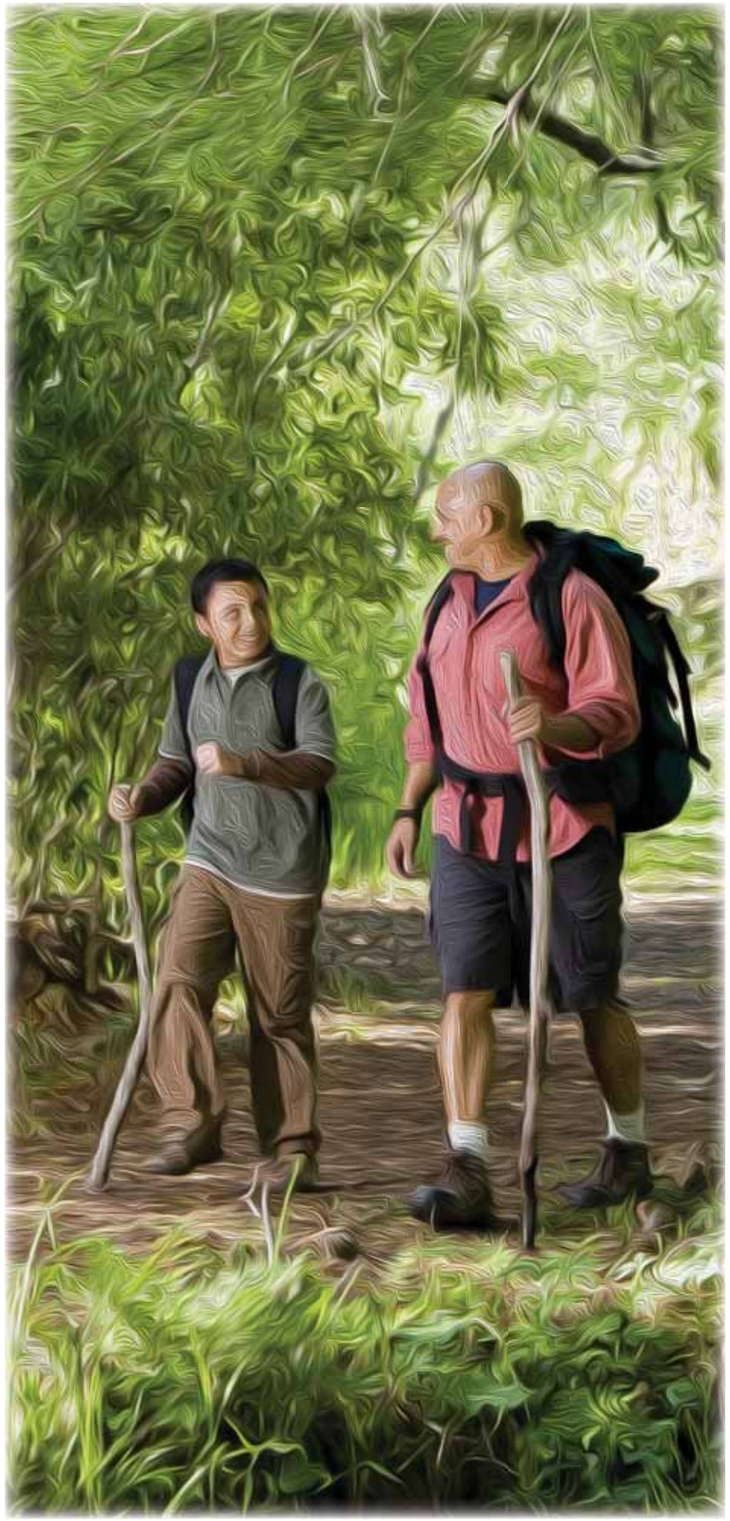
Crescent Park Greenway Concept Plan

Hillsboro
Parks & Recreation

A Greenway Concept Plan

Final Draft December 18, 2018

Hillsboro
Parks & Recreation



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APPENDICES*

*Provided separately; available at URL: ***https://www.hillsboro-oregon.gov/our-city/departments/parks-recreation/planning-and-development/crescent-park-greenway-plan***

EXECUTIVE SUMMARY

The Crescent Park Greenway is an opportunity to create a signature destination for Hillsboro's community. A greenway is a collection of natural areas, parks, and trailheads connected by green spaces and tied together by trails. Part of a long-term planning process that began in 2015, the concept is for the phased development of an approximately 16-mile trail and corridor – the Crescent Park Greenway – along the north, west, and south periphery of Hillsboro, as shown on the map on the next page. The Crescent Park Greenway, or simply "the Greenway," will wrap around Hillsboro's edges in a crescent shape — with the north end beginning at Gordon Faber Recreation Complex and heading west, then south behind the historic Pioneer Cemetery, and ending in South Hillsboro. Exact locations of the Greenway alignment are being studied and evaluated.

Hillsboro community members helped create the vision for the Crescent Park Greenway, which will include stream corridors, natural areas, and recreational amenities such as trails and trailheads, picnic shelters, signage, and other facilities. Through an extensive public outreach process guided by the City of Hillsboro Parks & Recreation Department, the community developed an initial vision for the Greenway as a unique recreation and open space amenity. As presented in the 2015 Hillsboro Trails Master Plan, the vision articulates the intended uses, user experience, and overall character of the Greenway, with the goal of developing an unparalleled recreation and open space asset for Hillsboro residents, employees, and the region through the next 20+ years.

This document, the Crescent Park Greenway Plan ("the Plan"), carries forward the vision from the 2015 Hillsboro Trails Master Plan. The Plan translates the community vision into detailed descriptions and guidelines to inspire and lead decision-makers when designing and implementing the Greenway. The Plan was developed to provide thought-provoking insight into the vision, experience, and functionality of the Greenway as well as a set of practical tools for implementation. The Plan provides the City and its partners with a clear guide to efficiently and thoughtfully deliver this vision.

What is a Greenway?

A greenway is a long corridor of protected open space, usually following natural geographic features, planned for environmental protection, and providing opportunities for recreation and non-motorized transportation. Greenways provide access between destination points, outdoor experiences, and space for recreation.

What is the Crescent Park Greenway Plan?

The Crescent Park Greenway Plan includes both a Concept Plan and Implementation Workbook – key elements of the long-term planning process that move the City closer to developing the Greenway. The Concept Plan should inform how the Greenway will look and feel, and offers approaches and solutions that create the user experience consistent with the vision and the environment. The Implementation Workbook describes the conceptual Greenway alignments, recreational amenities, regulatory information, costs, and phasing. Together, these elements of the Plan present a road map for Greenway implementation.

The Plan consists of four sections (the first three parts of which form the Concept Plan):

- **Introduction:** An overview of the vision, direction, and effort that went into developing the Plan.
- **The Greenway:** A further translation and guide for thinking about and understanding the Greenway. It contains a discussion about the overall Greenway form, and an explanation of the settings in the Greenway that will guide design.
- **Design Guidelines:** Conceptual details on how to achieve the community vision. This section outlines how the various settings differ and what occurs in those settings. The Design Guidelines section describes an approach to restoring, developing, and creating the Greenway. At a high level, the section explains how the Greenway functions from an ecological as well as a recreational perspective, and classifies each portion of the Greenway into a "setting" that will guide design. Additionally, conceptual information is provided on the recreational elements of the trail and how they fit into the Greenway via design.
- **Implementation Workbook:** A guide for decision-makers and project managers on the steps and information necessary to begin the process of implementing individual segments of the Greenway. Recognizing the scale of the Greenway project, it is conceptually divided into three separate areas, with each area containing various potential segments and options for the corridor alignment. The workbook provides information for the City to make informed decisions for implementation and is intended as a guide for the project managers who will lead future implementation as individual segments of the alignment are developed. The Implementation Workbook is also a toolbox. It provides additional information, details, and tools to assist with decision-making and long-range planning, such as Capital Improvement Plans. The workbook covers the steps needed to efficiently take a project from conception to completion, including which agencies to contact and when. It addresses the permitting processes for each agency, as well as the costs and expectations for each submittal. It includes helpful suggestions on what stakeholders to contact to move projects along smoothly and efficiently. Phasing recommendations are provided identifying which segments could be considered for implementation over the next 20 years, as well as potential funding sources.

The Plan is a starting point from which additional discussions, outreach, and development work will occur. The Greenway is an ambitious undertaking that will require further in-depth investigation on a segment-by-segment basis prior to implementation.

Diversity, Equity, and Inclusion

The Greenway is a regional resource, intended for all of Hillsboro's residents. A core theme during Plan development has been to incorporate diversity, equity, and inclusion into the overall planning process for the Greenway.

The City of Hillsboro is one of Oregon's most diverse communities with 23% Latino; 11% Asian; and 1% black or African American, 5% two or more races, and 1% identified as "other" (2012-2016 ACS 5-Year Estimates). With residents from around the globe, the City is a vibrant place to experience different cultural backgrounds. With a variety of cultures, we find a spectrum of how people like to recreate and connect with nature. The Greenway is a diverse place where all Hillsboro residents have the chance to connect with people and nature in their own way without barriers based on race, ethnicity, gender, age, religion, nationality, language preference, socioeconomic status, disability, sexual orientation, gender identity, or other characteristics. Beyond its ecological systems, the Greenway is a place to introduce community connection points or amenities that offer a range of possibilities for people to recreate in a way that is both comfortable and exploratory.

In understanding the complexity of the Greenway, and planning the design of the amenities within it, the project team looked at creating a place that produces a variety of experiences for diverse users with differing interests and needs. The Greenway will offer a spectrum of experiences that blend into each other and gently transition. The transitions are designed to be comfortable for the user, but still encourage exploring gentle challenges that may be out of an individual's comfort level. The recreational aspects of the Greenway should enable users to create their own experience rather than follow a prescribed one.

During the implementation process, it is essential to work with the community to understand barriers to recreation and continue to integrate diversity, equity, and inclusion into the design of the Greenway and its amenities. This will include finding design opportunities to engage individual and cultural ways of recreating while providing safe opportunities for individuals to challenge their comfort levels in a safe manner such as: providing rustic natural areas with added visibility and interpretive signage, as well as surfaces that evoke a rustic experience but are safe for individuals with mobility challenges. Understanding barriers and community needs is key to creating a space for all to connect with nature and each other. For example, Vive NW provided insight into the Latino population's relationship to outdoor recreation (see insert).

Taking the time to understand the barriers and benefits of outdoor recreation will be key to creating a world-class Greenway. The Crescent Park Greenway is a place where all people can meet as equals and share experiences, making Hillsboro a better place to live.

"Despite easy access to a plethora of outdoor activities here in the Pacific Northwest, Latinos are mostly absent from the region's parks, forests, beaches, and rivers. The Latino population is growing rapidly here, with 12 percent of Oregon's population is now Latino, up 72 percent since 2000, and more than 25 percent of the K-12 school population is Latino. Protecting parks and open space may not be relevant to this growing share of the population unless we address diversity and inclusion issues in outdoor recreation. The outdoor industry – a significant regional economic driver – may also lose its economic vitality unless its products and services can appeal more to Latino consumers. Getting more Latinos into the outdoors can instill a sense of ownership and stewardship of the land and expose them to healing aspects of living more active and healthier lifestyles. Latinos benefit, as does everyone, from time spent in the outdoors: we are better able to maintain an active and healthy lifestyle, spend leisure time with friends and family, and reduce stress. Latinos, however, face barriers to outdoor participation from lack of information about where to recreate to feeling uncomfortable or unwelcome in outdoor areas, not having transportation or equipment needed to participate or having less available time for leisure. Moreover, many neighborhoods have not seen the same kinds of investments needed to give Latinos the same access to local parks and green spaces that most other communities enjoy. Parks and green spaces not only contribute to the aesthetics of a community and support healthy air and water, but they also provide gathering space for communities where we can make connections with our neighbors and where our children can have safe places to play and learn about nature."

-Insight provided by Vive NW

PART 1 – INTRODUCTION

In 2015, the City of Hillsboro embarked on a visioning exercise with the community to develop a long-range trails plan. From this process, the community identified the location and vision for a signature trail that traverses the streams, rivers, natural areas, and periphery of Hillsboro to create a Greenway around the City. The vision developed in the 2015 Hillsboro Trails Master Plan is the basis for the Crescent Park Greenway Plan (the Plan). The Plan provides a bridge between the community vision and realistic options for implementation. It provides the City and potential partners with detailed information to make thoughtful decisions regarding:

- Selecting the appropriate segment alignments
- Formulating the City's Capital Improvement Plan and budgeting
- Beginning of design and development
- Other trail features

Additionally, Statewide Planning Goals, the Hillsboro Comprehensive Plan, the Hillsboro Parks & Trails Master Plan and Natural Area Analysis, and the 2015 Hillsboro Trails Master Plan provide the basis and framework from which the Plan was developed.

The Plan brings together the community blueprint outlined in the Hillsboro Comprehensive Plan and the long-term guide to trail development in the Trails Master Plan into one Plan to use as a starting point for implementation of the Greenway.

Vision

In the 2015 Hillsboro Trails Master Plan, the Crescent Park Greenway vision states *"Crescent Park Greenway is a significant community resource. It couples access to recreation, neighborhoods, employment, and services, in balance with nature, elevating the quality of our daily lives. The Crescent shall complete a greenway loop around the City contributing to a vibrant Hillsboro."*

Goals and Objectives

The community vision highlights several goals to guide development of the Greenway. According to City leaders and community members, the Greenway shall strive for the following:

- The Greenway shall be a resource and destination for the community.
- The Greenway is a signature feature of the park and trail system.
- The trail design and experience shall respond to the setting unique to each segment, whether open and expansive or intimate and meandering.
- The Greenway shall meet multiple objectives, including:
  - ✓ Recreation-opportunities to appreciate nature
  - ✓ Natural area restoration and enhancement
  - ✓ Stormwater management approaches
  - ✓ An asset for future development

The vision identified many other objectives that are integrated into the details of the Plan. More detailed explanations of these objectives can be found in Appendix A "Crescent Park Greenway Vision" (from the 2015 Hillsboro Trails Master Plan).

Plan Development

Using the community vision as a starting point, the project team created a Project Advisory Committee and consulted a multitude of existing resources such as comprehensive plans and system plans, existing data from GIS systems (property information and regulatory overlays), and public outreach to develop the Plan. In addition, the project team met with stakeholders, visited sites, and met with community members/groups. The following is an overview of the primary resources for Plan development.

Greenway objectives identified through the visioning process

Guiding Planning Documents

The community vision was developed primarily through the 2015 Hillsboro Trails Master Plan process. The vision and general trail guidelines within the Trails Master Plan provide the basis for the Plan. The City, state, and Metro Regional Government have conducted other planning efforts that also provided guidance.

In addition to the 2015 Hillsboro Trails Master Plan, these documents have been referenced in development of this Plan:

- Hillsboro Comprehensive Plan
- Hillsboro Transportation System Plan
- Hillsboro Community Development Code
- Statewide Planning Goals
- Metro Regional Trails Plan
- Washington County Community Development Code
- East Hillsboro Community Plan (Washington County)
- Washington County Transportation System Plan
- Washington County Pedestrian and Bicycle Plan
- Clean Water Services Low Impact Development Approaches
- Clean Water Services Design and Construction Standards

For more information, please see Appendix B.01 - B.11.

GIS Data

The initial steps to develop an understanding of the Greenway and conditions that surround the area included a review of the above planning documents, a review of GIS data, and site visits where feasible. Understanding the environment, existing infrastructure, facilities, and property attributes along the Greenway played an important role in establishing conceptual alignments. This information was included in the development of the trail alignments and can be reviewed within the Implementation Workbook section in the maps for each area. The GIS data sets used in the development of the Plan focused on:

- Environment
- Infrastructure and Facilities (Existing)
- Property-Related

Refer to the Greenway Existing Conditions Summary in Appendix C for more specific information.

Public Outreach

During the 2015 Hillsboro Trails Master Planning process, the project team conducted a community engagement program. From this process, a detailed six-page vision for the Greenway was developed and eventually adopted by the Hillsboro Parks & Recreation Commission as well as the City Council (refer to the 2015 Hillsboro Trails Master Plan, 04 Crescent Park Greenway Vision). The detailed vision is the guiding factor for Plan development.

Since this Plan is a further translation of the community vision and road map to implementation, the public outreach process consisted of confirming the trail vision and introducing potential alignment options. Two public open house events were held to introduce the trail and Greenway refinement. For more information regarding the outreach events, see Appendix D for Public Outreach Summaries.

Project Advisory Committee

A Project Advisory Committee was formed to provide guidance and assist with content for the Plan. The committee met three times over a year to review information developed by the project team. They provided vital insight on conceptual alignments and input on the experience and design of the trail. The Project Advisory Committee consisted of members from the following agencies, community partners, and citizen groups:

- **City of Hillsboro departments:** Parks & Recreation, Fire, Police, Public Works, Planning, Engineering, Economic Development.
- **Hillsboro boards and commissions:** Parks & Recreation Commission, Historic Landmarks Advisory Committee, Arts and Culture Council, Natural Resources & Education.
- **Hillsboro community:** Hillsboro School District, Hillsboro Chamber of Commerce, and representatives of the Latino community.
- **Washington County:** Land Use & Transportation.
- **State of Oregon:** Department of State Lands, Department of Transportation, Department of Fish & Wildlife.
- **Regional agencies:** Clean Water Services, Metro, the Intertwine Alliance.

Further information and meeting summaries regarding the Project Advisory Committee are included in Appendix E.

PART 2 – THE GREENWAY

The City of Hillsboro defines greenways as follows:

- *"A linear, vegetated open space typically associated with a naturally occurring corridor such as a stream or river, set aside for recreational use and/or natural resource protection."* ~ City of Hillsboro Comprehensive Plan
- *"Greenways are linear natural spaces that follow creeks and rivers. Some greenways provide public access with environmentally compatible trails, viewpoints, or watercraft launch sites. Other greenways prioritize wildlife habitat protection and do not allow any public access."* ~ 2015 Hillsboro Trails Master Plan

Greenways within Hillsboro provide vital natural functions that complement the built urban environment. These spaces provide connectivity for not only the human residents of the city, but the flora and fauna within our community. The creation of a community that harmoniously and holistically connects all elements, such as infrastructure, structures, urban spaces, habitat, and natural areas, is complicated but achievable. Thoughtful planning, management, and understanding of the environment are key to establishing high-quality functional spaces as well as creating a sense of place.

The Greenway is over 16 miles in length with about 20 Greenway segments. With the amount and type of land through which the Greenway and trail traverse, the conceptual alignment is divided into three areas, with several segments in each area. The sections within this document describe existing conditions and conceptual alignments for each segment. Finally, the Design Guidelines outline a design framework that, when implemented, will achieve the community vision for a Greenway trail.

The Greenway connects to more than the immediate area it traverses. The Greenway is interconnected to urban Hillsboro as well as the rural and wilderness areas throughout the Tualatin Valley. In planning the Greenway, careful attention was given to the recreational aspects of the trails as well as the urban interface, the community, and natural features through which the trail traverses. All of these factors are carefully managed to optimally balance the human and natural worlds.

Setting Overview

Situated on the western urban edge of the Portland Metropolitan area, the City of Hillsboro has experienced continued development of industrial, commercial, residential, and supporting infrastructure. The landscape within and surrounding Hillsboro varies from natural/agricultural land to developed lands. Positioned along this interface, the Greenway provides an opportunity to create a distinct edge between Urban and Rural Settings with pockets of nature that celebrate the area's diverse landscapes. To meld the community vision with adjacent land uses into a cohesive design, three categories were identified to guide Greenway development. The categories, or "Settings," are Natural, Rural, and Urban. This characterization of settings assists in creating the tone and attributes for the trail segments of Greenway development. When implementation begins along the Greenway, design of the segments will follow the guidelines presented on the following pages.

Setting Types and Character

Each segment of the Greenway flows through landscapes with diverse, varied characteristics. The design of the Greenway and trail complement each other and enhance these areas using specifications within the Design Guidelines. The specifications provide a high-level approach to Greenway design as well as more detailed insight into the design of signage, trails, and trailheads. The specifications presented will create a cohesive and functional Greenway. The alignment traverses three landscape settings that influence the design. Although the designated setting types apply to the Greenway itself and not the surrounding area, in many cases the setting type is influenced by its surroundings. In addition, changes to the character of the Greenway are expected to occur over time.

Natural Setting

The **Natural Setting** is a landscape where people can be immersed in nature with little influence from the built world. The design of the Greenway and trail will include native vegetation, restored stream corridors, and rustic finishes such as gravel trails. Site furnishings will be composed of natural materials, such as boulder and cut timber seating areas and signage that blend in with the landscape. The experience is intended to transport the user away from modern urban life into a serene and natural environment. Additionally, this setting protects and enhances existing natural features such as floodplains, fish and wildlife habitat, and native flora. Input from natural resource specialists and coordination with agencies (Clean Water Services, City departments, and Metro) is recommended to determine opportunities for preserving and enhancing natural habitats. Collaboration among scientists and designers will be needed to achieve ecological uplift as well as functional design in the natural Greenway.

Rural Setting

The **Rural Setting** is a transitional landscape between the Natural and Urban Settings. The built environment is noticeable in this setting, but rural and natural elements are still the predominant features. Design of the trail in the Rural Setting is rustic intermixed with roadways and developed parcels. Design of the Greenway and trail will be a mixture of native stream corridors, meadows, pastures, stormwater management approaches, and varying trail surfaces from gravel to asphalt, all providing a “rural” feeling. Rustic amenities include benches, stone masonry seating walls, more in-depth interpretive and wayfinding signage, along with some stone or wood-based water fountains and refuse bins at entry points and trailheads. In the Rural Setting, users will experience vast views of rural/agricultural areas, then be transported into smaller natural areas.

Urban Setting

The **Urban Setting** is the built end of the setting spectrum with the highest density of humans and infrastructure. Design includes constructed stormwater management approaches, formal native plantings, and refined amenities such as standard park benches, wayfinding kiosks, and signage. The Urban Setting also includes paved trail surfaces (asphalt and concrete), public art, and other amenities such as trailside exercise equipment and water fountains. The user will know they are in a built environment; urban development and utilities such as stormwater management approaches will be visible from the trail. Vegetation in the urban Greenway will have a more manicured look, but this setting could incorporate pockets of native ground cover, shrubs, and trees where appropriate.

PART 3 – DESIGN GUIDELINES

To achieve the character defined by the setting and the community vision, Design Guidelines help focus potential development of the Greenway and recreational amenities. The Greenway addresses two distinct categories: the Greenway and the environmental functions and recreational amenities it contains. These two categories are interdependent. We cannot create a recreational trail without thinking about the Greenway and vice versa. Creating the Greenway requires us to look at the complete picture to thoughtfully and efficiently utilize community resources. Trail development should be informed by the Greenway and its environmental attributes. This may require more than just trail work. In some areas, the scope of development may go beyond the recreational amenities such as partial restoration of corridors, and stormwater management. The long-term management of the Greenway goes beyond just providing and maintaining the recreational amenities. It could include management of the Greenway and its environmental resources. The following section discusses the Greenway and its environmental functions at a high level. Recreational amenities are addressed in more refined detail. The Design Guidelines are organized by highlighting the Greenway element design first, followed by recreational elements (trail, trailheads, boat facilities, etc.).

Greenway Element Design Guidelines

Greenways are complex in nature. To simplify understanding of the Greenway, it is divided into five elements:

- Stream corridor (streams, adjacent wetlands, floodplains)
- Transitional spaces and edges (includes wetlands, floodplain, vegetated buffer, and trail buffers)
- Uplands (upland habitat, trail buffers, and forested areas)
- Stormwater management approaches
- Human connections (recreational/interpretive facilities and amenities such as trails, trailheads, interpretive signage/amenities, etc.)

Each of the basic elements has specific functions; when the elements are combined, they create a complete and functional system. To achieve this, the planner should look beyond the immediate area where the Greenway is located. For example, look to the headwaters, evaluate the existing landscape surrounding the stream corridors, and determine how it could look in the future.

This analysis should determine how the Greenway will be restored and enhanced. This approach will foster environmental protection, which is another purpose of the Greenway. Through this approach, the Greenway will provide recreation, an alternative mode of transportation, and the creation of a framework for a functional ecosystem. Greenway element Design Guidelines provide high-level guidance and vision on how the Greenway will look and function, based on the three setting types. In each setting, the design of the basic elements of the Greenway can vary. See the table below, Greenway Elements and Settings.

The following portion of the Design Guidelines provides general design guidance for the Greenway.

Natural Setting

The Natural Setting is the most simple and straightforward design in terms of aesthetics and function. For trail segments designated Natural, the focus should be on natural stormwater management, stream stabilization and restoration, enhancing transitional spaces, and bolstering edges to protect the natural landscape. The segments categorized as Natural within the Greenway are primarily riparian areas, transitional areas, upland forest, and the Jackson Bottom Wetlands Preserve.

Greenway Elements and Settings

Element	Natural Setting	Rural Setting	Urban Setting
Stream Corridor	*Restoration or enhancement of existing systems*	*Restoration or enhancement of existing systems*	*Restoration, enhancement, or creation of new stream systems*
Transitional Spaces and Edges	*Forested or large wooded areas; larger spaces such as meadows or prairies for natural filtration and habitat corridors*	*Moderate application along stream corridor and wetlands, and between stormwater basins and constructed wetlands*	*Limited opportunity*
Uplands	*Extensive large forested or wooded areas*	*Moderate to limited opportunity depending on space availability*	*Limited opportunity depending on space availability*
Stormwater Management Approaches	*Natural wetlands, constructed wetlands. Refer to Clean Water Services Design and Construction Standards* and LIDA* (Low Impact Development Approaches)*	*Natural wetlands, constructed wetlands, stormwater facilities. Refer to Clean Water Services Design and Construction Standards* and LIDA**	*Stormwater facilities, constructed wetlands as space allows. Refer to Clean Water Services Design and Construction Standards* and LIDA**
Human Connections	*Refer to Trail Design Guidelines*	*Refer to Trail Design Guidelines*	*Refer to Trail Design Guidelines*

* LIDA and CWS Design and Construction Standards are not required in all areas but can be utilized as a reference for development.

Efforts to restore the Jackson Bottom Wetlands Preserve and neighboring wetland areas are ongoing. The Greenway could add to these efforts by identifying opportunities for stabilizing streams, protecting headwater wetlands, and managing forests for the long-term.

Of the three setting types, the Natural Setting category has the largest contiguous space to protect, stabilize, and re-establish highly functioning ecosystems. This setting provides the opportunity to restore riparian corridor habitats and stream functions in anticipation of future upstream build-out. Important habitats that occur along the Greenway - such as wetlands, riparian corridors, oak savannas and woodlands, conifer forests, and camas meadows - can be restored and protected for wildlife, natural system functions, and aesthetics. In forested areas, developing forestry management plans is important for the long-term sustainable use of these areas.

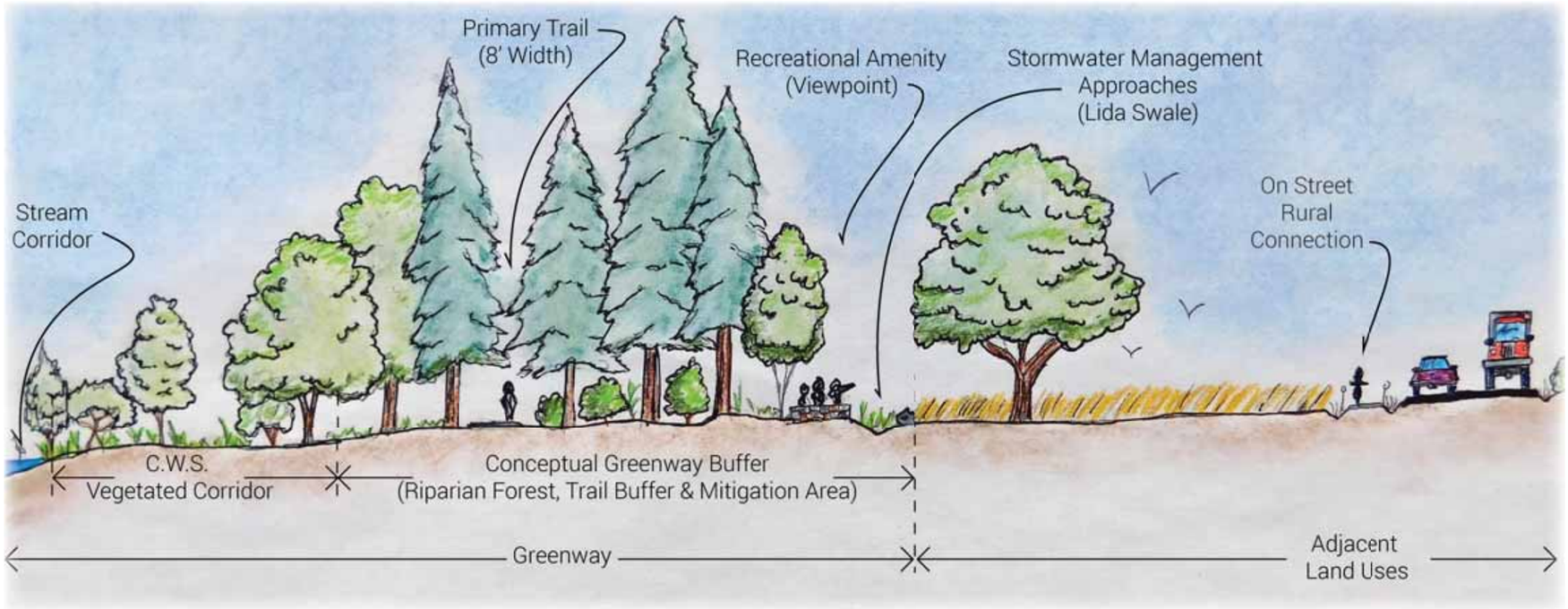
The figure on the following page illustrates a sample Greenway cross-section in a Natural Setting. Notice the forested edge transition and space allotted for transitional areas and natural stormwater management approaches. Additionally, note the types of facilities present compared to the Rural and Urban Setting cross-sections. The following guidelines should be integrated into restoration and enhancement of the Greenway within the Natural Setting:

1. Engage ecological specialists to design restoration activities. Consider working with Clean Water Services to identify restoration projects within the riparian corridors.
2. Use existing natural wetland systems or enhance those systems with nature-based design. The design should reflect long-term capacity needs and be developed with a holistic approach, taking into account functions and future forecast of development and activities upstream and regionally. In this setting, stormwater management approaches (for example, dry detention basins) could be out of place depending on the site and nearby features.
3. In forested areas, management strategies should focus on restoring vital native landscapes such as oak savanna or woodland, conifer forest, and riparian forest where appropriate. Create connected forests and stream corridors with varied topography and features that mimic a larger natural system.
4. Identify potential mitigation opportunities for enhancing ecosystems along the Greenway.

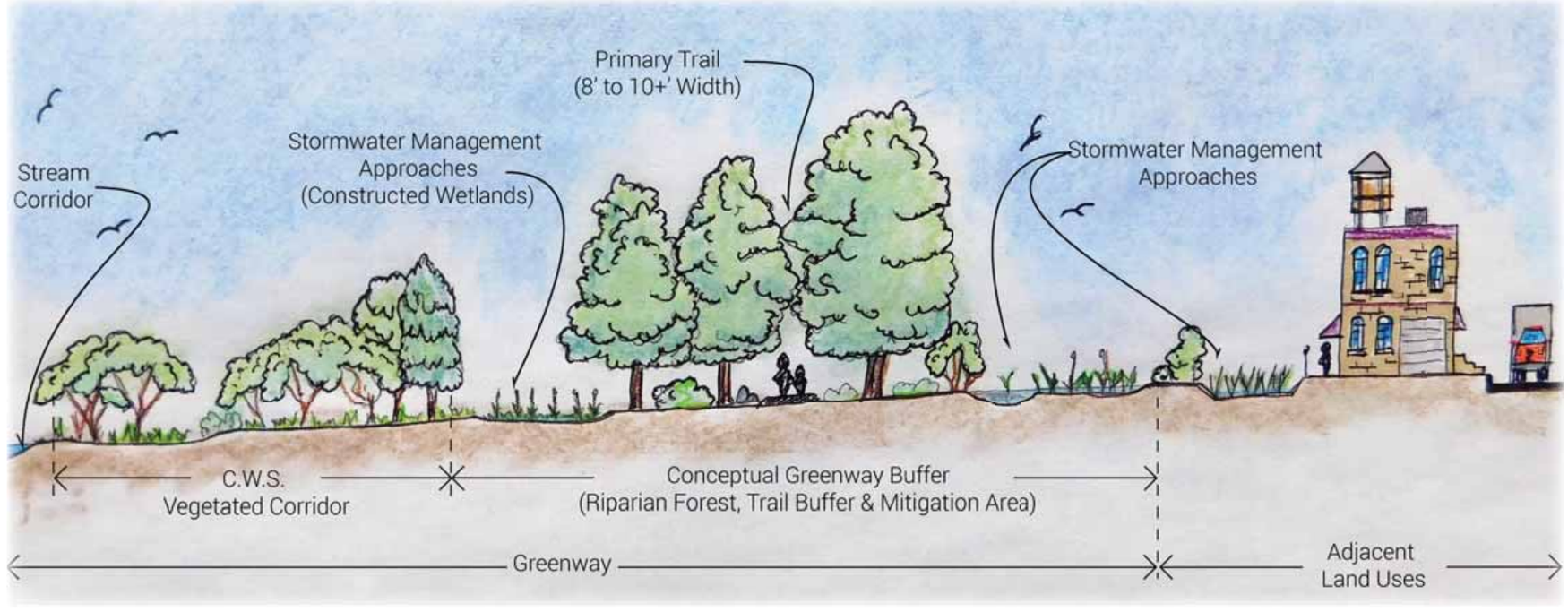
Rural Setting

The Rural Setting is often the transition from the Natural to Urban Settings. This area blends smaller natural features with developed space, particularly agricultural lands, future industrial development, and housing developments. This area is the best opportunity for restoration and improvements to the riparian corridor, restoring wetlands filled from agricultural development (past and present), and restoring upland habitat. See the sample Rural Setting Greenway cross-section. Notice the placement of the Greenway elements and edge treatments.

The Rural Setting provides opportunities to enhance riparian corridors and restore wetlands. Designed and used appropriately, these can improve water quality. The focus should be on restoring former natural wetlands that historically occurred along the rivers but were filled for agriculture. When working in rural areas, consider partnering with local, state, and federal conservation programs to promote the restoration of riparian corridors and wetlands. In many of these areas, woody vegetation along the stream or river has been cleared. By restoring the riparian corridor and adjacent upland habitats, the trail can be located far enough from the stream to reduce flooding closures, and a natural buffer can be established to protect valuable habitat from future development. The result will be an enhanced experience in a conserved and protected natural area.



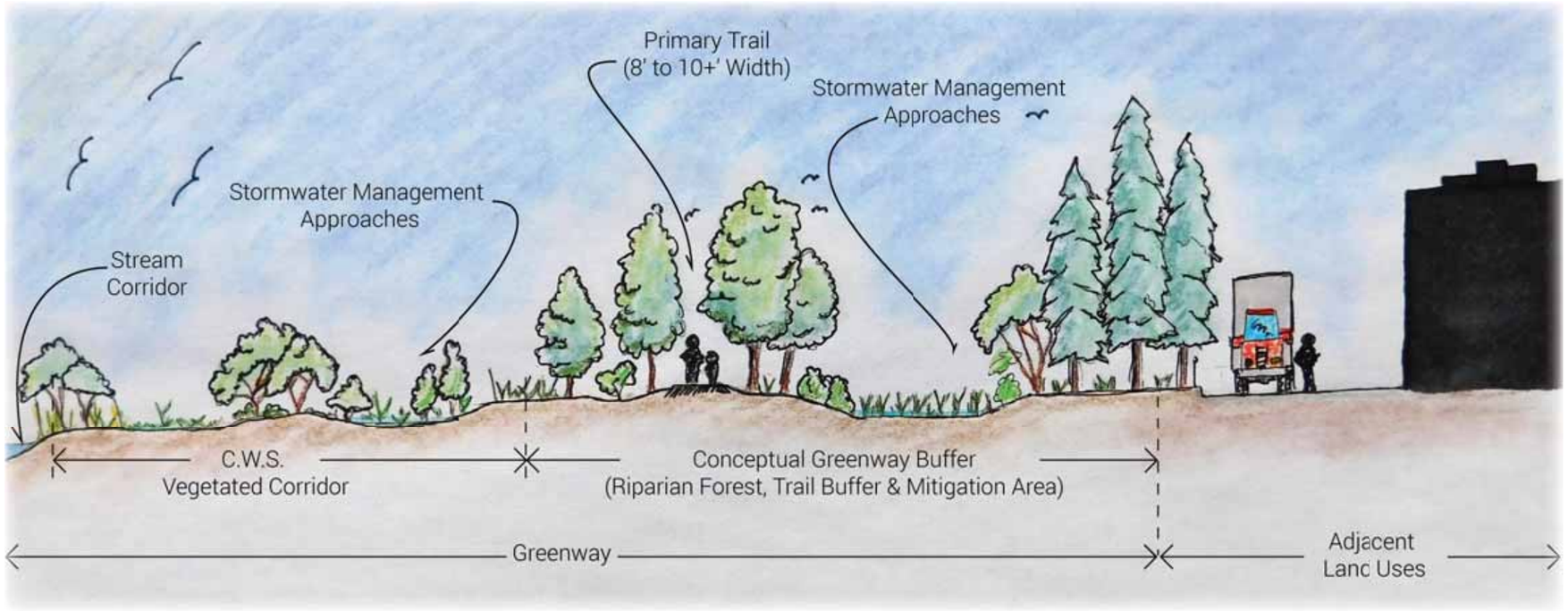
Natural Setting cross-section



Rural Setting cross-section

The following guidelines should be integrated into restoration and enhancement of the Greenway within the Rural Setting:

1. The focus is on restoring systems that historically occurred along the rivers and streams. An example of facility placement is illustrated in the cross-section figure. Generally aim for a transition from the outer edge of the Greenway consisting of constructed/engineered facilities, such as retention basins, to more naturally inspired facilities closer to the stream and existing wetlands. If dry detention basins and retention ponds are necessary, they should be as far from the stream as possible with adequate transition space. Careful attention to transition from constructed to natural systems will create a successful, sustainable system.
2. Various stormwater management approaches are appropriate on the periphery of existing or enhanced natural systems. These facilities feed into wetlands and streams and, with enough space, will allow water to slow, cool, and clean before entering streams.
3. Attention to designing transitional areas will provide overall Greenway functions such as wildlife corridors and screening from nearby infrastructure as well as enhance stormwater functions. This design cue will also add significantly to the trail user experience. The Rural Setting is a good place for trails, provided the introduction of trails does not fragment or otherwise negatively affect sensitive habitat areas.
4. Proximity to streams and existing natural areas requires careful treatment of constructed facilities and restoration. Re-establishment of woody vegetation in riparian corridors will improve stream health and habitat functions.



Urban Setting cross-section

Urban Setting

The Urban Setting is characterized by a mixture of stormwater management approaches and pockets of natural areas in a landscape that is clearly designed and has an organized structure. Because of space restrictions, nearby urban development, and stormwater requirements, these facilities tend to be restricted in design options. This setting is where the most investment could occur to design appropriate stormwater management approaches, integrating a meaningful trail experience, stream channel restoration, and re-creating transitional spaces. Design in this area will benefit from significant use of scientific and design professionals. See the cross-section figure for a sample Urban Setting Greenway. Note the difference in placement of constructed facilities compared to the Natural and Rural Settings.

Engaging scientific professionals, such as hydrologists, ecologists, and biologists, is one of the first steps in the development process outlined in Part 4 – Implementation Workbook.

The following guidelines should be incorporated into the development of the Greenway within the Urban Setting:

1. Avoid the most sensitive habitats, remove invasive plant species, and focus on re-establishing native vegetation in the area. Because many of these areas have been degraded from past development, existing pockets of natural resources should be protected and enhanced.
2. Restoring streams and re-establishing a natural corridor will benefit downstream systems. Ecologically sound design of stream restoration projects will reduce erosion problems and altered flow regimes.
3. Avoid definitive edges between development and the Greenway. Integrate developments with the Greenway to create a less-defined edge.
4. Placement of trail facilities will need to consider space limitations and provide adequate buffers for adjacent habitat areas.

Rural and Greenway edge typically found in agricultural areas

Trail Design Guidelines

The Greenway follows the streams and rivers along the periphery of Hillsboro and into unincorporated areas of Washington County. As envisioned by the community, the Greenway is more than a linear trail; it will be a network of open spaces, creating an intricate system that provides connectivity and recreational opportunities.

To achieve this, various options are provided for both primary and secondary (side) trails. See the **Greenway Study Areas & Conceptual Trail Alignments** section of the Plan (starting on page 30). The intent is to choose one alignment for the primary regional trail connection and use other optional alignments as side trails. Together, these options create a series of loops throughout the Greenway.

Ask yourself when designing the trail, "Will the user feel like they are miles away from civilization?"

Aspects of the trail, such as trail width and surface type, will vary depending on the setting and user experience. Primary alignments, some amenities, and unique features will follow Americans with Disabilities Act (ADA) accessibility standards to the extent possible. Secondary trails may not be fully accessible. Although portions of the trail will be accessible to all ages and abilities, achieving full ADA compliance is challenging because of the variability in trail surfacing and other factors. The following section provides guidelines for trail construction in each setting. See the summary table on page 23 for a list of trail elements and the corresponding settings.

Refer to the **Setting Types and Character** section on page 6 for an overview of the intended user experience for each setting.

Natural Setting

In the Natural Setting, the trail dimensions are narrower. Trail surfaces and furnishings are rustic and blend into the surrounding environment. Signage is minimal and subtle, and lighting only occurs where absolutely necessary for safety. This creates a trail where users feel immersed in nature.

Guidelines:

1. Primary trail widths are 8' with a 2' shoulder on each side of the trail, constructed of gravel or a compacted gravel mix such as Trail Surface Aggregate (see Appendix F for information on Trail Surface Aggregate). The narrow width provides a more intimate experience while still allowing access for multiple users, maintenance, and emergency vehicles along most of the trail. Frequent vegetation management is needed to maintain minimum width standards for service vehicles. The additional shoulder width provides the ability to expand the trail for safety or significant ongoing congestion. The 8' width is also important to minimize the impact of the trail on more sensitive landscapes.

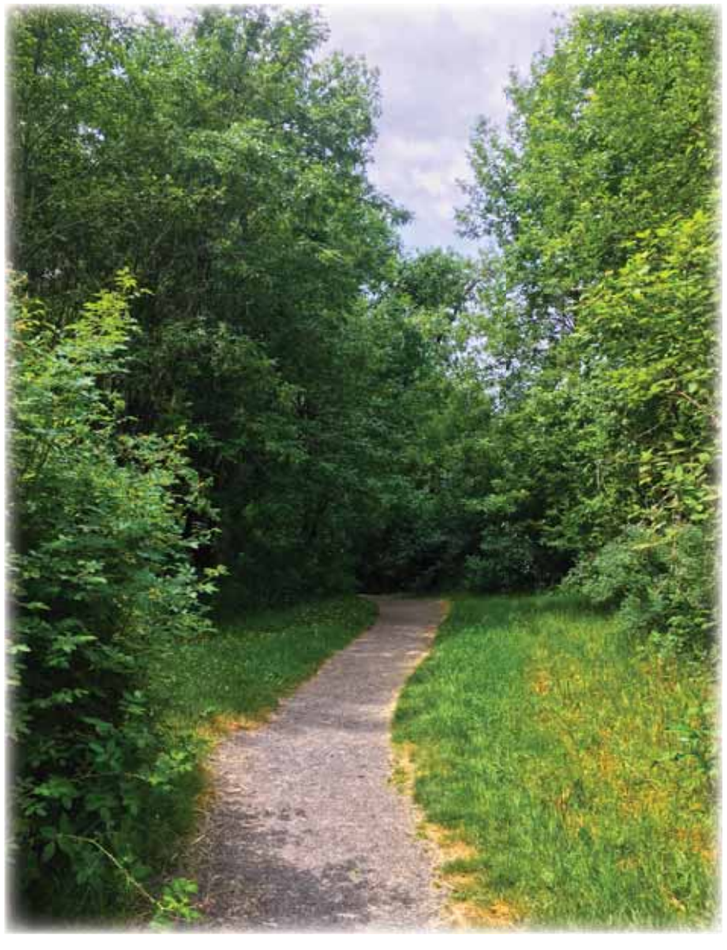
Trail alignment should meander to create anticipation and wonder for the trail user. Avoid straight lines of travel. Think of the alignment as an adventure for the user, making the journey interesting with unanticipated surprises to create an exciting, worthwhile experience.

2. Primary trails should be outside of sensitive areas and habitat. In some cases, a gravel surface may affect streams, and working with qualified designers will be necessary to modify surface or location of the trail. Secondary (side) trails could traverse more sensitive areas depending on their width and surface type. If introduction of secondary trails into more sensitive areas would harm natural systems or greatly disturb habitat, then alternative routes should be found.

In some instances, shoulders along the trail may not be practical due to environmental factors. View the shoulder of the primary trail as a flexible buffer between users and flora.

3. Secondary trails vary in width from 18" to 3' and are constructed of gravel ¾ minus base with an optional ¼ minus surface, typically not compacted mechanically. Shoulders may be necessary depending on surrounding vegetation, for example minimal shoulder where prairie grasses are present or forested areas with open understory. In areas where flooding may occur, a wood chip surface is acceptable.
4. Signage and interpretive elements are kept to a minimum, smaller scale, and are subtly placed. Mileage markers will need to be apparent for public safety and will be of a similar design throughout the Greenway.
5. Lighting is not appropriate in this setting unless required for public safety or at trailheads.
6. Furnishings include seating boulders or logs and rustic benches. Provide refuse bins at strategic points to minimize the visual impact on the trail user but that are convenient and easy to maintain/ access by maintenance staff.
7. Kiosks are not appropriate in the Natural Setting, with the exception of at a trailhead. A small rustic kiosk would be appropriate at a trailhead accessing a Natural Setting trail segment.
8. Plantings and restoration efforts along the trail should be native and fit into the nearby landscape. The plantings should feel natural and not "designed."

For additional guidance, refer to the 2015 Hillsboro Trails Master Plan, Trail Design Guidelines pages 6-15 through 6-31.



Rural Setting

The Rural Setting is the transition from a Natural experience with rustic surface and amenities to the more refined Urban Setting with concrete pathways and park-like amenities. The landscape tends to be less natural with smaller natural areas along the trail alignment. The primary trail maintains a narrow dimension to continue the more personal experience. Trail surfaces become more developed but still have a rustic feel. In the Rural Setting, there is a continued use of Trail Surface Aggregate and the introduction of asphalt as the main surfaces. Signage is more apparent along the trail. Larger interpretive signage describing important aspects of the Greenway or nearby features can occur more frequently. Structures to protect interpretive elements and other amenities should be provided in this setting. Mileage markers are consistent with the Natural and Urban Settings. Furnishings are still rustic, but a manufactured appearance may be introduced. Lighting can occur but only where it would increase public safety. The users will experience many of the same landscapes as within the Natural Setting but also vast rural vistas and small moments of urban development (such as small neighborhoods and industrial development within North Hillsboro). Protecting and preserving the edges of the Greenway from encroachment by development, a 50' setback from the vegetated corridor has been established through the North Hillsboro Industrial Area Plan to provide additional space for aesthetics and functionality.

Building simple gravel side trails with volunteers is a great way to engage community groups. A simple two-year development process can be employed using volunteers in three steps.

Start the first year by flagging the trail and working with agencies such as the City to ensure simple construction can occur.

After finalizing trail alignment and receiving authorization, schedule work parties to have volunteers lay ¾ minus gravel along the route about 4" to 6" deep (depending on the subsurface, landscape fabric may be an alternative under base ¾ minus gravel). Wait a season for natural compaction, and touch up with more ¾ minus gravel.

The following year, volunteer groups can cover compacted trail with 2" to 3" of ¼ minus gravel. The trail construction will be complete and the volunteers have built a piece of Hillsboro!

Guidelines:

1. Primary trail widths are 8' (potential width up to 10') with a 2' shoulder on each side of the trail, constructed of a compacted gravel mix such as asphalt or Trail Surface Aggregate (see Appendix F for information on Trail Surface Aggregate). With the addition of hard surfaces, the narrower width is important to provide a connection with nature by minimizing the visual impact of wider paved surfaces. All primary trails should be constructed to accessibility standards. In some rare instances, existing topography or hydrologic conditions may not allow accessibility on a conceptual alignment, creating a need for identification of an alternative route. The trail width and alignment should allow reasonable access for maintenance and emergency vehicles. The additional shoulder width provides the ability to expand the trail. Expansion should only occur for safety or significant ongoing congestion. The 8' width could be used to minimize the impact of the trail on more sensitive landscapes.
2. Primary trail location should be outside of sensitive areas and habitat. In some cases, a gravel surface may affect streams, and working with qualified designers will be necessary to modify surface type or location of trail. With the introduction of hard surfaces, stormwater treatment may be necessary. Refer to the Clean Water Services' Low Impact Development Approaches Handbook for ideas.
3. Some trails traverse the edge of agricultural development, providing an opportunity to connect trail users to Oregon's rural landscape and a major sector that has a long heritage in Oregon. Instead of separating users and agricultural operations, consider the trail as an opportunity to educate trail users on the agricultural sector. When starting the implementation process for trails along agricultural lands, work closely with farmers and the County to develop the trail and buffering treatments. Further research will be necessary on agricultural trails, including investigating buffer treatments (the Netherlands, Austria, Switzerland, and Germany have many successful examples), economic opportunities, and integrating trail design to co-exist with agricultural use in positive ways. Working with farmers and land owners voluntarily to co-create a system to achieve this will be key.

For wet areas along secondary trails, consider using simple plank boardwalks. Plank boardwalks are not accessible for all users and should only be used where the trail already has accessibility restrictions.

In other countries, particularly in Europe, and some parts of the United States, the benefits of agricultural trails have been embraced by both farmers and trail users. In some places, farm stands are located along trails. There is potential for the Greenway trail to become a component of the tourism industry, much like trails in Europe. Trails can provide an economic value as well as ecological and recreational values.

4. Secondary trails (spur trails or loop trails utilizing alignment options) vary in width from 18" to 6' and may be constructed of wood chips, or gravel ¾ minus base with an optional ¼ minus surface or crusher fines, typically not compacted mechanically. Secondary trails may not provide universal accessibility. Shoulders may be necessary depending on surrounding vegetation, for example minimal shoulder in areas where prairie grasses are present or forested areas with open understory. In areas where flooding may occur, a wood chip surface is acceptable.
5. Secondary trails may traverse more sensitive areas depending on width and surface type. However, if the introduction of secondary trails into more sensitive areas would harm natural systems or greatly disturb habitat, then alternative routes should be identified.
6. Signage and interpretive elements are moderate in scale and are placed in more apparent locations. Regional trail signs are more frequent.
7. Rustic kiosk structures are appropriate for major interpretive points and at trailheads.
8. Mileage markers will need to be apparent for public safety and be of a similar design throughout the Greenway.
9. Lighting is not appropriate in the Rural Setting unless required for public safety or at trailheads.
10. Furnishings have a manufactured feel, and include rustic benches as well as basalt or gabion seating walls. Seating logs can be used along the trail. Provide refuse bins at strategic points that minimize the visual impact on the trail user but are convenient and easy to maintain/access by City Parks & Recreation staff.
11. Plantings and restoration efforts along the trail should be native and compatible with the nearby landscape. The plantings should feel natural and not "designed."

For additional guidance, refer to the 2015 Hillsboro Trails Master Plan, Trail Design Guidelines pages 6-15 through 6-31.

Urban Setting

The Urban Setting is most often the opposite end of the experience from the Natural Setting. An example is the Rock Creek Trail. The Urban Setting has more refined surfaces and amenities. The views may include nearby urban development, but vary from natural in character to a more landscaped and organized form. Constructed stormwater management approaches are apparent but have thoughtful native plantings to soften the geometric design. Users of all abilities can access the primary trail and some secondary trails. Signage and lighting are offered for user convenience and interest. Inviting informational kiosks with local history and points of interest are adjacent to the trail. Nearby development is connected to the trail and industrial developments as well as neighborhoods are visible adjacent to the trail.

Guidelines:

1. Primary trail widths are 10’ with a 2’ shoulder on each side of the trail. However, depending on emergency and maintenance vehicular access, the trail requirement could be between 10’ and 12’ with 1’ to 2’ shoulders. The additional width is necessary for the added weight of vehicles and trail longevity. All trails are hard surface concrete or asphalt. All primary trails will be constructed to accessibility standards. Engineering of the trail will be necessary to ensure accessibility and vehicular access as well as stormwater management. The trail width and alignment should allow access for maintenance and emergency vehicles. Since these areas of the Greenway are potentially impacted and degraded, trail alignment will need to be integrated into Greenway design (e.g., stormwater, habitat corridors, sensitive areas).

Clean Water Services allows up to a 3’-wide trail surface without mitigation. Any trail considered impervious over 3’ could require mitigation and/or stormwater management. Work with Clean Water Services early in trail design to assess requirements and proactively identify a strategy for implementation.

2. Secondary (side) trails vary in width from 3’ to 6’ and are constructed of gravel ¾ minus base with an optional ¼ minus surface (typically not compacted) and mechanically or compacted gravel, such as Trail Surface Aggregate. Shoulders may be necessary depending on surrounding vegetation, for example minimal shoulder in areas where prairie grasses are present or forested areas with open understory. Secondary trails should be accessible to as many users as possible.
3. Primary trail location should be outside of sensitive areas and habitat or integrated into Greenway design. With the use of hard surfaces, stormwater treatment may be necessary. Refer to the Clean Water Services Low Impact Development Approaches Handbook for ideas.
4. Secondary trails could traverse more sensitive areas depending on their width and surface type. If the introduction of secondary trails into more sensitive areas would harm natural systems or greatly disturb habitat, then alternative routes should be considered.

The Urban Setting provides access to all users. Because of the developed nature of the area, a focus should be accessibility for all users.

5. Signage, interpretive elements, and public art are integral parts of the Urban Setting. Careful placement and design to complement the adjacent urban development, as well as the Greenway and trail elements, should be a priority, but should not detract from the overall experience. Regional trail signs are more frequent in the Urban Setting. The use of kiosks for major interpretive points is appropriate. Mileage markers need to be present for public safety and should be of a similar design throughout the Greenway.
6. More frequent trail lighting occurs in areas where use will extend into dusk and before dawn, and is designed to enhance public safety.
7. Furnishings, including standard park benches, accessible benches, basalt masonry, and gabion or concrete seating walls, are refined and have a manufactured feel and conform to Hillsboro Parks & Recreation Department standards. Refuse bins are located at strategic points more frequently than in other settings. The amenities blend with the design of the trail, Greenway, and nearby urban development. Maintenance access is easy due to the higher use within the Urban Setting.
8. Drinking fountains are provided near kiosks and at strategic points along the trail.
9. Plantings and restoration efforts along the trail should be native and compatible with the nearby landscape. The plantings will have a more “designed” feel but will maintain the natural aspect of the landscape.

For additional guidance, refer to the 2015 Hillsboro Trails Master Plan, Trail Design Guidelines, pages 6-15 through 6-1.

Trailhead Design Guidelines

Two trailhead design options have been developed to provide access to the Greenway: Destination and Local Trailheads. Destination Trailheads provide more amenities, more parking capacity, and are the access points for people who may be driving farther distances. In some cases, Destination Trailheads could have a regional appeal and have amenities typically found in a park. Local Trailheads are intended for the immediate neighborhood or for users driving a short distance to access the Greenway. Local Trailheads have limited amenities. The setting of the nearby trail will influence the design of the trailhead. For example, trailheads providing access to trails in the Natural Setting will have more rustic features compared to a trailhead near a trail in an Urban Setting. Trailhead classification is provided in the **Greenway Study Areas and Conceptual Trail Alignments** section starting on page 30.

Examples of rustic log benches at Orenco Woods Nature Park, made from on-site timber

Destination Trailheads

Destination Trailheads are located along the Greenway based on a variety of factors such as:

- Nearby transportation networks
- Location of unique features on the Greenway
- Distance from other Destination Trailheads
- Existing and future development opportunities
- Intended capacity of visitors

Destination Trailheads have a variety of amenities for a range of users traveling locally or regionally. Destination Trailheads feature the following elements:

1. **Parking** – Automotive: Prior to trailhead design, an assessment should be conducted of expected visitors, nearby attractions, nearby development, and distance from other trailheads with parking and infrastructure. This will inform the number of spaces needed for the trailhead. Typically, a parking lot will have between 10 and 40 parking spaces (including adequate handicapped accessible spaces and dedicated maintenance parking). Surface material will depend on budget and desired level of maintenance and can vary from gravel to asphalt. Alternative Modes: When designing trailheads, consider facilities for alternative modes of transportation such as bicycle parking, and work with TriMet to identify transit stops. Bicycle parking areas could also include facilities for bike repairs and servicing.
2. **Restroom Facilities** – Trailheads do not require large restroom facilities. One- or two-stall prefabricated restroom structures or Porta-potties should be adequate at Destination Trailheads.
3. **Shelters** – Since Destination Trailheads support local and regional visitors and are potentially near unique features of the Greenway, additional facilities for picnicking, resting, or congregating should be provided if the site allows. Shelters should have a consistent theme throughout the Greenway and be sized to be informal and not for organized events or occasions. Such shelters should not be for rent and should be constructed in a rustic fashion to complement the design of the trail.
4. **Kiosks** – Like shelters, kiosks are rustic in nature. Kiosks provide protected space for interpretive signage, wayfinding, and other information.
5. **Materials** – Consider using similar materials in design and construction of Destination Trailheads.
6. **Refuse Containers** – Use standard park refuse containers with a recycle bin attachment at trailheads. Simple or rustic containers that blend into the environment should be used. Containers should be durable, covered to keep out rain, and vandal-resistant.
7. **Dog Waste Stations** – Provide standard dog waste stations per Hillsboro Parks Maintenance.

Large shelter; smaller simplified shelters are encouraged

Kiosk at Noble Woods Park

Destination Trailheads could also include:

- Drinking fountains/stations
- Wayfinding signage based on the Intertwine Regional Signage Guidelines Second Edition (with adjustments outlined in the signage section)
- Lighting – according to standard lighting standards for Hillsboro Parks & Recreation
- Benches and picnic tables
- Optional fitness/stretching stations

The Intertwine Alliance Signs & Settings

Sign	Natural	Rural	Urban
	✓		
		✓	✓
			✓
	✓	✓	✓

The Intertwine Alliance signage that will be modified slightly for the Greenway

Cherry Lane Trailhead on the Rock Creek Regional Trail. An example of a small pervious gravel parking lot with concrete drive.

Local Trailheads

Local Trailheads provide access to neighborhoods and areas within a short walking or driving distance to the Greenway, have limited amenities, and offer more frequent access to the Greenway in comparison to the Destination Trailheads. Local Trailheads contain the following elements:

1. **Parking** – Limited parking is provided, typically on the street or a few spaces at the trailhead, depending on the distance of the trailhead from development or other trailheads.
2. **Bollards** – Removable bollards control vehicular access at trailheads and at maintenance access points along the trail. Bollards should be simple and rustic in nature. Use existing park standards where appropriate and the style is not contrary to the setting and recreational amenity design (standard park bollards are most compatible with the Urban Setting).
3. **Kiosks** – Larger Local Trailheads with parking may include smaller kiosks that are constructed of rustic materials.
4. **Signage** – Signage at Local Trailheads will match the setting of the nearby trail. Refer to signage in the **Setting section of the Design Guidelines** for appropriate sizes and types. Also refer to The Intertwine Regional Trails Signage Guidelines Second Edition in Appendix G.
5. **Refuse Containers** – Use standard park refuse containers with a recycle bin attachment at trailheads, and simple or rustic containers that blend into the environment along the trails. Containers should be durable and vandal-resistant.
6. **Dog Waste Stations** – Provide standard dog waste stations per Hillsboro Parks Maintenance.

Local Trailheads could also include:

- Water fountains/stations
- Wayfinding signage based on The Intertwine Regional Signage Guidelines Second Edition (with adjustments outlined in the signage section)
- Lighting – according to standard lighting standards for Hillsboro Parks & Recreation
- Benches

Single-stall prefabricated restroom

Double-stall prefabricated restroom

Porta-potty enclosure

Universal Guidelines for all Settings

In considering the Greenway from a user's standpoint, the creation of destinations or landmarks that encourage exploration was on the forefront. Recreation amenities are located strategically to take advantage of unique locations. Amenity types vary in complexity and with the setting they are located in. This variation encourages and coaxes users to explore places along the Greenway that may not be within their comfort zone. The design of amenity types should reflect how different user groups typically recreate, and encourage curiosity to explore and gently challenge preconceived comfort levels.

To accomplish this, the setting classification creates different environments for users that gently transition from one to another, encouraging exploration. Amenities should have the same levels of engagement with the environment and follow the intent of the setting classification. Following are guidelines for the development of trail amenities.

Overlooks and Viewpoints

Overlooks and viewpoints should highlight points of interest or unique views. Viewpoints can also provide a resting place along the trail, be simple or complex in design, and visually consistent with the setting in which they are located.

Picnic Areas

Picnic areas are resting points and places for users to spend an extended period of time. They are situated in special areas along the trail. Picnic areas can range in complexity from an open spot along the trail to a paved surface with amenities such as picnic benches, refuse containers, and interpretive elements.

Lookout Towers or Similar Points of Interest

Lookout towers or viewing platforms positioned at unique points along the Greenway become destinations for users to view the Greenway from another perspective. Lookout towers should replicate historic Forest Service fire watchtowers used in the 20th century.

Road Crossings

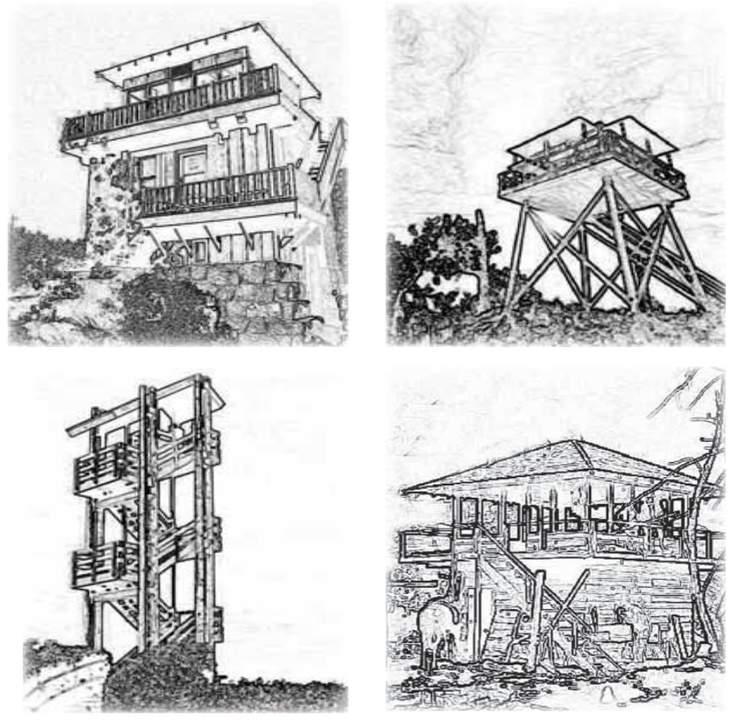
The Greenway trail alignment crosses numerous road types, varying from major thoroughfare to neighborhood streets. In many cases, current crossings are utilized in the alignment design. There will be instances in which a new crossing should be implemented. The Greenway trail has several major road barriers (Brookwood Parkway, Jackson School Road, River Road, and along Highway 219), and crossings of major roadways will be more complex, varying from bridges and elevated boardwalks to underpasses and lighted crosswalks. Information about crossings along the trail is provided in the Implementation Workbook. For additional guidance, refer to the 2015 Hillsboro Trails Master Plan, Trail Design Guidelines, pages 6-19.

Signage

The Greenway trail has received authorization from The Intertwine to use and slightly modify Intertwine signage (see page 13). The Intertwine Regional Trails Signage Guidelines Second Edition is provided in Appendix G.

Mileage Markers

Because the trail will not be developed in a linear fashion, mileage markers will change both in distance and location each time a segment is developed. Mileage marker posts that may change in the future should be set using post hole and compacted fill around a 4” x 4” treated post. Mileage markers at the beginning of the trail system that will not be modified can be installed with a concrete footing. Mileage starts at “Mile 0” at the beginning of the trail at Cornelius Pass Road near the Gordon Faber Recreation Complex. The final mileage is at the end of the trail along Butternut Creek Greenway and SW 209th Avenue. A system of mileage markers should be developed in cooperation with Police, Fire, and Public Works to provide consistency for users and public safety.



Examples of lookout towers

Wildlife Passage

Greenway development in all settings (Natural, Rural, and Urban) should consider opportunities for facilitating wildlife movement among habitats such as streams, wetlands, forests, and hedgerows. Consider providing wildlife passage to reduce animal–vehicle collisions and to promote conservation. Over 200 species of birds, 50 species of mammals, and several amphibian and reptile species live in Hillsboro and the metropolitan area. There are many different types and sizes of wildlife crossings and several factors to consider, such as whether the crossing is intended for a single species (e.g., pond turtle) or is intended for several species. An example of providing wildlife passage is installing a dry shelf in a culvert for small to medium-sized mammals to use during periods of high flow. Existing culverts could be retrofitted, or new culverts or stream crossings could incorporate passage for terrestrial species in addition to fish. Consider wildlife passage when installing fences and boardwalks. Leave a minimum of 6” of space at the bottom of these structures to provide passage for small mammals, amphibians, and reptiles. Work with local fish and wildlife agents and professional biologists to determine if wildlife passage would be beneficial and appropriate at a road or trail crossing. Refer to Metro’s Wildlife Crossings – Providing Safe Passage for Urban Wildlife for more information on wildlife passage guidelines.

A dry shelf installed in a culvert provides passage for small to medium-sized mammals during periods of high flow. (Image of Critter-Crossing TM Technology)

References

For additional information and specifications, refer to these resources:

- The Intertwine Regional Trails Signage Guidelines Second Edition, located in Appendix G.
- 2015 Hillsboro Trails Master Plan, Trail Design Guidelines pages 6-15 through 6-31.
- Metro, 2009. Wildlife Crossings – Providing Safe Passage for Urban Wildlife, Second edition. 600 N. East Grand Avenue, Portland, OR.
- Hellmund, P. & Somers Smith, D., 2006, *Designing Greenways: Sustainable Landscapes for Nature and People.* 1st ed. United States: Island Press.
- Little, C., 1990. *Greenways for America.* 1st ed. United States: The John Hopkins University Press.
- Jongman, R. & Pungetti, G., 2004. *Ecological Networks and Greenways, Concept, Design, Implementation*. 1st ed. United Kingdom: Cambridge University Press.

Summary of Trail Amenities by Setting

	Natural Setting		Rural Setting		Urban Setting	
	Primary Trail	**Secondary Trail**	**Primary Trail**	**Secondary Trail**	**Primary Trail**	**Secondary Trail**
Width	8’ + 2’ shoulder	18” to 3’	8’ to 10’ + 2’ shoulder	18” to 3’	10’ to 14’ + 2’ shoulder	3’ to 6’’
Surface Type	Gravel, crusher fines, TSA*	Wood chips, gravel**	TSA*, asphalt	Wood chips, gravel**, crusher fines	Asphalt, concrete	TSA*, asphalt, concrete
Accessibility	Varies	Varies	Yes	Varies	Yes	Yes
Trailhead Specifications by Setting						
Parking	Optional Small lot (10 - 20 spaces) Gravel or asphalt	No spaces	Standard Medium lot (20 - 40 spaces) Gravel or asphalt	1 - 4 gravel spaces or asphalt lot or on-street	Standard Large lot (40+ spaces) Gravel or asphalt	1 - 4 gravel spaces or asphalt lot or on-street
Restrooms	Optional Prefabricated 1 or 2 stalls	None	Standard Prefabricated 1 or 2 stalls	None	Standard Prefabricated 1 or 2 stalls	None
Shelter	Optional	-	Optional	-	Standard	-
Landscaping	Naturalized native	Naturalized native	Naturalized native	Naturalized native	Structured native	Structured native
Public Art	Limited and subtle	None	Subtle	None	Any in context of the area	Any in context of the area
Other Amenities	Water fountain, dog waste station	Dog waste station	Water fountain, dog waste station, fitness station	Dog waste station	Water fountain, dog waste station, fitness stations	Dog waste station
Signage Type by Setting						
Sign Type	Mileage markers Location maps Regional trail sign	Location maps at entry/trailhead	Mileage markers Location maps Regional trail sign Major directional	Location maps Regional trail sign	Mileage markers Location maps Regional trail sign Major directional Minor directional	Mileage markers Location maps Regional trail sign Major directional
Lighting by Setting						
Light Type	None	None	Bollard, ground	None	Pole, bollard, ground	Pole, bollard, ground
Location	Trailhead		Trailhead		Trailhead	
Furnishings along Trail						
Bench Materials	Natural log Boulder Rustic wood	Natural log Boulder Rustic wood	Natural log Basalt/masonry wall Gabion wall	Natural log Boulder Rustic wood Gabion wall	Basalt/masonry wall Gabion wall Standard park bench	Natural log Boulder Rustic wood Standard park bench
Bench Location	Occasional along trail or viewpoint	Occasional along trail	Trailhead, along trail, viewpoints	Occasional along trail	Trailhead, along trail, viewpoints, picnic areas	Occasionally along trail
Picnic Tables	None	None	Trailhead, viewpoints	Picnic areas	Viewpoints, along trail	Picnic areas
Refuse Containers	None	None	Trailhead, occasionally along trail, viewpoints, picnic areas	None	Trailhead, along trail, viewpoints, picnic areas	Picnic areas

* TSA, Trail Surface Aggregate; see ***https://www.dirtandgravel.psu.edu/sites/default/files/Center/Trails/TSA_tech_bulletin_2014.pdf.***

** Gravel, (3/4 to 1/4 minus)

PART 4 – IMPLEMENTATION WORKBOOK

Part 4 of this Plan provides implementers with a starting point and "trail map" to the development and permitting process, which must occur for each segment prior to construction. This section describes the types of analyses necessary based on a general understanding of the land through which the segment traverses, triggers to various types of permits, land use approvals, a general timeline associated with the overall process, and cost.

Process

Prior to project development, the intent is to have discussions and coordination with willing property owners, neighborhoods, and other agencies before finalizing the proposed routes and amenities. Once relationships are established and segment choices identified, confirmation of the project could proceed to decision-makers. When a segment has been agreed upon and approved, implementation of the Crescent Park Greenway will require several steps:

1. Secure funding
2. Design the segment
3. Obtain approvals and permits from regulatory agencies through which the trail traverses
4. Construct the trail
5. Maintain the trail and associated amenities

Steps 1 through 4 of implementation are illustrated on the timeline figure on the next page. Depending on the extent of earthwork as well as the presence of sensitive resources affected by the project, permitting may range from grading and erosion control permits to needing a whole suite of permits and approvals from local, state, and federal regulatory agencies. The process may seem daunting, but with planning and coordination, a Greenway segment can be designed, permitted, and constructed in approximately two years. In some instances, the timeline could extend to three years or longer if segments are associated with other infrastructure projects (e.g., stormwater, mitigation banking, co-location with other infrastructure).

The timeline also identifies the likely technical studies and review processes required in the City and County for developing a Greenway with the following elements:

- A trailhead and parking
- A picnic shelter or other structure
- A pedestrian bridge
- A boardwalk

Not all trail segments will include these elements, but they were selected to highlight the major steps required for project approval, from design through construction.

Design: The typical design process involves drafting a schematic plan for Greenway development; preparing 30% design documents; and then 60%, 90%, and final design. The design process begins with a site assessment that identifies opportunities and constraints. This assessment includes features such as plant communities; significant natural resources; presence and extent of floodplains, streams, wetlands, and vegetated corridors; steep slopes, landslides, or other hazards; site amenities such as views and unique features; and site challenges such as busy/noisy roads or consideration of neighboring properties. This information should be used to avoid identified regulated resources. Information collected will also enable a determination as to whether any property line adjustments, easements, or partitions are necessary. The easement width can change in response to construction needs and property restrictions. If such approvals are needed, they should be pursued prior to other approvals or in some instances concurrent with land use approvals.

The design documents are based on a detailed topographic survey that includes utilities to guide layout and alteration for the trail. Drawings include plan view as well as cross-section diagrams of trails, parking areas, and other amenities, as well as construction details. Some projects may include a trail profile and vertical curves for crests and dips along the trail alignment. The result of the design process is a set of plans stamped by licensed engineers and landscape architects that will serve as construction bid documents and construction drawings released for bidding by construction firms.

Land Use Approvals and Local Permitting: Based on a preliminary analysis of the trail corridor with the City and County Comprehensive Plan and zoning maps, the trail could potentially cross through the following zones (based on 2017 City and County plans):

Washington County Zoning

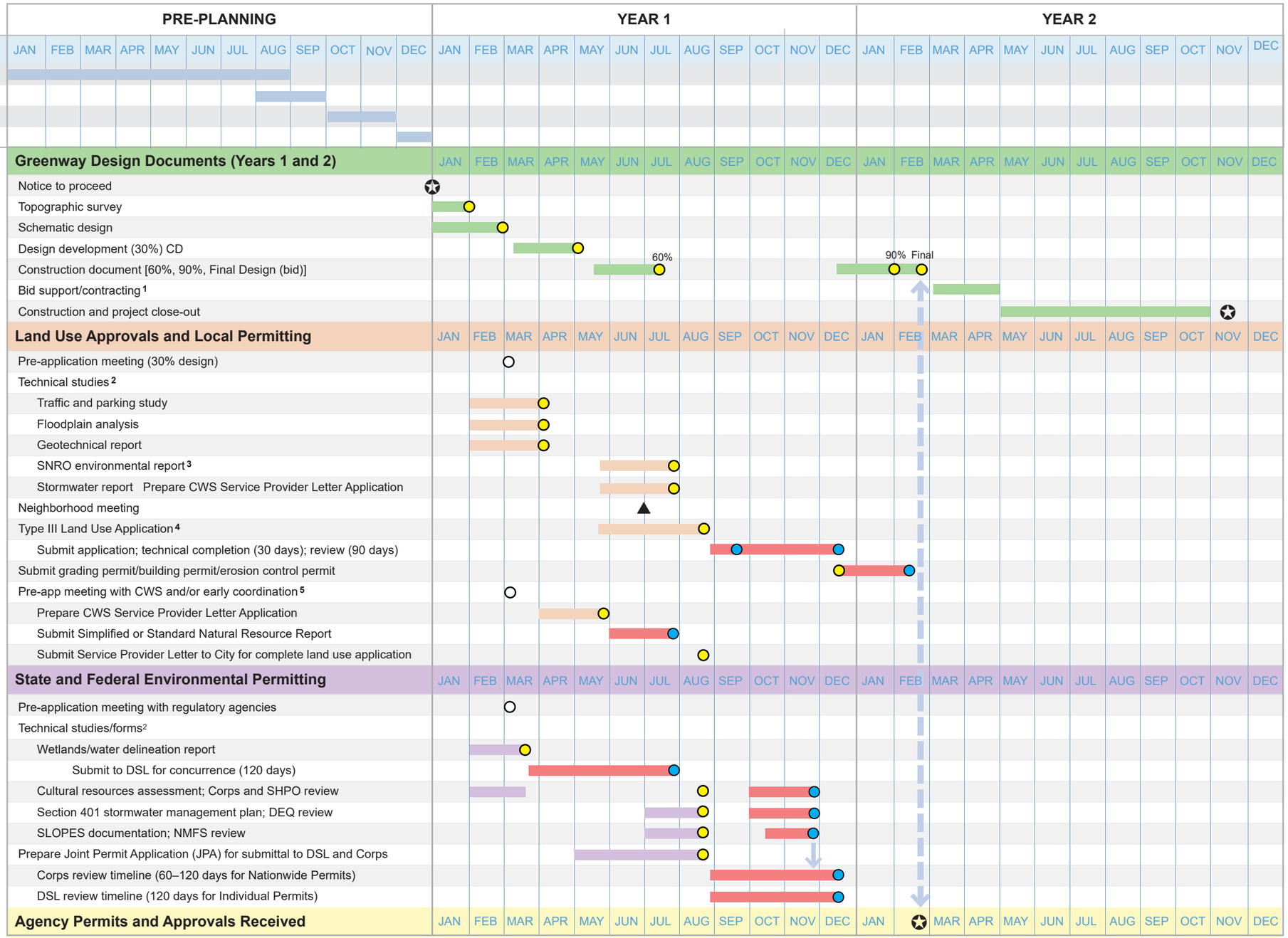
- EFU, Exclusive Farm Use
- R-9, Residential 9 units per acre
- AF-5, Agriculture Forest 5-acre minimum
- AF-20, Agriculture Forest 20-acre minimum

City of Hillsboro Zoning

- I-S, Industrial Sanctuary
- I-P, Industrial Park
- I-G, Industrial General
- C-G, Commercial General
- SFR-4.5, Single-Family Residential
- SFR-6, Single-Family Residential
- SFR-7, Single-Family Residential
- SFR-8.5, Single-Family Residential
- SFR-10, Single-Family Residential
- MFR-1, Multi-Family Residential
- MFR-2, Multi-Family Residential
- MFR-3, Multi-Family Residential
- MU-VTC, Mixed Use - Village Town Center

Design and Permitting Timeline for Crescent Park Greenway

Below is a typical design and permitting scenario for a generic greenway segment that includes:
(1) a trailhead and parking; (2) a shelter; (3) a pedestrian bridge over a fish-bearing stream; and (4) a boardwalk across wetlands.



NOTES

1) Contracting and procurement process may extend bid phase timing and push out construction start.

2) The list of technical studies is not exhaustive. Additional studies or reports, such as an Arborist Report, may be needed depending on project details.

3) The environmental report required to address the SNRO (Significant Natural Resources Overlay) in the City of Hillsboro can also be used for Washington County Goal 5 fish and wildlife habitat regulations.

4) Land use review in Washington County will likely require 150 days after the application is deemed technically complete.

5) Several segments of the Crescent Park Greenway occur outside of Clean Water Services' jurisdiction, in which case a Service Provider Letter will not be required.

LEGEND

- Agency Meeting
- Regulatory Response
- Deliverable
- Agency Review
- Significant Milestone
- Neighborhood Meeting

Land Use Approvals and Local Permitting (continued)
At the completion of the schematic plan phase, a pre-application meeting can be scheduled with either the City and/or County Planning Departments and other applicable agencies, depending on where the Greenway segment is located, to solicit feedback on the project and the land use permitting process requirements. The goal of the schematic design is to describe the project sufficiently such that City or County planners can provide constructive input. The pre-application meeting would typically be held at approximately 10-20% design to allow for needed/required adjustments and to avoid surprises that require substantial redesign. In addition to the pre-application meeting with the City or County Planning Department, coordination with Clean Water Services to obtain a Service Provider Letter should occur during this stage of the design.

The following information provides an overview of the local planning process for Greenway implementation. It is provided for general reference and covers the basic components of what can be expected in terms of local permits, approvals, and schedule. The actual process for local land use approval may vary for each segment.

Process Overview – City of Hillsboro

Trail development within the City of Hillsboro will require a Type II and/or Type III permit.

Type II permits include Development Review, Significant Natural Resource Permit (Minor), Floodplain Activity (Minor), or Cultural Resource Alteration (Minor). Type III Applications include Conditional Use Permit, Variance, Floodplain Activity (Major), or Significant Natural Resource Permit (Major). Most of the segments will require a Conditional Use Permit (CUP) and Development Review, which can be processed concurrently, with the Conditional Use Permit slightly ahead of Development Review. The following discussion provides a general overview of the process as well as fees (in 2018).

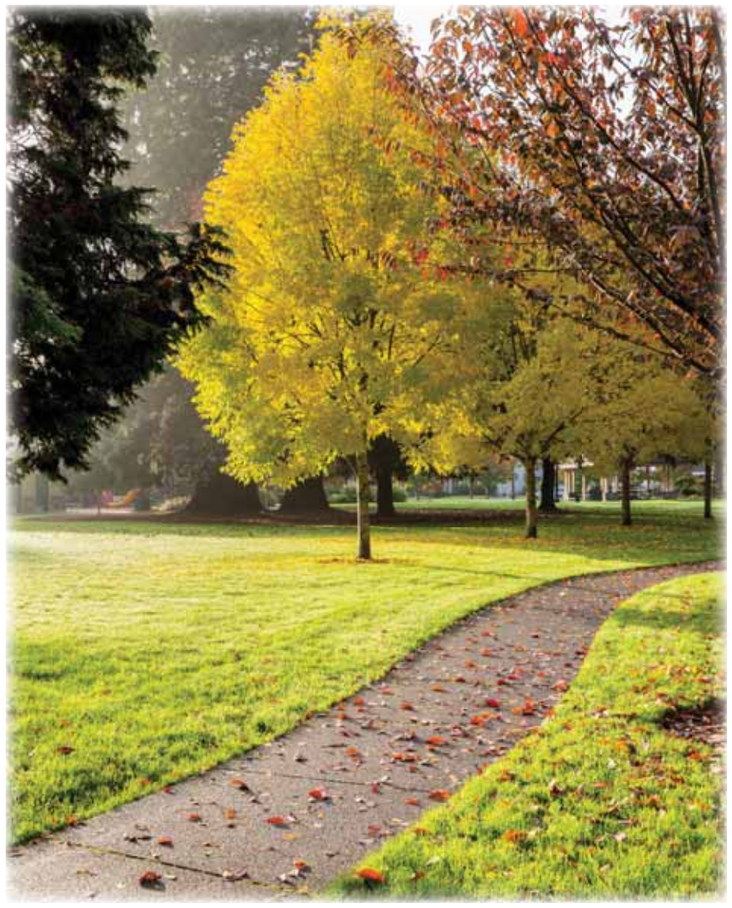
After the pre-application meeting, the City's representative (not the applicant) should provide a report that indicates the necessary permit(s) and review(s). The applicant should take notes regardless. Based on comments from the pre-application meeting, the plan would be refined to 30% design, then 60% design (or 90% if fast-tracking the Development Review process).

Inquire with the Planning Department on the potential to consolidate Development Review; the Planning and Zoning Hearing Board can decide not to require a subsequent Development Review application based on level of detail in the application, site context, and public involvement. For instance, submit a 90% design (without potential issues) with the Conditional Use Permit application.

Prior to submitting the application to the City and when 60% design is complete, a Neighborhood Meeting may be required. A Neighborhood Meeting is encouraged for all Type II and Type III applications, but is required for some Type III applications, such as a Conditional Use Permit.

After the Neighborhood Meeting, community input should be incorporated into the plans. Any necessary technical reports should also be completed. These might include a traffic study, natural resource assessments (wetland delineation), cultural resource review if there is alteration to a property or resource with cultural overlay, geotechnical report, or floodplain analysis. When all of the necessary materials are completed (i.e., plans, technical reports, findings, mailing labels for noticing, etc.), the application is submitted to the Planning Department. Pursuant to state law, the Planning Department has 30 days to deem the application complete or to request any outstanding materials or clarifications. Once the application is deemed complete, the file will be put on an agenda for the public hearing by the appropriate decision-making body.

Most approvals have an expiration date. For example, approval of a Conditional Use Permit is valid for 2 years, with an option to request an extension for 1 additional year. Construction must start on a portion of the project to vest the terms and conditions of the Conditional Use Permit.



Process Overview – Washington County and Clean Water Services

Portions of the trail will cross through properties within the jurisdiction of Washington County. While the County participated in the early planning stages of the Plan, the trail is not currently (as of September 2018) acknowledged in the County's documents. Consequently, the necessary permitting is unclear. A Type II or Type III permit, however, will likely be necessary. A Type II permit is a staff-level review, while a Type III permit requires a public hearing with a decision made by the Hearing Officer. Assuming that a proposed trail segment will require a Type III permit, the current process and timing would be similar to the process and timing for the City. For example, pre-application conferences are encouraged in Washington County. In addition, as in the City, a Neighborhood Meeting is typically conducted prior to the submittal of an application to allow community input early in the process. The application or project is then considered by the Hearing Officer at a public hearing. After an application is deemed complete, the land use process generally takes about 150 days.

A traffic analysis will be necessary for parking areas at trailheads and other locations within the Greenway. The traffic analysis will evaluate sight distance and access onto the public roadway and traffic control. If a roadway crosses over a state facility, then the Oregon Department of Transportation will be involved.

If a segment traverses property that is zoned Exclusive Farm Use (EFU) or Agriculture and Forest (AF-20), then a Farm/Forest Impact Analysis will be required. The EFU and AF-20 zones are the most restrictive in the County and the state. Restrictions or requirements are based on state statutes and regulations, all with the purpose of preserving farm and forest lands/uses. The trail, which would be considered equivalent to a "local park," is a land use that may be permitted as a Special Use on EFU and AF-20 lands, subject to satisfying the Farm/Forest Impact Analysis required by Oregon Revised Statutes (ORS) 215.296 and codified in the County Community Development Code. The analysis must demonstrate that the proposed use will not:

- Force a significant change in farm/forest practices on surrounding lands; or
- Significantly increase the cost of accepted farm or forest practices on surrounding lands.

For segments near agricultural uses, coordination with property owners will be necessary to understand the relevant farm/forest management activities and potential for conflicts or complaints as a result of the public trail and related facilities. Also, an assessment would be required if farmland were taken out of production.

Land use applications in both the City and County need to address local code requirements related to development activities in sensitive environmental areas, including significant natural resources (Statewide Planning Goal 5) and 100-year floodplains. Various technical studies and reports documenting a site's existing resources and a Greenway development proposal's impact on those resources may be required and could include, for example, floodplain and drainage hazard area analyses, fish and wildlife habitat assessments, arborist evaluations, and stormwater management reviews. Technical study needs are site- and project-specific and should be discussed at the City/County pre-application conference.

Greenway projects within Clean Water Services' district boundaries are subject to Clean Water Services design and construction standards for surface and stormwater management, which protect water resources in the Tualatin Basin. Clean Water Services' regulations provide for the protection of vegetated corridors adjacent to water quality sensitive areas including streams and wetlands, and a Service Provider Letter from Clean Water Services is required by the City and County as part of a complete land use application. The application includes a Natural Resource Assessment report that identifies and characterizes a site's sensitive areas and vegetated corridors, documents the avoidance and minimization of proposed impacts on those resources, and describes how the proposal meets Clean Water Services enhancement and mitigation requirements.

Greenway projects within the Clean Water Services district boundaries must meet their requirements for stormwater management, including standards for water quality treatment and flow control for new impervious surfaces. There are many design options for meeting Clean Water Services' stormwater management requirements, but Low Impact Development Approaches are encouraged and would be appropriate for most Greenway-related development. Examples include the use of vegetated water quality facilities that promote infiltration, pervious surfaces such as porous pavement and boardwalks, green roofs on structures, and vegetated corridor preservation and enhancement.

Local grading and building permits will be required by the City/County after land use approval is granted, when construction documents are near-final (~90%). Site plans for grading will need to include erosion and sediment control drawings, which will also need to be submitted to Clean Water Services if ground disturbance is between 1 and 5 acres, or to the Oregon Department of Environmental Quality if disturbance is greater than 5 acres, in compliance with National Pollutant Discharge Elimination System permit requirements.

Process Overview – State and Federal Agencies

Most projects that require state permits will also require federal coordination and permitting. State and federal permitting can occur at the same time as the local land use permitting. Refer to the agency review summary tables for more information on the types of activities that trigger state and federal permitting. Permit requirements are project-specific and can be evaluated after schematic design level and re-evaluated at the 30% design level. Technical studies required for local review can be modified to meet state and federal requirements. For example, the drainage and stormwater report required for City/County review can be formatted so that it also meets state requirements for post-construction stormwater management.

For the Greenway development, removal and fill of material is proposed along a fish-bearing stream and in wetlands. The Oregon Department of State Lands and the U.S. Army Corps of Engineers (Corps) both have jurisdiction over construction activities that affect streams, rivers, and associated wetlands. The state regulates activities that result in the removal or fill of 50 cubic yards or more in wetlands and streams. If the aquatic resource is considered Essential Salmon Habitat, then any amount of fill or removal requires a permit. In contrast, the Corps regulates any amount of fill in wetlands, with certain exceptions. A pre-application meeting with the regulatory agencies, while not required, is recommended to identify permitting issues and familiarize the reviewers with the project. Topics to discuss at a pre-application meeting include the purpose and need of the project, measures for avoiding or minimizing impacts to streams and wetlands, and compensatory mitigation that may be required to offset project impacts.

A single application form – the Joint Permit Application (JPA) – will need to be prepared to describe project impacts to regulated resources and proposed mitigation for submittal to both the state and the Corps. Impacts are described in terms of the amount and type of fill or removal proposed in wetlands or streams. Each agency will review the application and issue a separate permit for the project. Compensatory mitigation for wetland and stream impacts may be required and can be offset through the following options, in order of agency preference: (1) mitigation banking, (2) in-lieu fee, (3) permittee-responsible mitigation on-site, or (4) permittee-responsible mitigation off-site.

Prior to submitting the Joint Permit Application, wetlands and waterways should be delineated to determine the extent of project impacts. Wetland and waterway delineation can coincide with and inform schematic design. During pre-planning, resources such as the City Local Wetlands Inventory and the National Wetlands Inventory can be used to determine the potential presence of wetlands and streams in a project area so that these resources may be avoided. The Oregon Department of State Lands is the lead agency for providing concurrence on wetland/waterway boundaries. Allow up to 120 days for the Department to review and respond to a wetland delineation report. Concurrence from the agency on wetland/waterway boundaries is required prior to permit issuance.

A permit from the Corps triggers the potential for addressing Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, and Section 401 Water Quality Certification. Technical studies or forms that will be required as part of the Joint Permit Application submittal to satisfy these regulations include a SLOPES V form, Cultural Resources Assessment, and a post-construction stormwater management plan. The timeline presented in the Permitting Timeline figure (on page 18) assumes that Endangered Species Act documentation can be covered under SLOPES and that no coordination with the U.S. Fish and Wildlife Service is needed. SLOPES is a programmatic Biological Opinion issued by the National Marine Fisheries Service for transportation, utility, and stormwater projects that affect listed salmon and steelhead. If a project cannot meet the terms and conditions of SLOPES, then a project-specific Biological Assessment will need to be prepared. Review timelines vary depending on whether informal or formal consultation is needed. SLOPES does not cover threatened or endangered species under the jurisdiction of the U.S. Fish and Wildlife Service such as Nelson's checker-mallow, a rare plant known to occur in Washington County. Separate coordination with the U.S. Fish and Wildlife Service will likely be required for Greenway development through native habitats such as grasslands or meadows that may support federally protected plants.

STATE AGENCY REVIEWS

Agency/Permit	Triggered by	Application/ Documentation	Agency Review Schedule	Permit Fees
Oregon Department of State Lands Removal-Fill Permit	Removal/fill activities in wetlands or streams (below ordinary high water).	Joint Permit Application or General Authorization Application.	30 Days for General Authorizations. 40 Days for General Permits. 120 Days for Individual Permits.	Variable: based on permit type and removal/fill volumes (e.g., $774 for public bodies proposing fill of <500 cubic yards).
Oregon Department of Transportation (Rail and Public Transit Division)	Intersection management area, crossing state-managed roadways, rail crossings.	TBD	TBD	TBD
Oregon Department of Environmental Quality (DEQ) Section 401 Water Quality Certification	Federal requirements for states to certify that projects will meet water quality standards prior to issuance of a federal permit (e.g., Corps 404 Permit).	Joint Permit Application with Stormwater Management Plan.	~30 to 60 Days for Nationwide 401 WQ Certification.	$985
Oregon Department of Environmental Quality NPDES 1200-C/CN Permit	Construction disturbance >1 acre and stormwater discharges to surface waters.	<5 Acres Disturbance: Erosion and Sediment Control Plans to Clean Water Services for 1200-CN permit coverage. >5 Acres Disturbance: Application and ESCPs to DEQ for 1200-C permit coverage.	~30 Days. A 14-day public comment period is required for projects with >5 acres ground disturbance.	$1,990 for 1200-C Permit
Oregon Department of Fish & Wildlife	Fish passage reviews for activities at road/stream crossings (e.g., culvert replacements).	Comments on fish/wildlife issues during Corps/ODSL permitting processes.	Fish Passage Plan Application. Project Drawings.	None
Oregon State Historic Preservation Office Section 106 National Historic Preservation Act Review	Requirements for federal agencies to consider impacts to historic/archaeologic resources prior to issuing permits.	Joint Permit Application to Corps and ODSL, potentially with Cultural Resources Assessment if project is in an area of concern.	~30 days for initial SHPO comments. Follow-up review periods are variable and depend on issued identified.	None

FEDERAL AGENCY REVIEWS

Agency/Permit	Triggered by	Application/ Documentation	Agency Review Schedule	Permit Fees
U.S. Army Corps of Engineers Section 404 Permit	Discharge of dredged/fill material to wetlands or streams (below ordinary high water).	Joint Permit Application to Corps.	~60 to 120 days for Nationwide Permits, which would cover most Greenway-related activities. 120+ days for Individual Permits.	None
National Marine Fisheries Service Section 7 Endangered Species Act and Magnuson-Stevens Act Consultation	Construction in or near streams with federally protected fish or habitat and federal agency consultation requirements.	SLOPES Compliance Document or Biological Assessment.	~30 to 45 days for SLOPES approval. ~45 days for informal consultations. ~6 months to 1 year for formal consultations.	None
FEMA Letters of Map Revision	Grading permit; floodplain alteration.	No Rise Certification based on a hydraulic modeling run.	In conjunction with ESA consultation (e.g., with NMFS)	None
U.S. Fish & Wildlife Service Section 7 Endangered Species Act Consultation	Effects to federally listed plant/ wildlife species or habitat and federal agency consultation requirements.	Biological Assessment.	~45 days for informal consultations. ~6 months to 1 year for formal consultations.	None
Tribal Section 106 National Historic Preservation Act Consultation (e.g., Confederated Tribes of the Grand Ronde)	Potential for impacts to historic properties and consultation requirements under the NHPA for projects with a federal nexus – e.g., a Joint Permit Application or federal funding.	Cultural Resources Assessment to determine the presence of historical and archaeological resources.	~30-day initial comment period for tribes. Follow-up consultation periods are variable and depend on issues identified.	None
Migratory Bird Treaty Act, administered by the U.S. Fish and Wildlife Service	Land clearing activities, especially removal of shrubs and trees during the breeding season for native birds, generally March 15 to August 31.	A permit is issued only in rare circumstances; the applicant is expected to avoid adverse impacts to active bird nests, eggs, and young.	~30 days or more depending on the project for agency input. Coordination with the U.S. Fish and Wildlife Service may not be needed if a professional biologist can assess the potential for nesting birds in the construction area.	None

Phasing

The Crescent Park Greenway is an intricate system of Greenway and recreational amenities that could take many years to decades to fully implement. The Plan organizes and prioritizes the phasing of the Greenway according to three areas, which are classified based on development and practicality of implementation. The Plan's phasing information and alignment options are a guide for decision-makers and project managers. Actual implementation will depend on priorities and funding direction provided by City decision-makers.

The Greenway is complex and will require significant time and resources to complete. Through the development of the Plan, the project team has assessed each segment within the three areas based on the following:

- Segment complexity
- Current and future urban development
- Urban expansion
- Natural resources
- Property ownership
- Potential funding
- Likelihood of segment implementation
- Many other factors

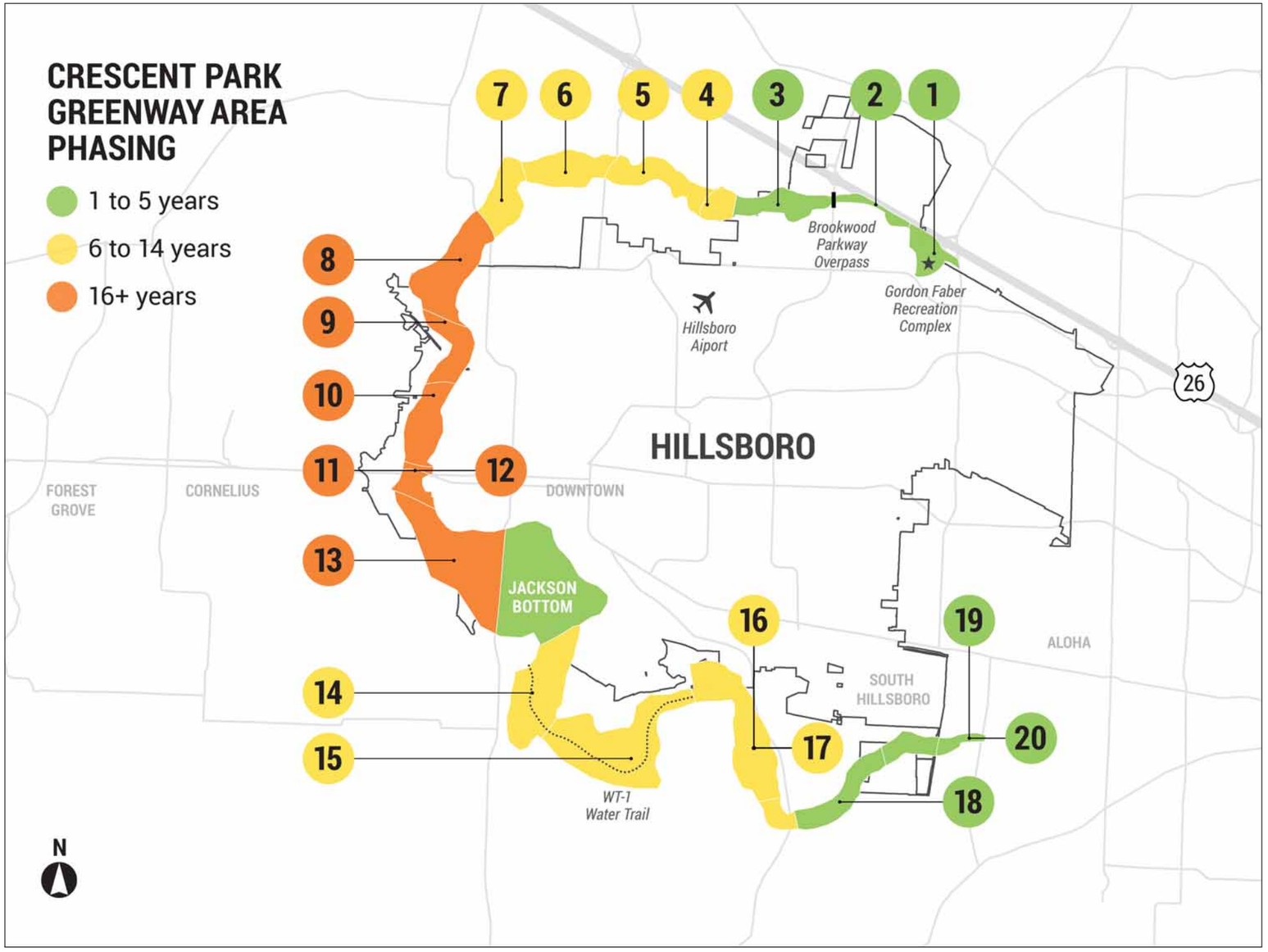
With this information, a phasing matrix was developed to guide the City and partners to plan for implementation of the Greenway. Phasing is a tool for planning Capital Improvement Project lists, City prioritization, and funding opportunities. Phasing is categorized into the following time periods:

- 1 to 5 years
- 6 to 15 years
- 16+ years

The phasing map illustrates where phasing will occur geographically. The phasing table includes alignment options and suggested phasing time periods.

In some instances, opportunities will arise through development, community partners, infrastructure projects, etc. that will veer from the phasing matrix. Changes are a reality and expected; the Plan is designed to provide flexibility for implementation.

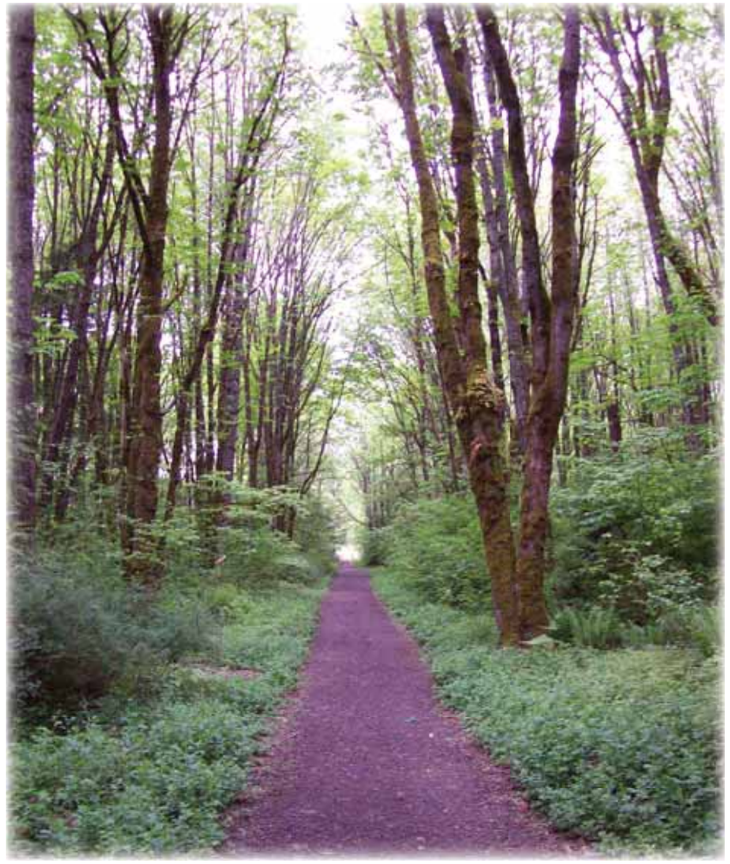
Many trail segments could be partially implemented. Partial implementation refers to creating narrow gravel trails that do not require significant engineering as explained in the Design Guidelines for secondary trails.



Phasing map for Greenway implementation

Crescent Park Greenway Trail Phasing

Area	Segment Number	Trail Segment Type	Setting	Phasing
Area 1 - North Cornelius Pass Road to NW Glencoe Road	1	Trail	Urban	1 - 5 years
	2	Trail & Boardwalk	Urban	1 - 5 years
	Brookwood Crossing	Bridge/Overpass	Urban	
	3	Trail & Bridge	Rural	1 - 5 years
	4	Trail	Rural	6 - 15 years
	5	Trail, Bridge & Boardwalk & Underpass	Natural	6 - 15 years
	6	Trail, Boardwalk & Underpass	Natural	6 - 15 years
	7	Trail, Bridge & Boardwalk	Rural	6 - 15 years
	8	Trail, Bridge & Boardwalk	Natural/Rural	16 + years
Area 2 West - NW Glencoe Road to Minter Bridge Road	9	Trail, Bridge & On-Street	Rural	16 + years
	10	Trail, On-Street & Bridge	Rural	16 + years
	11	Trail	Urban	16 + years
	12	Trail & On-Street	Rural/Urban	16 + years
	13	Trail, Bridge & Boardwalk	Rural	16 + years
	WT-1	Water Trail	Natural	6 - 15 years
	Jackson Bottom	Trail & Boardwalk	Natural	1 - 5 years
	14	Trail	Natural	6 - 15 years
Area 3 South - Minter Bridge Road to SW 209th Avenue	15	Trail, Bridge & On-Street	Rural/ Urban	6 - 15 years
	16	Trail, On-Street & Bridge	Rural	6 - 15 years
	17	Trail & Bridge	Rural	6 - 15 years
	18	Trail & Bridge	Rural	1 - 5 years
	19	Trail	Rural/Urban	1 - 5 years
	20	Trail & Boardwalks	Urban	1 - 5 years



Funding

In the City, Greenway funding is part of a larger citywide discussion centering on natural resources. During the planning process, the project team determined that the nature of the Greenway is primarily a recreational amenity and stormwater/utility corridor. More importantly, it is a collection of many systems and functions including other subtle but important systems such as habitat corridors, buffering (edge, sound, and visual), space for water pre-treatment, clean air, livability, community character, and much more. Before a comprehensive approach to Greenway development and funding can occur, policy discussions and decisions are needed. Developing a comprehensive natural resource program would start to answer these questions.

Greenway Functions and Benefits

Trails, greenways, and open spaces provide a multitude of environmental benefits by preserving the natural functions of ecosystems. Greenways serve as buffers in developed areas that protect and link fragmented habitats and provide opportunities for protecting native plant and animal species. This buffer also improves water quality by providing a natural filter for pollutants generated by agricultural and road runoff, keeping them out of local streams, rivers, and lakes.

Trails and greenways also reduce air pollution by two significant means. First, they provide enjoyable and safe transportation alternatives to the automobile, which can reduce the burning of fossil fuels and local pollution. Second, they provide large swaths of green space where plants create oxygen and filter out air pollutants, such as ozone, sulfur dioxide, carbon monoxide, and airborne particles of heavy metals.

Greenways also serve as an educational tool, providing opportunities for trail users to learn about the local landscape and environment. Interpretive signage along the trail can inform users about local wildlife, habitats, water quality issues, and other environmental topics. Similarly, greenways serve as hands-on environmental classrooms for people of all ages to experience natural landscapes, conduct creek clean-ups, and raise environmental awareness.

Greenway trails provide opportunities for the public to experience nature and have a physically and mentally healthy life. People experience nature at a range of scales; therefore, planners of healthy communities should include a range of experiences within the urban environment. This Plan is a framework for understanding the role that trails provide within an urban region. When viewed not only as recreation or transportation facilities, but as access to an array of green and natural environments, trails become conduits for essential healthy experiences.

Elements of a Greenway

Greenways are richly complex environments that provide multiple benefits including recreational, ecosystem-based, and infrastructural. The approach to funding the development of greenways and related amenities should be multifaceted as well.

The Crescent Park Greenway Plan was developed looking at two distinct but interrelated areas: the Greenway itself and the amenities within (Greenway amenities).

Holistically, the Greenway will include several elements. Some of these may be opportunities for funding partnerships. They include:

- Restoration of riparian areas
- Trails
- Trail user amenities
- Trailheads and access points
- Stormwater management applications
- Road crossings and intersections
- Utilities that take advantage of the unbuilt corridor

While the desired outcomes and anticipated benefits of trail and stormwater development will not be fully realized until the project is complete, they should be considered holistically throughout the design, permitting, and construction of a project.

Design / Engineering / Permitting / Development

Funding a regional trail system can be a significant challenge. Funding is necessary for planning, technical surveys and studies, design, construction, operation, management, programming, and maintenance. The need for an ongoing funding source and/or endowment for trail operation and maintenance presents a significant challenge.

Service Providers, Stakeholders and Partners - Roles and Responsibilities

Greenway trails require collaboration and partnerships. Many stakeholders and agencies will work together to advance the vision and implement the Plan. For the Crescent Park Greenway, the following agencies and non-profit organizations will play a role in moving the Greenway from concept to implementation.

Service Providers, Stakeholders, and Partners - Roles & Responsibilities

	Permitting	Potential Project Partner	Potential Funding Partner	Maintenance
Federal				
U.S. Environmental Protection Agency	✓			
Natural Resources Conservation Service				
Federal Highway Administration			✓	
State				
Oregon Parks and Recreation Department			✓	
Oregon Department of Transportation			✓	
Oregon Department of State Lands				
Regional/Multi-jurisdictional Agencies				
Port of Portland (Hillsboro Airport)		✓		
Metro		✓	✓	
Service Districts				
Clean Water Services	✓	✓	✓	✓
Tualatin Hills Parks and Recreation District		✓		
County Agencies				
Washington County		✓		
City of Hillsboro				
Parks & Recreation	✓	✓	✓	✓
Planning	✓			
Economic Development		✓	✓	
Public Works	✓	✓		✓
Non-Profit Organizations				
Access Recreation Board		✓		
Northwest Trails Alliance		✓		
The Intertwine Alliance		✓		

Greenway Management

Funding Sources / Revenue Streams

A greenway is a collection of many systems and functions including recreational amenities, stormwater management, ecosystem restoration, and transportation. As such, greenways are funded through many diverse federal, state, regional, and local government sources, and private entities, depending on project features, priorities, and opportunities.

Funding for initial capital cost and ongoing operations and maintenance costs will be a collaboration between the City and other public agencies, with an emphasis on seeking outside funding, such as through federal transportation or restoration grants. Implementing a system on the scale and complexity of the Crescent Park Greenway will require creative programming, fundraising, and contributions in addition to existing public funding mechanisms. Examples of community partnerships and creative funding can be seen in the development of other trail and greenway systems both nationally and in the Portland metropolitan region.

Partnering for Success – Designing, permitting, and implementing the Crescent Park Greenway represents a collaborative effort among the City, approving agencies, land owners and neighbors, volunteers, the community, and others. Partners will be involved in more than just funding; together, the partnerships will create a unique and valuable resource for the region and beyond.

Possible Funding Strategies

Implementation of the various elements of the Greenway will happen through a variety of approaches, including:

- Public agency investment focused on acquisition, design, and construction.
- Private sector investment in the form of land donation and additional funding.
- Exactions and mitigation requirements triggered by development review through applying Clean Water Services and City regulations.
- Restoration and maintenance activities by volunteers and non-governmental organizations.

Amenity locations along the Greenway could require acquisition. Potential acquisition options include the following:

- Fee simple purchase.
- Easements.
- Exactions from development.
- Developing partnerships (using Memorandum of Understanding or Intergovernmental Agreements) with public partners.

Options to construct amenities within the Greenway include the following:

- Co-locating facilities with utility infrastructure.
- Working with private development to construct the amenities.
- Utilize the Parks & Recreation Department maintenance projects crew to construct amenities in-house.

Potential options to maintain the Greenway over time include the following:

- Adopting a City management plan, with work assumed by the Public Works and/or Parks Departments.
- Entering into a maintenance contract with the Tualatin Hills Parks and Recreation District, or a local non-profit.
- Creating a volunteer-oriented or "adopt-a-trail" program for weeding, trash collection, and work parties along the trail.

Possible Funding Sources

The table on page 29 summarizes local, regional, state, federal, and private funding opportunities that relate to the goals of the Crescent Park Greenway Plan. These potential sources include funding opportunities at various stages of the Greenway development process, including acquisition, construction, planning/design, and ongoing management and maintenance. Note that the information listed was found through funding research in early 2018 and should not be considered a comprehensive list.

Public Funding Sources – Federal

Recreational Trails Program

This federal program is managed by the Oregon Parks & Recreation Department and includes the maintenance and restoration of existing trails, development or rehabilitation of trailside and trailhead facilities and linkages, acquisition of necessary easements, associated administrative costs, and new trails and educational programs.

Land and Water Conservation Fund Stateside Program

The federal Land and Water Conservation Fund 50/50 matching grant program is administered by Oregon Parks & Recreation Department in cooperation with the National Park Service. Program funds are intended for the acquisition and development of outdoor recreation areas; trails are one priority of this program. In particular, funds *"target projects that would enhance urban parks and community green spaces,"* with a focus on *"developing blueways and public access to water resources and conserving large landscapes."*

Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance Program is a technical assistance arm of the National Park Service dedicated to helping local groups and communities preserve and develop open space, trails, and greenways. The program is an important resource center for many trail builders in urban, rural, and suburban areas. While the program does not give out grants or loans, it *"supplies a staff person with experience in community-based outdoor recreation and conservation to work with partners"* on the ground.

Urban and Community Forestry

A program of the U.S. Forest Service, Urban and Community Forestry *"provides technical, financial, research and educational services to local government, nonprofit organizations, community groups, educational institutions and tribal governments."* Trails and greenways are a key part of the program, which is administered by forestry agencies in each state.

Five Star and Urban Waters Restoration Grant Program

The U.S. Environmental Protection Agency and the Urban Waters Federal Partnership co-sponsor the Five Star and Urban Waters Restoration Grant Program. This program seeks to develop community capacity by providing modest assistance to diverse local partnerships for river, wetland, riparian, forest, and coastal restoration, and wildlife conservation.

Clean Water State Revolving Fund

The Clean Water State Revolving Fund program is a federal-state partnership that provides communities a permanent, independent source of low-cost financing for a range of water quality infrastructure projects.

Office of Sustainable Communities Greening America's Communities Program

Greening America's Communities is a U.S. Environmental Protection Agency program to help cities and towns develop an implementable vision of environmentally friendly neighborhoods that incorporate innovative green infrastructure and other sustainable design strategies. The agency provides design assistance to support sustainable communities that protect the environment, economy, and public health and to inspire local and state leaders to expand this work elsewhere.

Urban Waters Small Grants Program (U.S. Environmental Protection Agency)

Since the inception of the Urban Waters Small Grants Program in 2012, the program has awarded approximately $6.6 million in grants to 114 organizations across the country and Puerto Rico. The grants are competed and awarded every two years, with individual award amounts of up to $60,000.

Clean Water Act Section 319 Nonpoint Source Program Grant

These grant funds are allocated to each state and are used to implement programs and projects designed to reduce nonpoint source pollution. Since 1999, Section 319(h) funds have been awarded for the development and implementation of watershed restoration plans.

https://www.epa.gov/nps/319-grant-current-guidance.

Public Funding Sources – Regional + State

Mitigation Banking - Oregon Department of State Lands and U.S. Army Corps of Engineers

A mitigation bank is large-scale wetland and/or stream restoration project that may be used to offset losses of aquatic resources in a defined geographic service area. Mitigation banks provide greater ecological benefits and are more efficient to manage than multiple smaller mitigation projects. Mitigation banks can be a profitable business venture when there is a suitable project site, skilled practitioners, and market demand. More information: ***http://www.oregon.gov/dsl/WW/Documents/EstablishMitigationBank.pdf.***

Metro

In addition to its budgeted transportation capital improvement program, Metro has flexible funding and grant programs for transportation, restoration, and neighborhood livability. These are summarized in the funding sources table.

Oregon Department of Transportation

The Oregon Department of Transportation funds programs to support transportation projects. These are summarized in the funding sources table on page 29.

Oregon Parks & Recreation Department

The statewide Parks and Recreation Department acts as the implementing agency for several federal-level programs that support greenway development. A summary of applicable opportunities is included in the funding sources table on page 29.

Oregon Department of Fish and Wildlife (ODFW)

Access & Habitat Program grants are available that address habitat protection, restoration, and enhancement. Projects may be on private or public lands, although preference is given to projects on private lands.

https://www.dfw.state.or.us/lands/AH/grants/index.asp.

Oregon Watershed Enhancement Board (OWEB)

Multiple grant programs target on-the-ground restoration to address local streams, rivers, wetlands, and natural areas. Grant programs include land acquisition assistance, technical assistance, restoration, and stakeholder engagement. In particular, the Small Grant Program is a short-term program with a low barrier for entry that awards up to $15,000 for on-the-ground restoration projects, mostly on private lands. This program is ideal for projects on a shorter timeframe.

https://www.oregon.gov/OWEB/GRANTS/Pages/grant-programs.aspx.

Public Funding Sources – Local

Washington County and City of Hillsboro Parks System Development Charges

System Development Charges are fees collected on new residential and commercial development within its service area. These fees can only be used for new trail development or improvements to existing trails that expand capacity necessitated by new development. The funds cannot be used for capital replacement or maintenance purposes.

System Development Charges Credit Projects

In lieu of paying System Development Charges at the time of development, developers may enter into a memorandum of understanding to construct trail improvements for the amount of estimated fees that would normally be charged. The memorandum outlines specific trail improvements to be constructed for which credit will be issued. The memorandum also includes language to ensure that such trail improvements meet applicable design standards and guidelines.

City of Hillsboro Transportation Utility Fees

Transportation Utility Fees (also known as Street Utility, Road User, or Street Maintenance Fees) are monthly fees collected from residences and businesses to fund road improvements and sidewalks. The City street maintenance fund is funded through fees on utility account holders. The following link provides more information on the City's Transportation Utility Fees: ***https://www.hillsboro-oregon.gov/our-city/departments/public-works/transportation/street-and-road-maintenance/transportation-utility-fee.***

City of Hillsboro Local Improvement Districts

Local Improvement Districts are used by cities or private property owners to fund and construct local projects such as streets, bike infrastructure, sidewalks, and stormwater management features. The process is used when the improvements will only benefit a specific geographic area, instead of the city as a whole. Using the process, area property owners share the cost of transportation improvements. Local Improvement Districts have recently been used to install new sidewalks in Baker City and Portland, as well as bicycle facilities in Ashland.

City of Hillsboro County Opportunity Grants

County Opportunity Grants go to Oregon counties to purchase land for campgrounds, to improve or plan camping areas, and other similar purposes. The grants come from a portion of RV registration fees and have been funding Oregon campground projects since 1983.

City of Hillsboro General Fund

The City's primary funding source is property tax revenue. This revenue goes into the City's general fund and is then allocated for capital projects and maintenance operations on an annual basis.

Tualatin Watershed Improvement Grant (TWIG)

The Tualatin Soil and Water Conservation District's Tualatin Watershed Improvement Grant (TWIG) Program awards grants up to $5,000 for certain conservation-related projects and events that promote conservation within the Tualatin River Watershed community. The TWIG Program awards up to $150,000 annually. Projects are awarded on a competitive basis until funds are exhausted for the fiscal year.

https://www.swcd.net/grants-funding/twig-program/.

Enhanced Conservation Reserve Enhancement Program (ECREP)

Landowners along the Tualatin River or perennial tributaries are eligible for The Tualatin Soil and Water Conservation District's Enhanced Conservation Reserve Enhancement Program, a source of funding created in 2005 that combines federal, state, and local resources for stream restoration work. Landowners involved in an ECREP project commit to a 10- to 15-year restoration contract, and the District covers all project costs (planning, labor, and plants) with no cost to the landowner.

https://www.swcd.net/stream/ecrep/.

Tualatin Basin Vegetated Buffer Areas for Conservation (VEGBAC)

For landowners who do not qualify for an ECREP or prefer more flexibility over higher benefits, a conservation plan is developed for a vegetated buffer at least 20 feet wide. Planting materials and removal of undesirable streambank plants are provided by the program, and plantings must be maintained for five years by the landowner or with help from the District. Other potential payments are for conservation easements, lease or transfer of water rights, and large/neighboring parcel bonuses. The program allows landowners to generate income from their conservation efforts.

https://www.swcd.net/stream/vegbac/.

Bond Funding

The District may pursue the issuance of bonds if approved by voters during a general or special election. Bond funds can be used for a variety of projects based on how the bond is crafted, including land acquisition, new trail development, redevelopment of existing trails, capital replacements, or a combination of these items. Bond funds can be short-term or long-term, and can be used for specific or a variety of projects.

Private Funding Sources

Donation/Volunteer/Partnership

Greenway improvements can be donated to the City and could include land, materials, products, and/or labor for the construction or maintenance of trail improvements. In most instances, this occurs in conjunction with improvement projects of other public agencies, such as Metro, the County, or Clean Water Services. In some instances, Greenway improvements can come from private development or community groups seeking improvements of trail facilities in their neighborhoods.

Private Individual Donations

Private individual donations can come in the form of liquid investments (i.e., cash, stock, bonds), land, materials, labor, or equipment use. Municipalities typically create funds to facilitate and simplify a transaction from an individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can address capital budgets, specific projects, or endow ongoing operation and maintenance.

A regional trail example is the San Francisco Bay Trail, which accepts financial donations from private individuals in two ways. Individuals can donate directly to the Bay Trail general fund or they can donate in memory of Bill Bliss, one of the founders of the Bay Trail.

Corporate Donations

Corporate donations are often in the form of liquid investments (i.e., cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can supplement capital budgets and/or projects.

Also in the San Francisco area, a portion of the Bay Area Ridge Trail was provided by corporate donation from Lucasfilm Ltd., which donated 800 acres to provide connections between Novato and the Golden Gate Bridge.

Corporate Sponsorships

Corporate sponsorships are often delivered in the form of services, volunteers, liquid investments (cash or stock), or land. Municipalities often team with corporations for necessary and/or alternative funding. A sponsorship, which is the equivalent of a donation, usually involves some marketing element or recognition. Marketing often improves the image of the corporation and can benefit both parties.

Duke Energy is a corporate sponsor of the Carolina Thread Trail and has provided cash, land, and in-kind services. Businesses can also sponsor a trail through volunteer efforts and providing supplies. REI has provided staff and t-shirts for volunteer efforts in the San Francisco Bay Area.

Fundraising/Campaign Drives

Organizations and individuals can participate in a fundraiser or a campaign drive for the Greenway. It is essential to market the purpose of a fundraiser to rally support and financial backing. Oftentimes, fundraising satisfies the need for public awareness, public education, and financial support.

San Francisco's annual Tour de Fat is an outdoor event that includes a bicycle parade, performances, and a bike rodeo. The 2009 event raised funds for the Bay Area Ridge Trail.

Compensatory Mitigation

When development has unavoidable impacts on environmentally sensitive areas (such as areas that fall within a Significant Natural Resource Overlay [SNRO]), compensatory mitigation is required. The Greenway project area can be used as a mitigation site to be enhanced by developers.

Private Foundation Grants

Grants can be used to acquire land, or fund an entire greenway development and/or just a portion of a greenway, such as a bridge, signage, or trailhead amenities. Several grant programs with high potential for development funding are described in the summary table.

PeopleForBikes Community Grant Program

PeopleForBikes is a national coalition of bicycle suppliers and retailers that has awarded $2.5 million in grants and leveraged an additional $650 million since its inception in 1999. The program funds small corridor improvements, mountain bike trails, BMX parks, and trail and park access. PeopleForBikes also administers the Green Lane Project, which is a technical support and peer exchange program for U.S. cities working on the installation of protected bicycle lanes and cycle tracks. PeopleForBikes is funded through private donations. More information: ***http://www.peopleforbikes.org/pages/community-grants.***

Bank of America Charitable Foundation, Inc.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grant program is called Neighborhood Excellence, which identifies critical issues in local communities. Another program that applies to greenways is the Community Development Program, and specifically the Program Related Investments subcategory. This program targets low- and moderate-income communities and encourages entrepreneurial business development. More information: ***http://www.bankofamerica.com/foundation.***

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972, and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To ensure that all Americans have access to basic health care at a reasonable cost.
- To improve care and support for people with chronic health conditions.
- To promote healthy communities and lifestyles.
- To reduce the personal, social, and economic harm caused by substance abuse.

More information: ***http://www.rwjf.org/.***

The Wal-Mart Foundation

The Wal-Mart Foundation offers local, state, and national giving programs. The Local Giving Program awards grants of $250 to $5,000 through local Wal-Mart and Sam's Club Stores. Application opportunities are announced annually in February with a final deadline for applications in December. The State Giving Program provides grants of $25,000 to $250,000 to 501c3 nonprofits working within one of five focus areas: Hunger Relief & Nutrition, Education, Environmental Sustainability, Women's Economic Empowerment, or Workforce Development. The program has two application cycles per year: January through March, and June through August. The Wal-Mart Foundation's National Giving Program awards grants of $250,000 and more, but does not accept unsolicited applications. More information: ***http://foundation.walmart.com/apply-for-grants.***

Local Dedicated Funding

Many successful greenway programs in the United States share one common trait – a local source of funding that is used to match and leverage other funding. Achieving the vision, goals, and objectives for the Crescent Park Greenway will require establishing a local, recurring source of dedicated funding to match other local, regional, state, federal, and private-sector funding. The local funding source will generally be determined by tax, fee or charge, voter preference, and political will.

For further ideas, the City could engage a public policy, financing strategist, and polling firm to explore the feasibility, public acceptability, and potential investment and return for a local funding strategy. Careful consideration should be given to the implementation of funding sources that require voter approval.

Summary of Possible Funding Sources

Funding Source	Program	% Funding Allowable	How it Could be Used			
			Acquisition	Construction	Planning + Design	Maintenance
Public Sources (Federal)						
Federal Highway Administration (Administrated by Oregon State Parks)	Recreational Trails Program	20% match	Yes	Yes	Yes	Yes
National Park Service (Administrated by Oregon State Parks)	Land and Water Conservation Fund State and Local Assistance Program	50% match	Yes	Yes	Yes	Yes
National Park Service	Rivers, Trails, and Conservation Assistance Program	No funding – provision of staff/technical assistance	N/A	N/A	N/A	N/A
U.S. Forest Service (Administered by the Oregon Department of Forestry)	Urban & Community Forestry					
U.S. Environmental Protection Agency + Urban Waters Federal Partnership	Urban Waters Restoration Grant Program		Yes	Yes	Yes	Yes
U.S. Environmental Protection Agency	Clean Water State Revolving Fund (CWSRF)		Yes	Yes	Yes	Yes
	Greening America's Communities Program					
	Urban Waters Small Grant Program					
	Clean Water Act Section 319 Grant		Yes	Yes	Yes	Yes
Public Sources (Regional/State)						
Oregon Department of State Lands and U.S. Army Corps of Engineers	Wetland mitigation bank	Variable	No	Yes (of natural features)	Yes (of natural features)	Yes (of natural features, until credits sold)
Metro	Metropolitan Transportation Improvement Program	Depending on segment and transportation-related applicability				
	Nature in Neighborhoods Capital Grants: Land Acquisition, Habitat Restoration	Not currently available as of 2018; check with Metro for future funding	Yes	Yes, depending on type		
	Nature in Neighborhoods Restoration Grants	Grant opportunity available to potential partners				
	Regional flexible funding for transportation projects	Depending on segment and transportation-related applicability				
Oregon Department of Transportation	Statewide Transportation Improvement Program	Depending on segment and transportation-related applicability	No	Yes		
	Enhance and Fix-it (2015–2018)					
	Oregon Connect (2015–2018)	Depending on segment and transportation-related applicability	No	Yes		
Oregon State Parks	Local Government Grant Program	At least 50% match	Yes	Yes		
Oregon Department of Fish and Wildlife (ODFW)	Access and Habitat Program Grant		Yes	Yes	Yes	Yes
Oregon Watershed Enhancement Board	Various grants (notably Small Grant Program)	25% match	Yes	Yes	Yes	Yes
Public Sources (Local)						
Washington County	System Development Charges (SDCs)		No	Yes	Yes	Yes
City of Hillsboro	System Development Charges (SDCs)		No	Yes	Yes	Yes
	Transportation Utility Fees			Yes		Yes
City of Hillsboro / Private Partnership	Local Improvement Districts			Yes	Yes	Yes
City of Hillsboro (IGA with Washington County as applicant)	County Opportunity Grants	50% Local match	Yes	Yes	Yes	Yes
City of Hillsboro	General Fund	100% - through budget process	Yes	Yes	Yes	Yes
City of Hillsboro / Residents	Bond Funding	variable	Yes	Yes	Yes	Yes
City of Hillsboro / Private Partnership	Public Private Partnership	variable	Potentially	Yes	Yes	Yes
Tualatin Soil and Water Conservation District	Tualatin Watershed Improvement Grant (TWIG)	100%		Yes	Yes	
	Enhanced Conservation Reserve Enhancement Program (ECREP)	100%		Yes	Yes	Yes
	Tualatin Basin Vegetated Buffer Areas for Conservation (VEGBAC)	100%		Yes	Yes	Yes
Private Sources						
Donation / Volunteer / Partnership	Varies	100%	Yes	Yes	Yes	Yes
Private Individual Donations	Varies	100%	Yes	Yes	Yes	Yes
Corporate Donations	Varies	100%	Yes	Yes	Yes	Yes
Corporate Sponsorships	Varies	100%	Yes	Yes	Yes	Yes
Fundraising / Campaign Drives	Varies	100%	Yes	Yes	Yes	Yes
Compensatory Mitigation	Varies	100%		Yes	Yes	
Private Foundation Grants						
People For Bikes	Community Grant Program	100%		Yes	Yes	Yes
Bank of America Charitable Foundation	Neighborhood Excellence and Community Development Grant Programs	100%		Yes	Yes	Yes
Robert Wood Johnson Foundation	Public Health Grant Programs	100%		Yes	Yes	Yes
Wal-Mart Foundation	Local, State, and National Giving Programs	100%		Yes	Yes	Yes

GREENWAY STUDY AREAS AND CONCEPTUAL TRAIL SEGMENTS

The following pages outline the potential Greenway, trail alignments, trailheads, and other recreational elements that make up the Greenway. The envisioned alignment (as presented in the 2015 Hillsboro Trails Master Plan) follows the creeks, streams, and Tualatin River that flow along the periphery and in many cases outside the City limits for approximately 16 to 18 miles. During the Plan development process, the project team found the envisioned alignment to be very difficult to achieve due to a series of factors. The following section is a translation of the community vision into a practical and implementable concept for developing the Greenway.

Alignment Organization

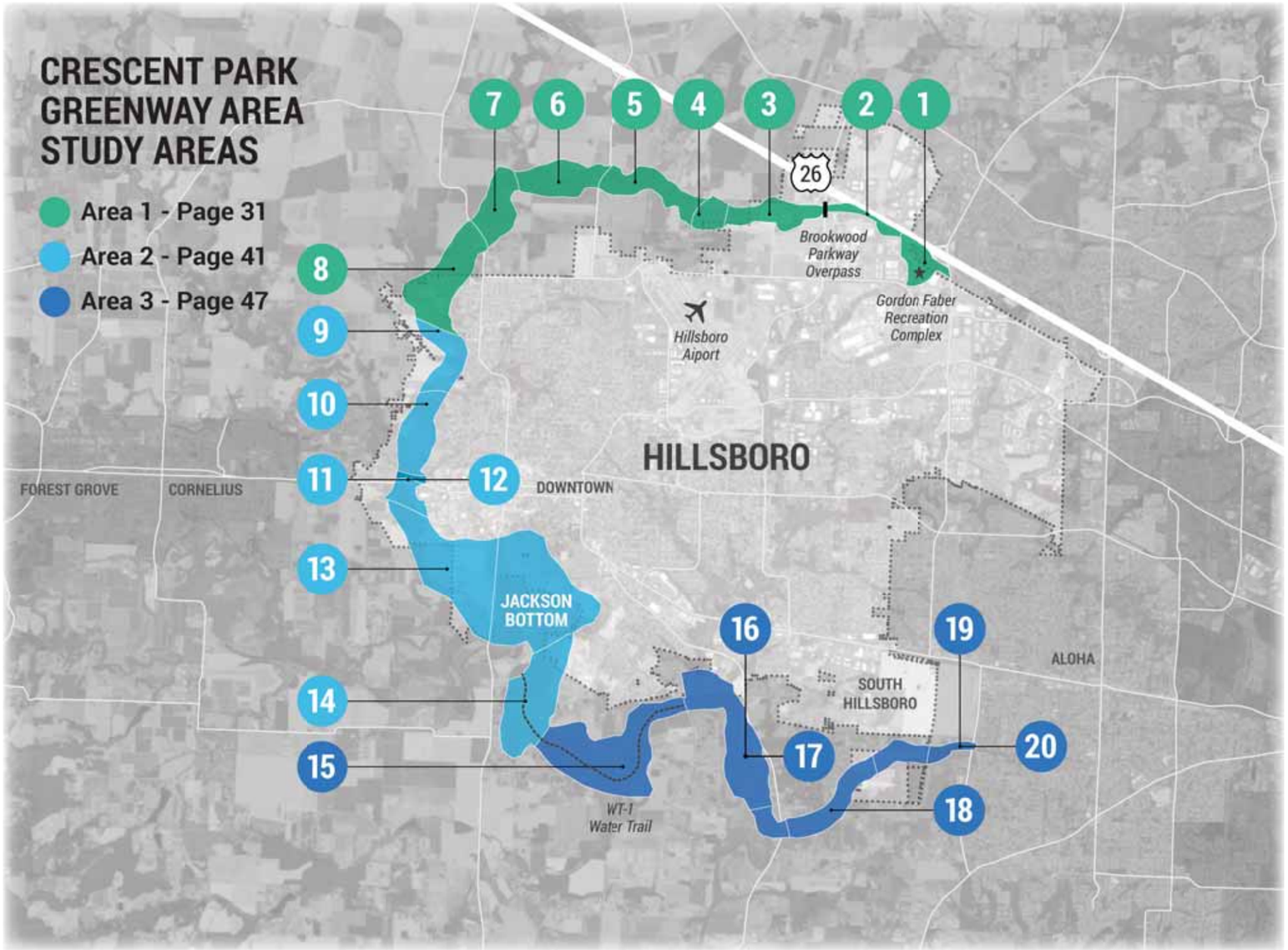
Since the Greenway is over 16 miles in length and has a complex trail alignment, the Plan has been organized into three areas. The following description of each area includes:

- Area Narratives
- Existing Conditions Map
- Conceptual Greenway Segments Map
- Tables of Conceptual Recreational Amenities, Details, and Costs (in 2018 dollars) by Segment

Area sections provide the information necessary for project managers and decision-makers to select segments to initiate the planning process. This section of the Plan can be viewed as an overview, providing the necessary information to make informed decisions on implementation.

Conceptual Greenway Areas Key

- Area 1 North - Cornelius Pass Road to NW Glencoe Road – Page 31
- Area 2 West - NW Glencoe Road to Minter Bridge Road– Page 41
- Area 3 South - Minter Bridge Road to SW 209th Avenue – Page 47



AREA 1 NORTH - CORNELIUS PASS ROAD TO NW GLENCOE ROAD

NOTE:
Certain portions of the proposed Greenway are outside of the City limits and Urban Growth Boundary; further research and discussion will need to occur with the County, other entities, and willing property owners prior to further development of the Greenway.

Area 1 of the Crescent Park Greenway connects at Cornelius Pass Road in the east, travelling west/southwest to Glencoe Road. Within Area 1, eight segments have been identified. The Greenway segments are generally organized conceptually in implementable segments. Segments typically start and end typically at road intersections or significant changes in the landscape.

Area 1 Existing Conditions

Area 1 is primarily characterized by the North Hillsboro Industrial Renewal Area, and portions of the area are in transition from Rural Residential to Industrial (see the **Existing Conditions Map**). Investments in infrastructure are occurring including new streets, water, power, sewer, and stormwater. The Greenway study area varies in condition from highly degraded to functional. Further resource studies will be necessary within each segment to determine the steps needed for restoration. **Segments 2 through 4** are degraded resources but provide opportunities for new Greenway development including integration of new natural systems such as stormwater and habitat corridors. **Segments 5 through 7** support the greatest natural resource values in the area.

Segments 1 and 2 are the starting point / main trailhead for the Greenway. Easements for the trail are secured with City land and the Majestic Property ("D" on the **Existing Conditions Map**). Work with the Bonneville Power Administration (BPA) will need to occur for trails within the easement (which covers a sizable portion of the site). Significant natural resource areas occur along the Greenway study area. Additional investigation into possible natural habitat expansion should occur between the Gordon Faber Recreation Complex (GFRC) parking area and the Majestic Property.

Plans to connect the Greenway to the future Oregon Electric Railway Trail at Cornelius Pass Road will require routing of the trail through a portion of sensitive areas between the GFRC and the road.

The **Segment 3** alignment starts at Brookwood Parkway and runs west to the future alignment of NE 30th Avenue/NW 264th Avenue, approximately one mile in length. The area within the Greenway is currently agricultural land with several resource areas (tree groves) and two streams. The tributary to Gulch Creek and Gulch Creek have been ditched and modified by the adjacent agricultural land uses. The NE 41st Avenue/NW 253rd Avenue alignment is currently in the final stages of construction, which bifurcates the Greenway.

Several small tree groves are within the alignment, typically associated with farmsteads and residences. The larger Gulch Creek has also been modified due to nearby agricultural land uses. Flow in Gulch Creek is relatively slow due to the flat terrain. The water table in the Tualatin Valley is fairly high and flooding is an annual occurrence. With expansion of the Urban Growth Boundary and plans to extend the City limits transitioning this area with the North Hillsboro Industrial Renewal Plan, new stormwater management approaches will be constructed adjacent to the stream corridors. The infrastructure improvements will affect the alignment and placement of trail and recreational amenities.

Greenway enhancement area near Brookwood Parkway

Segments 4 and 5 of the Greenway are within agricultural land that will transition to urban uses such as industrial, possibly residential, and supporting infrastructure. Several homesteads along the stream corridor could be integrated into the Greenway experience (cultural and recreational). Waibel Creek appears to have been dammed at some point, possibly for agriculture. This has created a large pond/reservoir.

View of a small pond east of Sewell Road (See 1 on Existing Conditions Map)

This section has many existing tree groves within the conceptual Greenway boundary. The pond, tree groves, and wetlands along this section would be beneficial additions to the trail user experience. Significant Natural Resource Overlay does not yet exist in this area; the overlay will be applied once the area is annexed into the City.

The Greenway is characterized by existing stream corridors, ponds, forested areas, and unique natural features. In this area, constructed wetlands and a specific hierarchy of Greenway systems begin based on the Rural and Natural Settings. At the confluences of Gulch and Waibel Creeks, the Greenway expands in width and complexity. This expansion is designed to manage nearby development and natural systems from upstream. Habitat corridors and robust buffers are also introduced. The user will feel less connected to the urban world and more immersed in nature and the rural landscape. Refer to the **Greenway Design Guidelines** in Part 2 for more information.

Segments 6 through 8 are outside of the Urban Growth Boundary and the City limits. The area is more remote than other sections of the Greenway. Urban development of the area west of Jackson School Road is unlikely in the foreseeable future.

The Greenway's conceptual alignment follows Waibel and McKay Creeks. This area is the best opportunity for a natural user experience along the Greenway. A large forested area is located from Jackson School Road to the confluence of Waibel and McKay Creeks. Flooding is a regular occurrence in this area, especially along McKay Creek, and will be a significant factor in trail development and use. There are no specific plans for infrastructure improvements near the Greenway. Significant Natural Resource Overlays do not yet exist; there will be a reliance on County and other agency regulations during the development process. There are no near-term plans for expansion of this area into the Urban Growth Boundary or City limits.

See the following **Existing Conditions Map** and the Existing Conditions Summary in Appendix C for additional information. Further research and consultation with natural resource professionals will need to occur prior to further implementation of the Greenway.

Area 1 Greenway Design

In Area 1, the Greenway transitions through the three settings. **Segments 1 through 3** are generally characterized by the Urban Setting, then transitioning briefly to Rural Setting in **Segment 4** then into the Natural Setting until **Segment 7** where the Greenway experience opens up to vast rural vistas.

Segments 1 and 2 of the Greenway and the trail are situated in proximity to urban development such as the recreation complex and industrial park. There are isolated existing resources near Cornelius Pass Road in the east and Brookwood Parkway in the west. These areas have little connection to the larger network of streams and forested areas. Minor Greenway development will likely occur along these segments, primarily for local stormwater management and wetland restoration.

Segments 1 and 2 are characterized as an Urban Setting primarily due to the existing resources. Because of the limited resources, this portion of the trail will be close to development. There are still locations to provide moments of nature along the trail.

Image of large pond near Jackson School Road (See 2 on Existing Conditions Map)

Aerial view of large pond and large forested area Northwest of Hillsboro at Jackson School Road (See 3 on Existing Conditions Map)

Example: Rock Creek Trail near industrial development

Example of Urban Setting with occasional views of development

Wetland areas and views of mature forest

Example of a Natural Setting trail and secondary trail connection

The rural landscape

Segment 3 of the Greenway is located among future industrial development planned in this area. Greenway design could manage stormwater and provide ecological corridors in the area. As of spring 2018, the Economic Development Department is in the process of evaluating the resources in the area and developing infrastructure and Greenway development strategies. Additional buffers and design requirements have been implemented in the North Hillsboro Design District. The area is primarily classified as an Urban Setting. For further information on design of the Greenway and trail, refer to the **Urban Setting Design Guidelines**, Natural Resource Assessments, and the North Hillsboro Design Guidelines. The Natural Resource Assessments and North Hillsboro Design Guidelines will be available later in 2018. Together, these documents will assist in developing the Greenway and ensuring an ecologically functional and aesthetically pleasing amenity for the community.

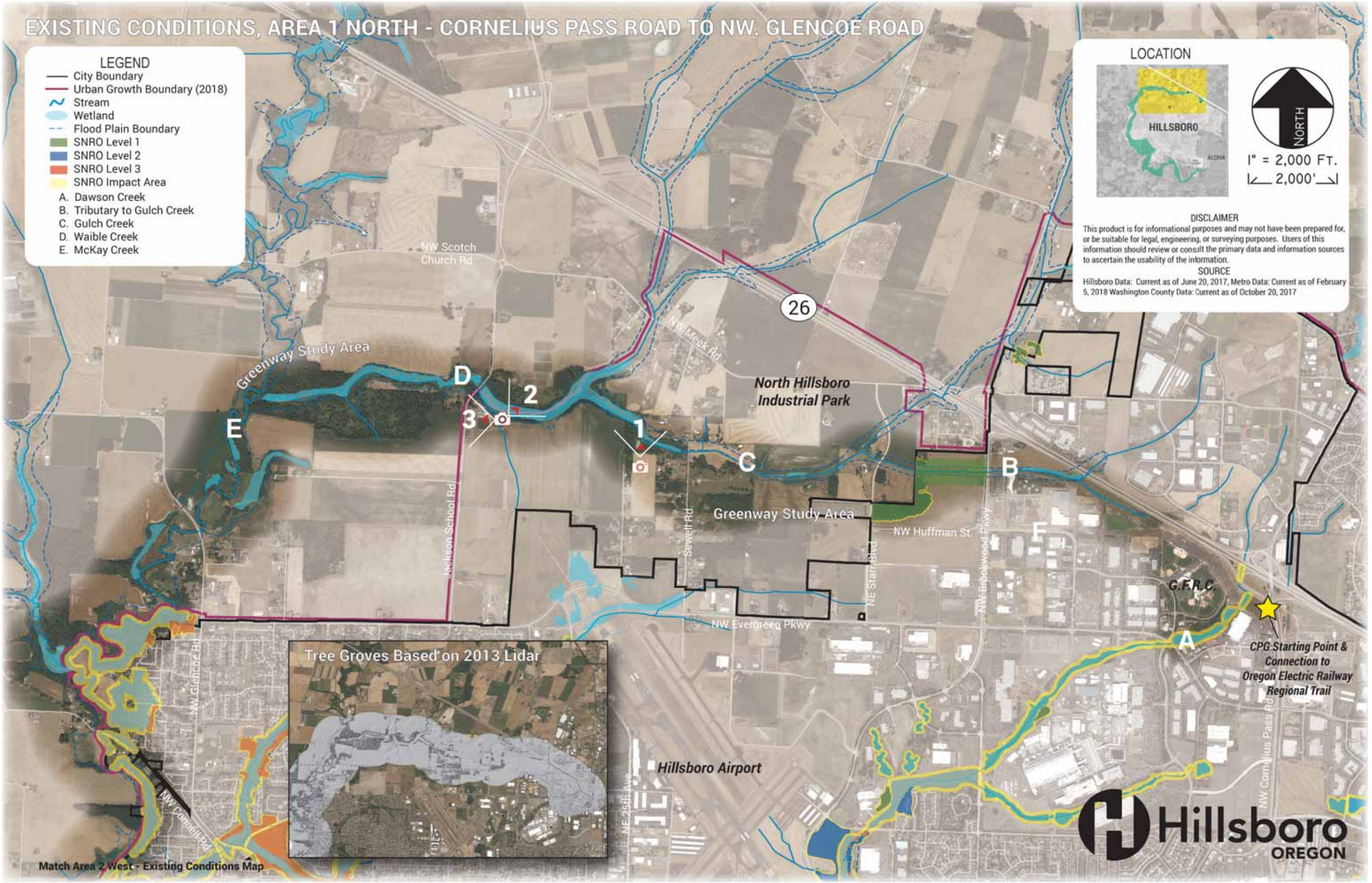
Segments 4 and 5 are in Jackson East, a future designated urban expansion area. The Greenway starts the transition from Urban to Rural and Natural Settings along these segments. This occurs around Sewell Road where we see the beginning of well-established creek corridors with intact environments. Stream conditions are less degraded than in the North Hillsboro area. With development pressures in the area, protection and enhancement of existing resources will be important to support the development with solid ecological functions. When designing the Greenway, thoughtful attention to the transition from Urban to Rural and Rural to Natural Settings will be key to creating a quality user experience.

When entering **Segment 6**, Greenway development in the area will rely on Natural Setting Design Guidelines. The focus of the area will be on stream stabilization/restoration as well as resource enhancement. Opportunities exist to utilize Greenway space for mitigation projects and forest planning as well as re-introduction of historically occurring ecosystems.

The final segments in this area are 7 and 8 along the McKay Creek area of the Greenway are where the alignment opens up to agricultural/rural lands with vast rural vistas and starts the transition back to urban residential. The east side of the Greenway abuts single-family residential within the City. The west side of the Greenway is outside the Urban Growth Boundary and City limits. This area is primarily large agricultural land tracts. McKay Creek floods annually (see the floodplain boundary on the **Existing Conditions Map** for extent). The developed nature of these segments adds several infrastructure crossings such as rural and urban roads and railroads. Significant Natural Resource Overlay does not exist outside of the City limits. Areas outside the City limits are not scheduled for inclusion in the Urban Growth Boundary in the near future.

Refer to the **Greenway Design Guidelines** for treatment of these areas.

EXISTING CONDITIONS, AREA 1 NORTH - CORNELIUS PASS ROAD TO NW. GLENCOE ROAD



Match Area 2 West - Existing Conditions Map

CONCEPTUAL GREENWAY SEGMENTS AREA 1 NORTH - CORNELIUS PASS ROAD TO NW GLENCOE ROAD

LEGEND

2015 Trails Master Plan Alignments
- Regional Trail
- Community Trail
- Community Greenway Trail
- Local Greenway Trail
- Local Trail
- On-street Connection

Existing Trails and Connection
- Existing On-street Connection
- Existing Trail

Other Features
- B.P.A. Easement
- Cilty Boundary
- Stream/ Rivers
- Flood Plain Boundary
- Segment Start/End Point
- Existing Parks
- School Properties

LOCATION

NORTH

1" = 2,000 FT.

2,000'

DISCLAIMER

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

SOURCE

Hillsboro Data: Current as of June 20, 2017, Metro Data: Current as of February 5, 2018 Washington County Data: Current as of October 20, 2017

The information provided is for planning purposes only. Final location of conceptual alignments and amenities will require further investigation, conversation, and process.

NW Scotch Church Rd

Greenway Study Area

26

NW Meek Rd

North Hillsboro Industrial Park

Segment 5

Segment 6

Segment 7

Segment 4

Segment 3

Brookwood Pedestrian Bridge

Segment 2

Segment 1

Greenway Study Area

NW Huffman St

Jackson School Rd

Sewell Rd

NE Starr Blvd

NW Brookwood Pkwy

G.F.R.C.

Segment 8

NW Evergreen Pkwy

CPG Starting Point & Connection to Oregon Electric Railway Regional Trail

NW Glencoe Rd

NW Cornelius Pass Rd

Segment 9

NW Cornell Rd

NE 25th Ave

Hillsboro Airport

Hillsboro OREGON

Match Area 2 West - Conceptual Greenway Segments Map

Segment 1

Location

Cornelius Pass Road to future alignment of Century Blvd. (edge of GFRC property).

Greenway Specifications

Jurisdiction:	City
Zoning:	I-P
Ownership:	City, Private
Setting:	Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	4’
Length:	3,200’ to 3,800’	

Surface Types:

Gravel		TSA	
Asphalt	X	Concrete	X
Boardwalks	X	Bridges	

Crossings: Future Century Boulevard Underpass (See Brookwood Parkway Overpass)

Facilities: Trailheads

Amenities

Benches:	X	Fencing:	X
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$508,000	$1,544,000
Land Cost Estimate:	$210,000	$430,000
Total:	$718,000	$1,974,000

Segment 2

Location

Future alignment of Century Drive (edge of GFRC property) to Brookwood Parkway.

Greenway Specifications

Jurisdiction:	City
Zoning:	I-P
Ownership:	City, Private
Setting:	Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’, 2’ & 4’
Length:	4,400’ to 8,000’	

Surface Types:

Gravel		TSA	
Asphalt	X	Concrete	X
Boardwalks	X	Bridges	

Crossings: Brookwood Parkway (Future Pedestrian Bridge)

Facilities: Trailheads, Picnic Area

Amenities

Benches:	X	Fencing:	X
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$868,000	$1,767,000
Land Cost Estimate:	$324,000	$817,000
Total:	$1,192,000	$2,584,000

Brookwood Parkway Overpass

Location

Over Brookwood Parkway.

Greenway Specifications

Jurisdiction:	City
Zoning:	N/A
Ownership:	City, Private
Setting:	Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	10’ & 12’	0’
Length:	400’	

Surface Types:

Gravel		TSA	
Asphalt		Concrete	
Boardwalks		Bridges	X

Crossings: Brookwood Parkway

Facilities: Pedestrian Bridge

Amenities

Benches:		Fencing:	
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$2,800,000	$3,500,000
Land Cost Estimate:	$73,000	$94,000
Total:	$2,873,000	$3,594,000

Segment 3

Location

South side of unnamed creek and Gulch Creek and from Brookwood Parkway to the east, crossing Starr Boulevard.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	I-S, FD-20, AF-5, I-P
Ownership:	Private
Setting:	Rural & Urban

Agencies

BPA		ODSL	
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’, 2’ & 4’
Length:	5,700’ to 12,000’	

Surface Types:

Gravel		TSA	
Asphalt	X	Concrete	X
Boardwalks		Bridges	X

Crossings: NE 41st Avenue, NE 30th Avenue

Facilities: Destination Trailhead, Picnic Area

Amenities

Benches:	X	Fencing:	X
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$1,112,000	$1,761,000
Land Cost Estimate	$484,000	$1,442,000
Total:	$1,596,000	$3,203,000

Segment 4

Location

Future alignment of NE 30th Avenue in the east, along north side of Gulch Creek to Sewell Road in the west.

Greenway Specifications

Jurisdiction:	County
Zoning:	FD-20, IFD-20
Ownership:	Private
Setting:	Natural & Rural

Agencies

BPA		ODSL	X
COH		ODFW	X
CWS	X	ODOT	
DEQ		SHPO	X
EPA	X	USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	2’ & 4’
Length:	1,800’ to 7,000’	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	
Boardwalks		Bridges	

Crossings:	Sewell Road
Facilities:	Trailheads, Picnic Area, Lookout

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$450,000	$1,096,000
Land Cost Estimate:	$115,000	$823,000
Total:	$565,000	$1,919,000

Segment 5

Location

Runs along the south alignment of Gulch and Waibel Creeks, and a large pond. The alignment runs from Sewell Road in the east to Jackson School Road in the west.

Greenway Specifications

Jurisdiction:	County
Zoning:	FD-20
Ownership:	Private
Setting:	Natural & Rural

Agencies

BPA		ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ	X	SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’, 2’ & 4’
Length:	5,500’ to 7,500’	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

Crossings:	Jackson School Road, Lookout
Facilities:	Viewpoints, Picnic Area, Trailheads, Lookout

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$1,278,000	$3,167,000
Land Cost Estimate:	$495,000	$1,594,000
Total:	$1,773,000	$4,761,000

Segment 6

Location

From Jackson School Road and Waibel Creek on the south side of Waibel Creek to the confluence of Waibel Creek and McKay Creek.

Greenway Specifications

Jurisdiction:	County
Zoning:	EFU
Ownership:	Private
Setting:	Natural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’, 10’ & 12’	0’ & 4’
Length:	5,800’ to 16,000’	

Surface Types:

Gravel	X	TSA	X
Asphalt		Concrete	
Boardwalks	X	Underpass	X

Crossings:	None
Facilities:	Trailhead, Picnic Areas

Amenities

Benches:	X	Fencing:	
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$875,000	$1,879,000
Land Cost Estimate:	$394,000	$1,264,000
Total:	$1,269,000	$3,143,000

Segment 7

Location

From the confluence of McKay and Waibel Creek south to Glencoe Road.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	EFU
Ownership:	Private
Setting:	Natural & Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’ & 4’
Length:	4,000’ to 4,700’	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

Crossings:	Glencoe Road
Facilities:	Lookout, Picnic Area, Trailheads

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$1,522,000	$3,275,000
Land Cost Estimate:	$302,000	$1,007,000
Total:	$1,824,000	$4,282,000

Segment 8

Location

From the intersection of Evergreen and NW Glencoe Road along McKay Creek to NW Hornecker Road in the south.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	EFU
Ownership:	Private, Swallowtail School, Boy Scouts of America
Setting:	Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	6', 8' & 10'	0', 2' & 4'
Length:	7,800' to 15,000'	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

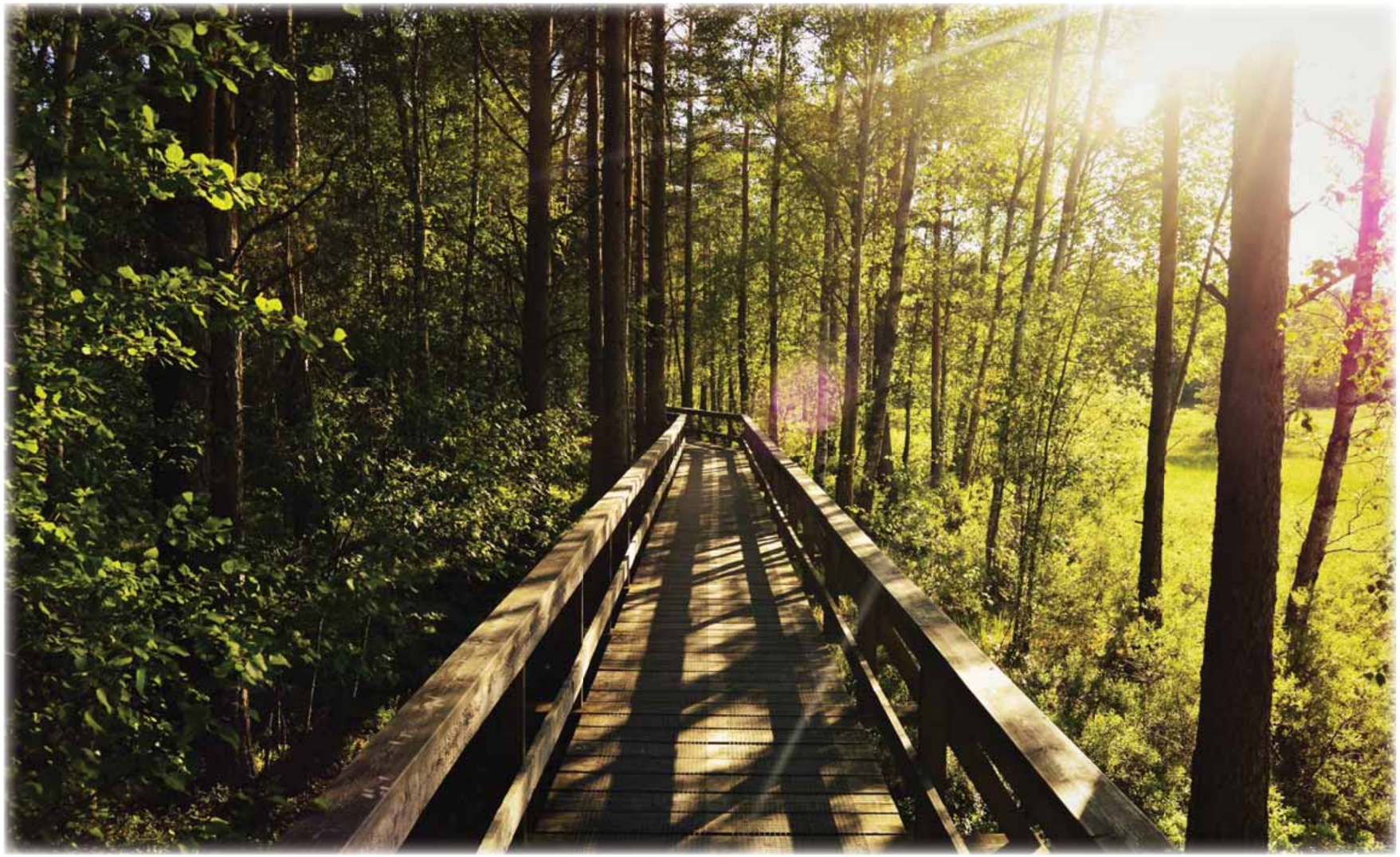
Crossings:	NW Connell Avenue
Facilities:	Picnic Area, Trailheads, Viewpoints

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost Estimate:	$1,439,000	$4,079,000
Land Cost Estimate:	$400,000	$2,641,000
Total:	$1,839,000	$6,720,000



Trail Alignment Summary - Area 1 North - NW Cornelius Pass Road to Glencoe Road

Segment ID	Potential Trail Segment Type	Potential Length (Total linear feet with various trail options)	Trail Width, ft (Not including Shoulders)	Shoulder Width, ft (Total Both Sides)	Setting	Surface Option 1 Low Cost	Potential Development Cost Low	Potential Easement Acquisition Cost Low	Surface Option 2 High Cost	Potential Development Cost High	Potential Easement Acquisition Cost High	Potential Total Amenities per Segment								
												Benches	Fencing Linear Feet	Light Fixtures	Refuse Containers	Signage	Lookouts	Picnic Area	Viewpoints	Trailheads
1	Trail & Boardwalk	3,200 - 3,700	8 & 10	4	Urban	Asphalt & Recycled Plastic Lumber	$508,000	$210,000	Concrete & Pultruded Fiberglass Grating	$1,544,000	$430,000	2	1,200	4	2	6	0	0	0	2
2	Trail	4,400 - 8,000	8 & 10	0, 2 & 4	Urban	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Asphalt & Recycled Plastic Lumber	$868,000	$324,000	Trail Surface Aggregate, Concrete & Pultruded Fiberglass Grating	$1,767,000	$817,000	3	200	6	5	9	0	1	0	2
Brookwood Parkway Crossing	Bridge/ Overpass	400	10 & 12	0	Urban	Steel/Concrete	$2,800,000	$73,000	Concrete/Steel/Wood	$3,500,000	$94,000	0	0	6	2	2	0	0	0	0
3	Trail & Bridge	5,700 - 12,000	8 & 10	0, 2 & 4	Rural & Urban	Asphalt & Steel/Concrete	$1,112,000	$484,000	Concrete & Concrete/ Steel/Wood	$1,761,000	$1,442,000	5	400	8	7	9	0	2	0	1
4	Trail	1,800 - 7,000	8 & 10	2 & 4	Natural & Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines & Trail Surface Aggregate	$450,000	$115,000	Asphalt	$1,096,000	$823,000	2	30	8	3	6	1	2	0	2
5	Trail, Bridge & Boardwalk	5,500 - 7,500	8 & 10	0, 2 & 4	Natural & Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate & Steel/ Concrete & Recycled Plastic Lumber	$1,278,000	$495,000	Trail Surface Aggregate & Asphalt	$3,167,000	$1,594,000	13	250	0	10	10	0	4	3	2
6	Trail, Boardwalk & Underpass	5,800 - 16,000	8, 10 & 12	0 & 4	Natural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Recycled Plastic Lumber & Steel/ Concrete	$875,000	$394,000	Trail Surface Aggregate	$1,879,000	$1,264,000	2	0	0	2	3	0	0	0	1
7	Trail & Bridge	4,000 - 4,700	8 & 10	0 & 4	Natural & Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, & Steel/ Concrete	$1,552,000	$302,000	Asphalt, Trail Surface Aggregate & Concrete/ Steel/Wood	$3,275,000	$1,007,000	3	500	0	6	5	2	2	0	1
8	Trail, Boardwalk, On-Street & Bridge	7,800 - 15,000	6, 8 & 10	0, 2 & 4	Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, Recycled Plastic Lumber & Steel/Concrete	$1,439,000	$400,000	Trail Surface Aggregate & Asphalt	$4,079,000	$2,641,000	8	2,900	0	13	18	1	4	2	4

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AREA 2 WEST - NW GLENCOE ROAD TO MINTER BRIDGE ROAD

Area 2 of the Crescent Park Greenway connects at NW Glencoe Road and runs south/southeast to Minter Bridge Road. Within Area 2, seven segments have been identified. The Greenway segments are generally organized conceptually in implementable segments that typically start and end at road intersections or significant changes in the landscape.

Area 2 Existing Conditions

The west area of the Greenway (starting around **Segment 8**) is where the Greenway transitions from agricultural/rural lands to urban residential. The east side of the Greenway study area from **Segment 9** through 11 abuts single-family residential. The west side of the Greenway is outside the Urban Growth Boundary and City limits. This area is primarily large agricultural land tracts. McKay and Dairy Creeks flood annually (see the floodplain boundary on the **Existing Conditions Map** for extent). The developed nature of this segment adds several infrastructure crossings such as rural and urban roads and railroads.

Flooding will make it difficult to develop a year-round accessible trail within the Greenway space. Several challenging crossings exist in this area, at Baseline Road and at the P&W Railroad line (see photos 1 through 4). Residential property ownership within the City limits may make developing a trail within the City boundary difficult. Trail alignments outside the Urban Growth Boundary and City limits could be a good alternative. Larger tax lots and fewer landowners and agriculturally zoned lands have a potential to create a unique trail experience, highlighting the Greenway as well as the beautiful agricultural landscape and cultural heritage of the area. Significant Natural Resource Overlay does not yet exist outside of the City limits. Areas outside the City limits are not scheduled for inclusion in the Urban Growth Boundary in the near future. Clean Water Services and the County are the primary jurisdictions in those areas.

South of this area are extensive wetlands and future wetland expansion areas. The Jackson Bottom Wetlands Preserve is a publicly owned preserve (Jackson Bottom Wetlands Preserve, Clean Water Services & City of Hillsboro) within the conceptual Greenway. North of the Greenway is urban land uses. To the south is rural agriculture and floodplain; this area is also outside of the Urban Growth Boundary and part of the Rural Reserves. We can assume these areas will not become urban in the near future.

Urban/Rural edge Illustrating the landscape on the Urban Growth Boundary edge and existing resources along McKay Creek (See 1 on Existing Conditions Map)

Area 2 Greenway Design

In this area of the Greenway, Natural and Rural Settings are the primary character.

No new development will likely occur in the next 50 years (there is no planned expansion of the Urban Growth Boundary or significant developable land tracts in the City limits). Most Greenway development could focus on restoration and possibly mitigation areas. Areas within unincorporated Washington County will require further discussion and coordination with the County and private landowners. Work with willing private landowners to co-create the Greenway and trail to offer a quality user experience that will not interfere with farm operations.

Segments 10 through 14 are constrained by the floodplain, annual flooding, existing urban development, and agricultural uses. Developing the Greenway and trail elements will require using a myriad of options such as:

- Working with property owners to enhance the Greenway.
- Researching other regulatory agencies who need to be involved in the design process.
- On-street connections, boardwalks, and seasonal trails.
- A water trail along the Tualatin River in this area, from the Jackson Bottom Wetlands Preserve to Rood Bridge Park.

Greenway design in the Jackson Bottom area will primarily depend on existing plans and efforts to restore the Jackson Bottom Wetlands Preserve as well as the Clean Water Services future wetlands project. Notice that the conceptual Greenway boundary is the broadest cross-section of the Greenway, primarily due to the floodplain. Each year, the Jackson Bottom Wetlands Preserve sees flooding for almost the entire area, as well as the surrounding Tualatin River and farmland. When developing the Greenway in the Jackson Bottom Wetlands Preserve, refer to existing plans.

Refer to the **Greenway Design Guidelines** for treatment of these areas.

NOTE: *Certain portions of the proposed Greenway are outside of the City limits and Urban Growth Boundary; further research and discussion will be needed with the County, other entities, and property owners prior to further development of the Greenway.*

EXISTING CONDITIONS, AREA 2 WEST - NW. GLENCOE ROAD TO MINTER BRIDGE ROAD

LEGEND

- City Boundary
- Urban Growth Boundary (2018)
- Stream
- Wetland
- Flood Plain Boundary
- SNRO Level 1
- SNRO Level 2
- SNRO Level 3
- SNRO Impact Area
- A. McKay Creek
- B. Dairy Creek
- C. Tualatin River

LOCATION

NORTH

1" = 2,000 FT.

2,000'

DISCLAIMER

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

SOURCE

Hillsboro Data: Current as of June 20, 2017, Metro Data: Current as of February 5, 2018 Washington County Data: Current as of October 20, 2017

Tree Groves Based on 2013 Lidar

City of Cornelius

SE Tualatin Valley Hwy / SW Baseline St

SW 331st Ave

NW Cavens Ln

NW Lenox Rd

NW Hornecker Rd

NW 13th Ave

NW Cornell Rd

NW Glencoe Rd

8

219

Clean Water Services/ Jackson Bottom Wetlands (Public Land, Wetlands)

City of Hillsboro Jackson Bottom Wetlands (Public Land, Wetlands)

Downtown Hillsboro

SW Hillsboro Hwy

Future Minter Bridge Park Site

SW Minter Bridge Rd

Match Area 3 South - Existing Conditions Map

Match Area 1 North - Existing Conditions Map

Hillsboro OREGON

Area 5 - McKay Creek Existing Conditions Map

CONCEPTUAL GREENWAY SEGMENTS, AREA 2 WEST - NW. GLENCOE ROAD TO MINTER BRIDGE ROAD

LEGEND

2015 Trails Master Plan Alignments
- Regional Trail
- Community Trail
- Community Greenway Trail
- Local Greenway Trail
- Local Trail
- On-street Connection

Existing Trails and Connection
- Existing On-street Connection
- Existing Trail

Other Features
- B.P.A. Easement
- Cilty Boundary
- Stream/ Rivers
- Flood Plain Boundary
- Segment Start/End Point
- Existing Parks
- School Properties

LOCATION

NORTH

1" = 2,000 FT.

2,000'

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SOURCE

Hillsboro Data: Current as of June 20, 2017, Metro Data: Current as of February 5, 2018 Washington County Data: Current as of October 20, 2017

Match Area 3 South - Conceptual Greenway Segments Map

City of Cornelius

SE Tualatin Valley Hwy

SW 331st Ave

Baseline St

Segment 11

Segment 12

Segment 13

Segment 14

Segment 15

Segment 10

Segment 9

Segment 8

Segment 7

NW Cavens Ln

NW Valley Rd

NW Hornecker Rd

NW 13th Ave

NW Glencoe Rd

8

219

OR 217 Elevated Boardwalk

Clean Water Services/ Jackson Bottom Wetlands (Public Land, Wetlands)

City of Hillsboro Jackson Bottom Wetlands (Public Land, Wetlands)

SW Hillsboro Hwy

Downtown Hillsboro

Future Minter Bridge Park Site

SW Minter Bridge Rd

Match Area1 North - Conceptual Greenway Segments Map

The information provided is for planning purposes only. Final location of conceptual alignments and amenities will require further investigation, conversation, and process.

Hillsboro OREGON

Segment 9

Location

From the intersection of OS 4, 8A, and NW Hornecker Road south along McKay Creek to NW Padgett Road.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	SFR-7, R-9
Ownership:	Private
Setting:	Rural/Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	6', 8' & 10'	0' & 4'
Length:	4,000' to 13,000'	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	
Boardwalks		Bridges	X

Crossings:

Facilities: Trailheads, Picnic Area, Viewpoint

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$669,000	$1,572,000
Land Cost:	$856,000	$2,020,000
Total:	$1,525,000	$3,592,000

Segment 10

Location

From Padgett Road in the north along Dairy Creek onto NW 1st Avenue along the driving range and cemetery to the P&W Railroad tracks to the south.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	SFR-7, SFR-8.5, R-9, C-G, SFR-10
Ownership:	Private
Setting:	Rural/Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	6', 8' & 10'	0', 2' & 4'
Length:	4,300' to 10,000'	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	X
Boardwalks		Bridges	X

Crossings: P&W Railroad, Jackson Street

Facilities: Trailhead

Amenities

Benches:	X	Fencing:	
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,309,000	$2,158,000
Land Cost:	$362,000	$1,413,000
Total:	$1,671,000	$3,571,000

Segment 11

Location

From the north side of the Hillsboro Pioneer Cemetery to the intersection of SW Tualatin Valley Highway and SE 17th Avenue.

Greenway Specifications

Jurisdiction:	City
Zoning:	C-G
Ownership:	City, Private
Setting:	Rural/Urban

Agencies

BPA		ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8'	0' & 4'
Length:	700' to 1,800'	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	X
Boardwalks		Bridges	

Crossings: SE Tualatin Valley Hwy 8

Facilities: Trailhead, Picnic Area

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$79,000	$388,000
Land Cost:	$83,000	$272,000
Total:	$162,000	$660,000

Segment 12

Location

Intersection of SW Tualatin Valley Highway and SE 17th Avenue to Dairy Creek Park.

Greenway Specifications

Jurisdiction:	County
Zoning:	AF-20
Ownership:	Private
Setting:	Rural/Urban

Agencies

BPA		ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8' & 10'	0' & 4'
Length:	2,200' to 7,000'	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	X
Boardwalks		Bridges	X

Crossings: P&W Railroad

Facilities: Destination Trailhead

Amenities

Benches:	X	Fencing:	X
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$522,000	$4,505,000
Land Cost:	$244,000	$958,000
Total:	$766,000	$5,463,000

Segment 13

Location

From Dairy Creek Park along Clean Water Services future development area to the intersection of SW Wood Street and OR 219 (Hillsboro Highway).

Greenway Specifications

Jurisdiction:	City
Zoning:	I-G, EFU
Ownership:	City of Hillsboro, Clean Water Services, P&W Railroad
Setting:	Natural/Rural

Agencies

BPA		ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’ & 4’
Length:	5,000’ to 24,000’	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

Crossings:	First Avenue
Facilities:	Viewpoint, Lookout, Local Trailhead

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$742,000	$3,680,000
Land Cost:	$415,000	$1,721,000
Total:	$1,157,000	$5,401,000

Trail Segment WT- 1

Location

From Jackson Bottom Wetlands Preserve on the Tualatin River East Ending at Rood Bridge Park at the Boat Launch.

Greenway Specifications

Jurisdiction:	City, County, State
Zoning:	N/A
Ownership:	Public (waterways), City, Private
Setting:	Natural (Water Trail)

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS	X	Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	n/a	n/a
Length:	28,000’ to 35,000’	

Surface Types:

Gravel		TSA	
Asphalt		Concrete	
Boardwalks		Bridges	

Crossings:	None
Facilities:	Trailhead

Amenities

Benches:		Fencing:	
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$130,000	$640,000
Land Cost:	$0,000	$250,000
Total:	$130,000	$890,000

Segment 14

Location

Existing trail in Jackson Bottom Wetlands to the future Minter Bridge Park site along SW Minter Bridge Road.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	SFR-9, EFU, R-9
Ownership:	City of Hillsboro, Private
Setting:	Natural/Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ	X	SHPO	X
EPA	X	USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’, 10’, 12’ & 14’	0’, 2’ & 4’
Length:	14,000’ to 31,000’	

Surface Types:

Gravel	X	TSA	XX
Asphalt		Concrete	
Boardwalks	X	Bridges	X

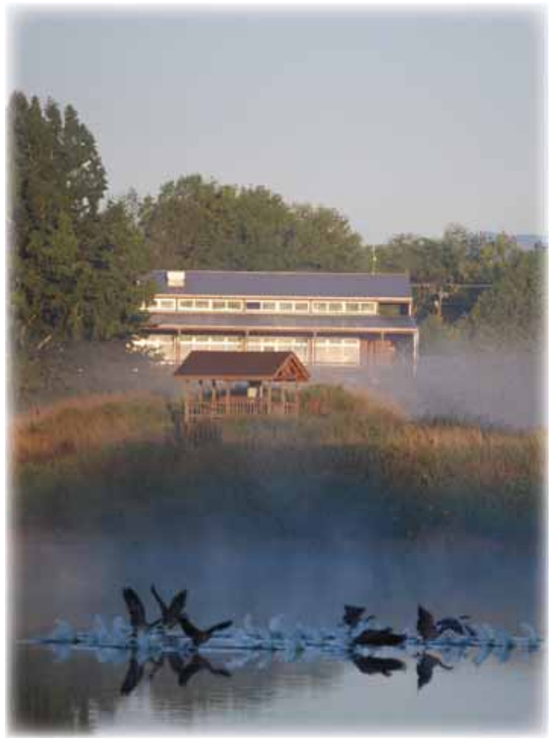
Crossings:	Morilon Lane
Facilities:	Picnic Area, Destination Trailhead

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,951,000	$10,471,000
Land Cost:	$339,000	$1,510,000
Total:	$2,290,000	$11,981,000



Trail Alignment Summary - Area 2 West - NW Glencoe Road to Minter Bridge Road

Segment ID	Potential Trail Segment Type	Potential Length (Total linear feet with various trail options)	Trail Width, ft (Not including Shoulders)	Shoulder Width, ft (Total Both Sides)	Setting	Surface Option 1 Low Cost	Potential Development Cost Low	Potential Easement Acquisition Cost Low	Surface Option 2 High Cost	Potential Development Cost High	Potential Easement Acquisition Cost High	Potential Total Amenities per Segment								
												Benches	Fencing Linear Feet	Light Fixtures	Refuse Containers	Signage	Lookouts	Picnic Area	Viewpoints	Trailheads
9	Trail & Bridge	4,000 - 13,000	6, 8 & 10	0 & 4	Rural/ Urban	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate & Steel/ Concrete	$669,000	$856,000	Asphalt & Concrete/ Steel	$1,572,000	$2,020,000	5	2800	0	6	9	0	1	1	2
10	Trail, On-Street & Bridge	4,300 - 10,000	6, 8 & 10	0, 2 & 4	Rural/ Urban	Trail Surface Aggregate, Asphalt & Steel/Concrete	$1,309,000	$362,000	Asphalt, Concrete & Concrete/Steel/ Wood	$2,158,000	$1,413,000	1	0	0	4	10	0	0	0	1
11	Trail	700 - 1,800	8	0 - 4	Rural/ Urban	Trail Surface Aggregate & Asphalt	$79,000	$83,000	Asphalt & Concrete	$388,000	$272,000	1	50	0	1	2	0	1	0	1
12	Trail, On-Street & Bridge	2,200 - 7,000	8 & 10	0 - 4	Rural/ Urban	Trail Surface Aggregate, Asphalt & Steel/Concrete	$522,000	$244,000	Asphalt Concrete & Concrete/Steel/ Wood	$4,505,000	$958,000	1	30	2	2	9	0	0	0	2
13	Trail, Boardwalk & Bridge	5,000 - 24,000	8 & 10	0 - 4	Natural/ Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, Recycled Plastic Lumber & Steel/Concrete	$742,000	$415,000	Asphalt, Pultruded Fiberglass Grating & Concrete/Steel/ Wood	$3,680,000	$1,721,000	12	2,300	0	10	14	1	4	2	2
WT - 1	Water Trail	28,000 - 35,000	N/A	N/A	Natural (Water Trail)	N/A	$130,000	$0	N/A	$640,000	$250,000	-	-	-	3	15	-	-	-	-
14	Trail	14,000 - 31,000	8, 10, 12 & 14	0, 2 & 4	Natural/ Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, Asphalt, Concrete, Recycled Plastic Lumber & Steel/Concrete	$1,951,000	$339,000	Gravel (1/4 & 3/4 minus)/Crusher Fines, Trail Surface Aggregate, Asphalt, Concrete, Pultruded Fiberglass Grating & Concrete/Steel/ Wood	$10,471,000	$1,510,000	10	1100	0	10	18	1	3	2	4

AREA 3 SOUTH - MINTER BRIDGE ROAD TO SW 209TH AVENUE

NOTE:
Certain portions of the proposed Greenway are outside of the City limits and Urban Growth Boundary; further research and discussion will need to occur with the County, stakeholders, and property owners prior to planning future Greenway segments.

Area 3 of the Crescent Park Greenway connects to the residential areas in South Hillsboro including future Witch Hazel, Witch Hazel South, and the South Hillsboro Community Area. Area 3 starts with **Segment 15**, runs from Minter Bridge Road, and ends on SW 209th Avenue with **Segment 20**. The Greenway follows the Tualatin River and Butternut Creek. The Greenway segments are generally organized conceptually in implementable segments. Segments typically start and end at road intersections or significant changes in the landscape

Existing Conditions

Area 3 of the Greenway experiences annual flooding of the Tualatin River. The area within the Greenway will be challenging to construct soft surface trails due to winter flooding. The area is on the urban/rural fringe so locating the trail outside of the City limits and outside of the Urban Growth Boundary could be an opportunity. Highlighting cultural resources in the area (such as agricultural heritage) could be a benefit to trails outside the Urban Growth Boundary. Constraints for trail alignments include residential lots along the east side of the area and the Tualatin River. There also may be opportunities to work with the Meriwether National Golf Club and larger landowners. Rood Bridge Park is the only significant parcel of publicly owned land, with existing trails and facilities, to act as a trailhead. The Greenway will connect to the current system in Rood Bridge Park. The South Hillsboro Community Area is the largest area of expansion for the Urban Growth Boundary and City limits. This area will primarily be residential development (see the South Hillsboro Community Plan, 2014). A large Planned Urban Development is in process that will initiate the development of South Hillsboro.

Tualatin River near Rood Bridge Park

Butternut Creek is a tributary to the Tualatin River and characterized by steep slopes along the stream and overgrown vegetation. The stream floods in the wet season. Implementation of the Greenway should be a priority with new and future development within the area. Areas outside of the current expansion will not become urban in the near future; additionally, these areas are not designated with Significant Natural Resource Overlays. Clean Water Services and Washington County are the stakeholders in this area.

Area 3 Greenway Design

Greenway design in this area will depend on working with other agencies since the Greenway follows the Tualatin River corridor and is primarily outside of the City limits and Urban Growth Boundary. Connecting with the Tualatin River Keepers, the state, and the Tualatin River Watershed Council is a useful first step. Refer to existing regulatory documents and management plans such as the Tualatin River Watershed Council Action Plan. The **Greenway Design Guidelines** should be used as a supplement to guide nearby development and edge treatments.

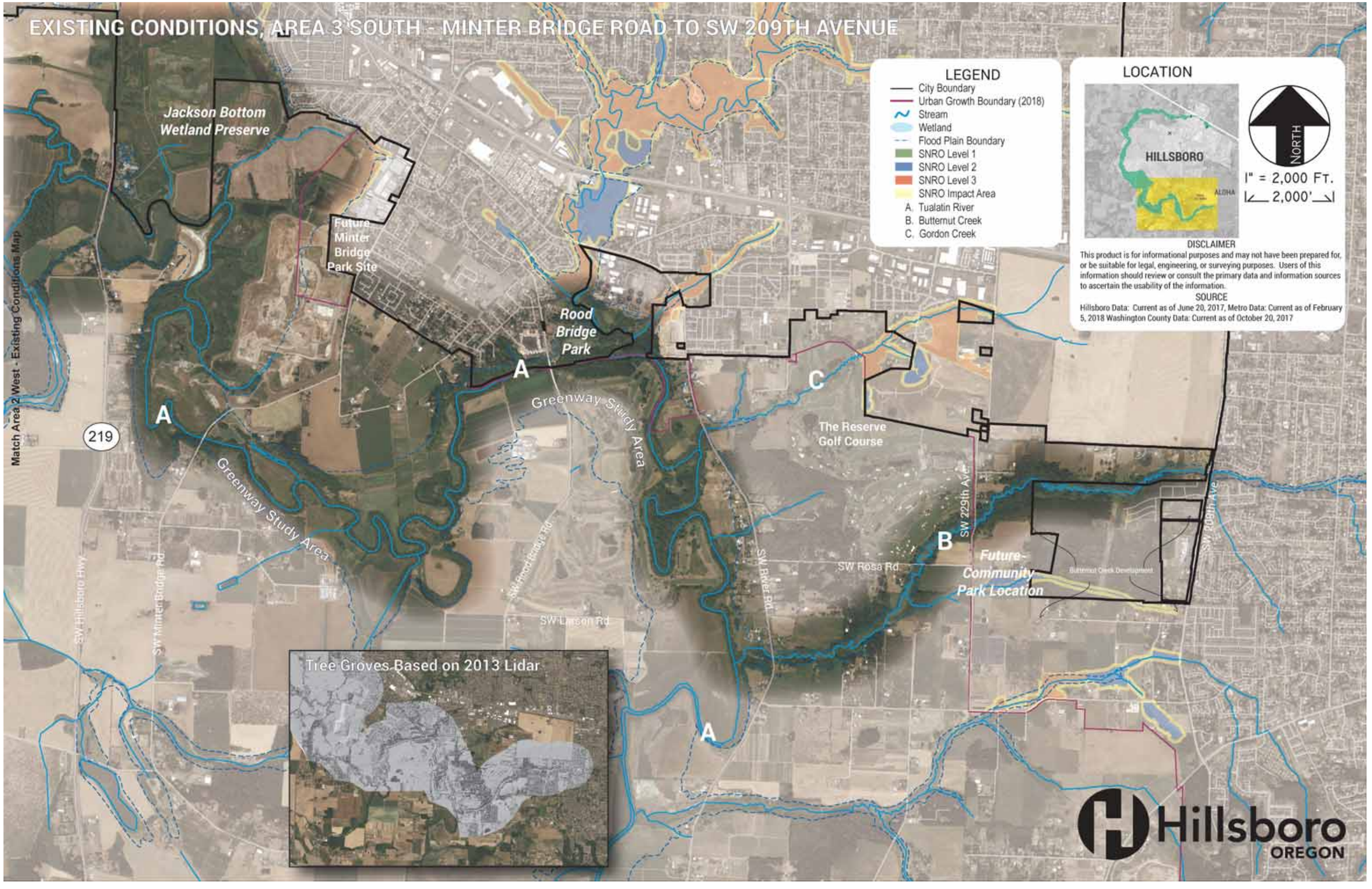
Setting types vary from Rural to Urban. Urban Settings occur along the Greenway closer to South Hillsboro development. Careful attention to balancing space for urban development and necessary space for Greenway systems to function properly will be critical. Work with developers, City departments, and other agencies in the early stages to achieve balance.

Areas outside of future development are designated as a Rural Setting. Working with agencies and property owners early to enhance the Greenway in those areas will be important. Consider partnerships to acquire easements or land within the Greenway for enhancement and trail development.

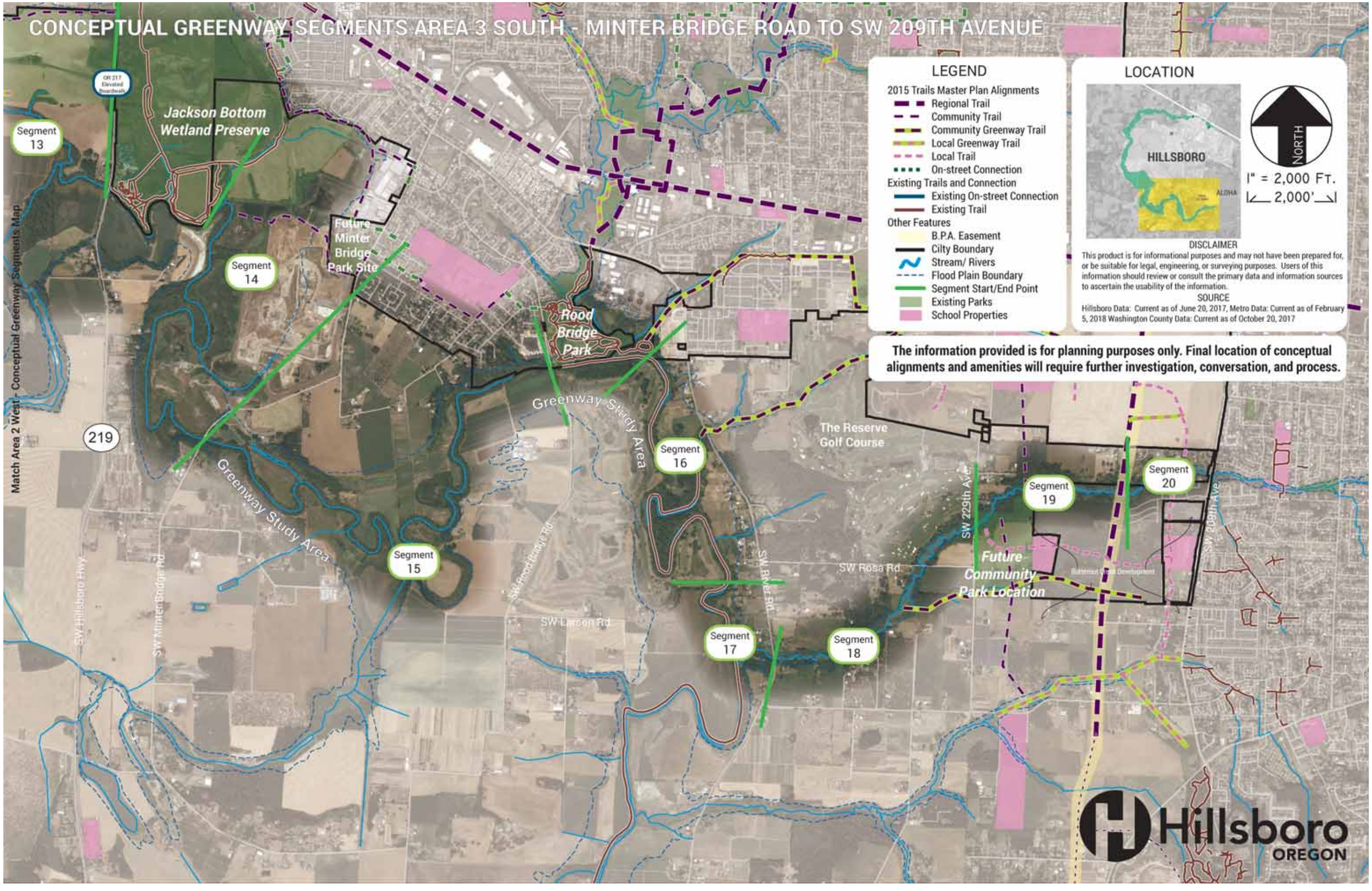
The Greenway transitions from Urban to Rural Settings near the future community park location. Use that property to make a smooth transition between the setting designations.

Refer to the **Greenway Design Guidelines** for treatment of these areas.

EXISTING CONDITIONS, AREA 3 SOUTH - MINTER BRIDGE ROAD TO SW 209TH AVENUE



CONCEPTUAL GREENWAY SEGMENTS AREA 3 SOUTH - MINTER BRIDGE ROAD TO SW 209TH AVENUE



LEGEND

2015 Trails Master Plan Alignments
- Regional Trail
- Community Trail
- Community Greenway Trail
- Local Greenway Trail
- Local Trail
- On-street Connection

Existing Trails and Connection
- Existing On-street Connection
- Existing Trail

Other Features
- B.P.A. Easement
- Cilty Boundary
- Stream/ Rivers
- Flood Plain Boundary
- Segment Start/End Point
- Existing Parks
- School Properties

LOCATION

NORTH

1" = 2,000 FT.

2,000'

DISCLAIMER

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

SOURCE

Hillsboro Data: Current as of June 20, 2017, Metro Data: Current as of February 5, 2018 Washington County Data: Current as of October 20, 2017

The information provided is for planning purposes only. Final location of conceptual alignments and amenities will require further investigation, conversation, and process.

Hillsboro OREGON

Segment 15

Location

Minter Bridge Road across from future Minter Bridge Park along SE Gerhard Drive onto Hillsboro High School to SE Radcliff Court.

Greenway Specifications

Jurisdiction:	City
Zoning:	SFR-7
Ownership:	Hillsboro School District, Private
Setting:	Rural, Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	X
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS	X	Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	6’, 8’ & 10’	0’, 2’ & 4’
Length:	5,000’ to 21,000’	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	X
Boardwalks	X	Bridges	X

Crossings:	Rood Bridge Road
Facilities:	None

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,246,000	$7,623,000
Land Cost:	$986,000	$3,125,000
Total:	$2,232,000	$10,748,000

Segment 16

Location

From the east edge of Rood Bridge Park (connecting to existing trail) following the Tualatin River south until connecting to Segment 17.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	EFU, MFR-1, FD-20, AF-5
Ownership:	City of Hillsboro, Private
Setting:	Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’ & 4’
Length:	6,000’ to 16,000’	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

Crossings:	None
Facilities:	Boat Launch, Local Trailhead, Lookout

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,764,000	$3,246,000
Land Cost:	$720,000	$2,040,000
Total:	$2,484,000	$5,286,000

Segment 17

Location

Just south of Rosa Road to the intersection of River Road and Butternut Creek.

Greenway Specifications

Jurisdiction:	Washington County
Zoning:	EFU
Ownership:	Private
Setting:	Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’ & 4’
Length:	4,200’	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	
Boardwalks		Bridges	X

Crossings:	SW River Road
Facilities:	None

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,232,000	$1,659,000
Land Cost:	$330,000	$495,000
Total:	$1,562,000	$2,154,000

Segment 18

Location

From River Road to SW 229th Avenue (future Century Boulevard), south side of Butternut Creek.

Greenway Specifications

Jurisdiction:	County
Zoning:	EFU
Ownership:	Private
Setting:	Natural/Rural

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 10’	0’ & 4’
Length:	6,400’ to 13,500’	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	
Boardwalks	X	Bridges	X

Crossings:	SW Rosa Rd, Century Blvd.
Facilities:	Viewpoint, Lookout, Picnic Area, Local Trailhead

Amenities

Benches:	X	Fencing:	X
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$745,000	$1,949,000
Land Cost:	$613,000	$1,827,000
Total:	$1,358,000	$3,776,000

Segment 19

Location

From future alignment of Century Boulevard to SE 74th Avenue, north side of Butternut Creek.

Greenway Specifications

Jurisdiction:	County
Zoning:	FD-20
Ownership:	Private
Setting:	Rural/Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ 10’ & 12’	0’, 2’ & 4’
Length:	3,200’ to 10,000’	

Surface Types:

Gravel		TSA	X
Asphalt	X	Concrete	X
Boardwalks	X	Bridges	

Crossings:	Cornelius Pass Road
Facilities:	Trailheads, Picnic Areas, Viewpoint

Amenities

Benches:	X	Fencing:	
Lighting:		Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$1,073,000	$1,981,000
Land Cost:	$229,000	$1,167,000
Total:	$1,302,000	$3,148,000

Segment 20

Location

SE 74th Avenue to SW 209th Avenue, north side of Butternut Creek.

Greenway Specifications

Jurisdiction:	City, County
Zoning:	FD-20
Ownership:	Private
Setting:	Natural/Urban

Agencies

BPA	X	ODSL	X
COH	X	ODFW	
CWS	X	ODOT	X
DEQ		SHPO	X
EPA		USACE	X
NMFS		Wash. Co.	X

Trail Specifications

	Trail	Shoulders (each side)
Width:	8’ & 12’	0’, 2’ & 4’
Length:	3,000’ to 7,500’	

Surface Types:

Gravel	X	TSA	X
Asphalt	X	Concrete	X
Boardwalks	X	Bridges	

Crossings:	BPA Corridor
Facilities:	Trailhead, Picnic Areas, Lookout

Amenities

Benches:		Fencing:	X
Lighting:	X	Refuse:	X
Signage:	X		

Cost Estimation

	Low Estimate	High Estimate
Development Cost:	$640,000	$2,081,000
Land Cost:	$240,000	$1,518,000
Total:	$880,000	$3,599,000

Trail Alignment Summary - Area 3 South - Minter Bridge Road to SW 209th Avenue

Segment ID	Potential Trail Segment Type	Potential Length (Total linear feet with various trail options)	Trail Width (Not including Shoulders)	Shoulder Width (Each Side)	Setting	Surface Option 1 Low Cost	Potential Development Cost Low	Potential Easement Acquisition Cost Low	Surface Option 2 High Cost	Potential Development Cost High	Potential Easement Acquisition Cost High	Potential Total Amenities per Segment								
												Benches	Fencing Linear Feet	Light Fixtures	Refuse Containers	Signage	Lookouts	Picnic Areas	Viewpoints	Trailheads
15	Trail & On-Street & Bridges	5,000 - 21,000	6, 8 & 10	0, 2 & 4	Rural/ Urban	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, Asphalt & Steel/ Concrete	$1,246,000	$986,000	Asphalt, Concrete & Concrete/Steel/ Wood	$7,623,000	$3,125,000	10	9,000	0	15	25	2	2	0	3
16	Trail, Boardwalks & Bridge	6,000 - 16,000	8 & 10	0 & 4	Rural	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Trail Surface Aggregate, Recycled Plastic Lumber & Steel/Concrete	$1,764,000	$720,000	Gravel (1/4 & 3/4 minus)/Crusher Fines, Asphalt, Pultruded Fiberglass Grating & Concrete/ Steel/Wood	$3,246,000	$2,040,000	3	1,800	0	8	13	0	0	0	2
17	Trail & Bridge	4,200	8 & 10	4 & 0	Rural	Trail Surface Aggregate & Steel/Concrete	$1,232,000	$330,000	Asphalt & Concrete/ Steel/Wood	$1,659,000	$495,000	2	100	0	2	4	0	0	0	0
18	Trail & Bridge	6,400 - 13,500	8 & 10	0 & 4	Natural/ Rural	Trail Surface Aggregate & Steel/Concrete	$745,000	$613,000	Asphalt & Concrete/ Steel/Wood	$1,949,000	$1,827,000	4	300	0	5	14	1	1	3	2
19	Trail & Boardwalk	3,200 - 10,000	8, 10 & 12	0, 2 & 4	Rural/ Urban	Trail Surface Aggregate, Asphalt & Recycled Plastic Lumber	$1,073,000	$229,000	Asphalt	$1,981,000	$1,167,000	1	0	0	3	5	0	1	0	2
20	Trail & Boardwalks	3,000 to 7,500	8 & 12	0, 2 & 4	Natural/ Urban	Gravel (1/4 & 3/4 minus)/ Crusher Fines, Asphalt & Recycled Plastic Lumber	$640,000	$240,000	Concrete & Pultruded Fiberglass Grating	$2,081,000	$1,518,000	0	200	7	3	3	0	0	0	0

COST ESTIMATES

The Crescent Park Greenway Plan provides conceptual options for the implementation of the Greenway and recreational amenities. The recreational aspects of the Greenway are offered to provide implementers with a myriad of options to choose. Along trail segments, many amenity options are also called out, providing a multitude of options for implementation.

Two scenarios are identified in this section. Scenarios illustrating Basic Low and Basic High cost estimates are provided, giving decision-makers a base range of potential costs associated with the recreational aspects of the Greenway.

The Basic Low estimate illustrates the potential lowest cost approach to a complete Crescent Park Greenway Trail. This option combines the least expensive alignment route to provide a baseline cost for the Greenway Trail.

The Basic High estimate illustrates the potential highest cost approach to a complete Crescent Park Greenway Trail. This option combines the most expensive alignment route to provide a high-cost estimate for the Greenway trail.

Note: The trail alignment estimates include a combination of lookout towers, picnic areas, viewpoints, bridges, trailheads, boat launches, and trail furnishings. The Brookwood Parkway Overpass is estimated separately due to its cost. Lists of amenities and attributes for each segment and amenity can be found in the summary tables under the **Greenway Study Areas and Conceptual Trail Alignments** section. Estimates are for construction and purchase of 20' trail easements only; real property acquisition and Greenway restoration are not included due to the uncertainty and complexity of the Greenway.

Basic Low-High Cost Trail and Easement Estimate (in 2018 dollars)

Segment ID	Trail Segment Type	Setting	Potential Development Cost *(Low - High)*	Potential Easement Acquisition Cost *(Low - High)*	Potential Low Estimate Segment Cost *(Development and Acquisition)*	Potential High Estimate Segment Cost *(Development and Acquisition)*
Area 1 North						
1	Trail & Boardwalk	Urban	$508,000 - $1,544,000	$210,000 - $430,000	$718,000	$1,974,000
2	Trail	Urban	$868,000 - $1,767,000	$324,000 - $817,000	$1,192,000	$2,584,000
Brookwood Crossing	Bridge/ Overpass	Urban	$2,800,000 - $3,500,000	$73,000 - $94,000	$2,873,000	$3,594,000
3	Trail & Bridge	Rural & Urban	$1,112,000 - $1,761,000	$484,000 - $1,442,000	$1,596,000	$3,203,000
4	Trail	Natural & Rural	$450,000 - $1,096,000	$115,000 - $823,000	$565,000	$1,919,000
5	Trail, Bridge & Boardwalk	Natural & Rural	$1,278,000 - $3,167,000	$495,000 - $1,594,000	$1,773,000	$4,761,000
6	Trail, Boardwalk & Underpass	Natural	$875,000 - $1,879,000	$394,000 - $1,264,000	$1,269,000	$3,143,000
7	Trail & Bridge	Natural/Rural	$1,552,000 - $3,275,000	$302,000 - $1,007,000	$1,854,000	$4,282,000
8	Trail, Boardwalk, On-Street & Bridge	Rural	$1,439,000 - $4,079,000	$400,000 - $2,641,000	$1,839,000	$6,720,000
Area 2 West						
9	Trail & Bridge	Rural/ Urban	$669,000 - $1,572,000	$856,000 - $2,020,000	$1,525,000	$3,592,000
10	Trail, On-Street & Bridge	Rural/ Urban	$1,309,000 - $2,158,000	$362,000 - $1,413,000	$1,671,000	$3,571,000
11	Trail	Rural/ Urban	$79,000 - $388,000	$83,000 - $272,000	$162,000	$660,000
12	Trail, On-Street & Bridge	Rural/ Urban	$522,000 - $4,505,000	$244,000 - $958,000	$766,000	$5,463,000
13	Trail, Boardwalk & Bridge	Natural/ Rural	$742,000 - $3,680,000	$415,000 - $1,721,000	$1,157,000	$5,401,000
WT-1	Water Trail	Natural (Water Trail)	$130,000 - $640,000	$0 - $250,000	$130,000	$890,000
14	Trail	Natural/ Rural	$1,951,000 - $10,471,000	$339,000 - $1,510,000	$2,290,000	$11,981,000
Area 3 South						
15	Trail & On-Street & Bridges	Rural/ Urban	$1,246,000 - $7,623,000	$986,000 - $3,125,000	$2,232,000	$10,748,000
16	Trail, Boardwalks & Bridge	Rural	$1,764,000 - $3,246,000	$720,000 - $2,040,000	$2,484,000	$5,286,000
17	Trail & Bridge	Rural	$1,232,000 - $1,659,000	$330,000 - $495,000	$1,562,000	$2,154,000
18	Trail & Bridge	Natural/ Rural	$745,000 - $1,949,000	$613,000 - $1,827,000	$1,358,000	$3,776,000
19	Trail & Boardwalk	Rural/ Urban	$1,073,000 - $1,981,000	$229,000 - $1,167,000	$1,302,000	$3,148,000
20	Trail & Boardwalks	Natural/ Urban	$640,000 - $2,081,000	$240,000 - $1,518,000	$880,000	$3,599,000

Greenway Cost Estimate

	Low	*High*
Development and Acquisition for Greenway Trail	$31,198,000	$92,449,000

NEXT STEPS AND RECOMMENDATIONS

Preparation of the Crescent Park Greenway Plan is a major milestone in the long-term process of achieving the vision for the Crescent Park Greenway. Working closely with the community and stakeholders, the next steps will involve developing an **Implementation Plan** to guide the near-term development of the Greenway; and developing a **Management Plan** to guide how the Greenway will be managed and maintained over the long term. Some of the key aspects of these plans are captured below.

- **The Crescent Park Greenway Implementation Plan** will include or identify:
  - ✓ Greenway segment development priorities
  - ✓ Detailed Conceptual alignments, trailheads, and amenity locations
  - ✓ An in-depth public outreach component that utilizes programs like the Metro Study on Outreach and Engagement
  - ✓ Foster meaningful relationships with landowners
  - ✓ Identify and develop key partnerships critical to successful implementation and ongoing greenway management
  - ✓ Development and funding strategies for design
  - ✓ Code amendments necessary to facilitate implementation
  - ✓ Develop Citywide Greenway and natural resource policies
  - ✓ Long term management strategies
  - ✓ Identify opportunities for interpretive elements highlighting the recreational, historic, natural, and cultural resources of the trail corridor and region.
- **The Greenway Management Plan** will:
  - ✓ Include a citywide resource inventory reflecting the Crescent Park Greenway
  - ✓ identify management strategies, including stabilization and restoration of resource areas
  - ✓ Identify maintenance standards and natural resource-based management approaches that focus on best practices
  - ✓ Introduce a holistic approach to managing the Greenway and its functions

In addition, the process will entail updating **the City's Parks System Plan** to reflect the natural resources, facilities, and amenities of the Crescent Park Greenway. Furthermore, a comprehensive Significant Natural Areas Report and Plan could be developed to address the cumulative effects of implementing the Crescent Park Greenway. Planning and development of the Greenway are part of a broader conversation in the City about long-term, sustainable natural resource management and restoration.

List of Acronyms and Shorthand

ADA	Americans with Disabilities Act
BPA	Bonneville Power Administration
City	City of Hillsboro
COH	City of Hillsboro
Corps	U.S. Army Corps of Engineers
CUP	Conditional Use Permit
CWS	Clean Water Services
Department	Parks & Recreation Department
DEQ	Oregon Department of Environmental Quality
ECREP	Enhanced Conservation Reserve Enhancement Program
EPA	Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
GFRC	Gordon Faber Recreation Complex
GIS	geographic information system
Greenway	Crescent Park Greenway
JPA	Joint Permit Application
LIDA	Low Impact Development Approaches
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
ODFW	Oregon Department of Fish & Wildlife
ODOT	Oregon Department of Transportation
ODSL	Oregon Department of State Lands
ORS	Oregon Revised Statutes
OWEB	Oregon Watershed Enhancement Board
P&W	Portland & Western (Railroad)
Plan	Crescent Park Greenway Plan
RV	recreation vehicle
SHPO	State Historic Preservation Office
SLOPES	Standard Local Operating Procedures for Endangered Species
SNRO	Significant Natural Resource Overlay
TWIG	Tualatin Watershed Improvement Grant
UGB	Urban Growth Boundary
USACE	U.S. Army Corps of Engineers

Acknowledgments

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Julie Nix, Project Specialist

Special Thanks to:

City of Hillsboro Departments: City Manager's Office, Economic Development, Fire, Parks & Recreation, Planning, Police, and Public Works

Hillsboro Boards & Commissions: Arts and Culture Council, Historic Landmarks Advisory Committee

Hillsboro Organizations: Hillsboro School District, Hillsboro Historical Society

Washington County: Land Use and Transportation, Parks

Regional Agencies: Port of Portland, Clean Water Services, Metro, Oregon Department of Transportation, Confederated Tribes of the Grand Ronde, and Tualatin Watershed Council

Community Members

Thank you to community members who shared their opinions, sought more information, etc.
We appreciate your support for the Crescent Park Greenway.

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CRESCENT PARK GREENWAY PLAN - A CONCEPT PLAN AND IMPLEMENTATION GUIDE

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