CHEHALEM HERITAGE TRAIL

Chehalem Heritage Trail Strategic Plan

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Prepared for:

Chehalem Park and Recreation District

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1.0 Background

1.1 Strategic Plan Purpose & History

The Chehalem Park and Recreation District (CPRD) created the Chehalem Heritage Trail Strategic Plan to communicate the proposed trail development concepts and key recommendations with the community, funding organizations, and other potential stakeholders. The goal identified for this trail system is:

> *The Chehalem Heritage Trail will create an outstanding 50+ mile trail system that links the greater Newberg-Dundee area through parks, historic preservation, habitat restoration, multi-modal transportation, education, and tourism.*

This strategic plan is intended to support the development of an exemplary trail system of off-street and on-street trails that provides safe and enjoyable connections at neighborhood, community and regional scales within and beyond the Chehalem Valley. The focus is within the CPRD service area, but potential connections to other parks, open spaces, and both existing and proposed regional trail networks were incorporated during plan development.

The strategic plan integrates ideas developed over the last 20 years with input from numerous visionary people in the Chehalem Valley, other stakeholders, and professional consultation. The formal planning process for the Chehalem Heritage Trail Strategic Plan was conducted between September 2009 and April 2010 with two community meetings. This document provides development concepts, key recommendations, and a framework for funding the development of a comprehensive trail system and the design and construction of key trail segments.

Wynooski Bridge over the Willamette River viewed from Rogers Landing

1.2 Strategic Plan Context

The approximately 45,000 acre Chehalem Valley is located in eastern Yamhill County with Newberg and Dundee as the principal urban communities. These communities are located about 25 miles southwest of Portland in the Willamette Valley and about 64 miles from Lincoln City on the Oregon coast, along heavily traveled Highway 99W. **Figure 1** is a vicinity map.

The extents of the CPRD service area are shown in **Figure 2**. The Chehalem Valley is formed by the Red Hills of Dundee on the west, the Chehalem Mountains on the north and east, and by the Willamette River to the south. Chehalem Creek, Hess Creek, and Springbrook Creek are notable tributary streams to the Willamette River in this region.

Chehalem Valley has traditionally been a region with a strong agricultural economy known for filbert orchards, wheat, and oats. More than 80 wineries have developed in and adjacent to the Chehalem Valley as have numerous manufacturing businesses. George Fox University and Providence Newberg Hospital are also notable employers in the region. The population of Newberg has grown from 18,064 in 2000 to 23,150 in 2009, demonstrating the desirability of the region for its quality of life and for its ready access to the Portland metropolitan area.

The region has also become an attractive weekend and vacation destination as signified by the opening in 2009 of The Allison Inn & Spa, a high end resort hotel. Tourism is a key component of the regional economy with indications it will continue to grow in importance. Other notable tourism draws include the very popular Champoeg State Park on the south shore of the Willamette River; the Willamette River for boating, canoeing and kayaking; numerous wineries, Chehalem Glen Golf Course, Chehalem Cultural Center, and Hoover-Minthorn House.

These points of interest and community parks and civic attractions provide a constellation of recreation and cultural attractions for the region. **Figure 3** shows points of interest identified during this planning effort with the proposed potential trail alignment. The proposed Chehalem Heritage Trail will provide a network that ties many of these points of interest together in a cohesive manner oriented to pedestrians and bicyclists.

The floodplain and riparian corridors indicated as trail routes along the major streams create stream and wetland restoration opportunities. **Figure 4** shows potential restoration opportunities, crossings, and .the proposed potential trail alignment

Economic development pressure poses a challenge to realizing the vision of the Chehalem Heritage Trail. Development is rapidly changing the character of the Valley as farm, forest, riparian and wetland areas are being converted to other uses. This rapid growth makes the development of a strategic plan for regional, community and neighborhood trails essential.

The Valley has a rich natural and cultural heritage, both of which were important drivers in the development of the strategic plan. The strategic plan considers both the Valley's natural assets and historical legacy while proposing innovative design and planning ideas for a multi-modal trail system that will serve a community in the midst of rapid change.

Chehalem Heritage Trail Strategic Plan

Figure 1

Vicinity Map: CPRD Boundary, State Parks, State Recreation Areas, Greenways, National Wildlife Refuges, Highways, Water Courses and Water Bodies

Vicinity Map

Columbia River
Washington
Oregon
Willamette River
Vancouver
Portland
Gresham
Multnomah County
Hillsboro
Forest Grove
Cornelius
Washington County
Gaston
Beaverton
Tigard
Lake Oswego
Bald Peak State Park
Tualatin River
National Wildlife Refuge
Tualatin
Sherwood
West Linn
Oregon City
Yamhill
Chehalem Parks and Recreation
District Service Area
Newberg
Yamhill County
Carlton
Wilsonville
Dundee
French Prairie Greenway
Willamette Greenway
Canby
Clackamas County
Lafayette
Champoeg State Park
Yamhill Landing Greenway
McMinnville
Dayton
Donald
Aurora
St Paul
Marion County
Hubbard
Woodburn
Molalla
To the Pacific Coast
(47 Miles)
To Salem
(22 Miles)

LEGEND

NTS

- CPRD District Boundary
- State Parks, Greenways and Recreation Areas
- National Wildlife Refuges
- Water Body
- City Boundary
- Highways
- County Boundary

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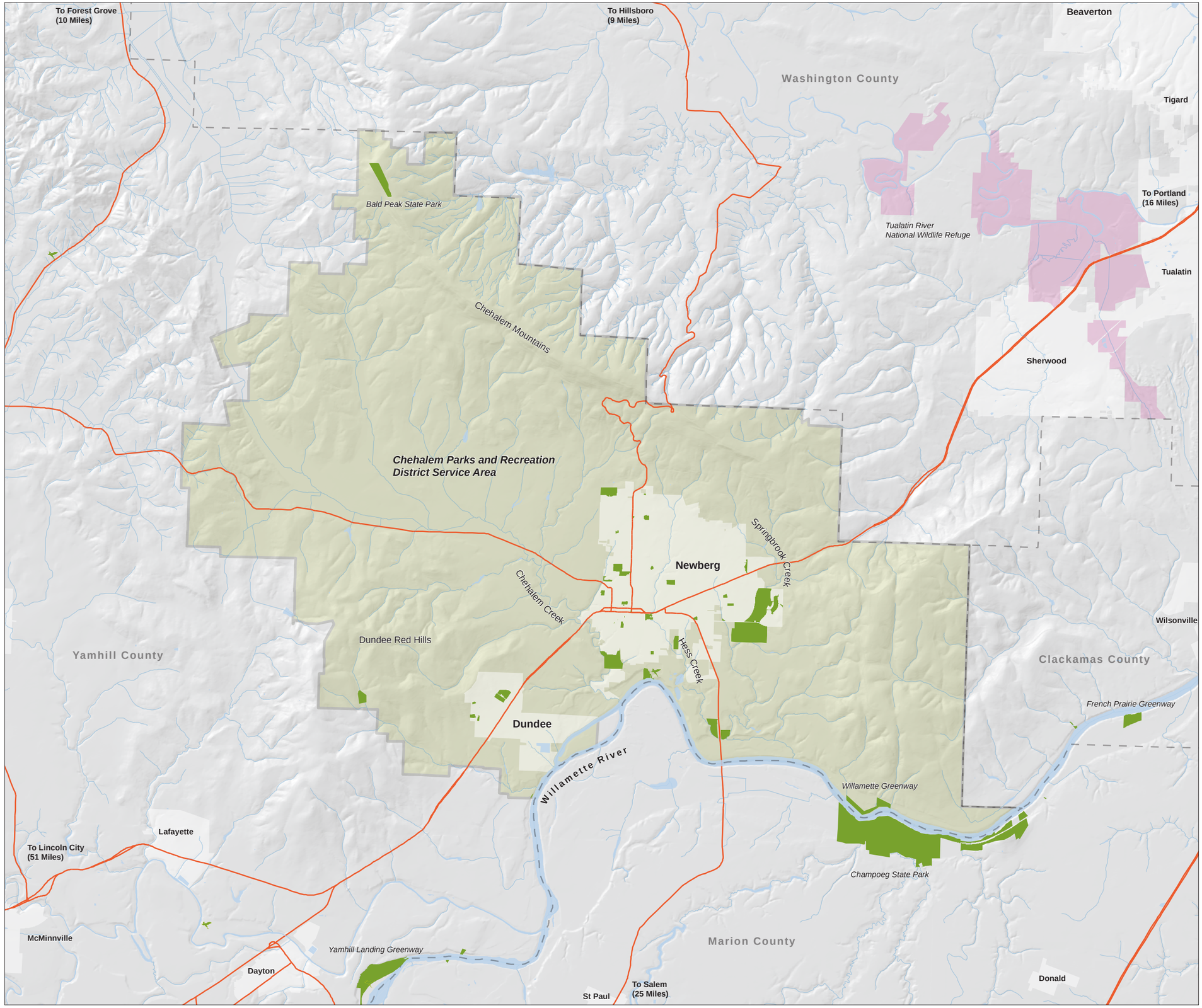
Figure 2

CPRD Service Area: CPRD Service Area, State, County and District Parks, National Wildlife Refuges, Streams, Water Bodies, City Limits, Roads

Chehalem Parks and Recreation District Area



LEGEND

NTS N

- CPRD Service Area
- State, County and District Parks and Greenways
- National Wildlife Refuges
- Water Body
- City Boundary
- Highways
- County Boundary

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Figure 3

Community Points of Interest, Historical Points of Interest and Schools

Points of Interest

Schools

1. Ewing Young Elementary
2. Chehalem Valley Middle School
3. Antonia Crater Elementary
4. Joan Austin Elementary
5. Mountainview Middle School
6. Newberg High School
7. Mabel Rush Elementary
8. Edwards Elementary
9. CS Lewis Academy
10. Dundee Elementary
11. Proposed School
12. Proposed School

Community Points of Interest

A. Erath Vineyard
B. Bella Vida Winery
C. Maresh Red Barn Winery
D. Dundee Cemetary
E. Dundee Scenic Overlook
F. Dundee City Hall
G. Ponzi Wine Bar
H. Dundee Women's Club
I. Argyle Winery
J. Dobbes Family Estate
K. Western Pond Turtles
L. Newberg City Hall
M. Newberg Library
N. Chehalem Cultural Center
O. Shea Wine Cellars
P. George Fox University
Q. SP/White Birch
R. Providence Hospital
S. Rex Hill Winery
T. The Allison Inn & Spa
U. Adelsheim Vineyard

Historical Points of Interest

i. Billick Park Trading Post
ii. Ewing Young Historical Marker
iii. Hoover Minthorn House Museum
iv. Fernwood Pioneer Cemetery
v. The McKern House
vi. Historical Ferry Site
vii. Willamette Trading Post

LEGEND

Scale: 1: 3,600

- Community Point of Interest
- Historical Point of Interest
- K-8 Public School
- Private School
- Public High School
- Proposed School
- Regional Off Street Trail
- Regional On Street Trail
- Community Off Street Trail
- Community On Street Trail
- Neighborhood Off Street Trail
- Neighborhood On Street Trail
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- Streams
- Park
- Floodplain
- Water Body
- Wetland

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Figure 4
Proposed Trail Alignments with Crossings and Restoration Opportunities

Crossings with Proposed Trail Alignments

Highway 99

A. Dundee at Alder Dr
B. Dundee at 8th St
C. Dundee at 5th St
D. Chehalem Creek
E. Cultural Center
F. Herbert Hoover
G. Newberg High School 1
H. Newberg High School 2
I. Providence Newberg

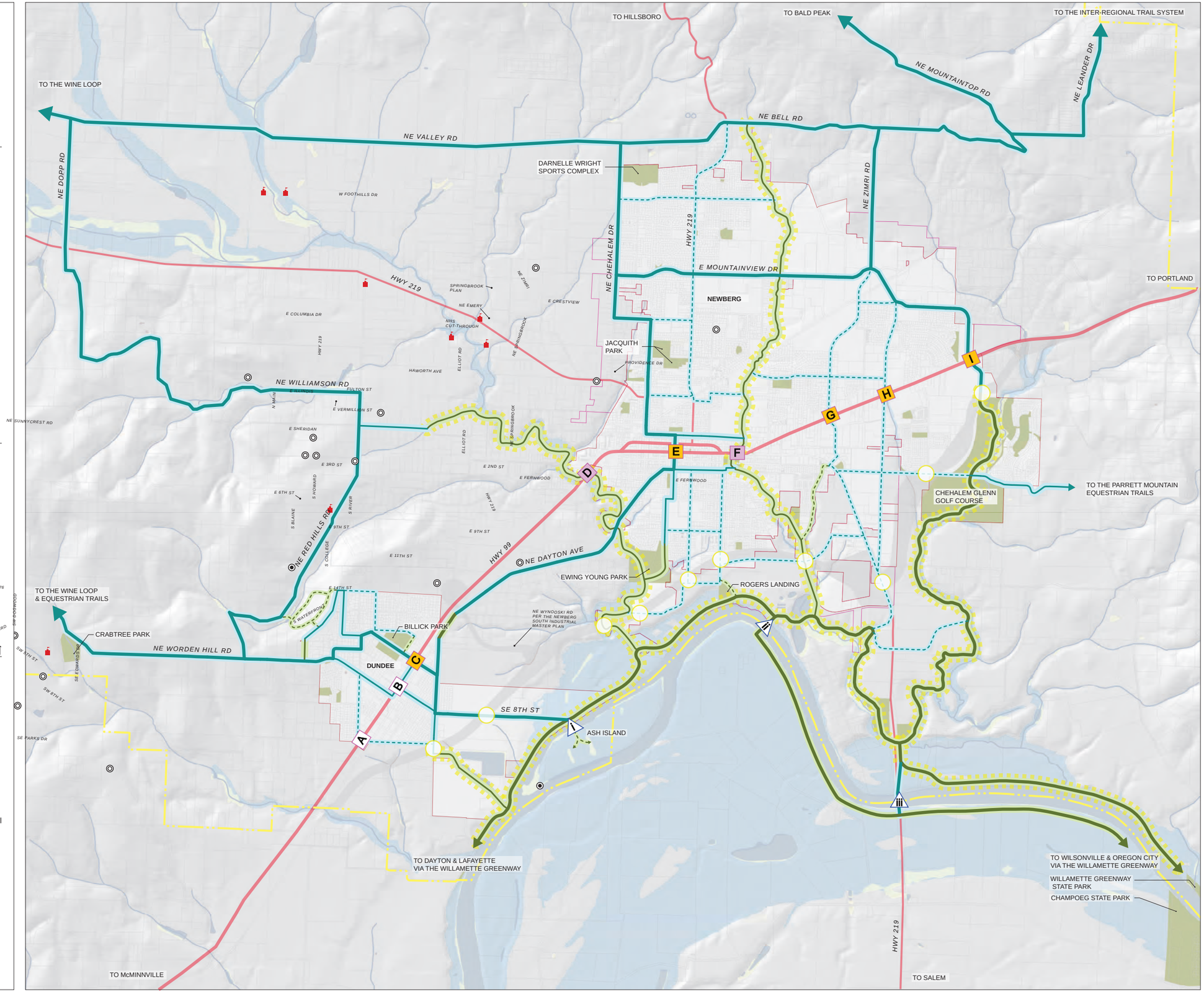
Willamette River

i. Potential Crossing at Ash Island
ii. Potential Upgrade of Wynooski Bridge
iii. Potential Upgrade of HWY 219 Bridge

Restoration Corridors

1.	Chehalem Creek	20,000 LF (3.78 MI)
2.	Hess Creek	20,025 LF (3.79 MI)
3.	Springbrook Creek	18,575 LF (3.51 MI)
4.	Willamette River	35,700 LF (6.76 MI)
5.	Dundee Ponds	3,350 LF (0.63 MI)

Total = 97,650 LF (18.49 MI)



Scale: 1: 3,600

LEGEND

- Bypass Crossing
- Signalized HWY 99 Crossing
- Non-Signalized HWY 99 Crossing
- HWY 99 Under-Crossing
- Willamette Crossing
- Proposed Restoration Area
- Regional Off Street Trail
- Community Off Street Trail
- Neighborhood Off Street Trail
- Regional On Street Trail
- Community On Street Trail
- Neighborhood On Street Trail
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- Park
- Floodplain
- Water Body
- Wetland

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1.3 Natural Heritage

The Chehalem Valley is rich with natural beauty. The Willamette River meanders along its southern border, and rolling hills, dramatic creek canyons, scenic vineyards and filbert orchards can all be found across much of the area. There are outstanding views of the Valley and beyond to Mt. Hood from numerous high points. Bald Peak, in the Chehalem Mountains, is the Willamette Valley's highest point at 1,633 feet.

The Valley is drained by three major streams: Chehalem Creek, Hess Creek, and Springbrook Creek. Each of these creeks drains to the Willamette River and has perennial tributaries reaching up into the Chehalem Mountains and the Red Hills. Native spring Chinook, Coho salmon and cutthroat trout have been documented in Chehalem Creek, but records do not exist for Hess and Springbrook Creeks. ODFW has identified fish passage barriers on these streams, which present stream restoration opportunities.

Soils in the lower elevation areas of the valley are well suited for agriculture and contribute to the long agricultural history in the Valley. Historically Chehalem Valley vegetation included; oak savannahs, Douglas fir/white oak/big-leaf maple forests, upland prairies, emergent wetlands, ash/cottonwood forests, wet prairies, oak woodlands and Douglas fir savannahs (GLO 2009). Today much of the Valley bottom is dominated by agricultural or urban use.

Remaining native vegetation ranges from emergent wetlands in the low areas of the creek valleys to oak woodlands, savannahs and prairies in the hills. Oregon white oak forests are found on the slopes of the Chehalem Mountains. Mixed hardwood and conifer forests containing big-leaf maple and Douglas fir can be found throughout Chehalem Mountains and the Dundee Hills. Scattered pockets of native prairie grasslands are found within the northern third of the district. Emergent wetlands and forested swamps can be found adjacent to the major creeks as well as along the Willamette (State of Oregon 2009).

The Chehalem Valley provides a wide range of both aquatic and terrestrial habitat types for use by many types of wildlife. Invasive plant species have spread throughout the area, which present restoration opportunities in uplands, riparian areas, and wetlands.

Oregon ash wetlands along the Chehalem Creek floodplain near NE Dopp Road

1.4 Cultural Heritage

Native Americans pre-dated European settlers in the Chehalem Valley by 4,000 to 10,000 years. The indigenous Che-ahm-ill (or Yamhela) people were a sub-group of the Kalapuyan culture. They managed the land with extensive use of fire, minimizing closed forests, selecting for oak savannahs and prairies, and creating more amenable hunting grounds and basic agricultural areas (Empfield 2001) for harvest of camas bulbs and other starch sources. There are reports that the Dundee-Billick Park site served as a major trading site prior to settlement by Europeans.

The fur trapper Ewing Young built a home near the mouth of the Chehalem Creek in 1834, and his house is believed to be the first constructed by a white settler in the Chehalem Valley. Yamhill County became officially organized in 1840, and the Euro-American population slowly began to grow. Smallpox had already decimated the indigenous population before the arrival of Euro-Americans, and the many of the remaining native people were relocated to reservations.

The Donation Land Claim Act, enacted in 1850, enabled Oregon residents 18 years of age and older to claim 320 acres of land if they lived on it and farmed it for 4 years. Arable land in the Chehalem Valley was converted to field crop, pasture and woodlot. Around the turn of the century berry farms and fruit orchards began to be established. The dairy industry also expanded into the area around this time (Empfield 2001). Yamhill County continued to be one of the state's most productive agricultural counties through the 1940's, producing; walnuts, prunes, filberts, cherries, vegetables, seeds, flax, turkeys and chickens (Empfield 2001). Since the 1980s vineyard acreage has steadily increased. Various industrial and mining interests have also moved into the valley, but agriculture continues to be the dominant land use.

Rapid development across the broader Portland metro region has put pressure on the unique character of the Chehalem Valley. Over the past 20 years the population of Newberg has grown at more than double the average for the state of Oregon (Empfield 2001). The region's small town and rural character has a diverse historical legacy that deserves attention and preservation.

Historic barn at Friends Park

2.0 Strategic Plan Development

The strategic plan for the Chehalem Heritage Trail was developed using an iterative planning process that is described in more detail in this section. Key steps in the development of the plan included the review of existing plans and documents, meeting with stakeholders and the public, GIS-based analysis, and field reconnaissance. Participants in the process included:

- Chehalem Park and Recreation District staff;
- Professional consultants with expertise in trail and parks planning and design, transportation planning, Right-of-way acquisition, and engineering;
- Key stakeholders from Dundee, Newberg and the surrounding area; and
- The public

The goal and objectives reflect both the valleys natural assets and historical legacy and put forward a vision of an innovative multi-modal trail system that will serve the residents of and visitors to the Chehalem Valley.

2.1 Goals, Objectives and Conceptual Plan Elements

CPRD staff, the VAI team, and key stakeholders met to develop a draft set of goals and objectives for the project. Based on the goals and objectives a preliminary map of points of interest was developed. These included areas of cultural, natural, and civic interest. Restoration opportunities within natural areas were identified, and typologies for trails were developed.

All of these elements were presented at a public meeting for comment and input. Community input was also solicited through a project website and newsletter. Comments and concerns were taken into consideration during strategic plan development. Meeting notes are included in **Appendix A**. The goals and objectives, points of interest, restoration opportunities, and trail typologies (described below) were used to drive the development of the Chehalem Valley Heritage Trail strategic plan.

Chehalem Glenn Golf Course

Goal

This project will create an outstanding 50+mile trail system that preserves and enhances the greater Chehalem Valley communities' parks, historic heritage, native habitats, open space, and community connectivity.

Objectives

Objective 1 – This will be a safe and enjoyable trail system that promotes fitness with a range of hard surface and soft surface trails that connect the greater Chehalem Valley to recreation and provides transportation opportunities. This includes:

- The "Safe Routes to Schools" program goals and objectives
- Integration with local jurisdiction trails
- Working with property owners.

Objective 2 – The trail will link the Chehalem Valley with other trails, parks, and open space systems regionally and beyond:

- The trail system will start with the Chehalem Valley and reach out
- This program may integrate with *The Intertwine* statewide parks and trails program
- Development of the trail system will require substantial public investments.

Objective 3 – The trail will emphasize the historical legacy of the Chehalem Valley and include historical features and interpretive materials that encompass the following:

- Geological History
- Willamette River History
- Yamhelas Indians
- Ewing Young
- Northwest Fur Company
- British Settlers
- Quakers
- ~200 registered historical homes
- Dundee and Newberg History
- George Fox University
- Museums
- Herbert Hoover
- Agriculture
- Timber Products
- Red Electric Trolley
- Wine Industry.

Objective 4 – The trail will promote habitat restoration, including the removal of invasive species, and interpretive materials (with standardization) that include the following topics:

- Willamette River
- Chehalem Creek
- Hess Creek
- Springbrook Creek
- Wetlands
- Stream
- Riparian Zones
- Upland Forests
- Heritage Trees (Native American, Survey Bearing Trees, etc.)
- Prairies
- Fish, Wildlife, and Native Vegetation
- Wildlife Corridors.

Objective 5 – The trail will provide safe connections within the Chehalem Valley emphasizing off-street trails and side street shoulders for non-motorized users with lighting as may be appropriate:

- Pedestrians / Hikers
- Bicyclists
- Equestrians (including staging areas)
- Roller bladers and skate boarders
- Families with strollers and small children
- Universal Access (ADA needs that could accommodate carts, etc.)
- Canoe and kayak trails (on the Willamette).

Objective 6 – The trail will promote the local economy and tourism:

- Providing a huge potential to shape the community
- Promoting the local economy, education, and tourism:
    - Creating new opportunities for existing businesses and attracting new businesses
    - Featuring Cultural Centers
    - Featuring Vineyards
    - Chehalem Glenn Golf Course
    - Featuring Resorts such as the Allison Inn
- Providing connections between residential areas and job centers including:
    - Providence Newberg Hospital
    - George Fox University
    - Austin Dental
    - SP/White Birch
- Offering family-friendly recreation close to the population centers of the Northern Willamette Valley
- Integrating with the Ecotourism:
    - Willamette River Trail
    - Champoeg State Park
    - Bald Peak State Park
    - Potential development of Ash Island as a state park, and other parks
    - Audubon birding sites
- Adding to the quality of life


OREGON HISTORY
WILLAMETTE POST
WILLAMETTE POST WAS ESTABLISHED IN DECEMBER 1813 ON A KNOLL JUST EAST OF THIS LOCATION BY EMPLOYEES OF THE NORTH WEST COMPANY, A MONTREAL BASED FUR-TRADING COMPANY. DURING THE ENSUING YEARS THE TWO-ROOM LOG CABIN, ALSO KNOWN AS FORT KALAPUYA, SERVED AS A SITE FOR TRADING WITH THE LOCAL INDIANS, THE KALAPUYANS. IT WAS ALSO A DEPOT FOR HUNTING EXPEDITIONS PROVIDING FOOD TO FORT GEORGE, ALSO KNOWN AS FORT ASTORIA, ON THE OREGON COAST. THE POST WAS STILL INTACT IN THE LATE 1820'S, AS FRENCH-INDIAN FAMILIES BEGAN TO SETTLE IN THE FRENCH PRAIRIE CHAMPOEG AREA. PIERRE BELLIQUE, A FRENCH CANADIAN FUR TRAPPER TURNED FARMER, AND HIS WIFE, GENEVIEVE, USED THE VACATED BUILDING AS A RESIDENCE BEGINNING IN THE EARLY 1830'S

3.0 Design Elements

The Chehalem Heritage Trail will incorporate design elements that represent the Chehalem Valley.

3.1 Points of Interest

Building on the defined objectives for the project, points of interest—to be connected by the trail system—were identified and vetted by the public. These locations can be loosely grouped into four categories: historical, community, school, and natural. Restoration opportunities associated with locations in the natural category are discussed in more detail below.

The rich history of the Chehalem Valley has been one of the driving factors during the course of the planning process. Traces of this legacy can still be found throughout the Valley at sites such as; Rogers Landing, the Willamette Trading Post, Ewing Young Park and the Billick Park Trading Post. It is the intention of the Chehalem Heritage Trail to uncover these traces, showcasing this history as an important part of the Chehalem Heritage Trail experience. The proposed trail alignments provide direct access to many of the historically important sites in the area. **Table 1** is a summary of points of interest by four categories.

Table 1.
Points of Interest by Category

Category	Description	Examples
Historical	Farms, museums, historic homes and sites, parks	Hoover-Minthorn House, Willamette Trading Post, Fernwood Pioneer Cemetery,
Community	City halls, Newberg Library, employment centers, tourist destinations	Providence Newberg Hospital, Chehalem Glenn Golf Course, Argyle Winery, The Allison Inn & Spa
Schools	Universities, High Schools, Middle Schools, Elementary Schools	George Fox University, Newberg High School, Ewing Young Elementary
Natural	Parks, natural open spaces, rivers and streams, wetlands	Jacquith Park, Crabtree Park, Chehalem Creek Canyon, Hess Creek, Willamette River

A network of trails between key points of interest is proposed to provide safe bicycle and pedestrian routes to schools, work, and recreation areas. This network must follow alignments that work with property, land use, and topographic constraints.

3.2 Restoration Opportunities

The planning area includes portions of the Willamette River and Chehalem, Hess and Springbrook Creeks and their riparian areas. It also includes wetlands, oak savanna and prairie habitats. Off-street trail alignments will likely follow undeveloped riparian corridors along streams. Construction of trails to provide access along these areas also provides an opportunity for enhancing and restoring the condition and function of existing habitat.

By prioritizing habitat restoration, this trail system will benefit overall watershed habitat quality. Stream corridors and wetland areas adjacent to the proposed off-street trail system will be targets for restoration efforts. Existing conditions of these resources are well described in the Chehalem Watershed Assessment (Empfield 2001). Information from this document pertinent to strategic plan development is included in **Appendix C**.

Table 2 summarizes restoration opportunities by five resource types. Primary and secondary restoration actions are identified for each resource type.

Table 2.
Restoration Opportunities by Resource Type

Natural Resource	Primary Restoration Actions	Secondary Restoration Actions
River/Stream Riparian Corridors	Plant native vegetation, add habitat features to streams, remove invasive species	Repair bank or stream bed erosion, remove fish passage barriers, add side channels where appropriate
Floodplains	Plant native vegetation, add habitat features to floodplains, remove invasive species	Create additional floodplains where appropriate and practical, add cutoffs where appropriate
Wetlands	Plant native vegetation, add habitat features to wetlands, remove invasive species	Expand wetlands where opportunities exist or add appropriate sustainable hydrologic enhancements.
Adjacent Woodlands	Plant native vegetation, add habitat features to woodlands, remove invasive species	
Adjacent Prairies	Plant native vegetation, add habitat features to prairies, remove invasive species	Coordinate prescribed burns as appropriate as a management tool

Restoration opportunities identified for this project are illustrated in **Figure 4**.

Aerial perspective of Ash Island

3.3 Existing Planning Documents

A number of planning documents were gathered, reviewed, and used to guide the trail alignment and the assignment of typologies to trail sections. In addition, several individual meetings were held to flesh out community or site-specific issues. Documents describing the condition of natural resources in the valley were also reviewed to identify restoration opportunities. Plans and documents reviewed include:

- The Riverfront Master Plan
- The Northwest Newberg Specific Plan
- Beyond the Vision: Strategic Plan for the Chehalem Valley 2030
- The Springbrook Master Plan
- Newberg South Industrial Area Master Plan
- The Dundee Master Plan
- The Chehalem Watershed Assessment

3.4 Safe Routes to School

A key subset of the points of interest is safe routes to school. There is the Federal Safe Routes to School (SRTS) Program that is intended to empower communities to make walking and bicycling to school a safe and routine activity as it once was. This Program provides funding for a wide variety of programs and projects, from building safer street crossings to establishing programs that encourage children and their parents to walk and bicycle safely to school.

The proposed Chehalem Heritage Trail includes routes to all schools in the District. The proposed first phase of the project would connect four schools to the trail system. This portion of the trail system is shown in **Appendix C**.

3.5 Trail Alignment and Refinement

Once the points of interest and restoration opportunities had been defined and other planned trail routes were considered for the trail alignment a GIS-based site analysis was conducted to identify constraints and opportunities for trail alignments. GIS was used to analyze a number of existing datasets including soil, topography, tax lots, floodplains, wetlands, water features, and roads. These data sets were processed in order to:

- Locate areas where soils and slopes were suitable/not suitable for trail development.
- Locate areas where parcel ownership and/or size, and development status might make trail development easier/harder.
- Locate areas where natural resources such as wetlands, streams and floodplains might make trail development easier/harder.
- Locate natural and manmade barriers to trail development such as highways and streams.

Conclusions from these analyses were synthesized to inform planning decisions and trail alignments. Maps of these analyses were developed as presentation tools for public and team meetings. GIS layers for community identified points of interest were developed and integrated into these maps which are located in **Appendix C**.

The parcel analysis shows improved and unimproved parcels in the CPRD service area. This analysis was used to identify potential corridors through unimproved parcels to connect key points of interest.

The zoning map identifies zoning for the CPRD service area. This mapping was used to identify potential corridors that would minimize land use conflicts.

The slope analysis indicates steepness of slopes for the CPRD service area. This analysis was applied to identify routes that could minimize earthwork costs for trails by routing trails along flatter alignments where practical.

With this information in place CPRD, the VAI team, and key stakeholders met to develop a preliminary trail alignment. This process identified a number of data gaps. These primarily involved local knowledge of existing trail and bike route plans and ongoing planning efforts. The process also generated a list of questions for the transportation and structural engineers on the consulting team about the feasibility of crossing the Willamette River, Highway 99W and the proposed Bypass. Technical memoranda on these subjects were subsequently completed and are included in **Appendix D** and **Appendix E**. This information was folded into the plan refinement.

Newberg Library

3.6 Trail Typologies

The trail system was envisioned to perform a number of functions. The trails are intended to provide safe routes to school and work, opportunities for neighborhood and community recreation, and connections to other regional trail networks. To accomplish this, trail typologies were developed to classify anticipated user groups and levels of traffic.

Regional trails provide major connections around and between Dundee and Newberg. They also extend beyond these communities to provide connections to parks, cities and other locations beyond the valley.

Community trails provide connections between employment centers and major civic buildings within Dundee and Newberg. Community trails also provide connections to the regional trail system both inside and outside of urban areas.

Neighborhood trails provide connections from residential neighborhoods to schools, shopping and other locations within the Dundee and Newberg.

Given the extent of development in the valley many of the proposed trials will need to be accommodated within the existing street right-of-ways (on-street) however there are opportunities for the construction of dedicated (off-street) multi-use trails for sections of the regional, community and neighborhood trail networks. **Table 3** describes five trail types according to surface, location, and roadway relationship.

Table 3.
Trail Typologies

Trail Type	Surface	Location	Shared Roadway (Yes/No)
Trails within the Right-of-Way			
Regional On-Street	Paved	Urban Suburban Rural Connect to areas outside the Valley	Bikes: Yes Pedestrians: No
Community On-Street	Paved	Urban Suburban	Bikes: Yes Pedestrians: No
Neighborhood On-Street	Paved	Urban	Bikes: Yes Pedestrians: No
Trails outside the Right-of-Way			
Regional, Community and Neighborhood Off-Street	Paved	Urban Suburban Rural	Multi Use: No
Equestrian	Unpaved	Rural	Multi Use: No

3.7 Field Reconnaissance

A windshield survey of the proposed potential alignments was performed on January 5th, 2010. This involved driving a majority of the major on-street alignments to confirm that the proposed alignments and trail typologies were feasible. In areas where obstacles were identified, alignment modifications were made.

Dayton Avenue near Dundee

4.0 Proposed Trails

The proposed potential trail alignments were developed through a synthesis of community and stakeholder input, geospatial analysis, and a consideration of local points of interest and restoration opportunities. The resulting potential alignments reflect desirable connections based on input from diverse sources.

The hierarchy of trails is based on the developed typologies; these typologies (Regional, Community, and Neighborhood On- and Off-Street Trails) communicate the primary users anticipated for each segment. Within each of those trail typologies are multiple possibilities for trail cross sections depending of the right-of-way width and the land use zone. Typical sections are presented in the next section

4.1 Concept-Level Cross Sections

Concept level cross sections were developed to illustrate the ways in which the various trial types fit into the existing locations. A simple GIS analysis was conducted to map the spatial extents of urban, suburban and rural settings.

These cross sections serve several purposes:

- First, they indicate how the proposed trail system will fit into existing right-of-ways;
- Second, they identify locations where existing right-of-way width may not be adequate to accommodate a trail; and
- Third, they show what the trail network might be like once constructed.

Existing bike lane and sidewalk on NE Zimri near E Mountainview

4.1.1 On-Street Trails in Urban Residential Areas

On-street trails in urban residential areas are characterized by a curb and gutter system, moderate traffic volumes and low to moderate traffic speeds. **Figure 5** shows a bike lane adjacent to a curb and gutter system typical of urban residential areas within the CPRD planning boundary.

Right-of-way widths along proposed on-street trail alignments in urban residential areas range from 30- to 80-feet wide. The majority of right-of-way widths fall within the 40- to 60-foot range. There are several areas where the right-of way width is about 30-feet wide. This narrow right-of-way width may present challenges.

Figure 6 illustrates how proposed trails may be implemented in urban residential areas typical of the Chehalem Valley. Cross sections are provided for a narrow 30-foot right-of-way and a more typical 42-foot right-of-way.

30-foot Right-of-Way:
This section may be applied to existing roads with 12-foot travel lanes and 3-foot shoulders. Travel lanes are narrowed to 11 feet and shoulders are paved and converted to 4-foot bike lanes. An extra-wide white 6-inch stripe delineates the bike lanes. This section does not accommodate pedestrian traffic, and should only be used for extremely limited right-of-ways. Purchasing extra right-of-way in order to accommodate pedestrians should be considered in these locations.

42-foot Right-of-Way:
This section may be applied to existing roads with 12-foot travel lanes and 3-foot shoulders that either have existing sidewalks or a right-of-way wide enough to accommodate new sidewalks. Travel lanes are narrowed to 11 feet and shoulders are paved and converted to 4-foot bike lanes. A 6-inch stripe is painted, separating bike lanes from traffic. Pedestrians are accommodated on existing sidewalks. In location without sidewalks, 6-foot sidewalks are installed on one or both sides of the street.

Figure 5 Bike Lanes with a Curb and Gutter System

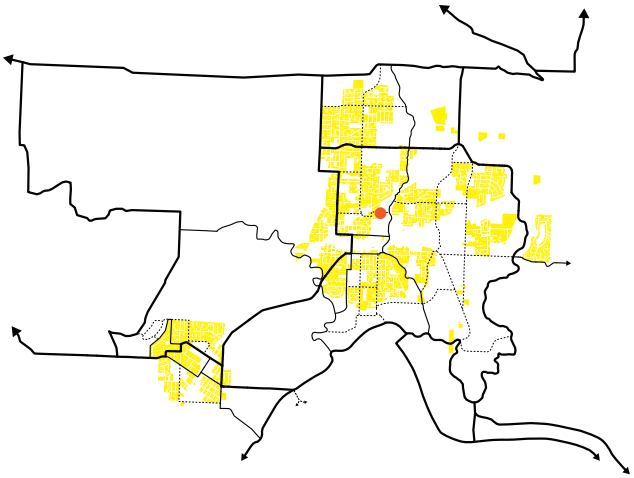
Source: http://domz60.files.wordpress.com

Figure 6. Urban Residential Cross Sections

Photo (E North St and N School St)

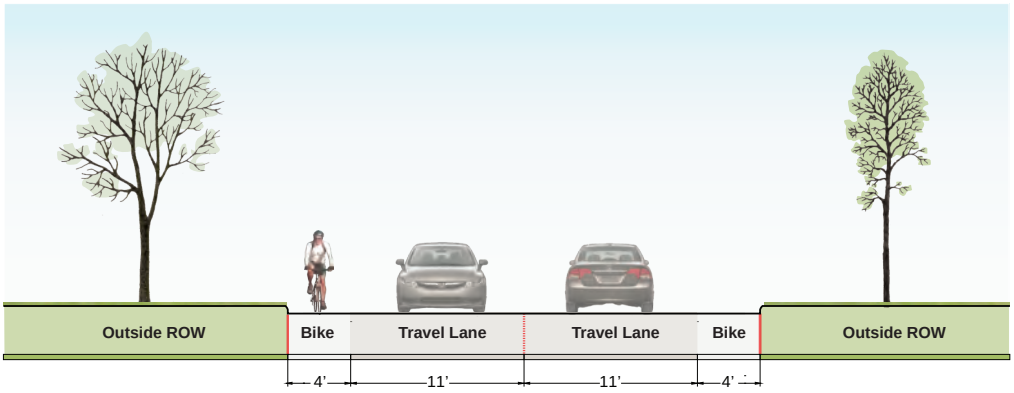
Photo Source: Google Streetview 2010

Urban Residential Areas

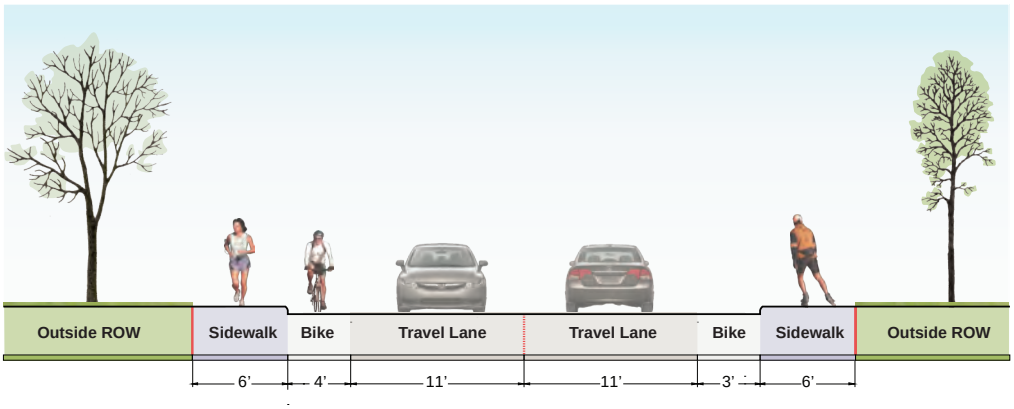


● Photo Point

30-Foot Right-Of-Way



42-Foot Right-Of-Way



NTS

Legend

	Vegetated Buffer		Pedestrian Walkway		Parking
	Bike Lane		Paved Buffer/Curb		Travel Lane

4.1.2 On-Street Trails in Commercial and Industrial Areas

On-street trails in commercial and industrial areas are characterized by a curb and gutter system, moderate to high traffic volumes, low to moderate traffic speeds, parking and more than two travel lanes. **Figure 7** shows bike lanes adjacent to parking typical of commercial and industrial areas within the CPRD planning boundary.

Right-of-ways range between 60- and 100-feet along proposed on-street trail alignments in commercial and industrial areas. The majority of right-of-way widths fall within the 60 to 70 foot range.

The cross sections in **Figure 8** illustrate how proposed trails may be implemented in urban commercial and industrial areas typical of the Chehalem Valley. A section for 60-foot right-of-way and a section for a 72-foot right-of-way are provided.

60-foot Right-of-Way:
This section may be applied to existing roads with two sides of parking, two lanes of traffic, and existing sidewalks near or abutting commercial shops. One side of parking is eliminated, and lanes are re-striped to accommodate bike lanes in each direction of traffic. Bike lanes are delineated by an extra-wide white 6 inch stripe. Parking is retained outside of the bike lanes. Pedestrians are accommodated on existing sidewalks. This section illustrates a 4 foot vegetated planting strip on one side of the road. The vegetated planting strip may be eliminated in narrower right-of-ways or, conversely, an additional vegetated planting strip may be added to the other side of the road when right-of-way width is available.

72-foot Right-of-Way:
This section may be applied to existing roads with two sides of parking, three lanes of traffic, and existing wide sidewalks near or abutting commercial shops. One lane of traffic is eliminated, and lanes are re-striped to accommodate bike lanes in each direction of traffic. Bike lanes are delineated by an extra-wide white 6-inch stripe. Pedestrians are accommodated on existing sidewalks.

Figure 7 Bike Lanes Adjacent to Parking and Travel Lanes

Source: http://www.lakesammfriends.org

Figure 8. Commercial and Industrial Cross Sections

Photo (99W and Main St)

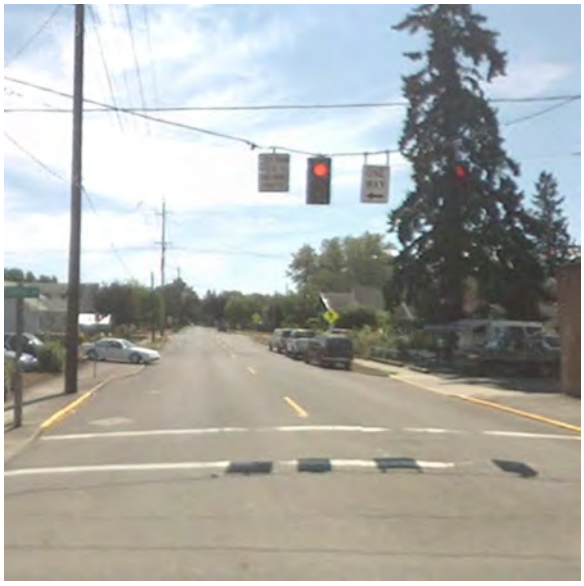
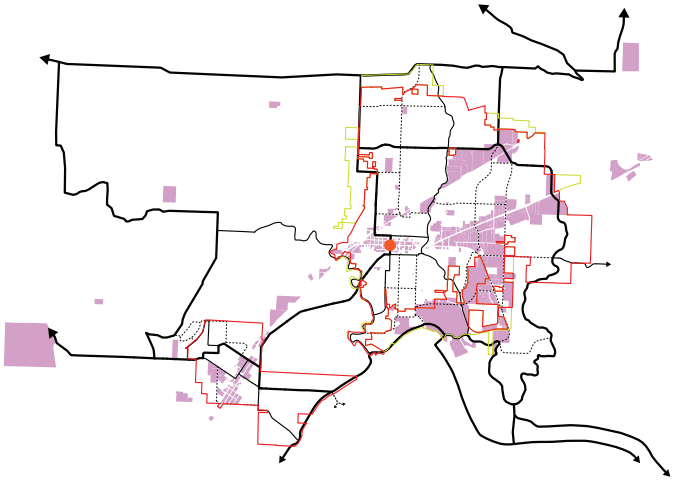


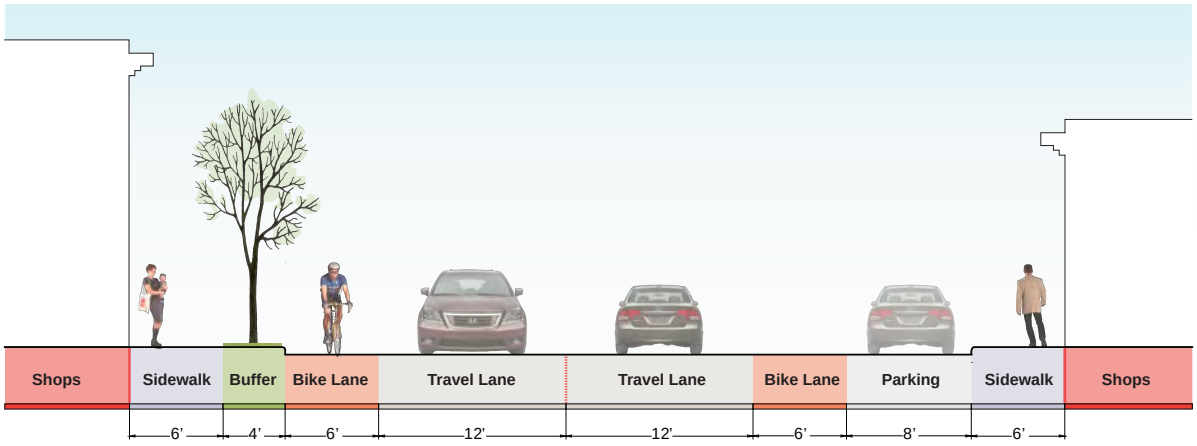
Photo Source: Google Streetview 2010

Commercial and Industrial Areas

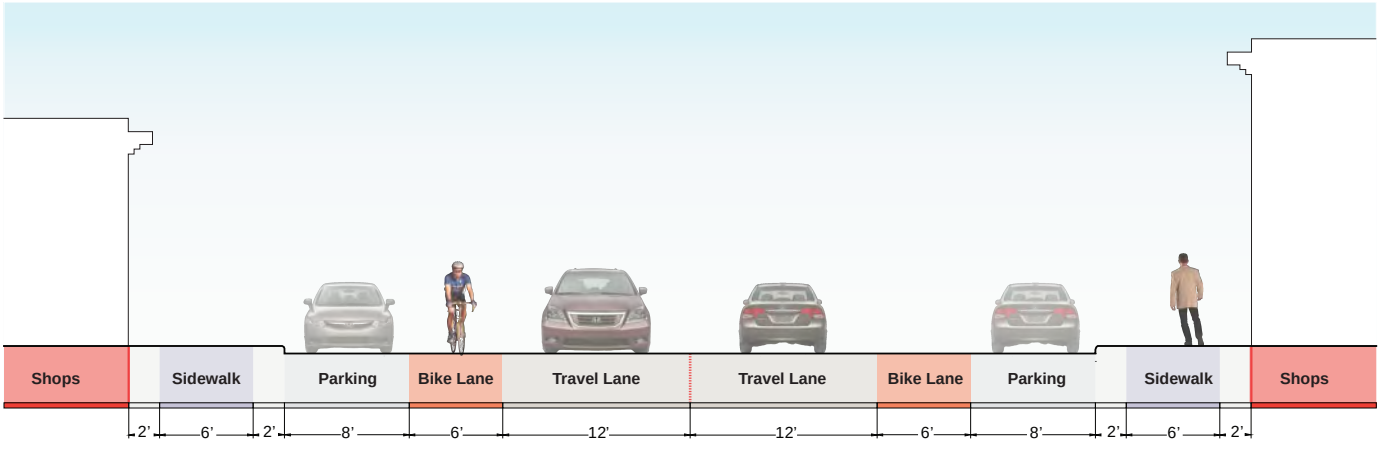


● Photo Point

60-Foot Right-Of-Way



72-Foot Right-Of-Way



NTS

Legend

Vegetated Buffer
Bike Lane
Pedestrian Walkway
Paved Buffer/Curb
Parking
Travel Lane
Shops

4.1.3 On-Street Trails in Suburban and Rural Residential Areas

On-street trails in suburban and rural residential areas are characterized by a ditch drainage system, low to moderate traffic volumes and low to moderate traffic speeds. **Figure 9** shows a shared roadway adjacent to a ditch drainage system typical of suburban or rural residential areas within the CPRD planning boundary.

Right-of-ways range between 40 and 70 feet along proposed on-street trail alignments in suburban and rural residential areas. The majority of right-of-way widths fall within the 40 to 60 foot range. 40-foot right-of-ways with ditch drainage systems are too narrow to accommodate pedestrian traffic without drainage improvements or the purchase of additional right-of-way.

Figure 10 illustrates how proposed trails may be typically implemented in suburban and rural residential areas. We are providing a section for a 46-foot right-of-way and a section for a 52-foot right-of-way.

46-foot Right-of-way:
This section may be applied to existing roads with normal travel lanes and shoulders. The existing roads are not physically modified, though travel lanes are converted into shared road ways through signage. Shared roadways are appropriate where traffic speeds are less than 40 mph and volumes are light. Pedestrians are accommodated on one side of existing walk or, if no walk exists, one sidewalk is installed.

52-foot Right-of-way:
This section may be applied to existing roads with normal travel lanes and shoulders. The existing roads are not physically modified, though travel lanes are converted into shared road ways through signage. Shared roadways are appropriate where traffic speeds are less than 35 mph and volumes are light. Pedestrians are accommodated on existing or installed sidewalks on both sides of the road.

Figure 9 Shared Roadway Adjacent to a Ditch Drainage System

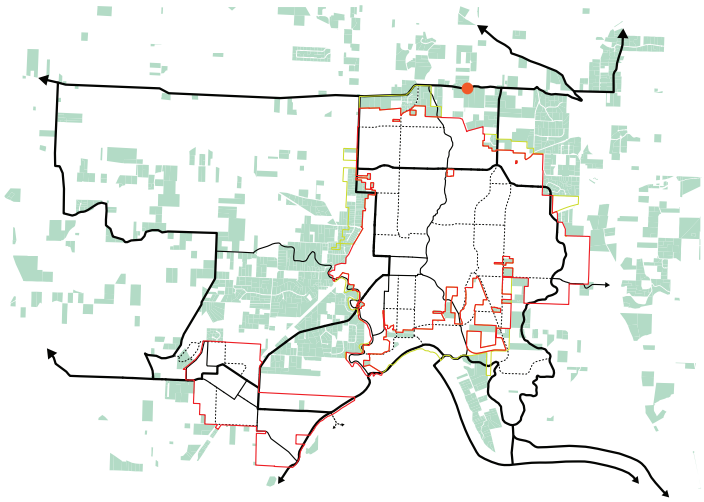
Source: http://www.struck.us/

Figure 10. Rural and Suburban Residential Cross Sections

Photo (NE Bell Rd)

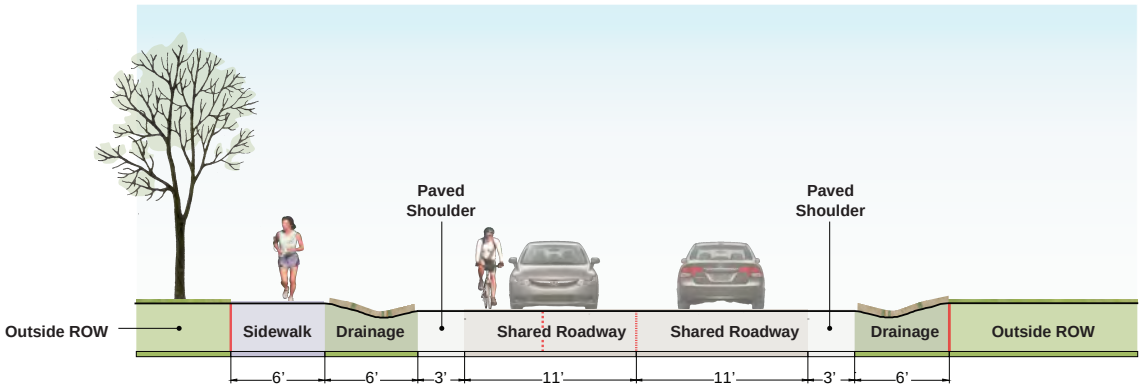
Photo Source: Google Streetview 2010

Rural and Suburban Residential Areas

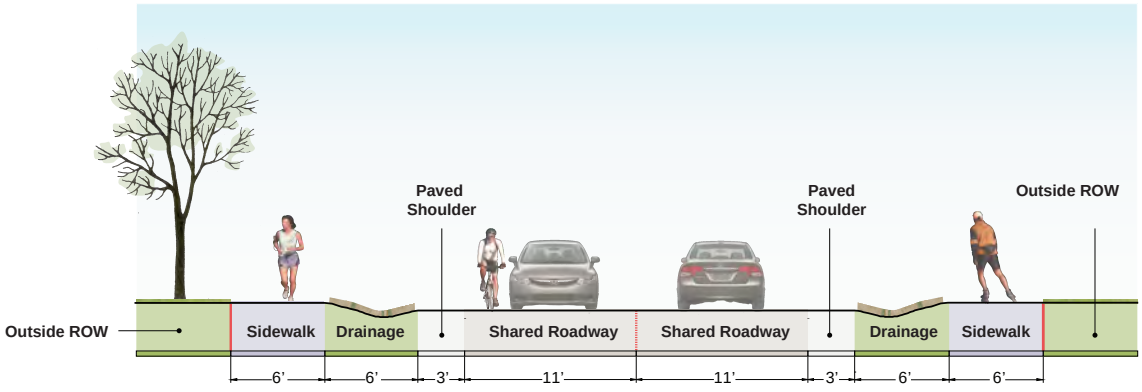


● Photo Point

48-Foot Right-Of-Way



54-Foot Right-Of-Way



NTS

Legend

Vegetated Buffer
Shared Roadway
Pedestrian Path
Paved Shoulder

4.1.4 On-Street Trails in Rural, Farm and Forested Areas

On-street trails in rural, farm and forested areas are characterized by a ditch drainage system, low traffic volumes and moderate to high traffic speeds. **Figure 11** shows a bike lane adjacent to a ditch drainage system typical of rural, farm and forested areas within the CPRD planning boundary.

Right-of-ways range between 40 and 60 feet along proposed on-street trail alignments in rural, farm and forested areas. The majority of right-of-way widths fall within the 50- to 60-foot range.

Figure 12 illustrates how proposed trails may be implemented in rural farm and forested areas typical of the Chehalem Valley. We are providing a section for a 48-foot right-of-way and a section for a 54-foot right-of-way. Narrow roadways with high traffic volumes and high speeds may need to be widened to accommodate the proposed width standards.

48-foot Right-of-way:
This section may be applied to existing roads with 12-foot travel lanes and 3-foot shoulders. The existing roads are restriped to accommodate 4-foot bike lanes in both directions of traffic. Unpaved shoulders will need to be paved to accommodate bike traffic. Pedestrians are accommodated on one side of existing walk or, if no walk exists, one sidewalk is installed.

54-foot Right-of-way:
This section may be applied to existing roads with 12-foot travel lanes and 3-foot shoulders. The existing roads are restriped to accommodate 4-foot bike lanes in both directions of traffic. Unpaved shoulders will need to be paved to accommodate bike traffic. Pedestrians are accommodated on existing or installed sidewalks on both sides of the road.

Figure 11 Bike Lane Adjacent to a Ditch Drainage System

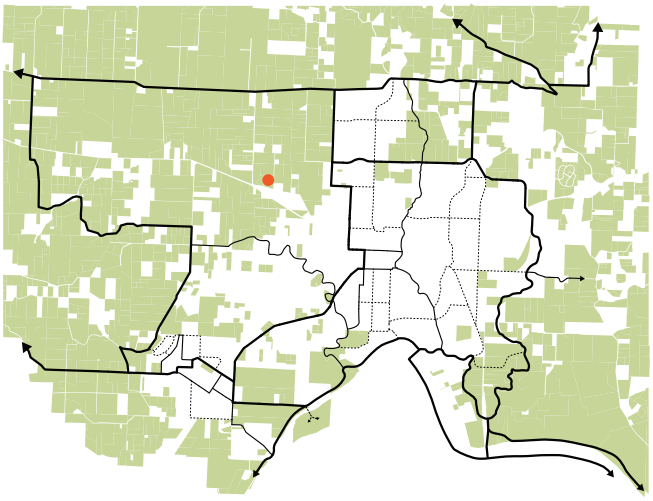
Source: http://www.flickr.com/photos/luton

Figure 12. Rural Farm and Forested Cross Sections

Photo (NE Yamhill Rd)

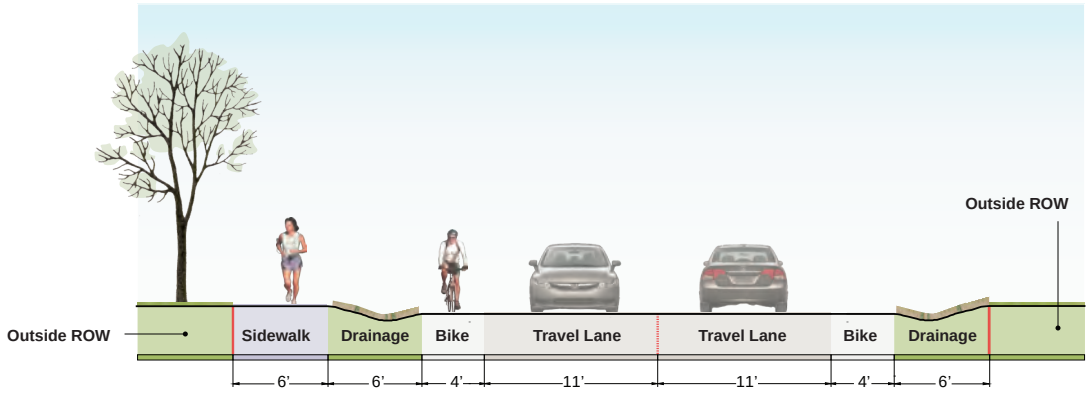
Photo Source: Google Streetview 2010

Rural Farm and Forested Areas

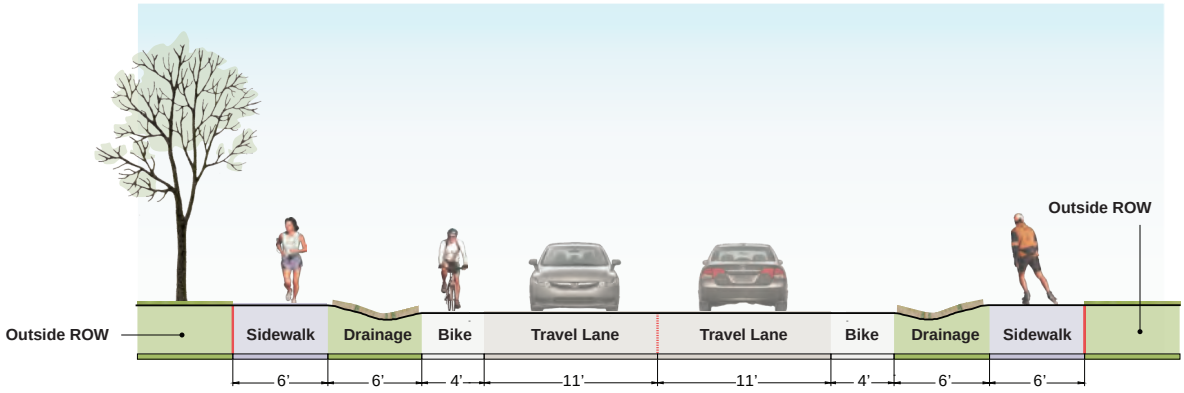


● Photo Point

48-Foot Right-Of-Way



54-Foot Right-Of-Way



NTS

Legend

- Vegetated Buffer
- Shared Roadway
- Pedestrian Path
- Paved Shoulder

4.1.5 Off-Street Multi-Use Trails

Off-street multi-use trails are appropriate for trail alignments that have continuous separation from roadways. Off-street multi-use paths accommodate two directions of bike and pedestrian traffic. Off-street trails provide multiple benefits to a community trail system, including; scenic quality, shorter connections to points of interest and access to natural areas.

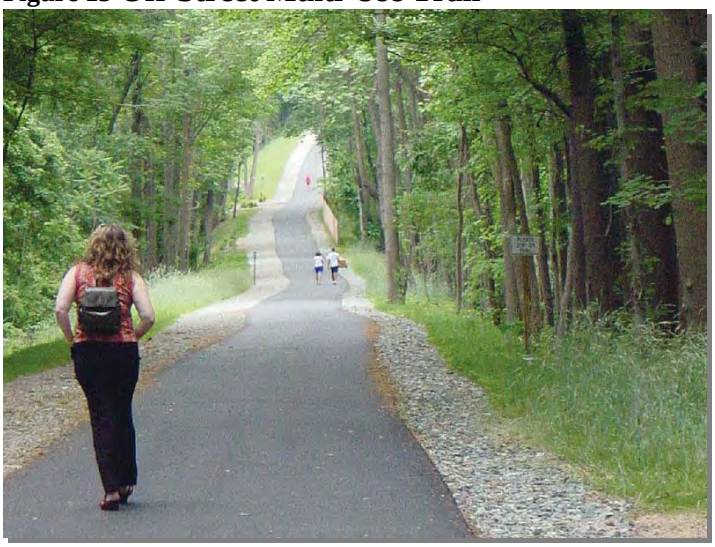
Figure 13 shows an asphalt multi-use trail typical of what is proposed for the Chehalem Heritage Trail.

Figure 14 illustrates how off street multi-use paths may be implemented along proposed alignments. Cross sections are provided for both asphalt and boardwalk paths. Widths will vary according to expected levels of traffic, and are noted as a range on the figure

Multi-Use Pathway (Asphalt):
This section may be applied to off street segments of trail that will accommodate mid- to high-levels of traffic. The width may range from 10 to 12 feet depending on anticipated traffic levels for each segment of the trail alignment.

Multi-Use Boardwalk:
This section may be applied to off street sections of trail where installation of asphalt may negatively impact wetlands or streams. The width may range from 10 to 12 feet depending on anticipated traffic levels for each segment of boardwalk alignment.

Figure 13 Off-Street Multi-Use Trail



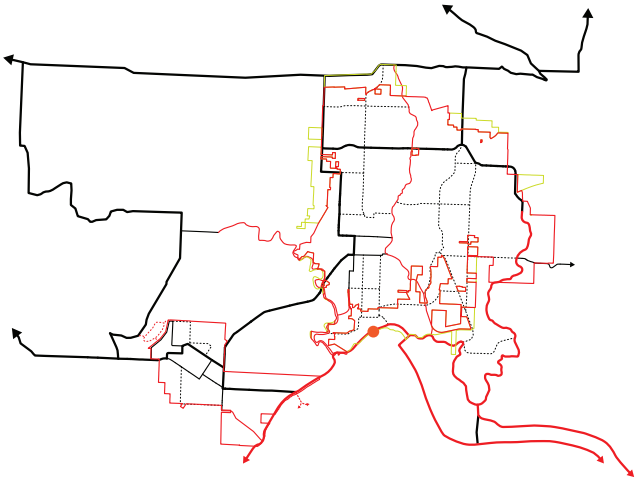
Source: http://www.lowermerion.org

Figure 14. Multi-Use Trail Cross Sections

Photo (Rogers Landing)

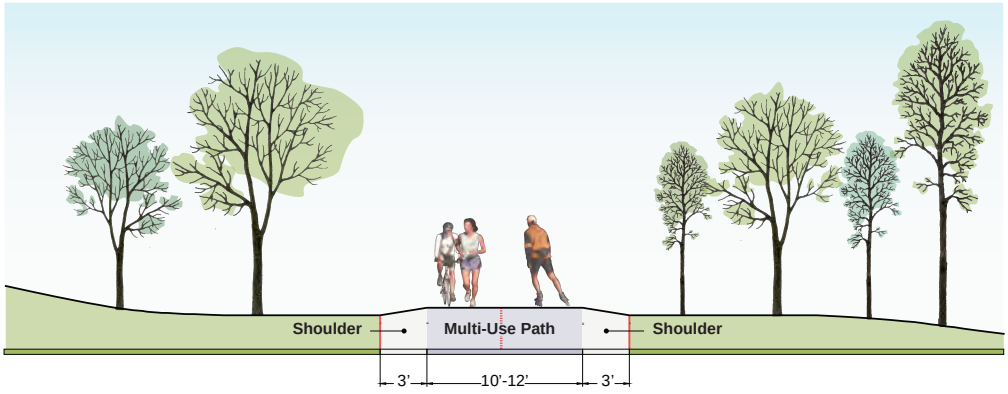
Photo Source: VAI 1/5/2010

Off Street Trail Alignments

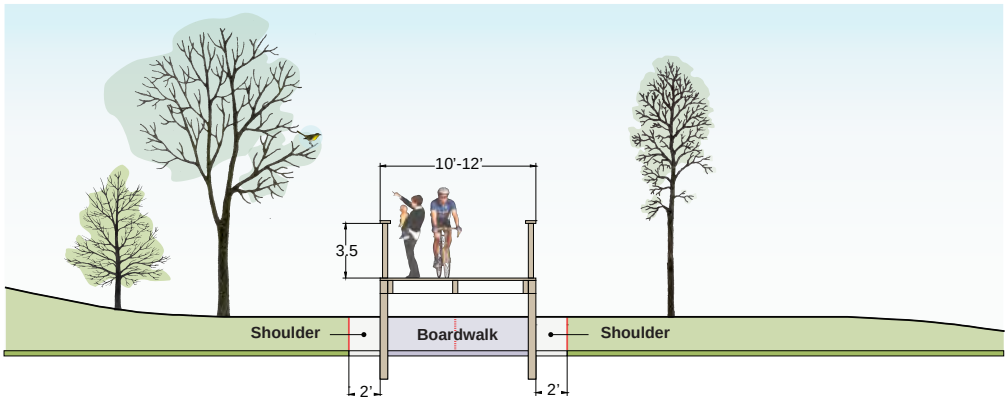


● Photo Point

10- to 12-Foot Multi-Use Path



10- to 12-Foot Multi-Use Boardwalk



NTS

Legend

Vegetated Buffer

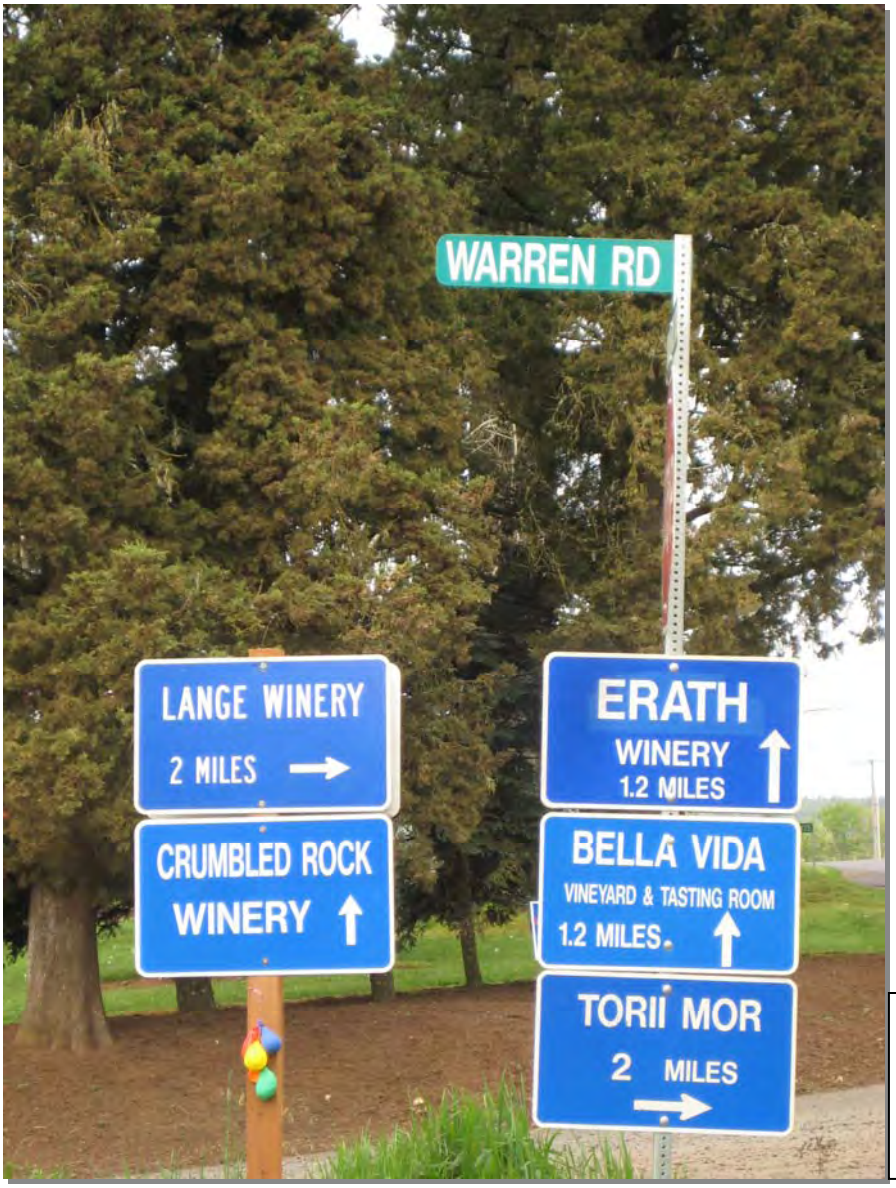
Multi-Use Path

Shoulder

4.2 Signage

Wayfinding signage will be integral to the experience of the Chehalem Heritage Trail. The diversity of the proposed trail typologies will require cohesive signage to aesthetically unify the project as a whole.

Interpretive signage will also be incorporated in appropriate locations. Interpretive signage will provide information on the historical importance of these sites. Topics for interpretation will include: Natural History and Geology; History of the Willamette River; Native American History in the Chehalem Valley; Ewing Young and other settlers; the Northwest Fur Company; the Quakers; George Fox University; Historical Houses; Herbert Hoover; the History of Agriculture in the Chehalem Valley; Timber Products; the Red Electric Trolley; and the History of the Wine Industry in the Chehalem Valley.



Existing signage for winery wayfinding

5.0 Proposed Phasing and Estimated Costs

5.1 Potential Phasing

The proposed Chehalem Heritage Trail system would be approximately eighty miles. Development of this trail system will require phasing over a period of approximately 20 years. The proposed phasing is based on the existing assessment of the scope of the project and potential funding. As the project is refined through master planning and as funding sources wax and wane the actual sequence of construction is likely to unfold differently

Phase 1 – Hess Creek from Friends Park to Herbert Hoover Park (Off-Street) crossing Hwy 99W to George Fox University and then following Haworth (On-Street) to Elliot to NHS (Off-Street) to N. Emery (On-Street) and ending at Crestview

Phase 2 – Dayton Ave Improvements (On-Street) from Hess Creek along 3rd in Newberg to SE Parks Drive in Dundee with connection to 5th

Phase 3 – Willamette River from Dundee to Newberg (Off-Street) with Hess Creek to Friends Park

Phase 4 –Willamette River from Hess Creek to Willamette Greenway State Park/Champoeg State Park (Off-Street) and Hess Creek from Herbert Hoover Park to North Valley Road

Phase 5 – Springbrook Creek from Hwy 99 to Hess Creek (Off-Street)

Phase 6 – Chehalem Creek Corridor Community Trail (Off-Street)

Phase 7 – Dundee Red Hills Regional Trail and Crabtree Connection (On-Street)

Phase 8 – North Valley Road Regional Trail (On-Street)

Phase 9 – Mountainview Drive Community Trail and NE Regional Trails (On-Street)

Phase 10 – Hess Creek Headwaters Equestrian System

Phase 11 – Dundee Red Hills Equestrian System

Phase 12 – Parrett Mountain Equestrian System

Phase 13 – Newberg South Neighborhoods (On-Street)

Phase 14 – Newberg North Neighborhoods (On-Street)

Phase 15 - Dundee Neighborhoods (On-Street)

5.2 Estimated Costs and Funding

The preliminary estimated cost is approximately $70 million dollars to construct the Chehalem Heritage Trail in 2010 dollars. This includes a 20 percent contingency for unknowns such as property acquisition costs, needs for bridges and other structures, and other requirements that might be identified as the project moves into the master planning phase.

The proposed potential trail alignments are based on an assumption that willing sellers will work with CPRD to develop this system. No property owners have been directly approached yet to determine how willing they would be to work with CPRD to develop this trail. **Appendix D** addresses general Right of Way issues, but no specific issues.

The proposed trail system will require crossing the Willamette River and Highway 99 to make safe connections between points of interest. **Appendix E** presents and initial engineering analysis with cost estimates for these proposed crossings. Additional crossings of Chehalem Creek, Hess Creek, and Springbrook Creek have not been investigated.

A number of potential funding sources exist from government programs at federal, state, and local levels. Potential funding also exists through various foundations. **Appendix F** identifies some of the specific potential funding sources that the Chehalem Heritage Trail could tap to develop this system.

Existing gravel trail along Hess Creek at George Fox University with campus trail above

References

Beyond the Vision: Strategic Plan for the Chehalem Valley 2020, City of Newberg, City of Dundee, Chehalem Parks and Recreation District, Newberg Public Schools, and Yamhill County, February 2004.

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Dundee Parks and Open Space Plan, City of Dundee and Morgan CPS, March 2004.

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Newberg ADA/Pedestrian/Bike Route Improvement Plan, Alta Planning and Design, June 2007.

Newberg Riverfront Master Plan, City of Newberg, CDA Consulting, 2001.

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The Northwest Newberg Specific Plan, Otak, Inc, August 1993.

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Springbrook Master Plan, WRG Design, Inc, June 2008

U.S. Department of Agriculture, Soil Conservation Service (SCS). Soil Survey of Yamhill Area,, Oregon. Yamhill County NRCS office, McMinnville, OR. January, 1974.

Photos:

Bike Lanes with a Curb and Gutter System, http://domz60.files.wordpress.com/2009/01/bike-lane-in-suburbs.jpg, Accessed March 1, 2010.

Bike Lanes Adjacent to Parking and Travel Lanes, http://www.lakesammfriends.org/BikeLanesCalmTraffic.html, Accessed March 1, 2010.

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Bike Lane Adjacent to a Ditch Drainage System, http://www.flickr.com/photos/luton/301608822, Accessed March 1, 2010.

Off-Street Multi-Use Trail, http://www.lowermerion.org/archive/osp/osp_linkage.html, Accessed March 1, 2010.

Appendix A

Community Meeting Notes

CHEHALEM HERITAGE TRAIL

October 28, 2009 7-8:30 PM
Chehalem Youth Building
Newberg, OR

This kickoff meeting for the Chehalem Heritage Trail Strategic Plan invited a number of key stakeholders to review project goals and objectives and to discuss points of interest along the trail system. The meeting presented work completed on the goals statement and on preliminary mapping since mid-September when a consultant team was engaged by Chehalem Park and Recreation District (CPRD). A list of attendees is at the back of this summary.

Welcome: Paul Agrimis with Vigil-Agrimis, Inc. (consultant team project manager)

Introduction: Don Clements, CPRD Superintendent
This project has been developing for over 15 years with input from a number of visionary people in the Chehalem Valley. The proposed trail system is a legacy gift to our children and grandchildren that celebrates the rich legacy of the Chehalem Valley in terms of history, natural resources and recreation. Portions of the trail already exist.

Discussion of Draft of Goals and Objectives: Paul Agrimis
Goal - This project will create an outstanding 50+mile trail system that links the greater Newberg-Dundee area through parks, historic preservation, habitat restoration, multi-modal transportation, education, and tourism.

Group Input – Goals Statement

- Connecting regional, community, and neighborhood areas is important
- Recreational purposes are important – not a focus but needs to be well incorporated
- Strong Cultural History is good; historic sites should be identified
- Paths that travel to and through city streets
- Ideally future additions are anticipated and established later
- Economic Factor – potential economic force – increase property values – more healthy communities, and tourism benefits
- Quality of life improvement
- Multi-modal transportation – walk/run – bike – equestrian – not all areas will offer the same opportunities
- Well defined public information program needed to mark trail network
- Viewpoints for wildlife viewing are needed to protect resources and private property
- This should be a voluntary program to support community assets
- The trails should be community specific – at the scale of the community

Group Input – Objectives

1. Safe Routes
    - Linkages across Highway 99W, Bypass – Noted span across I-5 in Eugene/Springfield
        - Convenience
        - Scaled to community
    - Consider a range of solutions from totally off street versus just a larger shoulder that is part of the street
    - Integrate with local jurisdiction trails
    - Protect property owners – security of property owner against damages, vandalism etc

2. Linkages at local, regional, and state levels
    - Start with Chehalem Valley and reach out
    - Provide linkages with others that are in progress
    - Substantial investments needed to support project
    - Funding available – grants etc

3. Historical Legacy – Recognize and Celebrate
    - 200 registered historical homes – state inventory in Newberg
    - Geological history
    - Museums – Rail – Lumber
    - Newberg History
    - Dundee History
    - River History
        - 30 riverboat landings
        - RR crossings and facilities
    - Red Electric trolley

4. Habitat Restoration / Interpretive
    - Labeling – standardization is important to making it easy and safe to use
    - Interpretive plan could be done in phases
    - Audio tour – example give regarding San Francisco
    - Landmark trees
        - Trees important to Native Americans
        - Survey Bearing Trees
        - Heritage Trees

5. Safe Connections
    - This can include canoe and kayak trails too
    - Consider roller blades, skate boards, strollers/small children
    - Current focus non-motorized
        - Electric carts for disabled use
        - Segway vehicles?
    - Avoid Main Arteries – use sections that are less busy with vehicles

- Lighting – when and when

6. Local Economy / Tourism
   - This will provide large potential opportunity to shape community
   - The trail will promote the local economy, education, and tourism
   - This will create business opportunities in the existing community and attract new business
   - Add RR/trolley connection as appropriate
   - River tourism (Keizer to Newberg)
   - Birding – Audubon has a state wide map of locations
   - Quality of Life will improve

Points of Interest:
A number of new sites were added to the draft maps with sticky notes and conversation.

Closing Overview:
The Strategic Plan will be completed in early 2009 after two more community meetings. This plan will focus on points of interest and potential connections. A master plan is anticipated in 2010 that will begin to identify specific trail routes. Construction of the first segments could begin in 2011.

Attendees:

Don Clements	CPRD Superintendent
Rob Daykin	Dundee City Manager
Mike Ragsdale	CPRD Board Member
Ken Huffer	Yamhill County
Sherri Mathison	Yamhill County
Keith Hay	Community Citizen
Larry Anderson	CPRD Board Member
Deona Twenge	CPRD Board Member
Jim Morrison	Community Citizen
Floyd Aylor	Columbia Empire Farms
Clyde Thomas	George Fox University
Jessica Cain	Newberg Chamber of Commerce
Terry Emery	Newberg Chamber of Commerce
Barton Brierly	City of Newberg
Fred Gregory	George Fox University
Larry Christensen	Property Owner
Don Sundeen	Dundee Mayor
Tom Edwards	Property Owner
Mr. Crawford	Dundee City Council
Lisa Joyce	CPRD Special Projects

CHEHALEM HERITAGE TRAIL

November 18, 2009 7-8:30 PM
Chehalem Youth Building
Newberg, OR

This first of two community meetings for the Chehalem Heritage Trail Strategic Plan was conducted to review project goals and objectives and to discuss points of interest along the trail system. Forty people attended. The meeting presented work completed on the goals statement and on preliminary mapping since mid-September when a consultant team was engaged by Chehalem Park and Recreation District (CPRD). A list of attendees is at the back of this summary. A second meeting is tentatively planned for mid-January 2010, and notice will be given in the community prior to the meeting.

Welcome: Paul Agrimis with Vigil-Agrimis, Inc. (consultant team project manager)

Introduction: Paul Agrimis
This project has been developing for over 15 years with input from a number of Chehalem Valley residents. The proposed trail system will be a legacy gift to children and grandchildren that celebrates the richness of the Chehalem Valley in terms of history, natural resources and recreation. Portions of the trail already exist.

Discussion of Draft of Goals and Objectives: Paul Agrimis
Goal - This project will create an outstanding 50+mile trail system that links the greater Newberg-Dundee area through parks, historic preservation, habitat restoration, multi-modal transportation, education, and tourism.

Group Input – Goals Statement
People attending expressed agreement with the goal statement.

Group Input – Objectives
1. Safe Routes
- More unpaved trails would be better – closer to natural – non groomed
- Concern - paving needed for major links or trail will be too muddy in winter
- Concern – trail user combinations need to be well planned (i.e.: be careful of mixing equestrians with small children)

2. Linkages at local, regional, and state levels
   - Examples of linkage – current – and broader asked for
     - Explanation by Paul Agrimis: The Chehalem Valley communities of Dundee and Newberg will be the center of the system with links reaching out to points of interest

   - Explanation of safe crossings requested
     - Explanation by Paul Agrimis: major crossings will include the Willamette River and Highway 99. The intention is to minimize interactions between trail users and vehicles moving at high speed. Improvements to Hwy 219 Bridge or to the Wynooski Bridge (utility bridge to SP plant) will be needed for Willamette River crossing. Possible underpass at Herbert Hoover Park and additional crossings of Hwy 99W will be needed. State and Federal grants are available to make these infrastructure improvements.
   - Include Champoeg and Bald Peak State Parks in system
   - Include Warden Hill Road to Crabtree Park – link local parks to trail system
   - Starting at the center of the Chehalem Valley makes sense for the project
   - Equestrian loops would be wonderful - we have no current trails – Parrett Mountain – exclusive pay a membership fee
   - Protect farm and natural resources
   - Resource values – urban – rural interfaces – address protection – incorporate urban growth in goals and objectives
   - Renne Park could be linked to an equestrian park
   - The Intertwine could be a partner for developing the Chehalem Heritage Trail. Explanation of the Intertwine requested:
     - Explanation by Paul Agrimis and Ric Stephens (Project Planner): The Intertwine is a regional and potentially statewide interconnection of trails. Key potential links would include south to Salem, Corvallis, Eugene along the Willamette; north to the Banks/Vernonia trail and the coast, connection to the 40-mile Loop in Portland; east to the Tonquin Trail connecting Sherwood and Wilsonville; west to McMinnville.
   - Bicycle link to Dayton would be good
   - Marion County connectivity is important
   - Explanation of potential connections by Don Clements (CPRD Superintendent): Some coordination is already in the works with adjacent communities.
   - Winery tour possible - one day tour took place this summer near Spokane with over 300 paid participants

3. Historical Legacy
   - Local cemeteries are an historic resource

4. Habitat Restoration / Interpretive
   - People attending expressed agreement with this objective.

5. Safe Connections

- This is an extremely important objective
    - Growing bicyclist community in Chehalem Valley
    - Must plan trails to minimize potential conflicts with hikers and equestrians
    - Need to distinguish between mountain bikers and distance riders
- Question – who has control over this – city – county – state – with a variety of agencies how do you change or modify once in place?
    - Paul Agrimis explained that Chehalem Park and Recreation District (CPRD) would control and manage this trail system with support from partners such as Oregon State Parks, service organizations (Scouts etc.), Adopt-a-Trail, and other community support. Example given of Tualatin Hills Park and Recreation District – serving greater Beaverton (with tens of miles trails – including the Fanno Creek Trail, Westside Trail, Powerlines Trail, and others). The system could be largely self policing – rules posted, etc. Some patrolling could be included (as funding allows).
- Compatibility issues require an education program so users understand proper trail etiquette.
- Example shared of Molalla Poker Ride that mixes equestrians and bicyclists. People learn from each other and develop better appreciation of another recreational activity.
- Dog use and rules needed, such as whether and where leash requirements will be needed.
- Interpretive signage and way finding aids will be necessary.

6. Local Economy / Tourism
- Outreach to Willamette River Keepers could build a community of mountain bikers and paddlers.
- Runners would be attracted to this trail system
- Consideration of additional fitness opportunities such as a Par course would be good
- Healthy Kids fitness –supporting fight against youth obesity with Safe Routes to School program will be great for the community.
- Restrooms will be needed in some locations.
- Need for sign-in on more primitive trail sections?
- Connection with Parrett Mountain trails would be good.

Points of Interest: Paul Agrimis
Participants voted on their preferences for points of interest. A tally of the voting is attached.

Closing Overview: Paul Agrimis
The Strategic Plan will be completed in early 2010 after one more community meeting. This plan will focus on points of interest and potential connections. A master plan is anticipated in 2010 that will begin to identify specific trail routes. Construction of the first segments could begin in 2011.

Chehalem Heritage Trail

Preferences for Draft List of Points of Interest

Recreation Sites	VOTE	Historical Sites	VOTE	Nature Sites	VOTE	Employment Sites	VOTE	School Sites	VOTE	Civic Sites	VOTE	Tourism & Winery Sites	VOTE	Trails	VOTE	Plans	VOTE
Champoeg State Park	13	Willamette Post	2	Ash Island	10	George Fox University	10	George Fox University	1	Newberg City Hall	X	The Allison	7	Thomas C. Trail	3	Springbrook Trails	6
Willamette Gway State Park	3	Ewing Young	4	Hoover Pool	1	Providence Hospital	X	Newberg HS	1	Dundee City Hall	1	Chehalem Glenn Golf	4	Newberg Riverfront Trail	12	Willam. Grway Trail	8
Bald Peak State Park	11	McKern House	2	Hess Cr. Canyon	7	Sportsman's Airpark	X	Chehalem Valley MS	1	Chehalem Cultural Ctr.	1	Argyle	3	Chehalem Glenn Trail	6	The River Trail	8
Rogers Landing County Park	4	Gearing Ferry	3	Harvey Cr. Viewpoint Tr.	4	Austin Dental	X	Mountain View MS	1	Newberg Library	3	August Cellars	1	Hess Creek to Champoeg / Willamette River	4	Other	X
Ewing Young Park	2	Hoover-Minthorn House	2	Spring Brook	3	SP/White Birch	5	Dundee Elementary	4	Dundee Library	1	Brick House	X				
Herbert Hoover Park	1	Dundee Women's Club	X	Other	X	Other	X	Edwards Elementary	X	Other	X	Duck Pond Cellars	1				
Memorial Park	1	Ewing Young Homestead	6					Ewing Young Elementary	1			Erath	5				
Jaquith Park	1	Dundee Cemetery	7					Antonia Crater Elementary	X			Lange Estates	2				
Hess C Headwaters Eq.	1	Friends' Church	X					Joan Austin Elementary	1			Rex Hill	3				
Crabtree Park	16	Abbey (Trappist)	5					Mabel Rush Elementary	1			Shea Wine Cellars	2				
Schaad Park	X	Nobel Cemetery						Other	X			Sokol Bosser	1				
Dundee Billick School Park	2											Evergreen Air Museum	1				
Other	X																
Total	55		31		25		15		11		6		30		25		22

Appendix B

Chehalem Watershed Assessment Excerpts

Chehalem Watershed Assessment Excerpts

The Chehalem Watershed Assessment (Empfield 2001) summarizes watershed conditions for the major creeks of the Chehalem Valley. **Table 4** has been modified to only show sub-basins pertinent to the strategic plan for the Chehalem Valley Heritage Trail.

Table 4. Watershed Conditions Summary (as modified by VAI)

Sub-Basin	Riparian Conditions	Wetland Conditions	Water Quality	Sediment Sources	Hydrology and Water Use
Springbrook	Degraded riparian areas in varied settings from logging, to annual grass seed fields, to urban areas. Many areas with bare ground or short Vegetation. Some areas with no vegetation or streambed remaining.	Many wetlands along the lower reaches of creeks. Only NWI mapped information available. No Local Wetland Inventory data available. Large acreage of drained hydric soils.	Willamette River 303(d) listed for temperature, the presence of mercury in fish, fecal coliform, and deformities in fish. Also at risk for pH, trace metals, dioxin, pesticides, semivolatile & volatile organics, and chlorophyll a	Some debris flow hazard potential. Large areas of impervious surfaces, urban runoff non-point sources of pollution, construction sites, annual grasses, row crops, clean cultivated orchards and forestry.	Considerable irrigation along Willamette River and Spring Brook. Many domestic wells, some in stream reservoirs. Many natural springs.
Lower Chehalem	Urban areas and Red Hills have good shade trees. Agricultural areas lack sufficient bank vegetation.	Only a few small wetlands remain. Hydric soils west of Chehalem Cr. would make good wildlife habitat wetlands near urban areas.	Chehalem Creek is at risk for the presence of pesticides, high temperatures, nutrients, dissolved oxygen, and channel modifications.	Large areas of impervious surfaces, urban runoff non-point sources of pollution, construction sites, annual grasses, row crops, clean cultivated orchards.	Heavily irrigated in the Dundee area and elsewhere along the Willamette. Many domestic wells
Dundee/Hess Creek	Orchard areas have eliminated some riparian zones. Urban areas and Red Hills have good shade trees. Agricultural areas lack sufficient bank vegetation.	Many wetlands along the lower reaches of creeks and Willamette. Only NWI mapped information available. No Local Wetland Inventory data available. Large acreage of drained wetlands suitable for restoration.	Willamette River 303(d) listed for temperature, the presence of mercury in fish, fecal coliform, and deformities in fish. Also at risk for pH, trace metals, dioxin, pesticides, semi-volatile & volatile organics, and chlorophyll a	Some debris flow hazard. Rural roads parallel streams. Large areas of impervious surfaces, urban runoff non-point sources of pollution. Highly erodible soils with annual grasses, row crops, clean cultivated orchards.	Largest acreage of irrigation in the watershed. Primarily near Dundee and south along the Willamette River. Also scattered throughout the Red Hills. Many domestic wells.

Appendix C

GIS Analysis Maps

- *Parcel Analysis*
- *Zoning Analysis*
- *Slope Analysis*
- *Proposed Phase 1*

Chehalem Heritage Trail Strategic Plan

Parcel Analysis

Parcels with Points of Interest

TO HILLSBORO
TO BALD PEAK
TO THE INTER-REGIONAL TRAIL SYSTEM
TO THE WINE LOOP
NE DOPP RD
NE VALLEY RD
NE BELL RD
NE MOUNTAINTOP RD
NE LEANDER DR
NE ZIMRI RD
NE CHEHALEM DR
HWY 219
E MOUNTAINVIEW DR
TO PORTLAND
NE WILLIAMSON RD
NEWBERG
TO THE PARRETT MOUNTAIN EQUESTRIAN TRAILS
NE RED HILLS RD
HWY 99
NE DAYTON AVE
TO THE WINE LOOP & EQUESTRIAN TRAILS
NE WORDEN HILL RD
DUNDEE
SE 8TH ST
ASH ISLAND
WILLAMETTE GREENWAY STATE PARK
CHAMPOEG STATE PARK
TO McMINNVILLE

LEGEND

Scale: 1: 3,600 N

- Improved Parcel
- Unimproved Parcel
- Improved Park
- Unimproved Park
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- School
- Community Point of Interest
- Historical Point of Interest

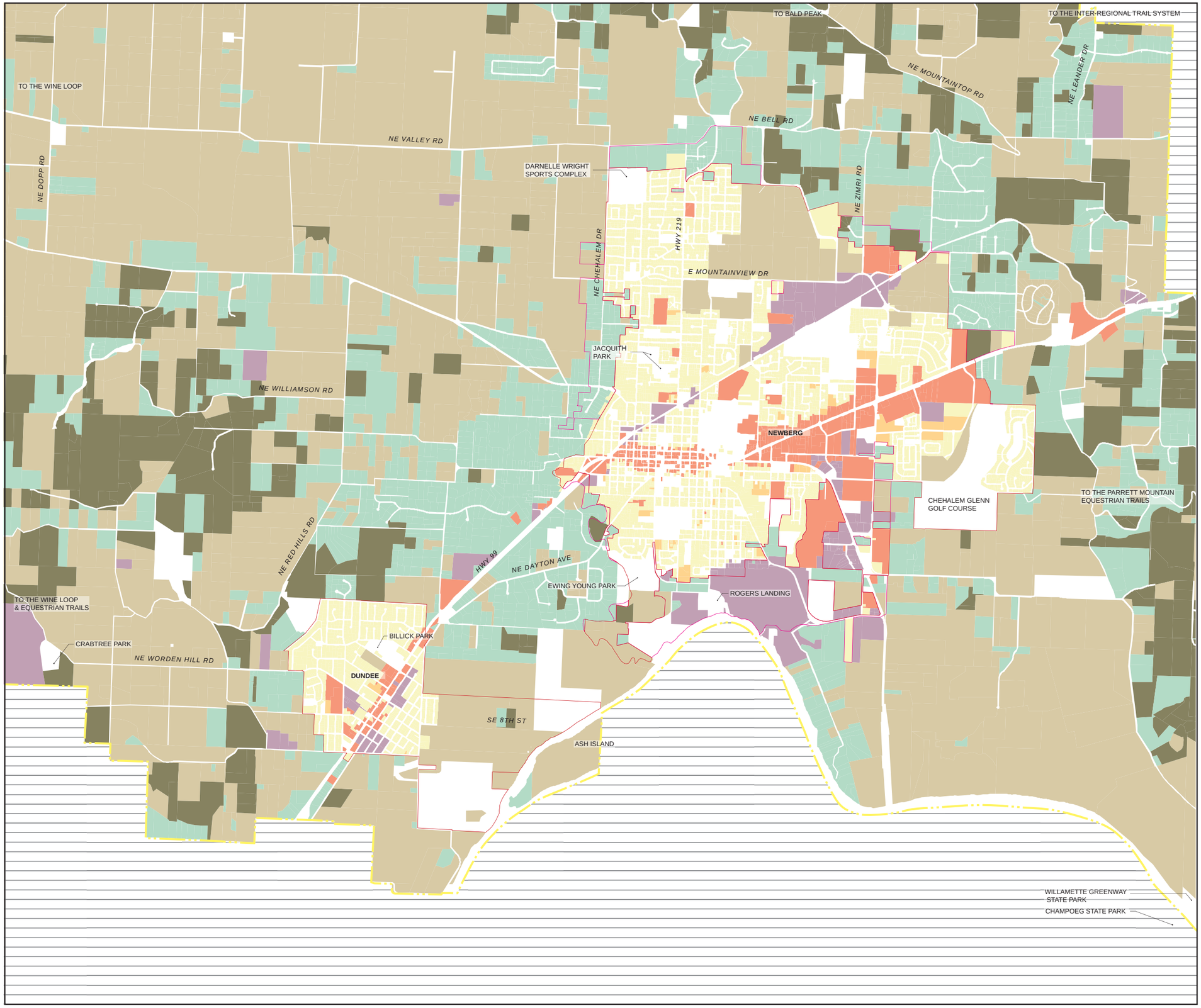
Chehalem Park and Recreation District

VIGIL AGRIMIS
design professionals

Chehalem Heritage Trail Strategic Plan

Zoning

Zoning



LEGEND

Scale: 1: 3,600

- Urban Residential
- Commercial
- Industrial
- Tract
- Farm
- Forest and Park
- Multi-Family Housing
- Exempt
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- Outside Extents of Zoning Data

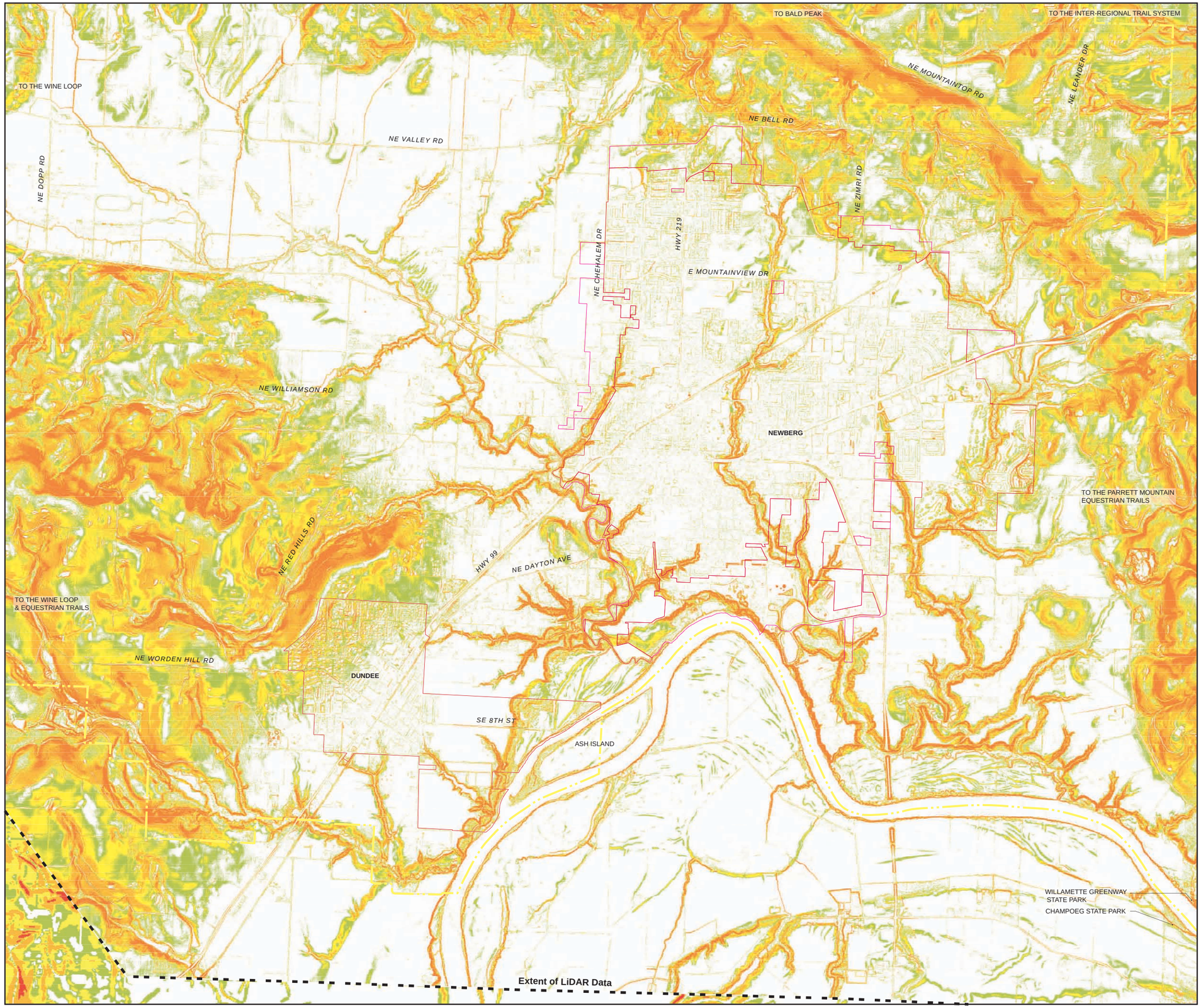
Chehalem Park and Recreation District

VIGIL AGRIMIS design professionals

Chehalem Heritage Trail Strategic Plan

Slope Analysis

Slopes



LEGEND

Scale: 1: 3,600

- 0 - 5%
- 5 - 8%
- 8 - 12%
- 12 - 20%
- > 20%
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- Park
- Floodplain
- Water Body
- Wetland

Chehalem Park and Recreation District

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Chehalem Heritage Trail Strategic Plan

Phasing

Proposed Phase One

Points Serviced in Proposed Phase One

Schools

1. Mountainview Middle School
2. Newberg High School
3. Mable Rush Elementary
4. CS Lewis Academy

Parks

1. Friends Park
2. Hoover Park
3. Babe Niclous Pool Park

Community Points of Interest

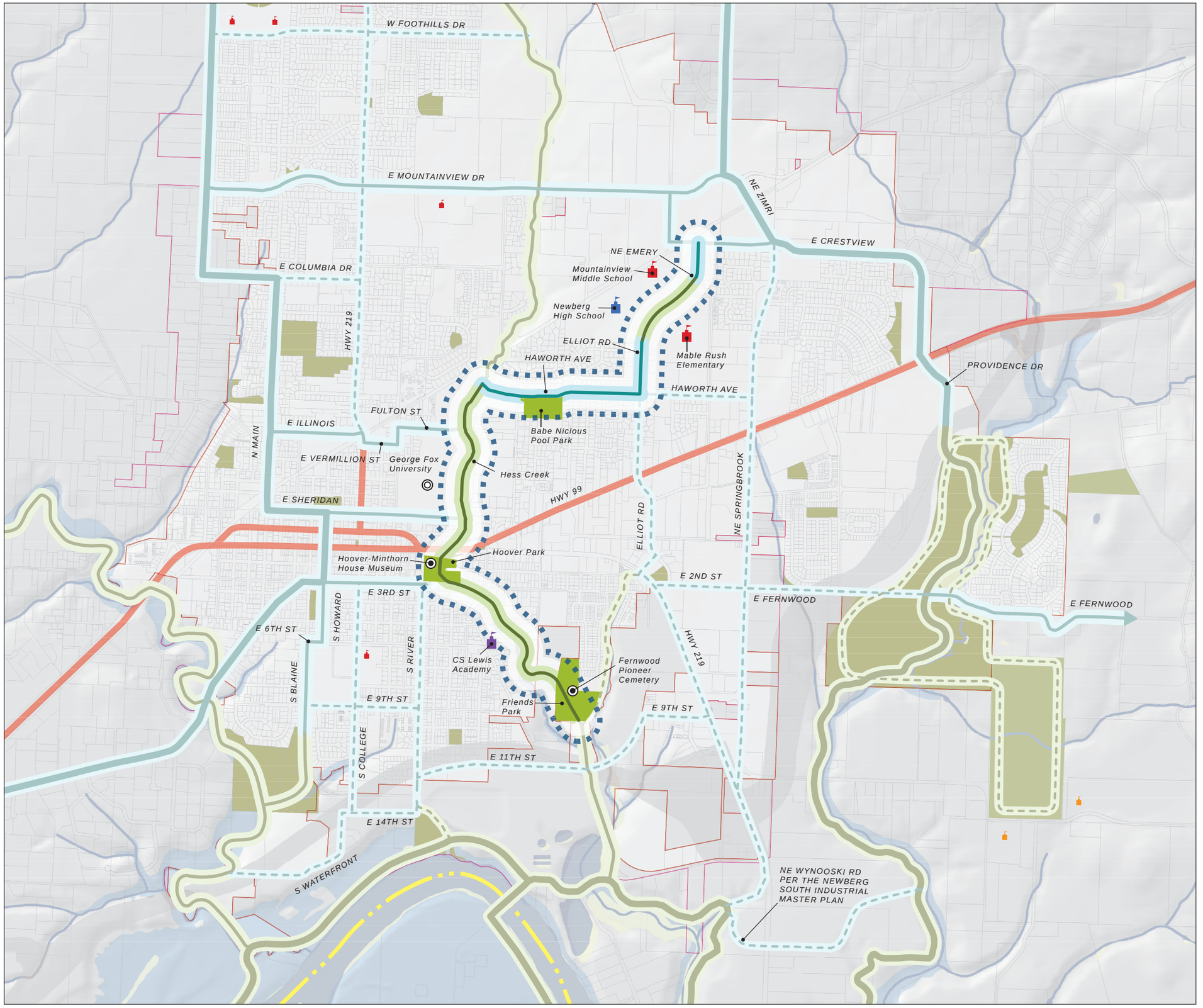
1. George Fox University
2. Proximity to Newberg CBD

Historical Points of Interest

1. Fernwood Pioneer Cemetery
2. Hoover-Minthorn House Museum

Restoration Opportunities

1. Hess Creek



LEGEND

Scale: 1: 3,600

- K-8 Public School
- Public High School
- Private School
- Proposed School
- Regional Off Street Trail
- Community Off Street Trail
- Neighborhood Off Street Trail
- Regional On Street Trail
- Community On Street Trail
- Neighborhood On Street Trail
- City Boundary
- Urban Growth Boundary
- CPRD Boundary
- Streams
- Park
- Floodplain
- Water Body
- Wetland

Chehalem Park and Recreation District

VIGIL AGRIMIS design professionals

Appendix D

Easements and Crossings Analysis, Hanna McEldowney & Associtates

HANNA, MCELDOWNEY & ASSOCIATES
8835 S.W. CANYON LANE, SUITE 405
PORTLAND, OR 97225
(503) 297-9588 Fax: (503) 297-2835

MEMO

DATE: February 23, 2010

TO: Paul Agrimis, Vigil Agrimis, Inc.

FROM: Roger Hanna, Hanna, McEldowney & Associates

RE: Chehalem Heritage Trail - Issues Concerning Trail Easements and Crossings

---

This memo was prepared for Vigil-Agrimis, Inc. as part of a wider planning effort for the Chehalem Heritage Trail. The Strategic Plan was commissioned by Chehalem Parks and Recreation District (CPRD) as an essential first step in creating an outstanding 50+ mile trail system that preserves and enhances the greater Chehalem Valley communities' parks, historic heritage, native habitats, open space, and community connectivity.

This memo identifies potential Right of Way (ROW) issues. The analyses provided in this memo are based on existing conditions and based on anticipated future conditions for the proposed Newberg-Dundee Bypass. Reference is made to the attached Chehalem Heritage Trail Strategic Plan: Figure 4.

Crossings of Newberg-Dundee Bypass

The Bypass will be a major transportation corridor that addresses severe congestion along Highway 99W in Newberg and Dundee. An Environmental Impact Statement is currently being finalized for this project. Funding has been provided for selected right of way acquisitions prior to completion of the EIS. Ten potential Bypass crossings by the proposed Chehalem Heritage Trail were investigated for this memo.

1.) Dundee West (Ref. D1 071006 Option, Map Tile 4, BDU 24): There is a proposed crossing on a new ROW from Parks Dr. to Fulquartz Landing Rd. on the south side of the Bypass. No crossing of Fulquartz Landing Rd. is considered in the EIS.

2.) Dundee East (Ref. D1 071006 Option, Map Tile 5, BDU 18): There are three proposed optional crossings in the Bypass EIS: from SE Edwards Drive, from an extension of SE 8th Street, and from an extension of SE 6th Street. Only one of these options will be selected per Parametrix Project Manager (Bill Ciz). The SE 8th Street crossing is indicated for the Chehalem Heritage Trail.

3) Chehalem Creek (Ref. Option D2 No Toll, Page 1, OTN 160): There will be an overcrossing of a deep creek/ravine. The area is rural farm and forest, primarily orchards. No ROW issues are foreseen.

4.) Newberg West 1 (Ref. Option D2 No Toll, Page 1 and Page 2): No crossing of the Bypass between Chehalem Creek and College Street is considered in the EIS.

5) Newberg West 2 (Ref. Option D2 No Toll, Page 2, OTN 150): There is an overcrossing of College Street.

6.) Newberg Central (Ref. Option D2 No Toll, Page 2 & 5.2D OTN 110-124): There is an overcrossing at River Street leading to Rogers Landing on the Willamette, and an overcrossing of the RR spur to the paper plant.

7.) Newberg East 1 (Ref. Option D2 No Toll, Page 3 & 4, OTN 21,22,50-56): There will be overcrossings of two creek/ravine areas east of Wynooski. Wynooski will be relocated with an overcrossing of the Bypass.

8.) Newberg East 2 (Ref. Option D2 No Toll, Page 4, OTN 18,19,39-41): There will be an overcrossing of Hwy 219. Access to Hwy 219 will be redirected to the north and south.

9.) Newberg East 3 (Ref. Option D2 No Toll, Page 7, ENI 41): There will be an over or under crossing of Fernwood Rd.

10.) Newberg East 4 (Ref. Option D2 No Toll, Page 9, ENI 17): No planned overcrossing at this location. There will be two overcrossings of creek/ravines to the east, the closest being about 1,600 feet away.

<u>Highway 99W Crossings</u>
Highway 99W is a major corridor through the area. Signalized intersection coverage is generally good in Newberg, but poor in Dundee. (I think there is only one signalized intersection in Dundee at 5th Street.)

A.) Dundee: Neiderberger Rd/SE Parks Dr. is a non-signalized, at grade street crossing of Hwy 99W.

B) Dundee: 8th Street crossing to 9th Street and Worden Hill Rd. 8th Street is not completed to Hwy 99W so trail ROW or easements will probably be necessary.

C) Dundee: 5th Street to Billick Park is the only signalized intersection in Dundee.

D) Chehalem Creek: An undercrossing of Hwy 99W and railroad.

E.) Cultural Center: North Hancock Street crossing in downtown Newberg that would be at grade, but is not currently signalized. There are marked pedestrian crossings across the 99W couplet.

F.) Herbert Hoover: At grade crossing on River Rd. or a tunnel under 99W. The at grade crossing would involve a double island crossing due to divided Hwy 99W. Technical issues will likely be important cost influences for a potential tunnel crossing at this location. (Yes. It could include both construction and right of way issues.)

G.) Newberg High School 1: At grade crossing on Elliot Rd.

H.) Newberg High School 2: At grade crossing on Springbrook.

I.) Providence Newberg: At grade crossing at Providence Hospital. The west side of the crossing is proposed as part of the Bypass project.

Willamette River Crossings

Ash Island access requires a new bridge. No plans exist for a pedestrian or combined bridge crossing.

Wynooski and Hwy 219 have existing bridge crossings. Either or both may require upgrading for safe pedestrian crossing. ROW may be needed to connect from the south end of the Winooski Bridge to other existing ROW.

General ROW Issues

1.) First choice is to use existing ROW where possible. Streets with wide, unused ROW may afford an opportunity to build a trail separated from traffic lanes.

2.) If possible, use existing easements such as overhead power line easements, and sewer and water line easements.

3.) Most property owners do not want a public trail through their property, so it is best to acquire a trail easement along the edge of the property.

4.) Property types and patterns of development are important factors. Typically, it is easier to get an easement on undeveloped land than developed land as long as the location of the easement does not hinder future development. Industrial users tend to be more willing partners than residential and commercial users.

5.) Mitigating impacts to private property is almost always necessary. Mitigation may include such things as solid board fencing ($26/lf for 6' fence), signage, public patrolling of the trail, and litter removal.

6.) Negotiations for a trail easement can be long and tedious. Allow ample time. Flexibility of design and location can be a key factor in reaching agreement.

7.) The price paid for a trail easement is usually equivalent to the underlying fee value because there is little private utility left to the property owner. Some owners will only sell the ROW in fee (deed)

because of potential liability under an easement.

8.) The at grade crossings of Hwy 99W will be on existing public ROW so costs will be negligible. A pedestrian overcrossing would be desirable but costly (possible ODOT/grant funds could be available).

9.) All of the Newberg-Dundee Bypass overcrossings of creeks and ravines should afford adequate pedestrian clearance. However, gaining access to the Bypass ROW will require acquisition of easements from private property.

10.) If Federal Funds are involved in the trail project, compliance with the Uniform Act is mandatory. There is a provision for seeking donations. However, if this fails, the acquisitions must be appraised and relocation benefits must be offered where required.

REFERENCES

Bill Ciz, Parametrix. 2010. Newberg-Dundee Bypass EIS.

Appendix E

Initial Engineering Analysis for the Chehalem Heritage Trail Strategic Plan, KPFF Consulting Engineers

kpff Consulting Engineers

Initial Engineering Analysis

for

Chehalem Heritage Trail Strategic Plan

Chehalem Parks and Recreation District
Yamhill County, Oregon

Prepared for:
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819 SE Morrison Street, Suite 310
Portland, Oregon 97214
503-274-2010

Prepared by:
KPFF Consulting Engineers
111 SW 5th Avenue, Suite 2500
Portland, Oregon 97204
503-227-3251

Written By: NJM
Reviewed By: CCV

February 28, 2010

KPFF Project Number # 309262.00

Table of Contents

1.1 – Project overview

This Initial Engineering Analysis (IEA) has been prepared for Vigil-Agrimis, Inc., as part of a wider master planning effort for the Chehalem Heritage Trail. The master plan has been commissioned by the Chehalem Park and Recreation District (CPRD) as an essential first step in creating an outstanding 50+ mile trail system that preserves and enhances the greater Chehalem Valley communities' parks, historic heritage, native habitats, open space, and community connectivity.

As the trail meanders though the Chehalem Valley, it will cross several key public transportation facilities and natural resources, namely Highway 99 and the Willamette River. A meeting was held December 10, 2009 between CPRD, Vigil-Agrimis, KPFF, and other key project team members to identify several key pedestrian crossing locations, identified in *Sections 1.2 and 1.3* below. This analysis will conceptually define the measures potentially needed to provide pedestrian crossings including permitting, construction measures and overall budget.

It should be noted that the cost information provided in this analysis is intended to provide a rough order of magnitude only. There has not been a schematic level of design performed to more precisely determine cost data, and therefore the figures contained herein are suitable for general conversational purposes only.

1.2 – River crossing overview

Three crossing locations of the Willamette River have been acknowledged as preferable pedestrian crossing locations for the trail. These locations are generally described below. Analyses of these crossings are provided in *Sections 2.1 though 2.3*.

Bridge Location	Northing	Easting	Existing Structure?
Ash Island Bridge	45° 16' 26.79" N	122° 59' 16.02"W	No
Wynooski Bridge	45° 17' 02.24" N	122° 57' 43.88"W	Yes – Steel Truss
Highway 219 Bridge	45° 16' 03.88" N	122° 56' 36.49"W	Yes – Reinforced Concrete

1.3 – At-grade crossing overview

Nine crossing locations of Highway 99 have been identified as preferable pedestrian crossing locations for the trail system. These locations are generally described below. Analysis of these crossings is provided in *Sections 3.1 though 3.9*.

Crossing Location	Northing	Easting	Existing Crossing?
Dundee at Alder Drive	45° 16' 18.35" N	123° 00' 59.24"W	No
Dundee at 8th Street	45° 16' 37.67" N	123° 00' 41.89"W	Yes - Unsignalized
Dundee at 5th Street	45° 16' 46.55" N	123° 00' 34.16"W	Yes - Signalized
Chehalem Creek	45° 17' 50.44" N	122° 59' 16.37"W	No
Cultural Center	45° 18' 01.13" N	122° 58' 30.35"W	Yes - Signalized
Herbert Hoover	45° 18' 01.15" N	122° 58' 02.78"W	Yes – Signalized

Crossing Location	Northing	Easting	Existing Crossing?
Newberg High School 1	45° 18' 15.09" N	122° 57' 15.17"W	Yes – Signalized
Newberg High School 2	45° 18' 22.98" N	122° 56' 49.85"W	Yes - Signalized
Providence Newberg	45° 18' 35.87" N	122° 56' 08.20"W	Yes - Signalized

Since the proposed at-grade crossings are located in the right-of-way of the Oregon Department of Transportation (ODOT), the agency would need to be closely involved with any improvements made within their property. The City of Dundee, City of Newberg, and Yamhill County would also likely require consultation during the design process.

Recommendations for improvements of at-grade pedestrian crossings of Highway 99 are based on considerations pertaining to ADA compliance, posted speed, sight distance, Average Annual Daily Traffic (AADT), and cost.

Transportation planners often express concern that introduction of new crossings could create a false sense of security for pedestrians. This concern may be valid where travel speeds are high and pedestrian numbers low, such as the highway transition areas from rural into urban areas. At some point in the effort to reduce traffic speeds, someone may question the potential liability of introducing traffic calming onto a highway. This has not necessarily proven to be a problem on urban streets[1]. Experience confirms that the potential benefits of traffic calming can outweigh the potential liability. Lawsuits can be minimized in the same way as other aspects of highway design:

- Clear policy.
- Good process that involves the pubic and documents the need.
- Appropriate design based on established goals.
- Consideration of users, especially the young, elderly, and disabled.
- Clear consistent signing and marking.
- Proper maintenance.

Highway 99 through Newberg has received much attention over the past few decades. Severe traffic congestion along this major route and in downtown Newberg exists, due in part to:

- Large numbers of long distance commuters using the highway (6,000 daily weekday local round trips to Portland).
- Heavy recreational traffic on Fridays and weekends going to the coast.
- Extensive local access directly on highway.
- Above average crash rate.

The recommendations made in this IEA have been made without detailed review of existing traffic studies undertaken for the proposed Newberg Bypass (ODOT Project) or other master plans for infrastructure in the vicinity. Before proceeding into the design phase of the project, all existing

[1] In 1997, the Institute of Transportation Engineers surveyed 68 agencies responsible for about 900 traffic calming projects and found that 6 lawsuits out of 1,500 files against these agencies involved traffic calming, 2 of which suits were successful.

traffic studies should be thoroughly reviewed to determine any perceived impacts that introduction of new pedestrian crossings may impose on future transportation systems.

1.4 – Pedestrian Improvement Toolbox

Highways are important transportation links, but can pose significant barriers to pedestrians. The priority for installation of a pedestrian crossing is to make users feel safe and comfortable. This section describes multiple design elements (i.e. "toolbox") that can be implemented to achieve pedestrian facilities complementary to the user. These items will be recommended as possible solutions at specific project crossing locations and described in detail in *Sections 2.1 though 2.3*.

Pedestrian Crossing Toolbox[2]

[2] Image from "*Main Street… when a highway runs through it: A Handbook for Oregon Communities*", November 1999, Transportation and Growth Management Program.

- **Channelization** is an engineering term that means movements are physically controlled through the use of curbs, islands, plastic posts, or painted markings.

- **Corner radius** is the radial distance of the corner curb at an intersection. A sharp corner radius will force vehicles to slow down in order to clear the turn and is an effective means of traffic calming and reducing the travel distance for pedestrians across an intersection.

- Legal **crosswalks** (marked or unmarked) exist on all legs of all intersections, except where closed by ordinance and appropriately marked. Two parallel painted lines are generally not enough of a distinguishing marking for crosswalks. Often motorists confuse the lines with the stopping line, and pull right up into the crosswalk. At a minimum, a ladder pattern type of striping or painting inside the crosswalk area is recommended to improve visibility.

- **Lighting** can be an important component of creating safer conditions for pedestrians at crosswalks. Crosswalks should be well-lit from above and some communities implement the use of embedded lighting to make the crosswalk highly visible at night.

- Raised **medians** and **refuge islands** provide a refuge area for pedestrians in the middle of the road, and are effective when used on wide roads (four lanes or more). Raised medians reduce conflicts by allowing pedestrians to cross only one direction of traffic at a time.

- Conveying information to motorists and pedestrians through **signing** is an effective way to increase the safety of pedestrian crossings. This can be done with reflective or illuminated signs, flashing amber signals that focus attention to specific signs or audible crosswalk devices to guide the visually impaired across an intersection.

- **Textured crosswalk** and **pavement markings** provide distinct visual cues to motorists and pedestrians that a crossing is ahead. Nonslip bricks and colored pavers are examples of construction materials that may be used in a textured crosswalk. Pavement markings typically consist of thermoplastic tape or paint placed on the pavement to designate travel lanes.

- **Traffic control** is a term generally used to describe stop signs or signalization used to control vehicles at intersections. Installation of traffic control must meet specific criteria, called warrants, before it can be installed. A traffic study must be done to determine the warrants at an identified intersection.

- **Transitions** in a road give drivers visual cues they are about to enter a roadway of changed character, and decreased travel speeds. Colored shoulders, gateways, planter strips, and medians are examples of transitional elements that can alert motorists to anticipate pedestrian traffic ahead.

- Reducing the **travel lane width** can effectively ease vehicle speeds. Where travel lanes must meet minimum width to comply with ODOT freight requirements, the “perceived”

travel lane width may be reduced though the use of colored shoulders and pavement texturing.

2.1 – Potential Crossing at Ash Island

Existing Conditions

The estimated horizontal distance from top of bank to top of bank is approximately 700 feet. The nearby Wynooski Bridge has approximately 100 feet of clearance above the navigation channel. Matching this will place the deck of this bridge approximately 65 feet above existing grade at each bank of the river. The 65 feet vertical grade difference would translate to approximately 1,000 foot long ramps at each end of the bridge to provide disabled access to the new bridge. KPFF's experience on comparable projects indicates that a stairway/elevator combination would be more appropriate and likely more cost effective than a long ramp. Security, operation and maintenance are typical challenges that can be addressed with specialized equipment.

The main issues associated with construction of a new bridge at Ash Island would be the complex permitting that result from the environmental impacts of building within the Willamette River. Seismic concerns would also need to be addressed during development of more detailed designs.

Bridge Design Options

Option #1 – Pedestrian Bridge ($5,200,000)

Pedestrian bridges can be constructed in many different forms from simple steel or concrete beams, to more costly signature structures such as cable stayed bridges or suspension bridges. As a result of this, costs can vary substantially ranging from $300/SF to more than $2,000/SF.

This study assumes a pedestrian bridge with the following characteristics:

- Structure Type – Steel or Concrete Box Beam, or Steel Truss.
- Aesthetics – Simple Aesthetics.
- Spans over river to be 200 ft + 400ft + 200ft, for a total of 800 feet.
- Stairs and elevator at each end.
- Bridge walkway width to be eight feet, at 5% grade.
- Cost - $400/SF for bridge over river with $1 Million for each stair/elevator.

Advantages of Pedestrian Only Bridge:

- Lower cost.
- More enjoyable experience for bridge users due to lack of vehicular traffic.
- Absence of vehicular traffic loads allows more slender, elegant structure type.

Disadvantages of Pedestrian Only Bridge:

- No vehicular access, resulting in significant distance for disabled users to travel.

Option #2 – Pedestrian and Vehicular Bridge ($17,700,000)

Vehicular bridges are generally constructed with more basic aesthetics than pedestrian only bridges due to the significant cost of constructing a signature structure to carry the loads of vehicular traffic. This study assumes that the vehicular bridge would be of more basic aesthetics than the pedestrian option, with the following characteristics:

- Structure Type – Steel or Concrete Box Beam, or Steel Truss.
- Aesthetics – Simple Aesthetics.
- Spans over river to be 200 ft – 400ft – 200ft for a total of 800 feet.
- Bridge width to be 36 feet, providing two 12-feet traffic lanes (one in each direction) and a single 10- foot sidewalk.
- Elevated vehicular approaches approximately 800 feet long by 26 feet wide at each end with additional stairs and elevator at each end.
- Cost - $250/SF for bridge over river with $200/SF for elevated approaches and $1 million for each stair/elevator.

Advantages of Vehicular Bridge:

- Vehicular bridge improves access to Ash Island over pedestrian only option.

Disadvantages of Vehicular Bridge:

- Increased cost.
- Heavier structure will require larger foundations and heavier bridge.
- Adjacent traffic will have adverse effect on pedestrian experience crossing bridge.

2.2 – Potential Upgrade of Wynooski Bridge

Existing Conditions

The existing steel truss bridge (approximately 750 feet long) was constructed in the early twentieth century and has been closed to traffic for many years. Currently, the bridge is used to support a water transmission main from the City of Newberg's well field, across the Willamette River, to the SP Paper Mill. The existing bridge ends at approximately 40 feet above grade at the south shore. KPFF's experience on comparable projects indicates that a stairway/elevator combination would be more appropriate and likely more cost effective than a long ramp for access to the bridge. Security, operation and maintenance are typical challenges that can be addressed with specialized equipment.

A four feet wide steel grating with steel pipe handrails exists along the centerline of the existing structure. The approximately 24-inch diameter water transmission line is located immediately to the west of the walkway, with two smaller pipelines immediately east of the walkway. A 12-inch water line is located along the east edge of the beams that formerly supported the bridge deck.

One concern associated with the proposed bridge improvements revolve around the existing structure most likely not meeting current seismic design standards. Any additional walkway would

add weight to the bridge and increase seismic forces on existing structure. Costs noted below do not include seismic upgrade of existing structure. Another potentially significant issue involves concern of bank stability on the north side of the bridge. A bank failure was reported in 1996, associated with the relatively high river flows during the spring. Designing a pathway from the bridge to Roger's Landing will need to explore in detail any bank stability measures, and is not included in this IEA.

Bridge Design Options

Option #1 – Retrofit Deck for Pedestrian Crossing ($1,300,000)

- Construct additional four feet of walking surface to the east of the existing walkway, to provide a total of eight feet of walkway width.
- Construct a stair and elevator at south end.
- Assumes $75/SF for additional deck width and $1 million for stair and elevator.

Advantages

- Lower cost.
- Does not require significant structural work to connect to existing bridge.
- Incorporates existing deck area into new deck.
- Retrofit work can be performed from existing walkway, eliminating safety hazard of work on side of bridge.

Disadvantages

- May facilitate vandalism of existing water lines.
- Possible poor aesthetics due to new deck next to existing deck.

Option #2 – Side Mounted Pedestrian Structure ($1,900,000)

- Construct an 8-foot wide pedestrian walkway mounted to the side of the existing structure.
- Construct a stair and elevator at south end.
- Assumes $150/SF for the new side mounted walk way and $1 million for stair and elevator)

Advantages

- New walkway can be isolated from existing water lines to prevent vandalism.

Disadvantages

- Increased cost.
- Substantially more construction than Option #1.
- Side mounted walkway may adversely affect the bridge aesthetics.

2.3 – Potential Upgrade of Highway 219 Bridge

Existing Conditions

The existing Highway 219 Bridge spans the Willamette River with an approximately 900 feet long bridge. Two additional shorter bridge structures exist to the north and south of the bridge. The north bridge is approximately 200 feet long and the south bridge is approximately 135 feet long.

Bridge Design Options

Option #1 – Side Mounted Pedestrian Structure ($1,700,000)

- Construct an 8-foot wide pedestrian walkway mounted to the side of the existing structure.
- The construction cost can be reduced if a trail alignment is designed to avoid traversing all three spans of the highway (i.e. follow the river and connect directly to the middle Willamette River bridge span). The breakdown of the crossings is:
    - $300,000 for the north bridge.
    - $1,200,000 for the Willamette River Bridge.
    - $200,000 for the south bridge

- Assumes $150/SF for the new side mounted walk way.

Advantages
- New walkway is isolated from adjacent bridge vehicular traffic.

Disadvantages
- Side mounted walkway may adversely affect the bridge aesthetics.

Other Issues
- Existing bridge most likely does not meet current seismic design standards. Additional walkway would add weight to the bridge and increase seismic forces on existing structure. Costs noted above do not include seismic upgrade of existing structure.

Option #2 – Retrofit Deck for Pedestrian Crossing ($1,800,000)

- This option involves installing a traffic barrier between existing traffic lanes and a new sidewalk along one side of the bridge. The bridge would be widened approximately 6 feet to accommodate the new sidewalk and barrier. The construction cost can be reduced if a trial alignment is designed to avoid traversing all three spans of the highway (i.e. follow the river and connect directly to the middle Willamette River bridge span). The breakdown of the crossings is:
    - $ 300,000 at north bridge.
    - $ 1.3 million at Willamette River crossing.
    - $200,000 at south bridge.
- Assumes $200/FT for the new barrier and $200/SF for the bridge widening.

Advantages
- Widening has less effect on bridge aesthetics than side mounted walkway.

Disadvantages
- Pedestrian experience affected by adjacent vehicular traffic.

Other Issues
- Existing bridge most likely does not meet current seismic design standards. Additional widening would add weight to the bridge and increase seismic forces on existing structure. Costs noted above do not include seismic upgrade of existing structure.

3.1 – Dundee at Alder Drive

A pedestrian crossing of Highway 99 at Alder Drive defines the western most limits of the Chehalem Heritage Trail through Dundee. There is currently no existing marked crossing at this unsignalized intersection. The northwest corner of the intersection has been improved with the recent construction of a West Coast Bank (not shown in image above) and includes a sidewalk, lighting and an ADA compliant ramp with tactile warning strip. The other intersection corners remain unimproved. Highway 99 at this location has two travel lanes, a center turn lane, and a southbound bike lane for a total paved width of about 50 feet.

Empirical observation seems to indicate the crossing location was not safe for pedestrian use. The high volume of vehicles during weekend operation (also prime pedestrian use of the trail) provided little opportunity to cross the road with the available gap in oncoming vehicles.

The main issue with this crossing location is providing a safe environment for a section of Highway 99 that transition from a rural highway to an urban setting. Vehicles will generally be traveling above the posted speed limit when entering downtown, unless visually prompted to slow down. This section of highway is plagued with congestion, and ODOT may be leery of allowing a pedestrian access at this location that could further exacerbate congestion.

Crossing Summary

ADA Compliant	No
Posted Speed	35 mph
Sight Distance	>350 feet
AADT (2008)	21,500
Road Designation	ODOT Pacific Highway No. 1 – MP 26.46
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($2,500)**

  To create a pedestrian crossing at this intersection, a crosswalk will be needed to inform vehicles that they can expect pedestrians in the roadway. Crosswalk improvements will involve construction of one new ADA ramp on the northeast corner of the intersection.

  Pros: Allows pedestrians greater opportunities to cross Highway 99.
  Cons: Liability of new unsignalized crossing.

- **Textured pavement ($98,000)**

  Creating a pavement surface that is highly discernible to motorists is important at this crossing because it is the first visual indication that a transition is being made from a rural highway roadway to an urban setting. Brick pavers matching the color scheme selected for the project would provide a clear distinction on pedestrian areas.

  Pros: Creates visual cue for motorists of pedestrian zone.
  Cons: Maintenance will be more frequent with dissimilar pavement materials. Traffic volumes and type may cause differential settlement of pavers from asphalt.

- **Pavement markings ($1,000)**

  White thermoplastic tape on the perimeter of the crosswalk will be beneficial in delineating the crosswalk.

  Pros: Creates visual cue for motorists of pedestrian zone.
  Cons: Maintenance will be needed to replace degraded tape/paint due to high vehicle traffic.

- **Raised median ($66,200)**

  Construction of a raised median is a cheaper alternative to installing full signalized traffic control at this crossing. By allowing a refuge for pedestrians, traffic from one direction at a

time needs to be navigated. The median would eliminate the ability of southbound vehicles to turn east on SW Niederberger Road. These vehicles could be detoured before the intersection, by turning east on SE 12th Street.

Pros: Creates refuge for pedestrians and greater crossing opportunities.
Cons: Elimination of center turn lane may not be acceptable to ODOT.

- **Signing ($15,000)**

"Crosswalk Ahead" and "Crosswalk" signs should be installed on Highway 99 in both directions to cue motorists that the crosswalk is ahead. Replacing the speed limit sign from "35 mph" to "25 mph" through downtown Dundee could also provide a safer environment for pedestrians. Flashing amber crosswalk signs are an additional signing element that can provide strong sensory cues to both motorists and pedestrians that a crossing is immanent.

Pros: Cost effective safety measure.
Cons: Changing the speed limit may not be acceptable to ODOT.

- **Transitions ($2,000)**

Colored shoulders, either through paint or a slurry seal over pavement areas to delineate the travel way from the bike lane and shoulders would create a perceived narrow travel lane, which tends to cause motorists to slow down. Since this crossing is approximately the beginning of the downtown area, an overhead gateway (not included in cost) identifying the rural/urban divide could be a good visual cue to cause motorists to pay attention to the crossing for pedestrians.

Pros: Maintains existing paved road width.
Cons: Political difficulty obtaining an agreeable gateway design.

Total Improvements ($184,700)

3.2 – Dundee at 8th Street

A pedestrian crossing of Highway 99 at 8th Street provides a central corridor through Dundee, and leads northbound users of the trail into "wine country". There is currently an existing striped pedestrian crossing at this unsignalized intersection. The existing crosswalk ramps on the northwest and northeast corners appear to meet ADA grade requirements, however would need tactile warning strips installed to meet code requirements. Highway 99 at this location has two travel lanes, a center turn lane, and a southbound bike lane for a total paved width of about 45 feet.

Empirical observation seems to indicate the crossing location was not safe for pedestrian use. The high volume of vehicles during weekend operation (also prime pedestrian use of the trail) provided little opportunity to cross the road with the available gap in oncoming vehicles. Vehicles tended to stop more for pedestrians users at this location than the Alder Street crossing. With further improvements to the crossing, this behavior may be more greatly influenced.

The main issue with this crossing location is its proximity to the fire station. A refuge island in the center lane will not be possible at this location, due to the need of the fire department to leave their station. This section of highway is plagued with congestion, and ODOT may be leery of allowing a pedestrian access at this location that could further exacerbate congestion.

Crossing Summary

ADA Compliant	No
Posted Speed	35 mph
Sight Distance	>350 feet
AADT (2008)	25,300
Road Designation	ODOT Pacific Highway No. 1 – MP 26.10
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($5,000)**

  The existing pedestrian crossing at this intersection would benefit from improvements to the crosswalk. Improvements will involve retrofitting two new ADA ramps at the existing ramp locations.

  Pros: Allows pedestrians greater opportunities to cross Highway 99.
  Cons: None.

- **Textured pavement ($48,000)**

  Creating a pavement surface that is highly discernible to motorists is important at this crossing because it is the first visual indication that a transition is being made from a rural highway roadway to an urban setting. Brick pavers matching the color scheme selected for the project would provide a clear distinction on pedestrian areas.

  Pros: Creates visual cue for motorists of pedestrian zone.
  Cons: Maintenance will be more frequent with dissimilar pavement materials. Traffic volumes and type may cause differential settlement of pavers from asphalt.

- **Pavement markings ($1,000)**

  White thermoplastic tape on the perimeter of the crosswalk will be beneficial in delineating the crosswalk.

  Pros: Creates visual cue for motorists of pedestrian zone.
  Cons: Maintenance will be needed to replace degraded tape/paint due to high vehicle traffic.

- **Signing ($12,500)**

  "Crosswalk" signs currently exist at this location. Installation of "Crosswalk Ahead" and replacing the speed limit sign from "35 mph" to "25 mph" through downtown Dundee could

also provide a safer environment for pedestrians. Flashing amber crosswalk signs are an additional signing element that can provide strong sensory cues to both motorists and pedestrians that a crossing is immanent.

Pros: Cost effective safety measure.
Cons: Changing the speed limit may not be acceptable to ODOT.

- **Transitions ($2,000)**

  Colored shoulders, either through paint or a slurry seal over pavement areas to delineate the travel way from the bike lane and shoulders would create a perceived narrow travel lane, which tends to cause motorists to slow down.

  Pros: Maintains existing paved road width.
  Cons: Proximity to fire station limits design options.

- **Lighting ($5,000)**

  The north side of Highway 99 does not currently have overhead lighting and pedestrian safety could be improved by installing a new luminare.

  Pros: Cost effective safety measure.
  Cons: Requires additional ongoing operation costs to owner.

Total Improvements ($73,500)

3.3 – Dundee at 5th Street

The proposed crossing at 5th Street provides a link for pedestrian users of the trail to Dundee Elementary School and one of the major collector accesses to the residential areas on top of the Red Hills. There is currently an existing striped pedestrian crossing at this signalized intersection. The crosswalks are also equipped with audible crosswalk devices for the visually impaired. A relatively high level of safety is provided to pedestrians at this crosswalk due to the level of traffic control and overhead lighting provided.

Highway 99 at this location has 2 travel lanes, a protected left turn lane and both south/northbound bike lanes for a total paved width of about 50 feet.

There are no identified issues for this crossing location.

Crossing Summary

ADA Compliant	Yes
Posted Speed	35 mph
Sight Distance	>350 feet
AADT (2008)	27,300

Crossing Summary

Road Designation	ODOT Pacific Highway No. 1 – MP 25.52
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

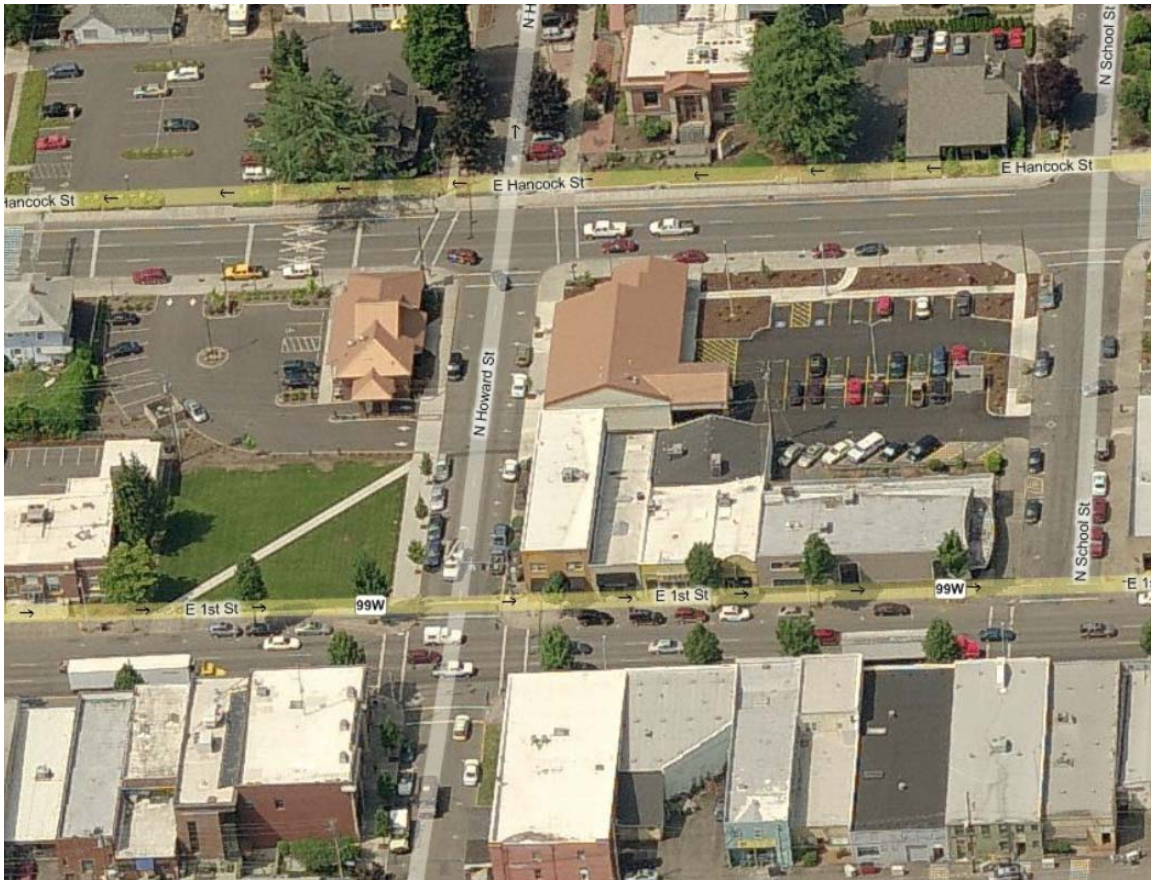
- **None recommended ($0)**

Total Improvements ($0)

3.4 – Chehalem Creek

A pedestrian undercrossing of Highway 99 at Chehalem Creek has been identified as a desirable transportation route for users of the trail traveling north from the Willamette River to the residential areas of Newberg. The crossing is not a part of this assessment, and is mentioned here to provide consistency with the trail planning work referenced by Vigil-Agrimis.

3.5 – Cultural Center



The Cultural Center in downtown Newberg is located at the intersection of North Howard Street, between E 1st Street and N Hancock Street. This location is a focal point of downtown, and provides an important node for the community. There is currently an existing marked crossing at the two signalized intersections (E 1st Street and E Hancock Street on N Howard Street). The intersections are well signalized and provided with overhead lighting. The existing sidewalk ramps appear to meet ADA grade requirements but do not have tactile warning strips. Highway 99 is split into a couplet at this location. Both the east and westbound (E 1st Street and E Hancock Street respectively) sections contain three travel lanes with a bike lane and curb extensions that lead to on-street parking. The paved width of both roads is approximately 46 feet. A relatively high level of safety is provided to pedestrians at this crosswalk due to the level of traffic control and overhead lighting provided.

There are no identified issues for this crossing location.

Crossing Summary

ADA Compliant	No
Posted Speed	25 mph
Sight Distance	>250 feet

Crossing Summary

AADT (2008)	37,800
Road Designation	ODOT Pacific Highway No. 1 – MP 23.72
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($2,000)**

  The existing pedestrian crossing at this intersection would benefit from improvements to the crosswalk. Improvements will involve retrofitting four ADA ramps at their existing locations with tactile warning strips.

  Pros: Allows pedestrians greater opportunities to cross Highway 99.
  Cons: None.

- **Signing ($9,000)**

  Installation of audible crossing signals would provide improved crossing conditions for visually impaired pedestrians crossing the highway.

  Pros: Cost effective safety measure.
  Cons: None.

Total Improvements ($11,000)

3.6 – Herbert Hoover

Herbert Hoover Park is located at the east end of downtown Newberg, and is an important trail crossing location for pedestrians traveling through the Hess Creek corridor. Two crossing routes have been identified for further discussion and research, one being an at-grade crossing of Highway 99 at the intersection of S River Street and the second being a below grade tunnel.

The main issue identified at the at-grade crossing location is the complex navigation route required to cross the road. Visually impaired pedestrians may find the route difficult, and audible signals could prove more of a hazard than a help.

There are several issues associated with design option to create a tunnel under Highway 99, the most significant being the level of unknown information pertaining to the structural stability of the embankment to sustain the construction process. Any existing utilities within the embankment will further complicate the crossing design, with relocation work adding to significant cost increases. The tunnel should also consider the seasonal flooding of Hoover Park, and how sustained high flows through Hess Creek could impact the structure.

Crossing Summary

ADA Compliant	No
Posted Speed	25 mph
Sight Distance	>250 feet
AADT (2008)	39,600
Road Designation	ODOT Pacific Highway No. 1 – MP 22.89
Road Classification	Principal Arterial

Option #1 – At-grade Crossing: The Highway 99 couplet intersects S River Road at Hoover Park and creates at geometrically complex crossing for pedestrians. A pedestrian at the southeast corner of the intersection must cross west across S River Road, north across E 1st Street, east across S River Road, and finally north across E 1st Street to perform the crossing. While the travel path appears to meet the grade requirements of ADA, no tactile warning strips are present. There are also no audible crossing signals, likely due to the complex route necessary to cross the road. A relatively high level of safety is provided to pedestrians at this crosswalk due to the level of traffic control and overhead lighting provided.

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($4,000)**

  The existing pedestrian crossing at this intersection could benefit from improvements to the crosswalk. Improvements would include retrofitting eight new ADA ramps at the existing ramp locations with tactile warning strips. Also, there are existing pine trees that block sight distance for certain pedestrians, trying to cross the couplet connection (eastbound on Highway 99 during back westbound) from the pedestrian island towards downtown. These trees should be removed and replaced with deciduous trees to improve sight distance.

  Pros: Allows pedestrians greater opportunities to cross Highway 99.
  Cons: None.

Option #1 – Total Improvements ($4,000)

Option #2 – Tunnel Crossing: Anecdotally, Highway 99 is understood to be constructed over an old railroad trestle at Hoover Park, with an elevated surface of about 35 feet above Hess Creek.

- **Tunnel Crossing ($3,250,000)**

  A new pedestrian crossing would require a length of about 180 feet. Lighting would need to be provided to create a safe environment for pedestrians desirous of entering the tunnel.

Pros: Allows pedestrians to avoid the complex at-grade crossing of Highway 99.
Cons: Level of unknowns related to design and construction.

Option #2 – Total Improvements ($3,250,000)

3.7 – Newberg High School 1

N Elliot Road crosses Highway 99 and provides a main through route to Newberg High School. There is currently an existing marked crossing at this signalized intersection. The intersections are well signalized and provided with overhead lighting. The existing sidewalk ramps appear to meet ADA grade requirements but do not have tactile warning strips. At the crossing location, Highway 99 has four travel lanes, a protected center left-turn lane, and bike lanes. The paved width of the roadway is approximately 78 feet. A relatively high level of safety is provided to pedestrians at this crosswalk due to the level of traffic control and overhead lighting provided.

There are no identified issues for this crossing location.

Crossing Summary

ADA Compliant	No
Posted Speed	35 mph
Sight Distance	>350 feet
AADT (2008)	38,200
Road Designation	ODOT Pacific Highway No. 1 – MP 22.79
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($1,000)**

  The existing pedestrian crossing at this intersection would benefit from improvements to the crosswalk. Improvements would include retrofitting two ADA ramps at their existing locations with tactile warning strips.

  Pros: Cost effective safety measure.
  Cons: None.

- **Signing ($6,000)**

  Installation of audible crossing signals would provide improved crossing conditions for visually impaired pedestrians crossing the highway.

  Pros: Cost effective safety measure.
  Cons: None.

Total Improvements ($7,000)

3.8 – Newberg High School 2

N Springbrook Road crosses Highway 99 and provides a second main through route to Newberg High School. There is currently an existing marked crossing at this signalized intersection. The intersections are well signalized and provided with overhead lighting. The existing sidewalk ramps appear to meet ADA grade requirements but do not have tactile warning strips. The crossing utilizes pedestrian refuges and channelization to direct traffic and pedestrian access. Both east and westbound traffic have right turn drop lanes with adequate sight distance.

The crossing maneuver necessary to cross Highway 99 is made somewhat complex through the use of pedestrian refuge islands that are not collinear for the entire length of the crossing. The right turn drop lanes are crossed at roughly 45 degrees to the direction of vehicular traffic on the highway.

At the crossing location, Highway 99 has four travel lanes, a protected center left-turn lane, and bike lanes. The paved width of the roadway is approximately 60 feet. A relatively high level of safety is provided to pedestrians at this crosswalk due to the level of traffic control and overhead lighting provided.

There are no identified issues for this crossing location.

Crossing Summary

ADA Compliant	No
Posted Speed	35 mph
Sight Distance	>350 feet
AADT (2008)	36,200
Road Designation	ODOT Pacific Highway No. 1 – MP 22.15
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($2,000)**

  The existing pedestrian crossing at this intersection would benefit from improvements to the crosswalk. Improvements will involve retrofitting four ADA ramps at their existing locations with tactile warning strips.

  Pros: Cost effective safety measure.
  Cons: None.

- **Signing ($9,000)**

  Installation of audible crossing signals would provide improved crossing conditions for visually impaired pedestrians crossing the highway.

  Pros: Cost effective safety measure.
  Cons: None.

Total Improvements ($11,000)

3.9 – Providence Newberg

The southern frontage of Highway 99 has been fully improved with the construction of the recently completed Newberg Providence Hospital project. At the crossing location, Highway 99 has four travel lanes, a protected center left-turn lane (westbound), a right-turn drop off lane (eastbound) and bike lanes. The paved width of the roadway is approximately 92 feet. A relatively high level of safety is granted to pedestrians at this crosswalk due to the level of traffic control. No overhead lighting is provided.

Crossing Summary

ADA Compliant	No
Posted Speed	45 mph
Sight Distance	>450 feet
AADT (2008)	34,000
Road Designation	ODOT Pacific Highway No. 1 – MP 21.81
Road Classification	Principal Arterial

The following options are suggested to improve the crossing conditions of the intersection using the design options identified in *Section 1.4 – Pedestrian Improvement Toolbox:*

- **Crosswalk ($33,500)**

  The existing pedestrian crossing at this intersection could benefit from improvements to the crosswalk. While existing ramps on the south side of the highway currently meet ADA requirements, there is no ramp on the north side of the highway. A new ramp is recommended with tactile warning strips. The new ramp would require a culvert to allow drainage flowing north to continue in the existing ditch along the road. Additionally, an embankment north of the road would need to be cut through, at a surface grade not exceeding 5% to meet ADA compliance. The embankment is roughly 10 feet tall at the location, and the cut would extent about 200 feet north into an empty farm field.

  Pros: Cost effective safety measure.
  Cons: None.

- **Signing ($7,000)**

  Installation of audible crossing signals would provide improved crossing conditions for visually impaired pedestrians crossing the highway.

  Pros: Cost effective safety measure.
  Cons: None.

Total Improvements ($40,500)

There are no identified issues for this crossing location.

4.1 – Permit Summary

The following sections describe the individual permits anticipated for the proposed improvements. For the purposes of this IEA, the costs presented include applying for, negotiating, obtaining, and paying any necessary agency permit fees.

ODOT Permits

- Construction of any work along Highway 99 will require an ODOT facilities (ROW) permit. An estimated cost of $15,000 is necessary to negotiate and obtain this permit.
- Changing the hydraulics along the Highway will require an ODOT drainage modification permit. The Providence Newberg at-grade crossing and likely modifications to the Highway 219 Bridge would modify drainage within the ODOT right-of-way. An estimated cost of $7,500 is necessary to negotiate and obtain this permit.

Joint Permit for Wetland Fill/Removal

- Any wetland impacts (both temporary and permanent) associated with the Ash Island and Highway 219 Bridges will require permits from the USACE and the DSL. Though each agency issues separate permits, there is a joint or common application (JPA) that is prepared and submitted to both agencies. Prior to submittal of a permit application, a wetland delineation will be required for the preferred bridge designs. Biological assessments will also be required. The delineation and permitting costs associated with wetland impacts are estimated to be a combined total of $150,000. Wetland mitigation is not addressed in this IEA.

DEQ Permits

- Any grading activities that disturb more than one acre of land will require an NPDES 1200-C permit from the Oregon DEQ. An estimated cost of $15,000 is necessary to apply for and obtain this permit.

City/County Permits

- Excavation to construct the bridge at Ash Island is expected to require a Yamhill County Fill or Removal permit for earthwork within the flood plain of the Willamette River. This permit is estimated to cost approximately $5,000.

4.2 – Project Cost Summary

Permitting = $192,500
Construction Costs = $11,781,700 to $24,981,700
Professional Services = $1,100,000 to $2,500,000

As previously mentioned in Section *1.1 – Project Overview*, it should be noted that the cost information provided in this analysis is intended to provide a rough order of magnitude only. There has not been a schematic level of design performed to more precisely determine cost data, and therefore the figures contained herein are suitable for general conversational purposes only.

4.3 – Initial Engineering Analysis Assumptions

Given the preliminary nature of this document, many assumptions had to be made in order to derive the recommendations presented. These assumptions will need to be revised to further refine the project design, and have been summarized below:

- Adequate right-of-way width for the proposed improvements
- Visual assessment of existing sidewalk grades for ADA compliance
- Existing signalized intersections are safe for pedestrians
- All costs are rough order of magnitude
- Professional services are assumed to be a percentage of the construction costs. A detailed proposal should be provided to accurately determine these fees.

Appendix F

Funding Opportunities Analysis, Jerry M. Palmer

MEMORANDUM

To: Paul Agrimis, VAI
From: Jerry Palmer

RE: TRAIL FUNDING SOURCES

This memo was prepared for Vigil Agrimis, Inc. as part of a wider planning effort for the Chehalem Heritage Trail. The strategic plan was commissioned by the Chehalem Park and Recreation District (CPRD) as an essential first step in creating an outstanding 50+ mile trail system that preserves and enhances the greater Chehalem Valley Communities parks, historic heritage, native habitats, open space and community connectivity.

This memo identifies potential public and private funding sources for trail projects with relevance to the Chehalem Heritage Trail. The three trail elements of recreation, cultural resources, and natural resources preservation and enhancement open up numerous opportunities for the District.

PUBLIC FUNDING

GRANTS:
There are a variety of potential grant programs available including ODOT, State Parks, and federal programs. Table 1 presents a summary of available program opportunities. Most of these involve the completion of extensive applications and compete with similar applications from other agencies. Many are restricted to specific types of improvements and are highly competitive. They are subject to funding appropriations and overall fund levels and type of project prioritization.

LOCAL FUNDS:
There are local funding sources including: bonds; District revenues; System Development Charges (SDCs); and partnerships with other local service providers. Future bond measures will require community outreach and support for a specific improvement program and be subject to a District wide vote. Partnerships with cities and school district can enhance the opportunities to gain favorable consideration of select project Grants and support.

System Development Charges (SDCs) are currently being assessed on new development within the District. The current SDC is $2,017/single family residence and $1,475/mobile home or multi-family unit. SDCs are collected on new development to meet the growth needs of the community. The District SDCs can only be used for acquisition, planning and/or development (construction). They cannot be used for operations and maintenance of parks, trails and facilities. The fund amount varies depending upon the development activity in the District.

FEDERAL FUNDS:
Pursuit of federal grants and funding requires considerable planning, coordinating and perseverance. There are opportunities to work with federal legislative representatives (Senators/Congressmen) to include specific project funding in legislative appropriation request. The requests are subject to extreme competition and consideration of Appropriations Committees and ultimate approval of legislation.

OTHER OPPORTUNITIES

FOUNDATIONS:
Some trail elements can be funded through private foundations, particularly if they are related to educational, civic, cultural, historical or environmental goals. Some of the local Foundations are listed on Table 2.

LAND TRUSTS:
Land trusts are local, regional or statewide non-profit conservation organizations directly involved in protecting and preserving natural, scenic, recreational, agricultural, historic or cultural lands that are important to the community.

INDIVIDUAL SPONSORS:
Individuals, businesses or corporations can contribute donations to sponsor sections of trail or project elements. Forms of recognition are typically placed on constructed trail elements or entries. Sponsorship is a good way to fund elements such as benches, trash receptacles and signage.

VOLUNTEERS:
The District works with volunteers to substantially reduce operations and maintenance costs. Local schools, community groups and dedicated neighbor groups can help to sponsor and define projects. Community organizations can be successful in holding fundraisers and organizing volunteer labor for work parties. Local examples include: Rotary; Scouts; and college and other service clubs.

TABLE 1 GRANT FUNDING SOURCES		Page 1
GRANT PROGRAM/SPONSOR	**DESCRIPTION/PROGRAM FOCUS**	**APPLICATION/AWARDS SCHEDULES AND RANGE OF AWARDS**
OREGON STATE PARKS AND RECREATION DEPARTMENT 725 Summer St. NE, Suite C, Salem, Oregon 97301		
1 Recreation Trails Grants (RTP) Federally Funded - FHWA marilyn.lippincott@state.or.us	Building, Restoring and Acquisition of Recreational Trail Projects, i.e. Hiking, Running, Bicycling, ATV and ORV.	Oct - Open for Application Jan - Application Due $20k to $130k Min. 20% proj. cost by Applicant
2 Land and Water Conservation Fund (LWCF) Federally Funded - NPS Marilyn.lippincott@state.or.us	Acquiring land and developing public outdoor recreation areas or facilities. Meet SCORP objectives.	Up to 50% project funding $50k to $150k March - Applications Due April/May - Evaluation and Recommendations
3 Local Government Grants Lottery Funded Michelle.scalise@state.or.us	Planning, acquiring land, develop or rehabilitate outdoor parks and recreation areas and facilities.	Jan - Open for Application April - Application Due Small Project/Planning: $8k to $35k Large Project: $250k (ave)
4 Heritage Program Grants kyle.jansson@state.or.us	Preserve and protect heritage and historic resources. (Along trail system)	Up to $20,000 October - Applications Due 1 to 1 match

TABLE 1
GRANT FUNDING SOURCES

OREGON DEPARTMENT OF TRANSPORTATION

Transportation Safety Division and Transportation Growth Management (TGM)

555 13th Street, NE, Salem, Oregon 97301

cinty.l.lesmeister@odot.state.or.us

GRANT PROGRAM/SPONSOR	DESCRIPTION/PROGRAM FOCUS	APPLICATION/AWARDS SCHEDULES AND RANGE OF AWARDS
1 Safe Routes to School Federally Funded - FHWA julia.a.yip@state.or.us	Planning, design and construction of projects that improve ability of students to walk and bike to school. Infrastructure projects within two miles of K-8 school. Cooperate with school district on application.	June - Application Due Statewide: $2,000k for infrastructure/project in 2010 $500k for non-infrastructure projects
2 Bicycle and Pedestrian Program Grants sheila.a.lyons@odot.state.or.us	Pedestrian and/or bicycle projects, i.e. crossings, bike lanes, bike boulevards, intersection improvements and sidewalks. Proposed facilities must be within public ROW. Very competitive (one grant/five applications). Cooperation with City who must apply.	June/July - Application Due. Statewide: $5,000k every two years (Two year cycle) Min. Five percent match.
3 Transportation Enhancement Program (TE) Reimbursement Funds (v. Grant) Federally Funded - FHWA patricia.r.fisher@odot.state.or.us	Special or additional activities not normally required on a highway or transportation project, i.e. Pedestrian/Bicycle project, Historic Preservation, Environmental Mitigation, and Landscaping and Scenic Beautification. Cooperation with City/County/State on application.	April - Open for Application. FY 2009-2011: $800,000/Project (Ave.) (Two year cycle) Min. ten (plus) percent match.

TABLE 1
GRANT FUNDING SOURCES

GRANT PROGRAM/SPONSOR	DESCRIPTION/PROGRAM FOCUS	APPLICATION/AWARDS SCHEDULES AND RANGE OF AWARDS
Oregon Watershed Enhancement Board 775 Summer Street NE, #360 Salem, Oregon 97301-1290 bonnie.ashford@state.or.us	Assessment, onground restoration of ecosystems, land acquisitions, instream water lease and transfers, and technical assistance grants.	April - Applications Due (Check Regional Schedules) 25% match by applicatnt $50k to $500k for large projects Up to $10k for small projects
Rivers, Trails and Conservation Assistance Program National Park Service Pacific West Region michael_linde@nps.gov	Technical assistance to locally - led natural resource and outdoor recreation projects. Need significant community outreach & commitment.	August - Applications Due no funds - technical assistance only. One year with second year renewal ability.
National Recreation Trails nrt@american trails.org	Technical assistance for training partnerships and fundraising.	Assistance only.
American Hiking Society National Trails Fund Grants nrt@americantrails.org	Acquire land, protect, establish, and maintain community hiking trails.	$4,000 to $5,000 grants. August - Applications Due.

TABLE 2
FOUNDATION FUNDING SOURCES

GRANT PROGRAM/SPONSOR	DESCRIPTION/PROGRAM FOCUS	APPLICATION/AWARDS SCHEDULES AND RANGE OF AWARDS
1 Spirit Mountain Community Fund Environmental Protection Grant	Funding for programs or projects that directly affect our natural environment, i.e. preserving lands and waters.	$5k to $50k
2 Meyer Memorial Trust Responsive Grants	Awarded in many areas including: community development, conservation and environment.	$20k to $50k (Typ.)
3 PGE Foundation	Award organizations that support education, arts and culture and healthy families.	Varies
4 Oregon Cultural Trust Public/Private Partnership	Support and protect Oregon arts, humanities and heritage.	$5k to $25k
5 Oregon Wildlife Heritage Foundation Beulah Drake Grant Program Public/Private Donors/Partners	Projects that increase, enhance or promote fish and wildlife resource. Fish, wildlife or pubic access projects.	$5k/yr.
6 Historic Trails Fund The Oregon Community Foundation 1221 SW Yamhill Street #100 Portland, Oregon 97205	Must meet "interpretive" standards. Historical project that interpret, preserve historic trail resources.	Sept 1 - Application Due Nov - Grant Decision One to one match up to $20k