows the intersection of Newberry Road and Skyline Boulevard.

This segment passes through Forest Park, which, at over 5,000 acres, is the nation's largest urban forest. One of the longest trails in Forest Park is the Wildwood Trail, which has its northern terminus at Newberry Road, one of the potential crossings for this segment. There is a fire lane that follows almost directly underneath the power line corridor through Forest Park and intersects with the Wildwood Trail. These are good opportunities to create additional trail connections. However, according to the Friends of Forest Park (as voiced at the Westside Trail Working Group meeting on 4/10/07), there are ecological concerns that preclude paving a trail through the Park.

Communities adjacent to this segment of the trail are 4-2: Intersection of Newberry Road and Highway 30.
mostly low-density in nature, and have medium to high median household incomes. These communities have a higher median age than other communities along the trail. The area is expected to see a 30-60% increase in households and a 21-30% increase in the number of jobs in the area by 2030. Most of the commuters in this area commute to downtown Portland, and a trail that connects to the TriMet line #17 on Highway 30 could help to provide more alternative mode options for them.

Vacant lots in this segment are within or adjacent to Forest Park, and can best be utilized as they are, as natural areas. The vacant lot adjacent to the river and across Highway 30 from Forest Park may have potential as a trail head. Both Forest Park and Ancient Forest Park, which is on the north side of Highway 30 and adjacent to the Multnomah Channel, can be connected in this segment.
Appendices

A: Power Line Safety
B: Policy Context
C: Safe Street Crossings
D: Socio-Economic Analysis
E: Forecasted Population and Employment
F: Demographics
G: Commuting Patterns
H: Active Living by Design
I: Physical Accessibility
J: Pearl and Trail head Criteria
K: Safe Routes to Schools
L: Census Tract Map
Appendix A

Power Line Safety

While power line corridors can accommodate multiple uses, the presence of high capacity electrical towers does raise specific concerns, Gary Holisko (2003). In an article called "Safe Management of Power Line Trails" and information from the Bonneville Power Administration (BPA) highlight three key public concerns.

**Safety:** Because of the amount of electricity being carried by power lines, people should stay at least thirty feet away from towers, and stay away from downed lines. Because of risks associated with storms, vegetation planted in the corridor should maintain 30 feet of clearance from power lines. Maintenance of the corridor should occur only after consultation with the power company.

**Electromagnetic Fields:** Over the last 25 years, widespread public concern about the cancer-causing effects of high voltage lines has led to extensive research on the topic. Though evidence has been inconclusive on both sides, most use of power line trails is transient, so exposure is limited. Greater concern may arise for a public park sited under power lines, which could lead to regular exposure over extended periods of time.

**Induction from power lines:** Grounded metal objects such as directional signage can cause a person to receive a small shock when they touch it. These low grade shocks can be irritating, but not life threatening. Proper treatments of metal objects can prevent this occurrence.

BPA has a Landowner's guide for compatible uses of power line corridors which describes these and additional concerns, provides steps to coordinate land use, and provides direction to additional information sources (BPA, 2006).
Appendix B
Policy Context

Federal policies

SAFETEA-LU

The Federal transportation legislation, SAFETEA-LU (Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users) was passed in 2005. SAFETEA-LU not only continues many programs included in the former legislation, TEA-21 (Transportation Equity Act for the Twenty-First Century), but also creates new programs and significantly increases the amount of federal funds provided to trail-related projects.

This legislation contains two key trail related programs. The Recreational Trails Program is one of them. This program provides a total of $3.7 million in funding through 2009 to maintain existing trail and trail-related facilities, develop a new trail system, acquire easements for trails, assess feasibility of trail projects and create environmental protection programs related to trails.

The Transportation Enhancements program is the other key trail-related program. The program is designed to enhance federal intermodal transportation systems including pedestrian and bicycle infrastructure, and of the twelve categories included in the program, three of them are trail related: pedestrian and bicycle facilities, pedestrian and bicycle safety and educational activities, and conversion of abandoned railway corridors to trails.

Oregon state policies

Oregon Statewide Planning Goal 8 – Recreational Needs

Section 7 of this Goal states that "Planning and provision for recreation facilities and opportunities should give priority to areas, facilities and uses that (a) Meet recreational needs requirements for high density population centers, (b) Meet recreational needs of persons of limited mobility and finances, (c) Meet recreational needs requirements while providing the maximum conservation of energy both in the transportation of persons to the facility or area and in the recreational use itself, (d) Minimize environmental deterioration, (e) Are available to the public at nominal cost, and (f) Meet needs of visitors to the state." This Goal both provides validation for the proposed Westside Trail and provides guidance for determining the trails objectives.
Transportation Planning Rule

The purpose of the Transportation Planning Rule is to implement Statewide Planning Goal 12 (Transportation) and ensure a balanced transportation system that serves all Oregonians and avoids principal reliance on any one mode of transportation. Transportation planning in all Oregon communities should provide economic, sustainable, and environmentally sound mobility and accessibility options for its citizens, and should do so through safe and convenient vehicular, bicycle, pedestrian, and freight travel. This rule requires that transportation system planning allow for multi-modal travel on all levels of the transportation system (1). The Westside Trail will help Metro to implement the Transportation Planning Rule by ensuring that pedestrians and bicyclists have a safe and convenient route through this part of the region.

Healthy Living Oregon

One way that the state of Oregon has responded to the trends is to establish a statewide physical activity plan called “Healthy Active Oregon” the plan has six primary goals.

- Increase daily physical activity among Oregon youth.
- Increase daily physical activity among Oregon adults.
- Foster and promote communities that are conducive to daily physical activity.
- Increase the ability of health care systems and providers to support and promote daily physical activity among Oregonians.
- Eliminate health disparities among racial and ethnic communities, medically undeserved, low income, senior, disabled, and rural populations, who are disproportionately affected by physical inactivity, obesity, and chronic diseases.
- Establish a comprehensive, coordinate statewide effort to promote daily physical activity and healthy eating.

Metro policies

Metro Greenspaces Master Plan - 1992

"Of importance to the Metropolitan Greenspaces system are trails that connect to regionally significant sites, are multi-jurisdictional, are multi-use, and that connect to national, inter-regional, or other regional trails." Fulfilling all of these criteria, the Westside Trail (the “Powerline Trail”) is specifically listed in the Greenspaces Master Plan as a proposed regional trail. Section 2.10 of the plan goes on to state that Metro shall “integrate the Greenspaces Regional Trails system with on-road trail systems in the region." The plan also prioritizes trail systems that connect park and open space areas.

Metropolitan Transportation Improvement Plan

Transportation funding is available from the Federal Government through the Metropolitan Transportation Improvement Plan (STIP) process. Every two years, Metro prepares a new plan to disburse federal transportation dollars throughout the region; this process is analogous to the State Transportation Improvement Plan (“STIP”). Generally, money is disbursed for one or multiple phases over the course of several years.

To be eligible for inclusion in the STIP, projects must be part of the Regional Transportation Plan (“RTP”). Applications for STIP funding are solicited for various types of transportation improvement projects, including capacity, green streets, boulevards, trails etc. and scored on a variety of criteria against other projects in the appropriate category. Once a project is selected for inclusion in the STIP, it is automatically included in the STIP.

Trail construction funds frequently come from STIP. This involves a lengthy application process, competition against other regional trail projects and the requirement that all Federal Highway standards for land acquisition and construction be followed. These requirements include ADA compliance, which, because of steep slopes, may be infeasible in some portions of

MLP - Westside Trail - Feasibility Study
the Westside Trail. Anecdotal evidence suggests that following federal standards may have the effect of doubling trail project costs (not simply due to ADA compliance). However, MTIP funds are frequently critical to the completion of regional trails. RTP evaluation criteria are currently under revision. When feasible, the trail design should aim to meet and fulfill as many objectives of the RTP update as possible in order to maximize its chances of receiving federal funds.

Regional Transportation Plan

Metro first adopted the RTP in 1983 and the plan had a major update in 2000. As a result of this update, the RTP was modified to reflect the 2040 Growth Concept and the state Transportation Planning Rule. In 2003, minor updates were made to the RTP to meet federal requirements. Final adoption of the RTP occurred in 2004. Currently, Metro is working through another major update, which is scheduled for completion in late 2007. Current changes to the RTP include a new policy chapter which advocates six policy goals. Among those pertinent to the Westside Trail are goal 3 "Transportation Choices", Goal 4 "Reliable movement of people and goods" and Goal 5 "Health and the environment." The Westside Trail will likely be included in the updated RTP.

Under the RTP, regional trails are defined as "paved off-street regional facilities that accommodate pedestrian and bicycle travel and meet the requirements of the American's with Disabilities Act." It should be noted that "Paths that support purely recreational uses are not considered part of this transportation network, although they are important components of the regional parks and green spaces map."

County policies

Within the Transportation System Plan, several policies address the major transportation elements of the area. Off-street trails are a key element to the Washington County Pedestrian Plan - Policy 14. The plan also provides strategies to define a program that will result in a "complete pedestrian system that is safe, convenient, and attractive." The overarching goal is to encourage pedestrians to reach their destinations through walking. The same theme is reflected in the Bicycle Plan - Policy 15. All pathways adhere to Metro's guidelines for system design for trails and on-street bikeways. The trail system services both pedestrian and bicycle needs. Washington County ensures that the overall needs are met within the area but delegates responsibility of trail construction and maintenance to cities, homeowners associations and THPRD.
City policies

City of Beaverton

As the largest of the jurisdictions along the Westside Trail, the City of Beaverton has supported the completion of the trail. Chapter 6 of the City's comprehensive plan details the goals and actions of the Transportation System Plan. Within those goals, several items apply to the Westside Trail:

- Provide connectivity to each area of the City for convenient multi-modal access
- Designate safe routes from residential areas to schools
- Construct multi-use paths only where they can be developed with satisfactory design components. Multi-use paths should converge at traffic-controlled intersections to provide for safe crossing, although their should be separate and distant from major streets for most of their length.

The pedestrian action plan identifies key pedestrian corridors to schools, parks, recreational uses and activity centers, as well as the completion of gaps within the pedestrian network. Many of these projects include bicycle improvements as well:

- US26/Bethany Trail Crossing
- Study of [all] US 26 Trail Crossings [within Beaverton]
- Study and improve unsignalized trail crossing of roadways
- TV Highway/Canyon Road sidewalk gaps
- Nora-Beard Road sidewalk gaps
- Weir Road sidewalk gaps
- Oak St./Davis Rd. sidewalk gaps
- Pedestrian Access to MAX

Portland Parks 2020 Vision

The Portland Parks 2020 Vision was a community-led planning process that sought to develop recommendations for improvements to the City's park system in order to best meet the needs of current and future residents. One of the major objectives within the vision is to "create an interconnected regional and local system of trails, paths, and walks." Action steps within this vision include providing over 150 additional miles of trail within the city. Although most of it is outside the Portland city limits, the Westside Trail will help to work towards the Parks 2020 Vision by connecting to trails within Portland and creating a major link within the regional trail system.

Forest Park Natural Resources Management Plan

The Forest Park Natural Resources Management Plan was completed in 1995 and seeks to satisfy current and future needs of the park and expectations of park users as well as to comply with all relevant environmental regulations. The goals of the plan are to protect and conserve the environmental resources within Forest Park and to enhance the park's recreational and educational opportunities. One of the major problems identified in the plan is the recreational over-use of the park, which is contributing to ecological problems. One of the major recommendations of the plan is to improve access to the park and minimize conflict with adjacent uses. This plan also recommends that there be no new trails constructed in the northern end of Forest Park in order to protect the natural resources in that segment of the park (3). The Westside Trail could contribute to improved access to Forest Park by allowing users to traverse the trail to an existing Forest Park trail head (such as the Wildwood) and would possibly reduce the numbers of people needing to drive to get to Forest Park.

MLP - Westside Trail - Feasibility Study
City of Tigard Park System Master Plan

Currently, there are nine miles of trails constructed and 351 acres of parks and open spaces within the City of Tigard. A Park System Master Plan, adopted in 1999, has been the driver for acquiring this land and securing a small amount of funds. Otherwise, the City does not operate a recreation program and does not have an annual budget for which to build and maintain parks.

Identified in the Master Plan are a few projects related to the Westside Trail:
- Pedestrian and bicycle linkage between the Tualatin River National Wildlife Refuge and the Westside Trail
- Completion of the Westside Trail over Bull Mountain

King City

King City has recently completed the design and partial construction of its first park, Edgewater Park, near SW 131st and the Tualatin River. Growth is expected to increase due to recent annexation and UGB expansion. A comprehensive plan and pedestrian or bicycle network have not been developed at this time.

Community Plans

West Tigard Community Plan

Bounded by SW Walnut Street to the north and SW Beef Bend Road to the south, the West Tigard Plan captures the remaining unincorporated lands west of the City limits. The plan notes that there are no existing park/recreation sites within the planning area, although, the power line corridor does accommodate some recreational users. Beyond the necessary inventory information, the West Tigard Community Plan does not offer design considerations that apply directly to the Westside Trail development.

Bull Mountain Community Plan

The smallest of Washington County's community planning areas, the Bull Mountain boundary contains only 3.4 square miles, yet it has been on the records since 1961. At the last update of the plan in 2004, the Bull Mountain community Planning Area was still largely undeveloped. The terrain is quite steep throughout the area, compromising the growth rates. However, as development occurs, the pedestrian and bicycle amenities have been installed in parallel; thus, the area is well connected at the street level. Unfortunately, as the plan states, there are no public parks or recreation facilities within the planning area.

The plan does lay out several design considerations applicable to the Westside Trail:
- Use of power line easements for farm operations, open space, and wildlife habitat shall be encouraged as appropriate.
- Removal of natural vegetation shall be minimized; existing vegetation protected and destroyed vegetation replaced.
- Add pedestrian pathways along Beef Bend Road for connectivity
- Future neighborhood commercial development at the corner of SW 131st and SW Beef Bend Road
Aloha-Beedle-Cooler Mountain Community Plan

The boundaries of the Aloha Community Plan cover the portions of the Westside Trail between SW Canyon Road and SW Weir Road, with a small portion from Scholls Ferry Road to Barrows Road. The plan identifies Mt. Williams and Cooper Mountain as significant natural features that provide wildlife habitat. Within this area, the plan notes that most streets are not built to recommended design standards. However, transit serves the area well, as do the existing and planned bicycle routes.

Of the general design elements, several points are applicable when discussing the Westside Trail:

- Power line easements and rights-of-way shall be preserved and protected to enhance the economic, social, wildlife, open space, scenic, recreation qualities of the community; and
- Where appropriate, trails shall be interconnected as part of a park and open space system.
- Open space shall be utilized for park and recreation facilities or passive recreation and dedicated to the appropriate recreation service provider whenever feasible.
- The County shall emphasize non-auto (transit, bicycle, and pedestrian) measures as an interim solution to circulation issues. These measures shall be used to facilitate access to transit centers.
- Establishment of the entire width of power line rights-of-way as public access open space shall be encouraged. At a minimum, however, a sufficient amount of open space allowing for a continuous pedestrian/bicycle corridor along the length of each right-of-way shall be dedicated for public use unless determined to be inappropriate through the development review process.
- Mt. Williams segment shall be protected as a scenic corridor
- Roadways on Mt. Williams shall contain turn out facilities for vehicles
- Current pedestrian and bicycle access to Cooper Mountain School is dangerous due to lack of sidewalks and bikeways.
- Connect neighborhoods to the trail under the BPA power line

Sunset West Community Plan

Beginning at Jenkins Road and extending north to West Union Road, the Sunset West Community Plan comprises one of the fastest growing areas for both residential and non-residential uses in the entire Portland area. The "Sunset Corridor" has driven much of this growth. The Westside Trail connects to this area at its easternmost point near SW 158th. As a major employer for the area, this corridor will continue to see growth within itself as well as within the surrounding neighborhoods. Detailed growth management policies are currently in place "to ensure that new development is accompanied by the provision of adequate urban services."

A key component to this community is the light rail line. The plan dictates that high-density growth take place directly adjacent to the transit lines. The plan also calls for bikeways along all major roadways, streams and in power line easements.

The natural features play a strong role in the Sunset West Community. Several creeks offer habitat and natural breaks in the land use patterns. Of the 11 square miles, there are 250 acres of forested land within this community. Because of the number of waterways traversing through this community, future trail constructions along the banks will improve pedestrian and bicyclist connectivity.
Bethany Community Plan

The Bethany plan adjoins to the northern boundary of the Sunset West plan and captures the land north to the Washington County line near Germantown Road. The area maintains a combination of residential and agricultural uses, but will see a continuation of residential uses in the future. The plan was last updated in 2004 and is currently undergoing a planning effort as the UGB was recently expanded in this area.

The general design elements listed for consideration are:

- A forested area within Central Bethany shall be considered for park and open space use.
- Construct multi-purpose trails within existing power line easements.
- The power line easement provides a connection to the trail system developed in conjunction with Oak Hills.

The transportation network will also undergo improvements according to Washington County's 2020 Transportation Plan.

Other Agencies

Tualatin Hills Parks and Recreation District - Master Plan

Tualatin Hills Parks and Recreation District serves the Beaverton, Oregon and surrounding communities through a system of parks, open space and natural areas, trails, and modern recreation centers. While a separate master plan addresses the trails specifically, this plan sets forth goals related to the Westside Trail:

- Provide linear parks
- Work closely with the Beaverton School District
- Acquire, conserve, and enhance high quality natural areas
- Develop an interconnected system of open spaces and wildlife habitat areas

- Actively manage open spaces and natural areas
- Allow for most natural processes to occur
- Develop and maintain a core system of regional trails
- Link trails to a complementary system of on-road bicycle and pedestrian routes
- Locate trail heads at or in conjunction with park sites, schools or other community facilities
- Preserve view corridors and viewsheds

Tualatin Hills Parks and Recreation District - Trails Master Plan

The update to the Trails Master Plan was recently completed in late 2006. The plan sets forth design guidelines and policies for trail construction. The Westside Trail is identified as a Regional Trail, illustrating a shared-use design, separate right-of-way and can accommodate maintenance and emergency vehicles as well as ADA access.
Appendix C

Safe Street Crossings

One of the Westside Trail's primary challenges will be the many road crossings along its length. Following is a summary of common barriers to safe crossings and design elements that may be used to improve safety.

**Barriers to safe crossings:**
- Masked sight lines, physical barriers
- Long crossing distances
- Lack of curb ramps or refuge space
- Inconvenience to signal location
- Short signal timing
- High vehicular speeds
- Right turning vehicles

**Design Elements for Grade-Separated Crossings:**
- Clearance to vehicles
- ADA accessibility
- Clearance to overhead wires
- Sufficient ramps to reach maximum elevation
- Fencing
- Non-skid surface
- Bicycle and pet-friendly

**Design elements for At-Grade Safe Crossings:**
- Intersect at 90-degrees
- Widen throat of trail at crossing to avoid entry/exit conflicts
- Improved visibility/sight lines (brush cutting, obstruction removal, street light)
- Curb extensions
- Striping (darker, preferred) or material change (stamped AC, concrete)
- Signing
- Lighting
- Curb and Sidewalk area at either end of crossing
- Ramps for ADA accessibility, bikes, skaters, seniors with walking assistance devices, strollers
- Mid-block refuge island, shorter crossing lengths
- Signalized crossing
- Restrict right turn movements
- Reduce traffic speed
Appendix D
Socio-Economic Analysis

This section synthesizes information from various studies in which the economic effects of trails on local economies were empirically examined. First, findings from studies that examined the economic effects associated with visitor spending are presented, followed by a review of case studies that examined the link between housing markets and trail proximity.

Trail economic impact studies often measure the effects of visitor spending on the local economy. These direct and indirect effects are quantified in dollars of output, income and jobs (Bowker et. al. 2004). At the national level, economic impact studies have shown that trail-related expenditures range from less than $1 per day to more than $75 per day, depending on mileage covered. Generally, findings from impact studies provide strong evidence that trails generate revenue and wealth for local communities.

A 1992 National Park Service study showed that approximately 170,000 individuals visit the Tallahassee, Florida St. Marks Trail every year. The average user was estimated to spend more than $11 per day. The total revenue from this visitor spending was estimated to exceed $1.2 million per year (NBPC, 1995). A 2001 study of Blaine County, Idaho, near the Salmon River, indicated that visitor spending resulted in the creation of 7,980 jobs and $120 million in income (Dean Runyan Associates, 2007). A similar study by Barthlow and Moore (1998) revealed that 61 businesses that were located along the 35-mile-long Missouri River State Trail reported that the trail was having a positive effect on their businesses. Eleven of the businesses reported that the trail had strongly influenced their decision to establish their business and 17 (28%) reported that they had increased the size of their investment since the trail had opened. More recently, the Washington State Trails Plan estimated that trail users in the State of Washington have an estimated equipment investment of over $3.4 billion which generates annual tax revenues of $13.8 to $27.6 million.

Trails may also affect property values and the general attractiveness of an area. In a survey of metro-Denver real estate agents, 73% of the agents believed that a home near a trail would be easier to sell than similar homes located away from a trail. A 1995 study by the Conservation Fund & the Colorado Parks Trail Program showed that 29% of homeowners living adjacent to a trail felt that their property value would increase and 57% felt that their home would sell more quickly because of the trailside location. Furthermore, 25% stated that the purchase of their home was influenced by proximity of a trail, and 17% of renters reported that they were influenced by the presence of a trail in choosing where to stay. Comparable case studies in other regions have substantiated the Denver findings. For example, Seattle's Burke-Gilman Trail revealed that the value of homes near, but not directly adjacent to the trail increased by 6.5% (Greenways Inc, 1992).

In a similar case study of the two rail trails in Minnesota, 87% of landowners surveyed believed that the trails had no negative impact on the value of their property. Another survey of property values near greenbelts in Boulder, Colorado, noted that housing prices declined by an average of $4.20 for each foot of distance away from a greenbelt for up to two-thirds of a mile. In one neighborhood, this figure was $10.20 per foot. This same study concluded that the average value of a home adjacent to the greenbelt would be 32% higher than the same property 3,200 feet from the greenbelt.
Appendix E

Forecasted Population and Employment

Overview and Data Sources

The purpose of the forecasted population and employment analysis is to identify places where population and employment is expected to grow substantially. The data used is from Metro’s 2030 Growth Forecasts by Traffic Analysis Zone (TAZ) (http://www.metro-region.org/article.cfm?ArticleID=15103).

Key Findings

Most zones are expected to gain in both residents and jobs between now and 2030. However, there are a few TAZs that are expected to lose residents or jobs. These are discussed in the next section and presented in more detail in Table 1.

Detailed Findings by Trail Segment

Segment 1 (King City-Tigard): This segment will see an increase of 1,450 new households and 1,698 new jobs by 2030. One zone (343) in this segment is forecasted to lose population. Zone 366 is expected to lose employment.

Segment 2 (Beaverton): This segment will see the largest increases in population and jobs, with 4,400 new households and 6,551 new jobs by 2030. Three zones (132, 139, and 143) in this segment are forecasted to lose population. Zone 157 is expected to lose employment by 2030.

Segment 3 (Washington County): The zone that intersects this segment is expected to gain 648 households and 613 jobs by 2030.

Segment 4 (Forest Park): The zones that intersect this segment are expected to gain approximately 2,000 households and 2,500 jobs by 2030.
### Table E-1: Forecasted Employment Information by Trail Segment

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Appendix F

Demographics

Overview and Data Sources

The purpose of the demographic analysis is to identify population characteristics of the residents along the Westside Trail corridor. All information was collected by Census block group and was obtained from the Census 2000 Summary File 1 at www.census.gov.

It is important to understand the demographics of a region when planning any new infrastructure project. Characteristics such as age or income can influence the way the trail will be used, and design of the trail should reflect those variations. It is also important to note the range in demographic characteristics that may exist within a given area so that the trail can accommodate the widest range of potential users as possible.

Key Findings

Many characteristics vary widely among block groups adjacent to the Westside Trail.

Age: The mean and median ages for the entirety of the trail are 34 and 35, respectively. However, one block group in Washington County (ID 37) has a median age of 76.4. The trail in this corridor should be designed to allow access for elderly people.

Income: The median household income within each block group varies from a low of $26,226 per year to a high of $121,487 per year. It will be especially important for environmental justice regulations to ensure that the trail segments in the lower income areas do not receive a lower priority in construction than the trail segments in the higher income areas.

Household Size and Number of Children: There is a great deal of variation in average household size and numbers of children within each block group, particularly in Segment 2 of the trail.

Housing Tenure: Three block groups along the trail have very low percentages of owner-occupied housing units.

Hispanic population: The mean and median percentages of Hispanic residents in block groups along the Westside Trail are 7% and 4%, respectively. The highest percentage of Hispanic residents occurs in block group 17, which is in Segment 2. This will be especially important to note when designing an outreach program in this area—outreach materials should be distributed in both Spanish and English.

Detailed Findings by Trail Segment

Segment 1 (King City-Tigard) of the trail is adjacent to six census block groups, which range in population size from approximately 2,000 to 5,000 residents. This segment contains the block group with a very high median age of 76.4. The highest percentage of Hispanic residents in this block group is approximately 7%. There is a large range of median household incomes among block groups in this segment, with the lowest at approximately $30,000 and the highest at approximately $100,000. There are high concentrations of children in three block groups in this segment. In all of the block groups in this segment, at least 50% of the housing units are owner occupied. Population densities range from 650 to 4,800 persons per square mile.

Segment 2 (Beaverton) is the longest segment and affects the greatest numbers of people. There is a great deal of variation among block groups in this segment with respect to demographic characteristics. There are 30 census block groups adjacent to this segment, and they range in population from approximately 500 to 8,000 residents. Median age ranges from 25 to 48, and median household income ranges from approximately $33,000 to $121,000. Block groups in this
Segment range from 42% minority population to 11% minority population, and the highest percentage of Hispanic residents is 26%. Population density ranges from about 500 persons per square mile to 10,400 persons per square mile. Three block groups in this segment have less than 10% of the housing units occupied by their owner. Greater than 30% of the residents are children in ten block groups within this segment.

Segment 3 (Washington County) intersects only one block group, with a population of 870 residents. This block group has a median age of 40.7 and has 8% minority population (3% Hispanic population). The median household income was $85,000 in 1999. The population density in this block group was low, ranging from 165 to 400 persons per square mile. 88% of the housing units in this segment were owner-occupied.

Segment 4 (Forest Park) also intersects only one block group, which has a population of 1,005 residents. The median age was 39.2 and the median household income was $52,000 in 1999. 24% of the population in 2000 was 17 years old or younger, and 8% was 65 years or older. 10% of the residents were living below the poverty line in 1999. 73% of the housing units were owner-occupied. This block group has approximately 10% minorities and 3% Hispanic residents. This area has a low population density at only 93 persons per square mile.
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<th>Children (0-17 years old)</th>
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<th>Pop. 65 Old or Older</th>
<th>Female Resident</th>
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MLP - Westside Trail - Feasibility Study
Appendix G

Commuting Patterns

Overview and Data Sources

The purpose of this analysis is to identify the commuting patterns of the residents along the Westside Trail corridor, particularly to see where alternative modes (modes other than single-occupant vehicles) are utilized the most frequently, and the general locations of where residents are commuting to. All information was collected by Census block group and was obtained from the Census 2000 Summary File 3 at www.census.gov. Table 1 presents data on mode, and table 2 presents data on commuting location and distance.

Findings by Trail Segment

Segment 1 (King City–Tigard) has relatively low percentages of bicycle and pedestrian commuters. Percentages of transit commuters range from 7% to 15%. Only about one-quarter to one-third of the commuters in this segment commute to the central city.

Segment 2 (Beaverton) has a large number of block groups and therefore a wide range of commuting patterns. The block groups nearest to the MAX line have the highest percentage of commuters travelling by transit. There is substantial variation in the percentages of people who commute to the central city in this segment.

Segment 3 (Washington County) has a high percentage of carpooling residents, with zero percent bicycling or walking to work. Fewer commuters work in the central city than in Segment 4.

Segment 4 (Forest Park) has 71% of commuters driving alone. Of the alternative modes, the most frequently used is carpooling. Most workers in this segment commute to the central city.
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**MEAN**

Drive Alone: 77%
Bicycle: 2%
Transit: 6%
Carpool: 10%
Total Commuters: 19%

**MEDIAN**

Drive Alone: 78%
Bicycle: 1%
Transit: 5%
Carpool: 9%
Total Commuters: 17%

**MAX**

Drive Alone: 91%
Bicycle: 11%
Transit: 21%
Carpool: 24%
Total Commuters: 39%

**MIN**

Drive Alone: 59%
Bicycle: 0%
Transit: 0%
Carpool: 1%
Total Commuters: 6%

*Includes bicycle, transit, carpool, and "other" category
*For tract location information see Appendix L
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<th>Percent of Workers who Worked in a Central City</th>
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**MEAN**
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- 33%
- 25%
- 75%

**MEDIAN**
- 56%
- 32%
- 26%
- 73%

**MAX**
- 76%
- 41%
- 27%
- 84%

**MIN**
- 56%
- 20%
- 16%
- 28%

* These data are from Summary File 3, Table P26.
** These data are from Summary File 3, Table P26. Because they are from a separate table than the data on working within the county of residence, they cannot be added together with them. In other words, the four columns are not meant to add up to 100%.
*** For tract location information, see Appendix L.

MLP – Westside Trail – Feasibility Study
Appendix H

Active Living by Design

In the literature relating public health and planning, the greatest common concern is an overall decrease in physical activity and an associated increase in the obesity rate amongst Americans. According to the Project for Public Spaces, this trend is especially apparent in the very old and very young. Nationwide, about 30% of children are overweight. Obesity also affects the older population, about 60% of which are considered inactive. According to the Oregon Department of Health (DOH), people with lower socio-economic status are at the greatest risk for becoming overweight. DOH estimates that about 70% of the population that makes under $25,000 annually is overweight. Recently, a cost-benefit analysis of trails in Lincoln, Nebraska was shown to return $2.94 in health benefits for each $1 invested in trails for physical activity. Studies show that people who have access to exercise facilities and neighborhood trails are significantly more likely to get the recommended amount of daily activity than their counterparts who lack such access.

According Bolland and Scholefield, residents of high walkability neighborhoods reach the U.S. recommended daily activity level of 30 minutes of moderate activity at least one additional day a week. By expanding the region’s trail network, Metro can help to make walking and biking a more important part of daily recreation. This focus on parks and trails falls in line with regional public opinion which cites walking and running as the two favorite outdoor activities. According to active living by design, trails may help promote physical activity among women, lower socioeconomic groups and the sedentary. Trails also serve an important function by promoting the use of non-motorized vehicle, thereby helping to improve air quality.

The current RTP update recognizes the connections between public health and planning. Goal 6 of the RTP, which focuses on human health and the environment, states “Multimodal transportation infrastructure and services reduce greenhouse gas emissions and protect, restore and/or enhance the quality of human health, fish and wildlife habitats and natural ecological systems.” Objective 6.3 seeks to “increase physical activity, reduce noise impacts and support efficient trip-making decisions in the region.” These goals and objectives can be implemented by creating a well-connected system of bicycle and pedestrian travel corridors.

In order for a trail to achieve its public health goals and objectives, it must be designed in a manner that will make people feel safe to encourage its use. A literature review of health based organizations resulted in a list of the following design criteria.

- Link areas of interest such as schools, community centers
- Ensure adequate access to facilities where people can exercise
- Design trail to make people feel safe (safe houses, phone boxes, good lighting)
- Design trail for multiple users
- Minimize the number of crossings where people are required to stop and/or travel out of their way to reach a signal
- Create “fitness stations” along the trail such as chin-up bars that allow people to use the trail as part of circuit training
- Post signage that states elevation changes, distances traveled, calories burned etc. to promote health awareness along the trail
- Work to promote social exercise opportunities such as walking clubs and cycling clubs
- Install traffic calming measures to increase the feeling of safety
- Provide trail support facilities to ensure comfort of trail users. Suggested infrastructure includes:
  - staging areas with parking, restrooms, directional and educational signage, bicycle racks and directions to nearby transit
  - seating, rain shelters, waste receptacles, drinking fountains

MLP - Westside Trail - Feasibility Study
Health Partnerships

Great opportunities exist to partner with health agencies to promote the benefits of active living. Suggestions to create a potential successful partnership include:

- Start small and work on shared goals.
- Provide local health clinics with maps of local parks and trails, pedometers and activity logs.
- Learn the language of the health profession to ensure shared conceptual understanding.
- Integrate health benefits into communications.
- Use solid evidence to justify the link between activity and health.
- Review literature and case studies of past success.
- Create partnerships that provide incentives for physical activity.
Appendix I

Physical Accessibility

The Americans with Disabilities Act (ADA) strives to provide access to the built and natural environment by articulating standards for the design and construction of trails. While these design guidelines cannot, or do not apply in all cases, the Federal Highway Administration guide on Trail Design for Access states that “to the maximum extent feasible, trails should be designed to accommodate the access needs of all designated users.”

The ability to provide ADA compliant access along portions of the Westside Trail will vary. For example, sections built on relatively flat terrain may conform to ADA standards. In the northern sections of the trail through forest park, accessibility may be restricted because of prohibitively steep slopes and the need to balance access with other key goals, such as the maintenance of uninterrupted wildlife corridors.

Described below are design guidelines intended to improve accessibility:

Grade: The slope of a trail parallel to the direction of travel. Typically, grade is measured as average running grade (recommended 5%) and a maximum grade, representing the steepest part of the trail.

Rest Areas: Level portions of the trail, spaced at a comfortable distance for people to rest or enjoy views. Rest area intervals are often defined by trail classification of easy, medium and hard. Mandated rest intervals vary from 200 feet to over 1000 feet.

Cross Slope: A measure of trail unevenness or slope measured perpendicular to the direction of travel. Recommended guidelines for cross slope maximum range from 2% to 4%.

Width: Design width and minimum clearance are two measures of trail width. While design width is defined as intended trail width, the minimum clearance is defined as the narrowest point on the trail. ADA guidelines call for a minimum clearance of 36 inches, which is wide enough for a single wheelchair to pass. Various user groups require varying trail width; generally, the faster a user is moving, the greater the necessary design width.

Passing Space: A minimum of 60 x 60 inches is required for two wheelchairs to pass, or for one wheelchair to turn in a complete circle. In areas of narrow right of way, passing spaces should be placed at regular intervals.

Changes in Level: Changes in trail flatness and evenness are caused by things like tree roots, erosion, and rocks on the trail. Paving materials such as crushed rock, wood chips, or pea gravel will also produce changes in level. These represent difficulties for wheelchairs, bikers, walkers and people with poor balance. ADA standards permit changes of less that .24 inches, while changes of .25 – .5 inches must include a beveled surface. A ramp is required if changes exceed .5 inches.

Vertical Clearance: Various user groups require different levels of minimum vertical clearance along a trail. For example, pedestrian use necessitates vertical clearance of about 10 feet, while hiking trails only require about 80 inches. Trails designed for maximum pedestrian accessibility should have sufficient vertical clearance to allow people on crutches and canes to avoid ducking.

Surface: In order to achieve maximum accessibility, the trail should be firm and stable. Materials such as concrete or asphalt can be used to create the desired surface. A firm surface may also benefit a fragile environment by minimizing soil compaction and plant damage.

Trail Information: Information about the trail and its length, surface type, and elevation change can be posted at each trail head to allow users to evaluate their relative level of ability before choosing to embark.
Maintenance: Regular maintenance can enhance trail safety and desirability, and promote continued use of the resource. Maintenance activities include ensuring structural integrity, path cleaning and clearing, vegetation trimming and maintaining water drainage. Deferred maintenance may necessitate the replacement of trail facilities that may have been repaired had they received regular attention.

More detail on design guidelines for trails from the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas, can be found in Section 16.2 of the final report, dated September 30, 1999.

Exceptions

Exceptions to the above guidelines may occur under circumstances where compliance would alter or harm cultural, historic, religious or significant natural features or considerably alter the nature, setting, or purpose of the facility. Exceptions may also occur when compliance would require construction materials prohibited by federal, state, or local regulations or in areas where the terrain makes compliance infeasible. These physical circumstances include: trail width of less than 12 inches for a distance of 20 feet; a surface that is not firm or stable for a distance of 45 feet; an obstacle over 30 inches high across the full trail width, or a combination of running and cross slope over 40% for twenty feet or more.
Appendix J

Pearl and Trail Head Criteria

**Pearl criteria**

- Highlight cultural or historic events that happened near or at the trail head or pearl location
- Provide amenities such as restrooms, picnic tables, at adequate intervals
- Within ¼ mile of a major trip generator defined as a school, major employer, park/open space, or other public facility (library, hospital, or town hall)
- Adequate space for construction of a trail head
- Give precedence to trail head locations that serve transit centers, stations and stops consistent with Policy 17.1 of the 2004 Regional Transportation Improvement Plan
- Appropriate surface for trail users
- Various locations or attractions mentioned during public involvement activities
- Adequate spacing of trail heads and other access points along the corridor

**Trail head site analysis criteria**

The following guidelines for environmental impacts of trail and site assessment are taken from Metro Green spaces:

- Determine kind and condition of wildlife habitat present
- Determine whether the plants and animals typically associated with the habitat are present, or whether the ecosystem has been simplified
- Determine the nature of past and present human impacts to the habitat
- Evaluate the surrounding land uses and their proximity to and impacts on the habitat. The best environmental trail heads will be in areas already impacted by human activity, ranked neutrally in areas of relatively undisturbed environment, followed by trail heads in virgin natural areas far away from other human impacts.

A workshop project, Linking Lents, in 2004 developed nine trail head evaluation criteria used for analysis of sites in the Springwater Corridor. Based on the public input from THPRD and other users, it is appropriate that these criteria are used to evaluate potential trail heads on the Westside Trail. (Note: these criteria served as the basis for the trail head location criteria as shown on the ground-truthing field guide)

**Auto Accessibility:** Adequate auto access ensures the trail will be seen as a regional facility, attracting users from out of the area.

**Transit Accessibility:** The presence of a bus line and stop increase the number of potential trail users.

**Street Condition:** This criterion ranks the quality of the street environment. This includes whether the street is paved or gravel, with or without potholes, or in need of major improvements.

**Average Daily Traffic:** It is suggested that moderate traffic is ideal for a trail head; moderate traffic will create a good balance between safety and visibility.

**Bicycle and Pedestrian Connections:** Presence of a bike lane, off street path, sidewalk or other pedestrian facilities increases the likelihood of the trail being used by local residents.

**Sidewalk Conditions:** A measure of quality of sidewalks around the trail head, this includes continuity, surface quality, presence of curb ramps and adequate minimum width (3/12 feet)

**Trail Environment:** Measure of quality of the trail experience (visual at the access point)

**Access Point Visibility:** How the trail feels, is it visible to the community or is it hidden behind houses or on a high traffic street.
Appendix K

Safe Routes to Schools

Over the last 30 years, the percentage of U.S. children who walk or bike to school has declined from 66% to 8% (Oregon Department of Human Services). The health implications are becoming apparent. This decrease in walking and biking has also translated into increased automobile trips and associated air pollution. According to Kallins and Parls (2002), 20 to 30% of morning traffic is generated by parents driving their children to school. Promoting walking and biking to schools is a low cost way to address many of these problems.

The Federal Highway Administration, under Section 1404 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act, funds the Safe Routes to Schools program. The purposes of the program are:

1. To enable and encourage children, including those with disabilities, to walk and bicycle to school
2. To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
3. To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8).

Each state administers its own Safe Routes to Schools program. Oregon initiated its program in 2001 with the passage of House Bill 3712 and has produced a supplement to the federal Safe Routes to School tool kit. Both the federal and state tool kits focus on four approaches:

The Encouragement Approach uses events and contests to entice students to try walking and biking.

The Education Approach teaches students important safety skills and launches driver safety campaigns.

The Engineering Approach focuses on creating physical improvements to the infrastructure surrounding the school, reducing speeds and establishing safer crosswalks and pathways.

The Enforcement Approach uses local law enforcement to ensure drivers obey traffic laws.

The Westside Trail would constitute an Engineering Approach. The other three approaches would complement the completion of the trail. Because each school is uniquely situated, solutions will necessarily vary. Generally speaking, safe routes will include dedicated pedestrian/bike paths, sidewalks, crosswalks, and slow automobile traffic. These safe routes are to be identified and publicized for greater awareness.
Appendix L - Census Tract Map
References


MLP – Westside Trail – Feasibility Study