Trolley Trail: An Assessment of Opportunities and Constraints

Jennifer Bell  
*Portland State University*

Michele Healy  
*Portland State University*

Stacy Burnett  
*Portland State University*

Beth Park  
*Portland State University*

Jennifer Shively  
*Portland State University*

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FORWARD

The purpose of this planning project was twofold. First, the project was completed as part of Planning Workshop, the capstone for the Master of Urban and Regional Planning program at Portland State University (PSU), and was intended to provide students with the opportunity to serve their personal and professional planning interests. Second, the project was completed for a client in the Portland metropolitan area with the intent of developing a product that will contribute to sustainability, quality of life, and social justice. It is with these two purposes in mind that this project has been completed.
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INTRODUCTION

In January 2002, Metro Regional Parks and Greenspaces (Metro) and North Clackamas Parks and Recreation District (NCPRE) contacted Portland State University’s Planning Workshop class for assistance with a regional trail planning project. Metro is the regional government for the Portland metropolitan area. Within Metro, the Regional Parks and Greenspaces staff administers the parks, open space, natural area, trails and greenways acquisition program for the citizens of the region. NCPRE is a special service district of Clackamas County that provides park and recreation services to communities in the northern portion of the county.

When the project was presented to the workshop class, Metro and NCPRE were beginning to plan for the conversion of a former streetcar right-of-way into a multi-use trail in North Clackamas County. Both agencies were interested in having a student group assist with the early phases of trail planning. In response to this interest, the workshop team completed a work plan detailing tasks and timelines for the workshop project. A part of the work plan was a problem statement that would guide the team’s work:

What are the opportunities and constraints that should guide the design and development of the Trolley Trail?

This report presents the workshop team’s findings of opportunities and constraints. This report will assist Metro and NCPRE in future trail planning phases. It will also assist hired professional consultants who will lead future planning and design efforts. The report is divided into three sections for easy reference as described below.

Section 1: Project Description

This section begins with a description of the project background. Next, the project’s significance both locally and regionally is discussed, and a general description of the trail corridor is given. The primary purpose of this section is to give context to the project.

Section 2: Analysis

The analysis section is divided into five discrete research categories: history, land use, vacant land, demographics, and environment. The purpose of conducting research in each category is as follows:

History — to identify opportunities to incorporate historical elements into the trail design.

Land Use — to characterize the land use patterns adjacent to the trail and to identify opportunities and constraints of the adjacent land uses.
Vacant Land — to identify potential land around the trail corridor that could be acquired for small neighborhood parks and larger community parks, as well as natural areas for wildlife habitat.

Demographics — to determine the socioeconomic and population characteristics of the neighborhoods surrounding the trail corridor.

Environment — to identify the environmental opportunities and constraints to trail development, including the presence of wetlands, drainage issues, and invasive species.

Within the document, each of these five categories includes an explanation of research methodology, a list of limitations (where appropriate), and a compilation of findings.

Section 3: Public Outreach

The team created a web-based virtual tour to be used as a public outreach and education tool by the workshop team, Metro, and NCPRD. The first part of this section describes the content and potential uses of the virtual tour. A copy of the tour on a compact disc is included with this report.

The team used the virtual tour to conduct focus group meetings. During the meetings, the participants viewed a draft of the virtual tour and gave feedback on opportunities and constraints of using the trail. This feedback is described in the second part of Section 3.

Appendices

There are a number of additional items included in the appendices, including historical photographs, vacant parcel descriptions, additional maps, and a user guide for the virtual tour.
Section I: Project Description
PROJECT DESCRIPTION

Project Background

Metro and NCPRD acquired the Portland Traction Company (PTC) streetcar line right-of-way in December 2001 with the intention of developing it into a regional multi-use trail. Funding came from NCPRD's "local share" portion of Metro's Open Spaces Bond Measure, which was approved by the region's voters in May 1995.

The PTC streetcar ran continuously on the rail line between February 1893 and January 1958. Freight service continued on the rail line until 1968. Since the rail line was abandoned, portions of the corridor have been used as an unimproved de facto trail by local residents and children.

In the late 1980s and early 1990s, Tri-Met, Oregon Department of Transportation (ODOT), Metro, Clackamas County, Milwaukie, Gladstone, Oregon City, and Portland studied the corridor as a potential light-rail route. The light-rail option was never implemented because it was not supported by the community.

Despite the lack of support for light-rail, the community has been involved with the redevelopment of this corridor into a trail. A group of 65 local residents have joined together in support of the trail and are in the process of creating a non-profit "friends" group, the Friends of the Trolley Trail. They serve as a liaison between the government agencies and the larger community. They have also given the trail its interim name, the Trolley Trail.

Project Significance

The development of this corridor into a multi-use trail has both local and regional importance. The trail completes an essential link in Metro's regional system of trails and greenspaces (see Figure 1). The trail will connect the Town Centers of Milwaukie and Gladstone. At the north end of the trail, users will be able to access the Springwater Corridor trail. At its southern end, users can continue along the I-205 Corridor trail and ultimately connect back to the Springwater Corridor, thus completing a 20-mile loop.

Locally, the trail will serve neighborhoods that are deficient in open space and recreational resources. Currently, this area of north Clackamas County has few parks and no developed trails.

The corridor is designated as a regionally significant trail route in a number of planning documents, in-
Trails and Greenways
Existing and Proposed Trails

Legend
- Trolley trail
- Existing Trails
- Proposed Trails
- Freeways
- Urban Growth Boundary

Source: RLIS 2002
cluding the Metropolitan Greenspaces Master Plan, Metro’s Regional Transportation Plan, Metro’s 2040 Growth Concept, NCPRD’s Master Plan, Clackamas County Bike Plan, and the City of Milwaukie’s Comprehensive Plan. Appendix 1 provides details on these planning documents.

General Description of the Trolley Trail Corridor

The corridor is located approximately six miles southeast of Portland’s Central Business District. The acquired right-of-way begins at the Jefferson Street boat launch in the City of Milwaukie and ends at Glen Echo Avenue in the City of Gladstone. The right-of-way is a total length of 5.1 miles in length (see Figure 2). In Gladstone, the corridor connects to an already developed one-mile section of the trail. At the time of this research, the boundary of the corridor had not been surveyed, however, the right-of-way is believed to be approximately 40 feet wide. Portland General Electric (PGE) maintains a high-power transmission easement through the corridor. PGE’s power lines are used as a point of reference for identifying the approximate location of the corridor.

The team divided the corridor into eight planning segments in order to organize this research as well as future trail planning efforts. Segment 1 and part of Segment 2 fall within the City of Milwaukie’s jurisdiction. The remaining segments fall within unincorporated Clackamas County. The beginning and ending points for each segment correspond to major street crossings and natural features. The
segments were recommended by a local resident who is familiar with the corridor. Table 1 lists the start and end points for each trail segment as well as the length of each segment. The distances were measured with Environmental Systems Research, Inc. (ESRI) ArcView software using Metro RLIS data. Distances should be considered approximations. Figures 3 through 10 are detailed maps of each segment. Characteristics and existing conditions of these segments are explained in detail in the environmental section of this report.

Table 1: Overview of Trail Segments

<table>
<thead>
<tr>
<th>Segment</th>
<th>Start</th>
<th>End</th>
<th>Length (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jefferson Street boat launch</td>
<td>River Road</td>
<td>0.6</td>
</tr>
<tr>
<td>2</td>
<td>River Road</td>
<td>Park</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>Park</td>
<td>Courtney</td>
<td>0.6</td>
</tr>
<tr>
<td>4</td>
<td>Courtney</td>
<td>15200 Arista</td>
<td>0.7</td>
</tr>
<tr>
<td>5</td>
<td>15200 Arista</td>
<td>Concord</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>Concord</td>
<td>Roethe</td>
<td>0.9</td>
</tr>
<tr>
<td>7</td>
<td>Roethe</td>
<td>Jennings</td>
<td>0.6</td>
</tr>
<tr>
<td>8</td>
<td>Jennings</td>
<td>Glen Echo</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Length</td>
<td>5.1</td>
</tr>
</tbody>
</table>
Trail Segment 6

- Public Park
- Private Park
- Trolley Trail
- Buslines
- Start/End
- Bike Lane
- School
- Stream

Risley Park
Wilshire Add
Riverside ES
RiverOaks
Sterling Park
NORTH
Page 14

Trolley Trail - Project Description
Section 2: Analysis
HISTORY

Methodology

The team researched the history of the Trolley Trail corridor to identify opportunities to incorporate historical elements into the design of the trail. Various sources were consulted for articles about the corridor, historical maps, and photographs of the streetcar stations and the surrounding area. Specifically, the team contacted the Oregon Historical Society, Milwaukie Historical Society, and the Clackamas County Historical Research Office. The team also attended Trolley Tales, an event held at Rose Villa Retirement Center that was hosted by the Friends of The Trolley Trail. At the event, residents shared memories about the trolley and the surrounding neighborhood. Lastly, several residents were interviewed about the locations and descriptions of the streetcar stations.

This section begins with a description of the character of the area before the trolley arrived in 1893 and the major changes that the trolley brought to the community. The section then describes the streetcar stations from north to south and highlights interesting features or history surrounding them. This is followed by some of the more poignant stories told by commu-

Timeline of Streetcar Ownership: 1891 to 2001

- 1891 - C.A. and James Steel bought the right-of-way through The Oregon City and Southern Railway, a subsidiary of their East Side Railway Company.
- 1901 - Portland City and Oregon Railway Company (PCOR Co.) bought out East Side Railway.
- 1893 - Passenger service began.
- 1903 - PCOR Co. was reorganized to form the Oregon Water Power and Railway.
- 1906 - The rail was transferred to the Portland Railway, Light and Power Company (PRL&P), who owned the line for 18 years under this name.
- 1924 - PRL&P changed its name to Portland Electric Power Company (PEPCO).
- 1930 - Portland General Electric (PGE) was formed to take over all of PEPCO's electric operations - including the electric streetcars. At Portland Traction Company (PTC) was formed to operate the railways as a subsidiary of PGE.
- 1945 - Portland Transit Company was formed to acquire the Portland Traction Company and the other interurban rail properties of PEPCO, however PTC remained in charge of the interurban lines.
- 1958 - Passenger service ended.
- 1962 - Portland Transit sold the interurban lines to Southern Pacific and Union Pacific Railroads for freight operation.
- 2001 - Metro and North Clackamas Parks and Recreation District purchased the right-of-way for conversion into a regional multi-use trail.
nity members about how much the trolley was valued. Finally, this section discusses the abandonment of passenger service.

Before the Trolley Line

Before the streetcar line was built, the towns and communities surrounding the corridor were somewhat isolated, rough and remote. Lots were large and the area had very few roads, all of which were dirt. Most travel was by foot or horse-drawn wagon. In general, people relied on the Willamette River to get to the larger cities of Portland and Oregon City.

The communities of Milwaukie, Oak Grove, and Jennings Lodge were located along what became the streetcar corridor. In 1850, Milwaukie consisted of a sawmill at Johnson Creek and a number of surrounding farms. The community of Oak Grove, named for a large stand of oak trees at its northwestern end, was platted in 1890. Platted in 1905, Jennings Lodge was another small community that the streetcar line would eventually serve.

The Operating Years

The remote small-town character of the area changed once the streetcar line was built. The streetcar line ran from downtown Portland to Oregon City, and the first car ran on the tracks on February 16, 1893.

"...[The corridor] passes through Sellwood and Milwaukie, small towns six and seven miles from Portland and, through other small settlements, but for a considerable distance it runs through new territory and opens up one of the most desirable residence regions in the neighborhood of Portland, and some of the way through primitive forests..."

(Fairchild, 1893)

After the rail line was built, development along the corridor flourished. Oak Grove and Jennings Lodge both expanded to include more residences, public buildings and stores. Houses adjacent to the corridor were built with their porches facing the rail. In the late 1890s, typical homes surrounding the streetcar were simple wood-frame buildings commonly referred to as Vernacular or Western Farmhouse styles. The homes built around 1900 typify newer American styles, such as the Craftsman-Bungalow, which was possibly the most popular architectural style through the 1920s (Clackamas County Cultural Resource Inventory, 1992). Examples of both the older farmhouse and Craftsman-Bungalow style houses still exist along the streetcar corridor today.
Craftman style house oriented toward the corridor 2002

Trolley Stations

To capture the character of the streetcar during its years of operation, this subsection describes the stations and relays stories shared by residents who rode the trolley. Station details and personal stories and memories were collected during the May 15, 2002 Trolley Tales event. Station details were also collected through historic photographs and written text. The determination of the historic trolley station locations is limited by our interpretation of historic hand-drawn maps and the accuracy of resident accounts.

The number of stations and their names underwent minor changes throughout the operating years of the streetcar. The original stations got their names in one of two ways. The names were either descriptive of the natural surroundings or they were provided by the owners of the land surrounding the corridor (Witter, n.d.). Figure 11 shows the stations as they existed in 1938. Below, each of the stations are described from north to south. Available photographs collected by the team are included.

**Milwaukie Station** was located near what is now Vic's Tavern on the west side of McLoughlin Boulevard. This station took the name of the city it served, and in 1915, the station consisted of a covered waiting platform with benches. The station was in front of an American Express Company office and an ice cream and soda shop.

The first stop was **Island Station**, the next stop, was located just north of what is now the Yes! I Do Bridal store at the intersection of 22nd Avenue and McLoughlin Boulevard. This station took its name from the nearby Rock Island in the Willamette River, known as Elk Rock Island today (Witter, n.d.). In 1933, the station consisted of a small freestanding wooden shelter.
Passenger operation, between Portland Passenger Terminal and Terminal 3rd and Main Sta. Oregon City, and between Portland Passenger Terminal and O.W. P. Dep't, Oregon City, and between Portland Passenger Terminal and O.W. P. Dep't, Portland. All operation suspended on line south of Boring, except line south of Boring. Operation between East Portland and all parts except line south of Boring, under P.U.C. of Oregon, Order No. 2066, Oct. 7th, 1933.
Earlier photos of Island Station show it next to a muddy road, possibly an early River Road, with a sign for an Open Air Sanitarium (see picture # 1 in Appendix 2).

**Lakewood Station** was located near Kellogg Lake. From Island Station, the streetcar traveled up a hill, past the lake, and through a deep stand of firs (Witter, n.d.). The station was appropriately named after these natural features. A 1915 picture shows trolley cars within the vicinity of the station.

**Evergreen Station** was the next stop on the line. It was also named for its surroundings (Witter, n.d.). This station was located at the northwest corner of the intersection of the streetcar line with Park Avenue. It is fondly remembered by local residents who used to buy pieces of penny candy at the small store adjacent to the station. Others remember that to get to the station from the east one had to cross a wooden bridge over a small gully. The gully was filled in during the construction of the “Super Highway,” known today as McLoughlin Boulevard.
For an additional photo of the Evergreen Station, see picture #2 in Appendix 2.

**Silver Springs Station** is the next station continuing south. It was named for a spring in the area (Witter, n.d.). Residents who used to ride the trolley remember that the station was located at the intersection of the corridor and what is now Silver Springs Road.

**Torbank Station** was located approximately where Torbank Road currently meets the trail right-of-way. The station was named by the wife of Joseph J. Price. Her husband gave land for the station.

**Courtney Station** was located at the southwest corner of the intersection of Arista Drive with North Avenue. North Avenue is now called Courtney Road. Courtney Station was named for an Irish chicken farmer, although the land previously belonged to the Broetje family and was used as a nursery.
Saint Theresa was located on the east side of Arista Drive about halfway between Courtney Road and Oak Grove Boulevard. It was named for Sister Theresa who established “The Little Flower” sanitarium at this location. A large evergreen hedge near the intersection of Arista Drive and Pine Avenue reportedly marks the location of the sanitarium and the station (Witter, n.d.).

Oak Grove Station was located in the community of Oak Grove at the corner of Oak Grove Boulevard and Arista Drive. Oak Grove offered stores, a post office, and gathering places clustered along Oak Grove Boulevard (called Central Avenue until around 1913). The station’s stop and ticket office were once located in the general store, which now houses the Oak Grove Bar and Grill.

Rupert Station was on more sparsely developed land and was reportedly located just after the corridor turns to the east, near present day Third Avenue.

Risley Station was the next stop and its name recognizes one of the more prominent families in the area. The station was a small shelter located at the northwest corner of the intersection of the corridor with Swain Avenue. Today, members of the Risley family continue to live in the area around the corridor.

The Jacob Risley and Charles Risley houses are both listed in the Clackamas County Historic Landmarks Inventory as excellent examples of the Italianate and Queen Anne style homes. Both homes are located on River Road near the location of Risley Station. (Hayden, 1991)
Concord and Vineyard Stations were the next two stops. It is unclear how either station received its name. Both stations were on land that once belonged to the Andrew’s family (Witter, n.d.). Concord Station was reportedly located at the northwest corner of where Concord Road now intersects with Arista Drive. The station may have been named after Concord, Massachusetts or for Concord grapes that early pioneers tried to grow in the area.

Naef Station was also named after a prominent family. Similar to the Risley family, members of the Naef family still live in the area. A photo taken near the Naef station shows what the area once looked like.

Jennings Lodge Station was named for the Jennings family. The station was located near the present day intersection of the trolley corridor and McLoughlin Boulevard. This stop offered commercial stores, a post office and meeting places. It was also a very popular destination for youth and teenagers. Long-time residents recall getting off the trolley at this stop and walking north to Roake’s Hot Dogs.

Roethe Station, the next stop, was located approximately at the intersection of the corridor and Roethe Road. Just past Roethe Road was Ashdale Station. The station was located approximately at the intersection of current Boardman Avenue with the trolley corridor.

Meldrum Station was named for the family that previously owned the land. The station was located along Abernethy Lane.

Fern Ridge was the last station in the study area and was located just north of present day Glen Echo Avenue.

Memories of Trolley Riders

Many current residents have fond memories of how the trolley served their community. The trolley connected young people and families without cars to their neighborhood and made it possible for them to access jobs in the larger cities and get to school.

Some of the schools in the area, including Milwaukie High School, contracted with the streetcar owners to allow stu-
dents to ride for free from Concord Station to school (McLaughlin, n.d.). Residents remember socializing on the ride to and from school.

Residents also remember that, as younger children, they played pranks on the conductors and other passengers. For instance, one resident remembers rocking the old wood and steel cars from side to side as another car passed on the double track, causing the roofs of the cars to rub. Others recall sneaking behind the cars while they were stopped and disconnecting the power line from the overhead cable. One individual recalls actually stealing a streetcar while the conductor was getting coffee and driving it for a few blocks in downtown Oregon City.

As much as kids played pranks on the conductors, the residents today tell stories of just how helpful the trolley operators were. One of the most well remembered conductors was A. A. Reck who worked on the Portland Traction Line for 38 years (Milwaukie Historical Society, 2002).

One story told about a conductor during Trolley Tales dated from right after the streetcar line began operating in 1893. One of the ten Birkermier children who lived next to the rail between Island Station and Lakewood Station crawled out onto the track when nobody was watching. The trolley was going too quickly to stop completely, but the trolley car operator climbed out onto the cow catcher and scooped the baby up and out of the way.

One current resident recalled how a conductor helped his grandmother. His grandparents owned and operated a restaurant in Portland and traveled by trolley every day. Once a week, his grandmother carried the restaurant's cash deposit box home on the trolley. On those days, the conductor would let his grandmother off before the designated stop, directly in front of her gate. He knew she was carrying cash and wanted her to arrive home safely.

More common stories involve conductors who were very familiar with the children riding the cars. In some cases, the conductor sent notes home to parents if their children were misbehaving. At other times, the conductor would make sure young children met up with their guardians at their stop before continuing.

The Last Days of the Trolley Line

As was the case with most interurban streetcar lines throughout the Portland metropolitan area, service along this streetcar line peaked in the 1920s. However, passenger numbers took a downturn and continued to decline over the next few decades. Several factors contributed to this decline, including the Depression, the increased use of personal automobiles, and the completion of Highway 99E, or McLoughlin Boulevard (Clackamas County Cultural Resource Inventory, 1992). Ridership surged again during World War II, as citizens were encouraged to ride public transportation to save gasoline and tires. After the war, ridership declined steadily. Despite this downturn, the Oregon City Line outlasted many other streetcar lines in the region.
As profitability waned, the Portland Traction Company pursued terminating passenger service. The company initially petitioned the Oregon Public Utilities Commission (PUC) to abandon passenger service in 1952. Due in part to the efforts of the "Transit Savers," comprised of commuters and property owners served by the streetcar, the Portland Traction Company's request was rejected. The company was determined, however, to abandon passenger service in order to focus entirely on its freight operation (Milwaukie Historical Society, 2002). After another round of hearings before the PUC in 1954-55, which again ended in rejection, the Portland Traction Company took matters into their own hands.

Deliberately disobeying the PUC's order to continue service, the Portland Traction Company abruptly discontinued passenger service on January 25, 1958. Court battles ensued, however, a judge determined that the company should not be required to reinstate service, as it would be the equivalent of depriving them of property without due process of law (Milwaukie Historical Society, 2002). Freight service continued on the Portland Traction line until 1962. The Portland Transit Company, of which the Portland Traction Company was a subsidiary at this time, sold the line to the Southern Pacific and Union Pacific Railroads. Rail service was abandoned completely in 1968 with the approval of the Interstate Commerce Commission.

Future of the Trolley Corridor

When passenger service ceased, the streetcar line had been operating continuously for 65 years. Perhaps its enduring presence is the reason why neighbors and public officials alike have fought to preserve the corridor as a vital recreational and transportation route since passenger service ended. In 1969, the year after freight service ended, a local high school teacher headed up a campaign called "Save the Interurban Right-of-Way" to convert the right of way into a temporary hiking and bicycle trail (Oregon Journal, 1969). The Save the Interurban Right-of-Way Committee's goal was to preserve the corridor as a trail, thus keeping it intact for possible future use as a mass transit right-of-way.

While the trail was not built in 1969, the vision of such a trail persisted. In 1971, the Oregon State Highway Division made plans to convert the corridor into a bicycle-pedestrian trail. In 1974, a feasibility study was conducted to explore using the corridor as a demonstration project for the region's first light rail line. Visions for different uses of the corridor continued to resurface over the years, and now, in 2002, Metro and the NCPRD are finally taking this vision one step further.
Findings

The streetcar line was a prominent feature in the development of the neighboring communities and in the lives of many longtime residents of these communities. Because of this, there is a wonderful opportunity to enhance the trail with design elements that incorporate the corridor’s rich history. The team recommends that the historic streetcar stop locations be marked in some way. It is also recommended that displays, perhaps at certain stop locations, include historical photographs and other accounts of the streetcar history. Anecdotes from residents who remember riding the streetcar could also be included in the displays. Finally, the Milwaukie Historical Society has a collection of assorted streetcar memorabilia, such as ticket stubs and schedules, that could be reproduced for incorporation into the displays.
**LAND USE**

*Methodology*

Land use information was derived from Metro's 2002 RLIS tax lot data. Using ArcView software, tax lots falling within 0.5 miles of the trail were selected for analysis. Selected tax lots falling on the western side of the Willamette River were eliminated, and the remainder were then reclassified based on the "Land Use" field in the tax lot attribute table. The database file associated with the tax lot data was exported from ArcView into Microsoft Excel and statistical analyses were carried out. Land use analysis was also supplemented by several on-site visits.

*Analysis - Major Land Uses*

The area surrounding the trail corridor is almost completely built out. Appendix 3 contains a zoning map and comprehensive plan map for the trail corridor and surrounding areas. Land uses are summarized in Table 2. The primary land use along the trail corridor is single family residential, which makes up approximately 81 percent of the tax lots in the area. The neighborhoods are generally composed of older housing stock; according to Metro's RLIS data, the median year built for homes in the corridor is 1959.

Commercial development is concentrated within the downtown area of Milwaukie and along McLoughlin Boulevard. Most of the businesses along McLoughlin Boulevard are strip and free-standing retail type developments, including many new and used auto dealerships. A small commercial zone also exists along Oak Grove Boulevard in the old Oak Grove town center. The majority of the commercial businesses on this block are small, independently owned stores.

![Commercial land uses along McLoughlin Boulevard 2002](image-url)
### Table 2: Trolley Trail Corridor Land Use

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Number of Lots</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential</td>
<td>5480</td>
<td>80.7</td>
</tr>
<tr>
<td>Multi Family Residential</td>
<td>303</td>
<td>4.5</td>
</tr>
<tr>
<td>Commercial</td>
<td>447</td>
<td>6.6</td>
</tr>
<tr>
<td>Industrial</td>
<td>49</td>
<td>0.7</td>
</tr>
<tr>
<td>Rural</td>
<td>26</td>
<td>0.4</td>
</tr>
<tr>
<td>Unknown</td>
<td>43</td>
<td>0.6</td>
</tr>
<tr>
<td>Vacant</td>
<td>439</td>
<td>6.5</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>6787</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Industrial land uses make up a small portion of the trail corridor and are almost exclusively confined to two areas, the City of Milwaukie (Segment 1 at the waste treatment plant) and further south between Vineyard Road and Boardman Avenue (parts of Segments 6 and 7). The trail runs directly beside these areas. There is a third section of industrially-zoned tax lots falling within the 0.5 mile corridor near Glen Echo Avenue and Portland Avenue, however, these are not located directly adjacent to the trail.

Lots categorized as "rural" in the tax lot data are primarily composed of school properties and parks. There are also a number of vacant lots existing along the trail corridor; descriptions and potential uses of these properties are discussed later in this report in the Vacant Land section.

---

**Serving Destination Points**

When complete, the trail is intended to provide improved connectivity between neighborhoods, parks, schools, and other destinations, as well as provide better opportunities to access commercial areas along McLoughlin Boulevard by foot or bike. Some potential destination points within the trail corridor are described below.

**Schools** - Being largely removed from busy streets and heavy traffic, the trail could provide students with a safer and possibly shorter route to school. Within the 0.5 mile corridor, there are a total of 11 schools, which are shown in Figure 12. One of the schools, Oak Grove Elementary School falls directly along the path of the trail. Many students at this school already make use of the trail, both to get to and from school and to visit their friends in the neighborhood (personal communication, 2002).
Retirement Communities - There are three retirement homes within the 0.5 mile trail corridor, clustered along River Road. There are also six 55+ restricted mobile home communities dispersed throughout the corridor, one of which is directly along the trail.

Some local streets, such as River Road, are noisy and potentially dangerous to walk on. The trail would provide an excellent opportunity for older adults to exercise and recreate away from traffic. None of the large retirement communities on River Road are directly adjacent to the trail, however. Each is almost half a mile away from the trail. Improved pedestrian facilities would most likely be necessary for these residents to access the trail. The mobile home parks are located at various distances from the trail. Accessibility will also be an issue for residents of the mobile home communities, especially for those communities located on the east side of McLoughlin Boulevard.

Parks - There are 13 public parks or open spaces within the trail corridor, a list of which can be found on the following page. The majority of the parks are concentrated on the northern and southern ends of the trail corridor (Segments 1 and 8). The Oak Grove and Jennings Lodge neighborhoods between Park Avenue and Jennings Avenue have only one park, Risley Park, which offers active recreational opportunities.

Milwaukie Waterfront Park and Dogwood Park are located directly adjacent to the trail. The rest of the parks are located at varying distances away from the trail. Trail users may not be aware of these parks, and therefore, it might be beneficial to provide signage along the trail indicating the direction and distance to parks outside the trail corridor. If possible, acquisition of properties adjacent to the trail in the future could provide for more pocket parks and other facilities directly along the trail.
Figure 13: Parks in the .5 mile corridor

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Custodian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scott Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>2</td>
<td>Spring Creek Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>3</td>
<td>Milwaukie Waterfront</td>
<td>City of Milwaukie</td>
</tr>
<tr>
<td>4</td>
<td>Jefferson St Boat Ramp Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>5</td>
<td>Dogwood Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>6</td>
<td>Elk Rock Island</td>
<td>City of Portland</td>
</tr>
<tr>
<td>7</td>
<td>Spring Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>8</td>
<td>Bunnell Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>9</td>
<td>Risley Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>10</td>
<td>Willamette Drive Park</td>
<td>NCPRD</td>
</tr>
<tr>
<td>11</td>
<td>Glen Echo Wetlands</td>
<td>City of Gladstone</td>
</tr>
<tr>
<td>12</td>
<td>Olson Property</td>
<td>City of Gladstone</td>
</tr>
<tr>
<td>13</td>
<td>Diericks Field</td>
<td>City of Gladstone</td>
</tr>
</tbody>
</table>

Other - In Segment 4, the trail runs directly through the Oak Grove town center on Oak Grove Boulevard. A number of businesses, including retail shops and restaurants, are located along this street and would be easily accessible to trail users.

Elks Lodge (Segment 3) and the Oak Grove Community Center (Segment 4) are located in close proximity to the trail. A large church, the Amazing Grace Evangelical Lutheran Church at Concord Road, is also located along the trail in Segment 5. For these destination points and others,
<table>
<thead>
<tr>
<th>Segment</th>
<th>Adjacent Land Use(s)</th>
<th>Problems for Trail Users</th>
<th>Problems for Adjacent Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Industrial</td>
<td>Occasional smell of sewage</td>
<td>Right-of-way cuts through property</td>
</tr>
<tr>
<td>1</td>
<td>Highway 99E</td>
<td>Noise pollution, pedestrian safety / comfort issues</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Highway 99E</td>
<td>Noise pollution, pedestrian safety / comfort issues</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Commercial</td>
<td>-</td>
<td>Businesses encroach right of way near end of segment</td>
</tr>
<tr>
<td>2</td>
<td>Single Family Residential</td>
<td>-</td>
<td>Homes encroach right-of-way near end of</td>
</tr>
<tr>
<td>3</td>
<td>Single Family Residential</td>
<td>People living along trail drive on trail to access their homes</td>
<td>Privacy issues for homes next to right-of-way</td>
</tr>
<tr>
<td>4</td>
<td>Commercial</td>
<td>Lack of sidewalks - Pedestrian safety on street</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Single Family Residential</td>
<td>Lack of sidewalks - Pedestrian safety on street</td>
<td>Homes encroach right-of-way near end of segment</td>
</tr>
<tr>
<td>5</td>
<td>Single Family Residential</td>
<td>-</td>
<td>Privacy issues for homes next to right-of-way</td>
</tr>
<tr>
<td>6</td>
<td>Industrial</td>
<td>Unattractive, possible safety/hazardous materials issues</td>
<td>Trespassing by trail users or other individuals with access via trail</td>
</tr>
<tr>
<td>6</td>
<td>Single Family Residential</td>
<td>-</td>
<td>Privacy issues for homes next to right-of-way</td>
</tr>
<tr>
<td>7</td>
<td>Commercial</td>
<td>-</td>
<td>Commercial properties encroach right-of-way</td>
</tr>
<tr>
<td>7</td>
<td>Highway 99E</td>
<td>Noise pollution, pedestrian safety / comfort issues when emerging onto 99E</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Single Family Residential / Multi-Family Residential</td>
<td>Lack of sidewalks - pedestrian safety on street</td>
<td>Privacy issues for homes next to right-of-way</td>
</tr>
</tbody>
</table>
the trail would enhance accessibility by residents of the neighborhoods.

**Findings**

Certain land uses adjacent to the trail may pose safety hazards or present other possible conflicts that would discourage trail usage. Conversely, because the trail passes close to people's homes and businesses, the trail could produce privacy and encroachment issues for those individuals. Table 4 provides a list of these types of potential conflicts. This list is general in nature, serving only to point out large-scale subjects of potential concern, not site-specific problems.

Currently, the right-of-way provides connectivity to several destination points in the area. However, providing accessibility for users outside the immediate neighborhood, including residents of the retirement communities and other interested trail users, will need substantial work. The sidewalk network can be irregular in this area, which hinders access on foot, and automobile parking is limited. Connectivity to the Springwater Corridor and I-205 Corridor trails will help mitigate this issue, especially for regional trail users.

Several stretches of the trail pass near land uses that are unpleasant or potentially dangerous, including McLoughlin Boulevard and industrial areas. Options for improving these stretches, or even re-routing the trail in some spots, could be explored. The most challenging issue to address may be in resolving property line and privacy issues for home and business owners directly adjacent to the corridor.

- **Land Use**
  
  **Summary of Opportunities and Constraints**

  **Opportunities**
  - Trail will connect schools, businesses, and community centers
  - Corridor has a pleasing residential character
  
  **Constraints**
  - Certain land uses adjacent to trail may deter usage
  - Trail proximity to homes may create privacy issues for adjacent landowners
Land Use: Segments 1-3
Jefferson St. Boat Ramp to Courtney Ave.

Trolley Trail - North Clackamas County, Oregon
Land Use: Segments 4 & 5
Courtney Ave. to Concord Ave.

Trolley Trail - North Clackamas County, Oregon
Land Use: Segments 6-8
Concord Ave. to Glen Echo Ave.
VACANT LAND INVENTORY

The team conducted the vacant land inventory to identify land that could potentially be acquired for public parks. Public parks can include pocket parks, natural areas, sports fields, etc. Conversion of vacant land to any of these uses would enhance the recreational value of the trail. It is important to identify potential adjacent park land early in the trail planning process because vacant parcels may be unavailable in the future.

Methodology

The team used Metro’s February 2001 RLIS Vacant Land data in ArcView 3.2 to identify vacant sites for inquiry. More recent data was not used until later in the inventory due to data access issues. However, this did not effect the outcome of the inventory. Using this information as a guide, the team visited and photographed each site and recorded information using a standard site analysis sheet created by the team. From this process, some sites were eliminated because they were no longer vacant. While conducting the site visits, any sites that appeared to be vacant or unused that were not identified as vacant in the RLIS data were also documented. Next, RLIS February 2002 data was used to identify the current owner, zoning, size, tax lot ID and lot configuration of each location. The full information and photographs for each site are included in Appendix 4. Figures 14 through 16 show the 25 sites inventoried with this process.

Limitations

The vacant land inventory is limited to data currently available from Metro’s RLIS database and the observations made in the field during April 2002. Lot configuration and ownership can change quickly, therefore, these findings should be verified.

Findings

Vacant lands were categorized by type, vegetation, location relative to the trail, and topography. As shown in Table 5, the majority of the sites can be described as side yards that are mostly open, are adjacent to the trail, and have level topography. From this categorization and the field observations, the team suggests possible uses for each site. The types of uses listed below are followed by a brief explanation of which kinds of sites are appropriate for each use.

Kiosk/Information - This use is appropriate for smaller sites where other uses would not be possible. On larger sites, kiosks could be incorporated as a second or third element.

Parking/Bathrooms - These uses are appropriate for flat sites with easy auto access that do not have natural character that would be damaged by installing a parking lot or bathroom structure. In addition, sites not directly adjacent to residential homes are preferable for this use.
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Type</th>
<th>Vegetation</th>
<th>Location</th>
<th>Topography</th>
<th>Possible Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Side yard - grassy</td>
<td>No structures</td>
<td>Paved</td>
<td>Mostly open</td>
<td>Mostly Treed</td>
</tr>
<tr>
<td>1</td>
<td></td>
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<td></td>
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<tr>
<td>25</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Natural Area/Passive Recreation - This use is appropriate for larger sites with existing natural areas that are located away from noisy traffic corridors.

Active Recreation - This use is appropriate for larger sites with flat open space and is best suited for sites with auto access.

Restoration - This use includes returning sites to a natural vegetative state that can be used for environmental education. It is appropriate for mid to larger sized sites where the property is either dominated by non-native vegetation, is covered with asphalt, or needs to be cleared of debris.

The team recommends that further research be conducted to determine fund availability and the most desired type of recreation for this area. These sites present many options to enhance the trail corridor and the recreational opportunities in the area.

<table>
<thead>
<tr>
<th>Vacant Lands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Opportunities and Constraints</td>
</tr>
</tbody>
</table>

Opportunities
- Many level, open sites adjacent to trail could be used for parks, trailheads, or other recreational uses
- Possibility to obtain properties for habitat preservation

Constraints
- Most vacant sites are in private ownership and may have unwilling sellers
Vacant Land: Segments 1-3
Jefferson St. Boat Ramp to Courtney Ave.

Source Data: RUS 2002
Map Created: May 2002
Vacant Land: Segments 4 & 5
Courtney Ave. to Concord Ave.

Source Data: RLIS 2002
Map Created: May 2002
Vacant Land: Segments 6-8
Concord Ave. to Glen Echo Ave.

Source Data: RLS 2002
Map Created: May 2002

Trolley Trail - North Clackamas County, Oregon
DEMOGRAPHICS

A multi-use trail such as the future Trolley Trail will attract a variety of users. Each user group is likely to place different demands on the trail facilities. For example, while children may enjoy activity-based trail amenities, older users might benefit from the provision of benches along the trail corridor. Knowledge of the community being served is therefore imperative to successful trail planning (NCPRD, 2002 and Flink et al., 2001).

Limitations

Because economic and labor force data are unavailable from the 2000 Census as of May/June 2002, our analysis was limited to age, gender, race, and household characteristics. However, understanding economic and labor data such as income and education are important for determining trail demand (NCPRD, 2002). Income, for example, can indicate the community's ability to pay for the construction and maintenance of the trail. In addition, a highly educated population is more likely to participate in recreation activities than a less educated population. Therefore, as more 2000 Census data becomes available, it should be incorporated into future demographic analyses.

Methodology

A demographic analysis was conducted for the area within a 0.5-mile radius of the trail corridor. The team used 2000 Census data at the block-level for the demographic analysis. The team determined that block level data, the smallest level of aggregation available, was the most appropriate geographic scale by which to analyze the corridor.

Census Tiger 2000 data was acquired online (Geography Network, 2002). It included both the database information and the corresponding spatial data. Using ArcView 3.2, the team selected blocks with their centers falling within 0.5 miles of either side of the corridor. A total of 280 Census blocks fell within the 0.5-mile buffer, although it should be noted that 43 of the 280 blocks have zero population.

For those blocks containing residents, the percentages of race, gender, age, and household occupancy were calculated from the total block population. The population density in persons per acre was determined for each block as well. Table 6 summarizes the demographic characteristics of the Trolley Trail corridor. Figures 17 and 18 show the corridor's population density and age distribution.

To assess how the demographics of the Trolley Trail corridor compare to other areas of the region, we obtained demographic data for Clackamas County and the Portland Metropolitan Statistical Area (PMSA) from the U.S. Census Bureau and the PSU Population Research Center (PRC).

We did not carry out a complete comparison between age
Trail Corridor Density
Census Block Level - North Clackamas County

LEGEND
- Trolley Trail

Density: Persons Per Acre
- No Data
- 1 - 4
- 4 - 12
- 12 - 43
- 43 and above

Source Data: IRS 2002 and Census 2000
Map Created May 2002
Median Age
1 - 20.0
20.0 - 41.1
41.1 - 61.9
61.9 - 82.5
No Data

Percent Ages 0 to 17
0 - 9.8
9.8 - 22.3
22.3 - 32.7
32.7 - 52.4
No Data

Percent Ages 65+
0 - 6.1
6.1 - 17.1
17.1 - 37.5
37.5 - 81.1
No Data

Legend
- Trolley Trail

Age Groups
Census Block Level - North Clackamas County

Source Data: BLS 2002 and Census 2000
Map Created May 2002
Table 6: Demographic Profile of Trolley Trail Corridor
Data Source: Census 2000

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>23,048</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>SEX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10,982</td>
<td>47.6</td>
</tr>
<tr>
<td>Female</td>
<td>12,066</td>
<td>52.4</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 5 years</td>
<td>1,532</td>
<td>6.6</td>
</tr>
<tr>
<td>5 to 17 years</td>
<td>3,642</td>
<td>15.8</td>
</tr>
<tr>
<td>18 to 21 years</td>
<td>1,178</td>
<td>5.1</td>
</tr>
<tr>
<td>22 to 29 years</td>
<td>2,601</td>
<td>11.3</td>
</tr>
<tr>
<td>30 to 39 years</td>
<td>3,435</td>
<td>14.9</td>
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<tr>
<td>40 to 49 years</td>
<td>3,321</td>
<td>14.4</td>
</tr>
<tr>
<td>50 to 64 years</td>
<td>3,396</td>
<td>14.7</td>
</tr>
<tr>
<td>65 years and up</td>
<td>3,943</td>
<td>17.1</td>
</tr>
<tr>
<td><strong>RACE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One Race</td>
<td>22,315</td>
<td>96.8</td>
</tr>
<tr>
<td>White</td>
<td>20,757</td>
<td>90.1</td>
</tr>
<tr>
<td>Black/African American</td>
<td>200</td>
<td>0.9</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>167</td>
<td>0.7</td>
</tr>
<tr>
<td>Asian alone</td>
<td>400</td>
<td>1.7</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>28</td>
<td>0.1</td>
</tr>
<tr>
<td>Other race</td>
<td>763</td>
<td>3.3</td>
</tr>
<tr>
<td>Two or more races</td>
<td>733</td>
<td>3.2</td>
</tr>
<tr>
<td>Hispanic or Latino Origin</td>
<td>1,686</td>
<td>7.3</td>
</tr>
<tr>
<td><strong>HOUSING OCCUPANCY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total housing units</td>
<td>10,894</td>
<td>100.0</td>
</tr>
<tr>
<td>Occupied</td>
<td>10,156</td>
<td>93.2</td>
</tr>
<tr>
<td>Owner-occupied units</td>
<td>4,994</td>
<td>49.2</td>
</tr>
<tr>
<td>Renter-occupied units</td>
<td>5,162</td>
<td>50.8</td>
</tr>
<tr>
<td>Vacant units</td>
<td>738</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Analysis

A total of 23,048 people live within the Trolley Trail corridor area, the overwhelming majority of whom are Caucasian. Individuals of Hispanic or Latino origin comprise 7.3 percent of the population. Other minority populations make up only a minor percentage of the corridor's residents.

Of the age categories, the 65 years old and older group makes up the highest percentage of the population at 17.1 percent. The categories of middle-aged adults are fairly evenly split at around 15 percent each. The percent of children ages 5-17 is more than double that of children ages 0-5, and young adults 18-21 make up the smallest percentage of the corridor's residents.

Females outnumber males by almost 5 percent. As women tend to outlive men, the gender disparity might be attributable in part to the large elderly population.

Regarding housing occupancy, renters make up a slightly higher percentage of the population corridor than homeowners at 50.8 percent. Vacant units comprise almost 7
<table>
<thead>
<tr>
<th>Subject</th>
<th>Trolley Trail Corridor</th>
<th>Clackamas County</th>
<th>PMSA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEX</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47.6</td>
<td>49.4</td>
<td>49.6</td>
</tr>
<tr>
<td>Female</td>
<td>52.4</td>
<td>50.6</td>
<td>50.4</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 years and younger</td>
<td>22.4</td>
<td>26.2</td>
<td>24.8</td>
</tr>
<tr>
<td>65 years and up</td>
<td>17.1</td>
<td>11.1</td>
<td>10.5</td>
</tr>
<tr>
<td><strong>RACE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One Race</td>
<td>96.8</td>
<td>97.5</td>
<td>96.7</td>
</tr>
<tr>
<td>White</td>
<td>90.1</td>
<td>91.3</td>
<td>83.6</td>
</tr>
<tr>
<td>Black/African American</td>
<td>0.9</td>
<td>0.7</td>
<td>2.9</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>0.7</td>
<td>0.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Asian alone</td>
<td>1.7</td>
<td>2.5</td>
<td>4.9</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
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<tr>
<td>Other race</td>
<td>3.3</td>
<td>2.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Two or more races</td>
<td>3.2</td>
<td>2.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Hispanic or Latino Origin</td>
<td>7.3</td>
<td>4.9</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>HOUSING OCCUPANCY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupied</td>
<td>93.2</td>
<td>93.6</td>
<td>94.2</td>
</tr>
<tr>
<td>Owner-occupied units</td>
<td>49.2</td>
<td>71.1</td>
<td>62.0</td>
</tr>
<tr>
<td>Renter-occupied units</td>
<td>50.8</td>
<td>28.9</td>
<td>38.0</td>
</tr>
<tr>
<td>Vacant units</td>
<td>6.8</td>
<td>6.4</td>
<td>5.8</td>
</tr>
</tbody>
</table>
percent of the housing stock.

Table 7 compares the characteristics of the Trolley Trail corridor to Clackamas County and to the PMSA. The racial composition around the Trolley Trail is primarily Caucasian, which is similar to the rest of Clackamas County. Both areas show less racial diversity than the PMSA as a whole. However, the corridor is substantially different from the larger regions in many other respects. As stated above, females outnumber males by almost 5 percent along the corridor, whereas in the County and the PMSA, the gender percentages are roughly equal. The corridor also differs from the County and the region in the age of its residents. A much higher percentage of the population is 65 years and older in the trail corridor than in the County or in the PMSA. Conversely, a lower percentage of the corridor's population falls into the 18 and under category. The following table shows a comparison of elderly populations.

Table 8: Percent of Elderly Population

<table>
<thead>
<tr>
<th>Percent of Population 65 Years and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Trail Corridor</td>
</tr>
<tr>
<td>17.1%</td>
</tr>
</tbody>
</table>

In terms of homeownership, the corridor also differs substantially. Along the corridor, renter-occupied units outnumbered owner-occupied units. The rest of Clackamas County, and the PMSA as a whole, is heavily owner-

Table 9: Housing Tenure

<table>
<thead>
<tr>
<th>Owner Occupied vs. Renter Occupied Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Trail Corridor</td>
</tr>
<tr>
<td>Owner Occupied</td>
</tr>
<tr>
<td>49.2%</td>
</tr>
<tr>
<td>71.1%</td>
</tr>
<tr>
<td>62.0%</td>
</tr>
</tbody>
</table>

occupied, as shown in Table 9. The high percentage of renter-occupied units along the corridor could be attributed to the large number of retirement communities within the corridor. In addition, a substantial number of apartment complexes are located along Kellogg Creek, as well as at the southern end of the trail near Glen Echo Avenue.
Findings

As the demographic analysis shows, there are a large number of elderly people living in the corridor surrounding the trail. While it is important to design the trail to balance the needs of a wide range of regional trail users, special consideration should be made to accommodate the needs of the local older population. Considerations include providing additional benches, water fountains, restroom facilities, a relatively flat grade and smooth paving materials.

Demographics

Summary of Opportunities and Constraints

Opportunities
- Provide appropriate recreational opportunities for local residents

Constraints
- It may be difficult to accommodate a wide variety of trail users
ENVIRONMENTAL ANALYSIS

An environmental analysis was conducted because environmental conditions can pose significant constraints to trail construction. Understanding trail conditions prior to trail development may help prevent extensive delays in environmental permitting. In addition, constructing the trail in a way that protects the natural environment provides opportunities for preservation of plants and wildlife protection as well as educational opportunities for trail users.

Methodology

The team collected environmental information by conducting visual inspections of the corridor and by contacting local agencies for information. The visual inspections were conducted on April 7 and April 17, 2002. The inspections involved walking the full length of the trail, from the Jefferson Street boat launch in Milwaukie to the intersection of Glen Echo Avenue and Abernethy Lane in Gladstone. For each of the eight trail segments, the team listed invasive plant species and identified trees and shrubs for possible preservation. Water and drainage issues, such as standing water and streams, were also identified. Finally, the team noted potential areas of erosion and any other details of environmental significance.

The team confirmed and expanded upon information collected during the visual inspection by contacting local agencies and reviewing existing environmental studies conducted in the area. Agencies contacted include Clackamas County’s Water Environmental Services (WES) and Department of Transportation and Development (DTD), NCPRD, and the Oak Lodge Sanitary District (OSLD).

The findings from both the visual inspection of the trail corridor and from local agencies are summarized in this section, each with a focus on the opportunities and constraints that the environmental conditions lend to trail development. Information in the first subsections comes primarily from agency research. The information gathered from the visual inspection is contained in the subsection titled Current Environmental Conditions.

Limitations

The scope of the environmental assessment is limited by the background specializations of the team. The team members are not wetland biologists, horticulturists, or natural resource experts. Trees, shrubs, and ground covers were identified with assistance from various plant identification field books. Similarly, the team identified potential wetland areas by visually observing the level of ground saturation and wetland plant life, as well as reviewing previous studies conducted in the area.

A second limitation to the findings is that at the time of the field visits, not all areas of the trail could be accessed. Some were completely blocked by overgrown vegetation. Therefore, the team could only estimate conditions in the blocked areas, drawing conclusions based on the
conditions before and after the blocked sections.

Identification of vegetation types was somewhat limited because the visual inspections were conducted in early spring and much of the vegetation had not yet emerged.

Given the limited timeframe of the project, the team did not collect drainage and stormwater information from the City of Milwaukie.

Finally, at the time of the environmental assessment, the exact boundaries of the trail corridor were not known because a boundary survey had not been done. The team estimated the corridor boundaries based on the location of the PGE power lines. Until a survey is complete, this estimation of the corridor's location should not be considered final.

Topography

The trail corridor is relatively flat with a gentle upward slope from north to south. The relatively flat topography of the trail corridor, common to rail lines, creates an opportunity for it to be accessible to a wide range of users. Compared to the land immediately surrounding the corridor, a section of Segment 5 from Creighton Avenue to Concord Road has a high elevation and presents an opportunity for views of the hills to the west.

Oatfield Ridge, located east of the corridor and beyond the 0.5 mile trail buffer, is the highest ground surrounding the trail corridor. The impact of Oatfield Ridge on the corridor will be discussed more in the following subsection.

Hydrology

A majority of the trail corridor is located within the Oak Lodge Sanitary District (OLSD). The exceptions are Segment 1 and part of Segment 2 to Lark Street, which are in the City of Milwaukie's Sanitary Sewer District.

Within the OLSD there are seven drainage basins. The basins encompass 3,565 acres and are: Kellogg Basin, River Forest, North Boardman Basin, South Boardman Basin, Gladstone Basin, Willamette River Boundary and Wallace Road. The trail corridor passes through the first five basins.

The annual precipitation in the trail corridor ranges from 45 to 50 inches per year. The main water bodies near the trail include the Willamette River, Boardman Creek and associated wetlands, Kellogg Lake, Kellogg Creek, River Forest Creek and River Forest Lake. There are a number of natural springs in the area, indicative of the shallow groundwater system (OLSD, 1997). According to information from OLSD, there are two springs directly adjacent to the trail corridor. Both springs are located south of Courtney Road and east of Arista Drive.
Both Oatfield Ridge and McLoughlin Boulevard have a substantial hydrological impact on the trail corridor. Oatfield Ridge is the highest ground surrounding the trail corridor and is heavily urbanized. Significant runoff flows from the ridge westward toward McLoughlin Boulevard, where additional runoff is collected as well as potential pollutants (OLSD, 1997).

West of McLoughlin Boulevard, a number of streams cross the trail corridor and drain towards the Willamette River. Adjacent property owners privately own all streams in OLSD, including those that cross the trail corridor. OLSD does not have drainage easements along the streams and must request access by residents to clear debris and make necessary improvements.

This issue creates somewhat of a constraint for trail development because surrounding streams have a big impact on the trail. Development near streams will require coordination with neighboring property owners to prevent potential flooding of the streams. In addition, trail development near streams will need to comply with OLSD buffer regulations, which currently require a 25-foot wide undisturbed corridor on either side of sensitive* areas. Furthermore, a paved or gravel path may not exceed eight feet in width and cannot be constructed closer than ten feet from the boundary of a sensitive area, unless approved by the District (OLSD, 2000).

(*Note: Sensitive areas are defined as wetlands, lakes, rivers, streams, and creeks draining more than 100 acres).

Wetlands

Wetlands can result from both natural conditions and man-made disturbances. Natural underground springs can create seasonal wet areas, as well as feed larger more substantial wetland systems (NCPRD, 2000). There are a number of small wetland pockets along the trail corridor and two substantial wetland systems, Boardman and Hull wetlands. The locations of wetlands in the trail corridor are identified in Figures 3-10 in Section 1 of this document, the Project Description. Wetlands are also identified in Appendix 5, OLSD maps. Although wetland areas are shown on these maps, a wetland delineation will be necessary prior to development to confirm exact locations and extents.

Wetland Area in trail corridor 2002
Existing wetlands along the trail corridor serve a number of important functions. Not only do they provide important habitat for aquatic life, birds and mammals, but they also play an important role in surface water management. They help attenuate floodwaters that could potentially damage homes and businesses along the trail corridor. Without the natural flood storage that wetlands provide, peak flows in Boardman Creek would be great and the risk of downstream flooding would increase. In addition, the wetlands help improve water quality by filtering pollutants (OLSD, 1999). The opportunities that the wetlands present to trail construction will be discussed more specifically in the Current Environmental Conditions subsection.

**Geology and Soils**

Columbia River basalt in the northeast and lacustrine deposits in the southwest generally underlie the corridor. There are a number of soil series throughout the corridor area. Most are characterized by high runoff and low infiltration potential. The primary types of soils are silt loams, clay loams, sandy loams, loam and river wash (OLSD, 1997).

**Vegetation**

Much of the vegetation along the trail corridor has been introduced with residential and commercial development. Excluding wetland vegetation, the team observed a number of native species including Douglas firs (Pseudotsuga menziesii), big leaf maples (Acer macrophyllum), Oregon grape (Berberis nervosa), Oregon ash (Fraxinus latifolia), black hawthorne (Crataegus suksdorfii), Western red cedar (Thuja plicata), red alders (Alnus rubra), sword ferns (Polystichum munitum), Indian plum (Oemleria cerasiformis), snowberry (Symphoricarpos albus), red elderberry (Sambucus racemosa), and laurel (Kalmia ssp.). There are many opportunities along the corridor to preserve trees and bushes, as is discussed in the Current Environmental Conditions subsection.

Wetland and riparian vegetation is common along the trail due to the adjacent wetlands and the streams that cross the corridor. Species include black cottonwoods (Populus balsamifera ssp. trichocarpa), red-osier dogwoods (Cornus sericea ssp. sericea), willows (Salix ssp.), salmonberry (Rubus spectabilis) and thimbleberry (Rubus parviflorus).

**Invasive Plants**

Invasive species are typically described as non-native or very opportunistic species that grow to dominate a natural area (NCPRD, 2000). They can reduce canopy cover by smothering trees, alter soil conditions and drainage patterns, and create microclimates (i.e., dark, damp areas). Invasive plants are common in areas with some level of soil or vegetation disturbance. The primary disturbances along the trail corridor are a result of urban development.
Although the team did not conduct a full inventory of vegetation, there are a number of obvious invasive species present along the trail corridor. Some of the most common species include Himalayan blackberry (*Rubus discolor*), English Ivy (*Hedera helix*), clematis (species not determined), periwinkle (*Vinca spp.*), Japanese knotweed (*Polygonum cuspidatum*), Poison oak (*Rhus diversiloba*), yellow iris (*Iris pseudacros*), Western horsetail (*Equisetum arvense*) and Reed canary grass (*Phalaris arundinacea*). Invasive species are discussed more fully in the Current Environmental Conditions subsection.

### Fish and Wildlife

A wildlife survey was not completed as part of this study. However, information gathered from previous studies conducted in the area surrounding the corridor indicates the presence of species similar to those in the urbanized sections of the lower Willamette River (OLSD, 1997).

Common songbird species throughout the corridor include the Red-breasted Nuthatch, Black-capped and Chestnut-backed Chickadee, House Finch, Pine Siskin, Song and Fox Sparrows, Rufous-sided Towhees, Robin and Thrush. Water birds include various ducks, Common Merganser, Great Blue Heron, and Belted King-fisher. A number of amphibians and reptiles are also present including salamanders, newts, toads, frogs, turtles, lizards and snakes. Typical mammals include moles, shrews, bats, squirrels, voles, rats, beavers and nutria (OLSD, 1997).

Fish species within the streams surrounding the trail corridor have not been documented. However, salmon and steelhead species may potentially be present in Kellogg and/or Boardman Creeks as they are direct tributaries to the Willamette River (OLSD, 1999).

### Threatened and Endangered Species

Generally, there are no reported threatened or endangered species within the areas surrounding the trail corridor. However, the lack of reports does not suggest that threatened or endangered animal species are not present, only that there is no recorded information (OLSD, 1997). Threatened or endangered salmon and steelhead may enter Boardman Creek for rearing use or high-flow refuge. This however, has not been documented. The team recommends that a search be conducted for endangered plant species through the Oregon Natural Heritage Program.
<table>
<thead>
<tr>
<th>Segment</th>
<th>Invasive Species</th>
<th>Trees &amp; Plants for Preservation</th>
<th>Standing Water</th>
<th>Flowing Water</th>
<th>Storm Drains &amp; Culverts</th>
<th>Potential Wetlands</th>
<th>Areas of Erosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Jefferson Street boat launch to River Road</td>
<td>Himalayan blackberry, scotch broom, English ivy</td>
<td>apple trees, laurel</td>
<td>-</td>
<td>-</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2: River Road to Park Avenue</td>
<td>Himalayan blackberry, English ivy, clematis</td>
<td>Douglas firs, laurel bushes, maples, alders, cedar, sword ferns</td>
<td>standing water in berm at several points</td>
<td>trickle of water in ditch</td>
<td>yes</td>
<td>evidence of wetland vegetation</td>
<td>along berm on McLoughlin</td>
</tr>
<tr>
<td>3: Park Avenue to Courtney Road</td>
<td>Himalayan blackberry, English ivy, clematis, canary grass, poison oak</td>
<td>Douglas fir, laurel, holly, cottonwood trees, arum, cedar, willows, bracken fern, vinca</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4: Courtney Road to 15200 Arista Drive</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5: 15200 Arista Drive to Concord Road</td>
<td>Himalayan blackberry, English ivy, poison oak</td>
<td>plantings on trail, trees</td>
<td>standing water in berm at several points</td>
<td>trickle of water in ditch</td>
<td>yes</td>
<td>-</td>
<td>berms and puddles along corridor, possible erosion</td>
</tr>
<tr>
<td>6: Concord Road to Roethe Road</td>
<td>Himalayan blackberry, English ivy, goutweed, poison oak</td>
<td>Hazel nut, cedar, Douglas firs, hawthorne, dogwood, cherry, willow, maple, crabapple</td>
<td>standing water along side of corridor and bike routes, Boardman Slough</td>
<td>Boardman Creek</td>
<td>yes</td>
<td>Boardman Slough</td>
<td>-</td>
</tr>
<tr>
<td>7: Roethe Road to Jennings Avenue</td>
<td>Himalayan blackberry, canary grass, English ivy, scotch broom</td>
<td>Hawthorne, oaks, firs</td>
<td>standing water in ditches, Boardman Slough</td>
<td>Boardman Creek</td>
<td>yes</td>
<td>Boardman Slough</td>
<td>-</td>
</tr>
<tr>
<td>8: Jennings Avenue to Glen Echo Avenue</td>
<td>Himalayan blackberry, bamboo</td>
<td>maples, Douglas fir, cottonwoods, laurel</td>
<td>-</td>
<td>-</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Current Environmental Conditions

Current environmental conditions are described in this subsection. Within each trail segment, findings are reported on environmental opportunities and constraints to trail development.

Segment 1: Jefferson Street boat launch to River Road

Segment 1 begins at the Jefferson Street boat launch on a paved sidewalk adjacent to McLoughlin Boulevard. The sidewalk crosses over the culverted Kellogg Creek and ends just before the Kellogg Creek Water Pollution Control Plant. From this point to the rail trestle, the trail could follow two routes. One possibility is for the trail to continue on the existing sidewalk that is immediately adjacent to McLoughlin Boulevard. Another possibility is for the trail to be located in a wide stretch of mowed grass just west of the PGE power lines and further removed from McLoughlin Boulevard.

Findings — Aligning the trail in the grass is the preferred option and the primary environmental opportunity in Segment 1. Here, apple trees on the east provide a natural buffer to McLoughlin Boulevard, and laurels and photinias on the west buffer the treatment plant.

A sizable dry well is located mid-way through this stretch and creates an obstacle to building the trail in the grass. A manhole is approximately 40 feet from the dry well and may also be an obstacle. All manholes are shown in the OLSD maps in Appendix 5.

At the rail trestle, Himalayan blackberry, scotch broom, and English ivy encroach into the corridor and may require some clearing. Drainage runs east/west under the rail trestle. At the time of this assessment, the drainage ditch was dry. Beyond the rail trestle, the corridor narrows to 22nd Avenue where the trail right-of-way follows McLoughlin Boulevard to the beginning of Segment 2.
Segment 2: River Road to Park Avenue

The corridor continues to run adjacent to McLoughlin Boulevard in Segment 2, from River Road to Park Avenue. From River Road to 26th Avenue, mature Douglas firs frame the grassy corridor to the east. Maples, laurels, alders, sword ferns, and a gorgeous cedar grow along a berm to the west of the corridor, near the ODOT property at 26th Avenue.

English ivy and Himalayan blackberry are also present in this stretch. The English ivy is especially abundant on the west side of the corridor and in some areas it completely covers tree trunks and branches. The ivy, trees, and fallen branches seem to be protecting the berm from erosion.

There is a fairly deep ravine on the west side of the corridor before 26th Avenue. At the time of this assessment, there was a small trickle of water present. The ravine appears also to be protected from erosion by ivy and other groundcovers. Manholes are present in this stretch and may be a constraint to building a trail down the center of the corridor (see Appendix 5). At 26th Avenue, a drainage ditch may also be a constraint to the trail crossing the road.

Beyond 26th Avenue, the corridor continues a short distance along McLoughlin Boulevard to Mikell’s Bar and Grill and da Vinci’s Restaurant. Both establishments encroach onto the corridor. A thick bramble of blackberry bushes blocks the right-of-way from da Vinci’s through to Park Avenue.

Findings—The most significant environmental constraint in this section is the abundance of English ivy and clematis. Particularly on the west side of the corridor, the English ivy and clematis should be removed from the trees so that they will not be overtaken and killed, as is happening to a few trees now. Removal of English ivy covering the ground may not be a priority since it appears to be stabilizing the berm and protecting it from eroding into the corridor.

Segment 3: Park Avenue to Courtney Road

Segment 3 begins on Park Avenue next to Diamond Auto Paint & Collision Center. From Park Avenue to Silver Springs, the corridor is narrow and largely overgrown with Himalayan blackberry, English ivy, and clematis. This section was somewhat cleared during a SOLV clean up day on April 20, 2002. Volunteer community members made this section more accessible by removing blackberry bushes, trimming overhanging laurels, and picking up trash.
Wetland plant species found in this segment include horse-tail, canary grass, algae, and various succulents. These plants suggest that water is present for a large portion of the year. South of Silver Springs, the corridor provides access to the homes that are oriented toward the corridor. Autos have created deep tire ruts that accumulate standing water. Culverts are visible at Evergreen Road and Torbank Road. During the winter months from Torbank Road to Courtney Road, there is standing water approximately five inches deep and three feet across.

Findings—Drainage issues create the biggest constraint to trail construction in Segment 3. Just before Evergreen Road there is a drainage ditch on the west side of the corridor that continues throughout the entire segment. The amount of water in the ditch varies from just a trickle to areas with three to five inches of standing water. OLSD is aware of this drainage situation and has suggested coordination between OLSD projects and trail construction.

A wide variety of plants are present in Segment 3, including: Douglas fir, laurel, holly, cottonwood, cedar, willow, arum, vinca, and native blackberry. Just south of Torbank, neighbors have planted shrubs and flowers on the east side of the corridor. Hanging branches from some Douglas firs and laurel will require trimming. These plants offer an opportunity to maintain much of the existing vegetation for the enjoyment of future trail users.

Segment 4: Courtney Road to 15200 Arista Drive

An environmental assessment was not completed for Segment 4 since the right of way for this segment runs entirely on Arista Drive.

Segment 5: 15200 Arista Drive to Concord Road

Segment 5 begins at 15200 Arista Drive and ends at Concord Road, at the Amazing Grace Evangelical Lutheran Church. From 15200 Arista Drive to Creighton Avenue the corridor right-of-way is entirely overgrown. Opening the corridor between these points will require much clearing of underbrush (Himalayan blackberry, English ivy), leveling of land, and possibly minimal tree removal. If this section is not cleared, the trail could remain on the road from 15200 Arista Drive to Creighton Avenue, and Creighton
Avenue to where it meets Arista Drive again to the east. At this point, the corridor is clear and the trail can continue along Arista Drive's grassy right-of-way.

The grassy strip is approximately eight feet wide from Creighton Avenue to Concord Road. At the intersection of Creighton Avenue and Arista Drive, neighbors have planted bushes and ornamental trees along the east side of the corridor. Past these plantings, Himalayan blackberry is on either side of the corridor and a slight berm is on the east side near SE Ella. In this stretch there is a drainage ditch running along the west side of the corridor. The ditch contains flowing water in some sections and standing water in others. The water could cause erosion of the berm over time. At Swain Avenue and several other spots, puddles form in tire ruts in the corridor's right-of-way.

**Findings**—The primary environmental opportunity in this segment is to keep the drainage ditch open between Creighton Avenue and Concord Road. This would be beneficial to storm water management in the area, allowing water to naturally filter into the ground rather than being piped and released elsewhere. Keeping the drainage ditch open could also serve as an educational opportunity for trail users.
Segment 6: Concord Road to Roethe Road

This segment begins at the intersection of Concord Road and Arista Drive, in a gravel patch that is approximately 20 feet wide. The gravel area currently serves as overflow parking for the Amazing Grace Evangelical Lutheran Church. Beyond the gravel patch, the corridor quickly narrows to about two feet with thick Himalayan blackberries and some poison oak on both sides. From Concord Road to Vineyard Road, a low ditch runs along the east side of the corridor. At the time of this environmental assessment there was little to no water in the ditch. However, wetland plant species were present (horsetail and wetland grasses), suggesting that the ditch is wet at least intermittently or that the ground is saturated.

Approximately halfway to Vineyard Road there is standing water three inches deep on the east side of the corridor. Algae are growing in the water, which extends parallel to the trail for approximately 35 feet. No wetland plants are present. There are many different trees between Concord Road and Vineyard Road, including: hazelnut, cedar, crabapples, dogwood, cherry, willow, and maple.

Past Vineyard Road to Naef Road the right-of-way is blocked by overgrown vegetation and possibly encroaching yards to the west. Heavy equipment may be necessary to clear this section. There are two large culverts running east/west mid-way between Vineyard Road and Naef Road. Water is daylighted at this point and a third culvert runs north. This northbound culvert is east of the corridor right-of-way and probably will not impact trail construction. Water was present in these culverts at the time of the assessment.

At Naef Road, the corridor is passable but narrow, only two feet wide in some sections. Himalayan blackberry is abundant in the corridor right-of-way. Mid-way to Roethe Road, there is an eight to ten foot ditch that may require a footbridge to cross.
In their capital improvement plans, OLSD has identified the ditch for construction of either a bridge or a box culvert. To the east of the ditch there is standing water that is a part of Boardman Slough. Boardman Creek runs on the west side of the ditch and is approximately four feet wide at this point. The creek continues in the corridor right-of-way to Roethe Road. From the ditch to Roethe Road the right-of-way is completely blocked by vegetation.

Findings - Perhaps the most significant environmental features of this segment are Boardman Creek and parts of the Boardman Slough. The creek and slough may present constraints to constructing the trail because of environmental permitting requirements. However, once permitting is obtained the creek and slough offer excellent opportunities for environmental education and wetland preservation.

Segment 7: Roethe Road to Jennings Avenue

Segment 7 begins at Roethe Road adjacent to the Sunburst Gymnastic Center and ends at the intersection of Jennings Avenue and McLoughlin Boulevard. At Roethe Road, the corridor is overgrown with Himalayan blackberry and other shrubs and brush. To the east of the corridor and south of the gymnastic center is an open water area of Boardman Slough. Plants found around this area include reed canary grass, non-native invasive yellow irises, and algae. A nutria was seen swimming in the water.

To the west of the corridor is Boardman Creek. Beyond the creek is a residential neighborhood. The corridor's right-of-way is open for only about 50 feet, beyond which vegetation blocks the corridor through to Boardman Avenue.

At the intersection of Boardman Avenue and Arista Drive, the corridor's right-of-way is to the east of Arista Drive and narrows as it approaches Jennings Avenue. There is a ditch in the right-of-way that contained water at the time of this assessment. Closer to Jennings Avenue, the ditch is dry but littered with tires, bottles and auto fluid containers, and a few large drums. The ditch and narrowing right-of-way may present a constraint to aligning the trail in its actual corridor. Aligning the trail on Arista Drive may also be problematic because the road may not be wide enough to add a bike lane.
Findings — As with Segment 6, there is an excellent opportunity in Segment 7 to protect Boardman Creek and Boardman Slough and to educate trail users on wetland and watershed ecology. There are a number of schools in close proximity to the trail that could use the wetlands and streams for environmental education.

The wetlands also provide a number of benefits to the natural environment surrounding the corridor. Such benefits include improving fish and wildlife habitat, preserving wetland and riparian ecosystems, and removing invasive species. Construction of a trail helps ensure the preservation of the riparian habitat and wetlands by preventing more intense urban development along the corridor (i.e. light rail).

Specifically, efforts should be made during trail construction to retain as much vegetation as possible between the trail and the water to provide habitat for wildlife. Exotic species should be removed and replanted with native species (NCPRD, 1996).

Combining volunteer efforts to maintain the trail corridor with maintenance of the wetlands gives community members an interactive role in the preservation of the natural environment around their homes. Some of the activities might include picking up trash, removing invasive species, and building bird and bat houses.

A constraint associated with constructing a trail in the wetland areas is the process of obtaining the necessary permits and meeting environmental requirements.

Segment 8: Jennings Avenue to Glen Echo Avenue

The final trail segment is Segment 8, beginning at the intersection of Jennings Avenue and Abernethy Lane and ending at Glen Echo Avenue at the Gladstone city limits. At Jennings Avenue and Abernethy Lane, the corridor is on Abernethy Lane with single-family and multi-family residential properties to the east. A mature row of maples lines the front of these homes. Other trees in this segment include cottonwoods, large firs at Meldrum Avenue, and laurel.

At Hull Avenue, there is a sign announcing the presence of Boardman Creek watershed. Just past Hull Avenue, there is potential for the trail to move off the road and into a grassy strip running parallel between Abernethy Lane and Ashton Lane. The corridor’s right-of-way at this point has several mature trees, some of which may be a constraint to trail construction in the right-of-way.
There are two obvious invasive species in this segment, bamboo and Himalayan blackberry. The bamboo is planted in the median at the intersection of Meldrum Avenue and Abernethy Lane, and blackberry bushes are present from Abernethy Lane and Hewitt Place to Glen Echo Avenue.

At Glen Echo Avenue, the now incomplete trail corridor meets a completed section of the trail. This completed section is in the City of Gladstone and extends to the Clackamas River and then connects to the I-205 trail.

Findings—The main constraint to trail development in Segment 8 is the presence of large fir trees in the center of the right-of-way. At the same time, however, mature trees are an amenity to the corridor and the neighborhood and should be preserved where possible.

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Environmental Assessment
Summary of Opportunities and Constraints

Opportunities
- Protect native and notable vegetation
- Wetlands provide an educational resource
- Increase awareness of urban natural resources and watershed protection
- Natural drainage

Constraints
- Poor drainage and high potential for flooding
- Overgrown invasive plant species
- Existing stormwater facilities may impact trail construction
VIRTUAL TOUR

The virtual tour is a web-based, interactive tour, designed such that viewers can click through a series of pictures to view the length of the corridor. The virtual tour was created to be used as an outreach tool by Metro and NCPRD in future planning efforts. The team used the virtual tour during focus group sessions to validate findings. The focus group results are discussed in more detail in the next subsection.

Methodology in Creating the Virtual Tour

The team took several hundred photographs of the trail corridor and compiled them in sequence as if one is walking from north to south down the trail corridor. The virtual tour begins just north of the Jefferson Street Boat Ramp and ends at the intersection with Glen Echo Avenue at the Gladstone city limits. At the beginning of each trail segment, a map and an aerial photograph display the location of the trail in context with surrounding streets, bike and bus routes, schools, parks, and water features. The virtual tour also includes photographs of various views encountered along the trail, including views of vegetation, historic homes, landmarks, and natural amenities. In addition, the tour displays, through photographs and aerial views, sections of the trail where alternative routes will need to be assessed during trail design.

A user guide for the virtual tour is included in Appendix 6.

Limitations

The photographs included in the virtual tour captured existing trail conditions between February and late April 2002. In some cases, trail conditions have changed since the time of the photos. Therefore, until trail construction is final, photographs in the tour may need to be updated.

The alternative routes suggested in the virtual tour are purely conceptual and their feasibility has not been fully explored. Analysis of trail alignment routes will be addressed later in the planning process by consultants.
FOCUS GROUPS

Purpose and Objectives

The purpose of the focus groups was to educate the participants about the trail corridor and to gather input on the opportunities and constraints to using the trail. At these sessions, participants also provided feedback regarding the effectiveness of the virtual tour. This feedback will be used by Metro, NCPRD, and hired consultants to help guide trail design.

Five stakeholder groups were originally selected as potential focus group participants: elementary school principals, high school cross country track coaches, the Clackamas County Bicycle and Pedestrian Advisory Committee, older adults, and the Friends of the Trolley Trail citizen group.

The team selected these potential groups because of the unique perspective they could provide on trail use. Specifically, elementary school principals could point out safety concerns related to children walking or biking to school on the trail. High school cross county coaches could determine potential opportunities and constraints to using the trail for practice. The Clackamas County Bicycle and Pedestrian Advisory Committee could help identify how the trail could be used as a non-motorized transportation corridor. Because there is a high population of older adults along the trail corridor, this group could highlight accessibility and special needs of elderly trail users. Finally, the Friends of the Trolley Trail could provide their expertise on the trail to confirm and supplement findings as presented in the virtual tour.

Methodology

Letters were sent to between six and eight people in each stakeholder group. The letters introduced the Trolley Trail project and invited the recipient to participate in a focus group meeting. One week later, letter recipients were telephoned to see if they could participate. The team successfully arranged meetings with representatives from each of the above stakeholder groups except the high school cross country track coaches. The coaches were in the midst of track season and, although they were interested, a meeting time could not be coordinated. Therefore, the team recommends including this group in future planning efforts.

Focus group meetings were held between May 7 and May 18, 2002. Each meeting began by viewing the virtual tour. Next, five discussion questions were asked:

1) Do you know where the trail is?
2) Have you used any sections of the trail?
3) What did you see in the pictures that would make the trail easy and enjoyable to use?
4) What did you see in the pictures that would make the trail difficult to use?
5) How will this trail change your community?
These questions and the participants’ responses were written on flip charts. The results of each focus group meeting are described below.

**Focus Group Results**

Several participants commented that the virtual tour was very useful in helping them become more familiar with the location of the trail and more aware of the issues that need to be addressed in trail design and construction. For many participants, the virtual tour sparked interest in future use of the trail as well as involvement in the planning of the trail. Many hope to see the tour posted on Metro’s and the NCPRD’s websites so that others could experience the trail and learn more about it. The specific comments from each group are summarized below.

**Elementary School Principals**

Two members of the team held a focus group meeting with six elementary school principals and vice-principals for 30 minutes. The meeting was incorporated into the first part of the regularly scheduled area-wide principal meeting at the North Clackamas School District #12 Administrative Building.

Because the focus group portion of the meeting was short, only two segments of the virtual tour were shown, Segments 2 and 3. Segment 2 was selected because of safety constraints at road crossings and aesthetic constraints due to the corridor’s close proximity to McLoughlin Boulevard.

Segment 3 was selected because it runs adjacent to residential properties and Oak Grove Elementary School.

Of the six principals, two knew where the trail corridor was and the same two had walked on portions of the trail. Principals felt the trail would be easy to use because it can provide a more direct route to some destinations than by traveling on the street. For example, it may be more direct for children to use the trail to get to Oak Grove Elementary School then to go by street. The principals also thought the trail could potentially be very attractive and that walking on the trail was safer than walking on busy roads like River Road.

At the same time, principals were concerned that more isolated areas of the trail may attract criminal predators and therefore pose a threat to children traveling alone or without an adult. Also on the issue of safety, principals voiced concern that busy street crossings like Park Avenue, Courtney Road, and Concord Road could be dangerous.

In response to how the trail might change the community, principals noted that the trail would promote healthy lifestyles and bring more people to the Oak Grove School yard for recreation.

**Clackamas County Bicycle and Pedestrian Advisory Committee**

The focus group with the Clackamas County Bicycle and Pedestrian Advisory Committee was also incorporated into the committee’s regular meeting time. The team was given
30 minutes in the agenda to present the tour and ask questions. Only Segments 2 and 3 were shown to the committee.

Of the twelve committee members, eight knew where the trail was and four had used parts of the trail for exercise and dog-walking. The committee members noted that the trail would be enjoyable to use because it would be separated from motorized traffic. Also, the vegetation along the corridor could make the trail attractive. Finally, the trail would be useful because it would improve connectivity to downtown Milwaukie and Portland.

Like the principals, the committee members voiced concern about safety in the more isolated stretches of the trail. They identified street crossings as potentially dangerous for both bikers and pedestrians and thought the trail should be kept off of McLoughlin Boulevard as much as possible.

Committee members expressed that the trail would be positive for the community because it would become a destination for recreation, especially for families. If the trail was properly maintained, it could create a safer community and enhance the livability of the surrounding neighborhoods.

Older Adults

The focus group meeting with older adults took place at Rose Villa retirement center in Milwaukie. This meeting was an hour long and had six participants. Three of the six participants knew where the trail was and had used it for walking.

Participants thought the trail would be a good location for organized walking groups like Volkswalkers. The trail would be enjoyable to use because of the variety of scenery along the corridor, both man-made (residential areas) and natural (trees, bushes, and flowers). Participants also suggested that the trail would be easy to use if it were accessible at numerous points and entry onto the trail was well-marked from the streets. Older adult users would particularly appreciate restroom facilities along the corridor and at entry points.

The older adult participants agreed that the trail should stay back from McLoughlin Boulevard in Segments 1 and 2. This would mean aligning the trail corridor just west of the road in the grassy strip. The older adults also felt that major street crossings would make the trail difficult to use and that good cross walks would be necessary.

Due to time constraints, the last question (How will this trail change your community?) was not asked.

Friends of the Trolley Trail

The Friends of the Trolley Trail group also met for one hour. The meeting was held at the Amazing Grace Evangelical Lutheran Church adjacent to the trail corridor at Concord Road and Arista Drive.

Four people attended the meeting and all of them knew
where the trail was and had used the trail to varying degrees.

The Friends of the Trolley Trail participants mentioned several ways in which the trail might be used. For example, the trail could be used as a place to teach children how to ride bikes safely away from traffic. It could also be used for long distance running, walking, or biking. One participant mentioned that a local high school track team anticipated using the trail for practice and another said she would ride her bike on the trail to the grocery store. The trail would also connect neighborhoods to Risely Park, just one block west of the trail corridor on Risely Road. A representative from the Oak Lodge Sanitary District noted that the trail would provide good access to drainage ditches that run along the west side of the corridor and present an opportunity to educate the public on environmentally friendly drainage alternatives.

The Friends participants thought the trail would be easy and enjoyable to use because it would be a safe corridor away from cars. Trees and shrubs along the corridor should be preserved so that the trail protects natural areas in an urban environment. Participants also mentioned that a wider corridor would accommodate a variety of users at any one time, making the trail easier to use. For example, a family could walk together, while still leaving enough room for joggers or bicyclists to pass.

**Findings**

The comments provided by focus groups represent a wide range of potential user interests and concerns. These comments should be considered throughout the trail design process.

A common concern to participants was safety at crossings and proximity to McLoughlin Boulevard. However, in general all of the participants were excited about the trail and thought it would be an attractive amenity to the community.

The focus groups were held to collect insight from specific groups likely to be interested in the Trolley Trail project and only represent the opinions and concerns of a selected subset of the population living near the trail. They were not intended to be comprehensive public involvement workshops or design charrettes.

An extensive public involvement program is being planned by Metro and NCPRD for the trail's design and development. The focus group participants were encouraged to attend these future public workshops planned for the late summer of 2002.
Focus Groups
Summary of Opportunities and Constraints*

Opportunities
- Expand outdoor recreational opportunities for neighborhoods surrounding trail corridor
- Provide connection with local community
- Protect natural character of trail

Constraints
- Proximity to McLoughlin Boulevard and busy traffic
- Pedestrian safety at street crossings
- Children's safety issues

*as identified by the focus group participants
NEXT STEPS

From the date that the corridor was purchased to final trail construction, the Trolley Trail is expected to take approximately five years to build. The workshop team's research completes two of the early phases of trail planning, as defined by Metro and NCPRD. First, the team researched information on the trail corridor and surrounding neighborhoods. This was primarily done using ArcView GIS and Census 2000 data. Second, the team conducted an assessment of current trail conditions. This was accomplished during field visits and by contacting local agencies. Finally, the team confirmed and supplemented findings with public outreach. The team's findings were compiled with an emphasis on the opportunities and constraints of trail development.

This document will be given to hired consultants who will continue the planning of the Trolley Trail in summer 2002. Future planning phases will include identifying possible funding sources and completing grant applications; carrying out further community outreach activities; conducting design and engineering studies; and obtaining intergovernmental agreements.

The team would like to thank all the individuals and agencies who participated in this important planning project.
REFERENCES


Clackamas County Historical Cultural Resource Inventory, 1992. Clackamas County, Oregon.


Kozowski Collection (two unprocessed boxes of rolled maps). Oregon Historical Society:

1. 1913, Cadastral map set showing right-of-way with deed instrument listing on sheets. Covers the entire O.C. line.
4. 1908, Golf Links to Wilsonville Map...giant rolled up vinyl sheet.
5. 1907, Map of railway lines, shows some station names.


Metro Regional Parks and Greenspaces Plan.


Oregon Journal. 1969. “Let’s Not Miss This Train”. May 6, 1969, 14J, 2M.

Portland State University Population Research Center. (http://www.upa.pdx.edu/CPRC/).


Appendices
Metropolitan Greenspaces Master Plan

In 1903, the Olmsted Brothers, a nationally renowned landscape architecture firm, issued a report to the City of Portland's Board of Park Commissioners identifying the need for Portland to plan and develop an interconnected system of parks. The Olmsted Brothers reasoned that, "a connected system of parks and greenways is manifestly far more complete and useful than a series of isolated parks." Metro carried on this vision for the Portland region when it adopted the 1992 Metropolitan Greenspaces Master Plan. The Plan identifies a regional system of interconnected parks, natural areas, greenways and trails, and the Trolley Trail is an important link in this system.

NCPRD Master Plan

NCPRD is currently updating its district-wide Master Plan. As a part of the process, an extensive public involvement program was designed to gather information from the community about the needs for parks, open space, and recreation facilities. In each of the public involvement opportunities, trails and pathways were consistently listed as the top priorities that the District should provide in the future.

There are currently no developed trails in NCPRD, however, trails are continually cited as a desired amenity by residents. Therefore, the development of the Trolley Trail will help meet the needs of the community. The unimproved trail has already received high levels of use by residents of the area, as well as those from the surrounding region.

Oak Lodge Neighborhood Park Plan

The trail is a priority in the Oak Lodge Neighborhood Park Plan because of its consistency with the two essential guiding principals identified in the Oak Lodge Neighborhood Plan – acquisition of Portland Traction Line right-of-way and protection of Boardman Slough. The trail falls within the Boardman Creek Basin and its development offers an opportunity to partner with other agencies to protect the natural resources of the Boardman Slough.

City of Milwaukie Comprehensive Plan

The development of the Trolley Trail right-of-way is consistent with:

- The Open Spaces, Scenic Areas and Natural Resource Element,
- The Recreation Needs Element, and
- The Transportation Element of the City of Milwaukie’s Comprehensive plan.

Objective 1 of the Open Spaces, Scenic Areas and Natural Resource element outlines the city’s goal to provide access to the 40-mile loop. This loop is a state designated recreation trail and passes through two sections of Milwaukie on the Trolley Trail right-of-way. Use of the Trolley Trail is also referenced as an alternate transportation mode and a linear park system in the City’s plan.
Clackamas County Comprehensive Plan & Bicycle/
Pedestrian Master Plans

The development of the right-of-way complies with the park and recreation policies of Clackamas County's Comprehensive Plan and the transportation policies of their Bicycle and Pedestrian Plans. The Plans identify the corridor as a multi-use trail in the Oak Lodge neighborhood. Specifically, the corridor is included in the Clackamas County Comprehensive Plan Open Space Network & Recreation Needs map, the Essential Pedestrian Network map, and the Planned Bikeway Network.

In addition, the project is consistent with the County's policy of providing a park and recreation system that maximizes access for walkers, hikers, bicycles, and transit riders. The trail is easily accessible due to its close proximity to McLoughlin Boulevard (Hwy 99E) and River Road. TriMet buses service McLoughlin Boulevard and would enable access to the trail from around the region.
Milwaukie Station 1912 (MHS)

Island Station view north (OHS Neg. 130-43)

Milwaukie Station 1915 (OHS Neg. 59094)

Island Station view south (OHS Neg. PGE 130-41)
Evergreen Station view north (MHS)

Oak Grove girls band 1928 (OHS Neg. 01083)

Cars south of lakewood station 1915 (MHS)

Oak Grove town center with new cars 1953 (OHS Neg. 63411)
Comprehensive Plan
Trolley Trail - North Clackamas County, Oregon

Source Data: RLIS 2001
Map Created: May 2002
APPENDIX 4: VACANT LAND DETAILS
Description and surrounding uses: This is an undeveloped grassy area that is relatively level with a short slope down to the north at the edge of the property. It is located just to the south of the waste water treatment plant, and is bordered by older single-family homes to the west and south. The Southern Pacific Railway borders the site on the west.

Opportunities: Once past the plant and up the slope on the level grassy area, it is a quiet sheltered spot, and no sewer plant odors persist. There is a stand of mature trees between the railway and the site.

Constraints: Access from the trail requires users to walk adjacent to the sewage treatment plant fence, which is dominated by unpleasant odors. The site is currently overgrown with Himalayan Blackberry and grasses. There is currently no vehicle access. An undeveloped roadway exists between the plant and the vacant parcel.
Description and adjacent uses: The majority of this site is well below the grade of Highway 99E. It is a vegetated flat area along the southwest bank of Kellogg Lake. The site is bordered the steep slope up to Highway 99E to the west and an apartment complex to the south. Across the lake is a large grassy field. The site has a graded path leading down to it from the road. There are a few established trails through the shrubs.

Opportunities: A signaled crosswalk gives easy access to the path leading down into the site. Once down away from Highway 99E at the level of the water, the site is a quiet peaceful area. There are many mature trees and a strong understory of shrubs.

Constraints: An extensive layer of ivy is endangering the mature trees and shrubs. There is trash and large pieces of debris present. It is possible the site is in the 100-year flood plain. Crossing Highway 99E, even with the signaled crosswalk is daunting, and no vehicle access is available.
Site: 3  Date: 04/07/02
Zoning: SFR High Density  Size: 88,502 SF
Owner: State of Oregon Department of Transportation
Tax Lot #: 1S1E36CC 01700, 00300

Description and adjacent uses: This large site has two distinct areas. One is a small, vegetated ravine with a shallow stream of water flowing through it. The other is a large open asphalt-paved and gravel lot which is currently used to store Oregon Department Of Transportation (ODOT) materials, however there were few materials on the site during three separate visits. The trail is directly to the east of the site and it is bordered to the north by a single-family home on the other side of the ravine. To the southwest is a small residential road.

Opportunities: The entire site is bordered by large trees and evergreen shrubs giving it a vegetative buffer from the noise and view of Highway 99E. The storage portion is flat, has no structures and could be used for a number of activities.

Constraints: The status of ODOT's use is not known. The site may be used more extensively in the future. There are currently metal pipes and gravel piles on site. The ravine portion of the site is extensively overgrown with invasive ivy.
Description and adjacent uses: This flat bare lot has recently been sold and may soon be developed. It is bordered to the north by da Vinci's restaurant, to the west by single-family homes, to the east by Highway 99E, and to the south by Park Avenue.

Opportunities: It is a corner lot with high visibility and easy auto access, and it is already graded.

Constraints: There is no vegetation on this cleared site. It is adjacent to Highway 99E and is noisy.
Description and adjacent uses: This site consists of a cluster of 3 grassy parcels behind the Elks Lodge. Tax lot 03800 also contains the lodge building. The Elks Lodge borders the parcels on the east and single-family homes border it to the north, south and west. The trail borders this property in two places, and there is vehicle access from 27th Avenue. The southern portion of the site is unmaintained and overgrown.

Opportunities: The majority of the site is open and currently maintained for recreation. It is visible and easily accessible from the trail and by car. The vegetation surrounding the site is mature and effectively buffers the site from the surrounding uses.

Constraints: The southern portion of the site is completely overgrown with Himalayan blackberry, Japanese knot weed and invasive ivy.
Description and adjacent uses: This site is part of a single-family residence yard. It is fenced and extensively landscaped, with a stream running through it. Adjacent uses include Oak Grove Elementary School across the trail to the west, single-family homes to the north and east, and Courtney Road to the south. Across Courtney Road there are single and multi-family homes.

Opportunities: The landscaping and the stream provide a beautiful setting adjacent to the trail. The site is directly accessible from the trail and is along a road providing auto access. The site is relatively level and the vegetation along the fence buffers the site from the street.

Constraints: The site is currently used as private property.
Description and adjacent uses: This site contains a few fruit trees and is part of a single-family residence yard. The space appears to be used for gardening space. Arista Boulevard borders it to the east, and single-family residences exist to the north, south and west.

Opportunities: The site is level, accessible by foot and auto and is relatively open without invasive species overgrowth.

Constraints: The site is currently used as private property.
Description and adjacent uses: This fenced site appears to be part of a single-family residence yard. Arista Drive and the trail border it to the east, and single-family residences border it to the north, south and west.

Opportunities: The site is level and is accessible by foot and auto. There are large fir trees throughout the property.

Constraints: The site appears to be currently used as private property, but the vegetation is so dense, it is impossible to see through to the middle and back of the site. Development would be constrained by the dense growth.
NO PHOTO AVAILABLE

Site: 9  Date: 04/07/02
Zoning: SFR High Density  Size: 3,222 SF
Owner: Ronald Emil and Dorane F. Dachtler
Tax Lot #: 2S1E12BC 07100

**Description and adjacent uses:** This small triangular parcel is slightly sloping, has a culvert adjacent to the road. It is currently planted with landscaping by the adjacent single-family residence property owner. It is bordered by the trail to the southwest, the single-family home to the north, and Arista Drive to the southeast.

**Opportunities:** There are few obvious opportunities for this parcel due to its size and location.

**Constraints:** The size, shape and location restrict this parcel's potential uses. In addition, the culvert could present problems for grading the site for development if necessary.
Description and adjacent uses: This small irregularly shaped parcel is partially used as a driveway for a single-family residence. The remainder of the site is forested with small shrubs and grass. Single-family residences and Arista Drive border the site.

Opportunities: The site is close to the trail and is level.

Constraints: The parcel is small and is between to single-family residences (without much of a vegetative buffer).
Site: 11  Date: 04/07/02
Zoning: SFR High Density  Size: 17,040 SF
Owner: Elmer L. and Anita Hamm
Tax Lot #: 2S1E12CB 00100, 00200

Description and adjacent uses: This site is part of a single-family residence yard. It is open and grassy in the center and has dense vegetation around the sides. The residential yard on one side and streets on the other three sides border this parcel.

Opportunities: The site is highly accessible due to having streets on three sides, and it is just across Arista Drive from the trail. It is level, grassy and has mature vegetation to provide borders.

Constraints: The site is currently used as private property.
Description and adjacent uses: This level, open and grassy site is part of a single-family residence yard. The residence is used as a day care facility. It has a few mature trees and is not fenced. The site is across Arista Drive from the trail and is bordered by single-family homes to the east and north, and Arista Drive and the trail to the west. Swain Avenue and more single-family homes are to the south.

Opportunities: The level maintained grass site is highly visible and accessible from the trail and provides easy auto access, as it is a corner lot.

Constraints: The site is currently used as private property, and may be used as a play area by the day care facility.
Description and adjacent uses: This large site is relatively level and varies between dense shrub and tree growth and open unmaintained grassy areas. It is partially fenced and has many deciduous trees. The site is bordered by single-family homes to the north, east and south. Arista Boulevard and the trail border the western edge of the site. A portion of the site is apparently being used as a side yard for a residence.

Opportunities: The large size of the parcel could be adapted to several uses. It is easily accessible from the trail and by auto. In addition the existing vegetation provides a natural open center space bordered by dense trees and shrubs.

Constraints: A portion of the site is used as private property for a side yard. Some areas towards the back of the site are overgrown with dense vegetation including Himalayan blackberry.
Description and adjacent uses: This vacant site is a large unused asphalt paved lot, which is a portion of a larger industrial building parcel. It is directly adjacent to the trail on its western border. There are single-family homes to the north and west across the trail and industrial uses to the east and south.

Opportunities: This site is large, open and flat. It is adjacent to the trail and could be a good opportunity for revegetation and reduction of impervious surfaces within the Boardman watershed. The other possibility would be for a trailhead parking lot.

Constraints: The site is currently paved with asphalt, so it would require removal and disposal work to return it to a naturalized or maintained park space. To the south of the site, the trail is currently impassible due to vegetation overgrowth and the presence of a large stormwater system ditch.
Description and adjacent uses: This cluster of parcels forms a large site, which is approximately 500 feet away from the trail corridor. The irregularly shaped cluster varies between open grassy areas and dense shrubs and trees. It slopes gently down to the east and is surrounded by single-family residences. Naef Road borders the south edge of the site.

Opportunities: The natural landscape of this site would be well suited to passive recreation. It is accessible by auto, is relatively flat and there were many birds at the site.

Constraints: The property is not directly adjacent to the trail. Fast automobile traffic was observed on Naef Road, and the sidewalk from the trail does not extend all the way to the vacant site. In addition, there are some areas overgrown with Himalayan blackberry.
Description and adjacent uses: These two parcels formerly made up one irregularly shaped parcel. They both contain single-family homes, but large grassy areas with numerous bordering trees and shrubs dominate the sites. Boardman creek flows through the western side of the fenced property. The trail runs along the site's eastern side. To the east is a large light industrial/commercial building. The trail right of way at this location is somewhat overgrown, but passable, although the entry is partially blocked with barbed wire fencing.

Opportunities: This is a large beautiful site with access to Boardman creek that is adjacent to the trail and is accessible by car. It is predominately flat.

Constraints: The sites are currently used as single-family residential lots.
Site: 17  Date: 04/12/02
Zoning: Mixed Use Ind.  Size: 88,936 SF
Owner: Melvyn and Wendy Haldors
Tax Lot #: 251E13AD 00800

Description and adjacent uses: Grass dominates this relatively large flat parcel. A gravel road provides access to it and the cell tower immediately to the north. The trail runs just to the west of the property. Industrial buildings surround the site to the east and north and single-family residences are to the southwest.

Opportunities: The site is level and sheltered from auto traffic, because it does not border any streets. It will be easily accessible from the trail once the trail section to the north is cleared of overgrown vegetation.

Constraints: Proximity to the cell tower may deter some park users. The industrial land uses adjacent to the site are not visually pleasing and may require screening with tall vegetation. The large grassy area is part of parcel that contains an industrial building. The site is not easily accessible by auto.
Description and adjacent uses: This is a large slightly sloping grassy field with no fencing. It is approximately 425 feet from the trail corridor. It is a corner lot that is bordered by single-family residences to the north and west. A ‘For Sale’ sign sits at the corner of Roethe Road and Blanton Street, and a small garden plot exists in the center of the field.

Opportunities: The site is regularly shaped and only slightly sloped. It has easy pedestrian and auto access. There are few invasive plants growing at the site.

Constraints: The site is not directly adjacent to the trail and is not sheltered from auto traffic. It is currently for sale, so there is a possibility it could transfer ownership soon and be developed.
Description and adjacent uses: This level grassy site is part of a single-family residence yard. It is fenced and landscaped with native and exotic trees and shrubs. There is some debris in the yard. The site fronts on Roethe Road and is directly west of a portion of Boardman Creek. The trail runs just to the east of the creek, and a children’s gymnastic studio is to the east of the trail. To the south of the gymnastic building is a picturesque portion of Boardman Slough, and single-family residences border the vacant site to the south and west.

Opportunities: The site is fairly level and is already landscaped. It provides access to Boardman Creek and Boardman Slough and is accessible both from the trail and by automobile.

Constraints: The site is currently used as private property and may be subject to flooding.
Description and adjacent uses: This is a single-family home parcel with a large open vacant area for sale. Trash and large debris are scattered throughout the level grassy site. Himalayan blackberry dominates the northern property line and Boardman Slough borders the site to the west. There are industrial buildings to the north and single-family residences across Boardman Avenue to the south.

Opportunities: This site is close to Highway 99E providing quick access to this portion of the trail. It is level and mostly open. It is accessible both on foot and by car.

Constraints: The property needs to be cleared of trash and debris. Someone operates a satellite dish on the site, and it is possibly subject to flooding. In addition, it is currently for sale and is part of a single-family residential lot.
Description and adjacent uses: This level grassy site is part of a single-family residence yard. It is fenced and landscaped with native and exotic trees and shrubs. This corner site is bordered on the south and west by single-family residences. There are multi-family residences across Arista Drive.

Opportunities: The site is fairly level and is already landscaped. It is an easily accessible corner property with level open grassy areas.

Constraints: The site is currently used as private property.
Description and adjacent uses: This site houses an Portland General Electric substation. The substation is on the northeast portion of the property and is fenced. In addition there is a cellular phone tower in the southeast corner. The remainder of the site is maintained grass and there are both young and mature trees on the site. One prominent mature maple tree stands near Abernathy Road. The site is level near the road but slopes quickly to the east near the back of the lot. There is a mix of commercial and residential uses bordering this site.

Opportunities: The mature maple tree and level grassy area provide a good place for a bench or picnic area. The area near the back of the lot, which is lower in elevation than the front, is sheltered from traffic noise and the visual impact of Highway 99E.

Constraints: Due to its proximity to Highway 99E, the front portion of the site experiences relatively high noise levels. In addition, the site is not easily accessible by automobile.
<table>
<thead>
<tr>
<th>Site:</th>
<th>23</th>
<th>Date:</th>
<th>04/12/02</th>
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<tr>
<td>Zoning:</td>
<td>MFR Low Density</td>
<td>Size:</td>
<td>52,563 SF</td>
</tr>
<tr>
<td>Owner:</td>
<td>James H. and Helen Bean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax Lot #:</td>
<td>2S2E18DC 04100, 04300</td>
<td></td>
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</tr>
</tbody>
</table>

**Description and adjacent uses:** This property was previously developed, but the structures have been demolished. Construction/demolition debris is scattered throughout the site, which slopes gently to the east. Along Abernethy Road, the site is about five to six feet above the grade of the road. There are a few prominent evergreen trees at the front of the lot and a mix of deciduous and evergreen trees lines the perimeter of the site. Single-family homes border the site to the north and east, and a multi-family apartment complex borders the site to the south.

**Opportunities:** This site presents a large grassy, mostly flat area that could be used for multiple recreation purposes adjacent to the trail corridor. It is easily accessible by trail users.

**Constraints:** The property has debris and may have building foundations that would need to be removed in order to develop the site for active recreation. Auto access is limited due to the narrow width of Abernethy Lane and a lack of a turn around at the end of Abernethy.
Description and adjacent uses: This corner site is partially overgrown with vegetation, and a short gravel road passes through it. The property is generally flat and is bordered by single-family homes and commercial properties.

Opportunities: This site is fairly large and has some mature vegetation. It is very accessible by automobile and trail users.

Constraints: The noise level at the site is somewhat high due to its proximity to Highway 99E.
Description and adjacent uses: This site is a long, rectangular maintained grass area that is bordered by single-family residences on all sides. There are mature trees and shrubs lining the length of the property.

Opportunities: The site is well maintained and level. It is sheltered from the adjacent single-family residences by the mature vegetation. It is easily accessible by auto and trail users on foot.

Constraints: The site is in private ownership, and may be used as a side yard.
APPENDIX 5: OAK LODGE SANITARY DISTRICT MAPS
Map for planning purposes only. Not a legal survey or for engineering design.

Oak Lodge Sanitary District

Legend
- Sewer Lines
- Manhole
- Clean-Out
- PS
- Storm Line
- Private
- Culvert
- Detention
- Ditch
- Stream
- Catch-Basin
- Clean-Out
- Drywell
- Outfall
- Private
- Wetlands
- River
- OLSD Sites
- Parks
- Trolley Trail

Trolley Trail Segment 2
SE River Rd.
SE Park Ave.

1 in. equals 400 ft.
Map for planning purposes only. Not a legal survey or for engineering design.
APPENDIX 6: VIRTUAL TOUR USER GUIDE
TROLLEY TRAIL VIRTUAL TOUR USER GUIDE

1. Introduction
   The virtual tour is provided on CD-ROM for use offline. The tour can also be posted on Metro's or NCPRD's website.

2. Opening the virtual tour home page
   The virtual tour home page can be opened using any web browser, such as Internet Explorer. With the web browser, open the index.html file located on the CD-ROM drive, i.e. E:/index.html.

3. Virtual tour components
   The virtual tour has five main components. Four of the components, Environmental Analysis, Land Use Analysis, Demographics and Trolley History, provide a summary of some of the findings from the team's work. The fifth component, Virtual Tour, includes a series of approximately 150 photographs and maps compiled in sequence as if the user is walking from north to south down the trail corridor.

4. Using the virtual tour
   By clicking on the virtual tour hyperlink, the user will be brought to the virtual tour navigation page in which the user can launch the virtual tour by clicking on text hyperlinks for each trail segment or by clicking segments of the map. By clicking on the segment, a new browser window will open containing a map of the selected segment.

   4.1. Launching the virtual tour using text hyperlinks
      The virtual tour can be launched by clicking on any of the segment names listed below the virtual tour text hyperlink as shown in Figure 1.

   4.2. Launching the virtual tour by clicking on map segments
      The virtual tour can also be launched by clicking on any segment on the map. As shown in Figure 2, the segment number appears when hovering over a segment on the map.
4.3. Navigating through the virtual tour

Once the virtual tour is launched, the user can navigate through the tour by clicking the forward and backward arrows located at the bottom of each page. When the user reaches the end of the segment and clicks the forward arrow, the map of the next segment will appear. Furthermore, when the user reaches the beginning of the segment and clicks on the back arrow, the last photograph of the previous segment will appear.

4.4. Navigating through views

Certain photographs contain views to the right or left of the trail segment. These views can be accessed by clicking the "Click to see view" button as shown in Figure 3. The user can return to the previous photograph by clicking on the "Back to trail" button as shown in Figure 4.
4.5. Trail alternatives

In some sections of the trail, alternative routes will need to be assessed. The two alternatives are denoted by orange and blue arrows labeled with the letters A and B. An example is shown in Figure 5.

Figure 5 - Trail Alternatives
Jennifer Bell

Jennifer Bell is currently pursuing a Master of Urban and Regional Planning degree at Portland State University and will graduate in June 2002. She is a Graduate Research Assistant for the Institute of Portland Metropolitan Studies, where she is currently working with Metro's Growth Management Services Department on their benchmarking project. Jennifer recently completed an internship at WRG Design Inc., a private engineering and planning consulting firm. Prior to attending graduate school, Jennifer earned a B.S. in Environmental Studies from the University of Kansas.

Stacy Burnett

Stacy Burnett is finishing up her second year in the Master of Urban and Regional Planning program at PSU. She will graduate in June 2002 with an emphasis on analytical methods. Stacy obtained her undergraduate degree in biological sciences from the University of California, Davis. Before attending graduate school, she spent several years working in the field of water resources, focusing on GIS applications. Currently she is working for the U.S. Geological Survey on a study investigating the effects of urbanization on water quality in the Willamette River Basin.

Michelle Healy

Michelle Healy is a second year student in the Master of Urban and Regional Planning program at Portland State University. She will graduate in June 2002 with a specialization in environmental planning. Michelle is currently working for North Clackamas Parks & Recreation District assisting with park, trail, open space, and recreation planning projects. She earned a Bachelor of Science degree in Environmental Science, with a specialization in aquatic resources, in 1996 from Virginia Polytechnic and State University. Prior to attending graduate school, Michelle was an environmental scientist working on solid and hazardous waste clean-up projects.

Beth Park

Beth Park will graduate from Portland State University's Master of Urban and Regional Planning program in June 2002 with a focus in environmental planning. Beth has an internship with the City of Portland's Bureau of Planning. She works with the Willamette Greenway/ESA group and is currently assisting with an economic analysis of the Portland Harbor area. Beth received her undergraduate degree in Economics from Michigan State University. Prior to graduate school, Beth was a client representative at Marsh McClennan, a nation-wide commercial insurance brokerage with an office in Portland, Oregon.
Jennifer Shively

Jennifer Shively graduated from the University of California at Santa Barbara with a B.S. in Physical Geography. She lived in the San Francisco Bay area and worked for a commercial real estate information firm serving the Portland Metropolitan market for two years before deciding to pursue a Master's degree in Urban Planning. At Portland State, Jennifer is a Graduate Research Assistant and is specializing in Environmental Planning. She currently interns with the Environmental Land Use Review division of the City of Portland's Office of Planning and Development Review.
Mel Huie  
Senior Regional Planner  
METRO Regional Parks and Greenspaces  
600 NE Grand Avenue  
Portland OR 97232-2736  
(503) 797-1731  
huiem@metro.dst.or.us

Jane Hart  
Environmental Planner  
Metro Regional Planner  
600 NE Grand Avenue  
Portland OR 97232-2736  
(503) 797-1585

Heather Nelson-Kent  
Manager of Planning Education  
METRO Regional Parks and Greenspaces  
600 NE Grand Avenue  
Portland OR 97232-2736  
(503) 797-1731

Mike Henley  
Director  
North Clackamas Parks & Recreation District  
11022 SE 37th Avenue  
Milwaukie, OR 97222  
(503) 794-8002  
Fax: (503) 794-8005  
mikehen@co.clackamas.or.us

JoAnn Herrigel  
City of Milwaukie  
10722 SE Main Street  
Milwaukie, OR 97222  
(503) 786-7508  
Fax: (503) 652-5294

Student Contacts

Jennifer Bell  
(503) 234-0471  
jbell@pdx.edu

Stacy Burnett  
(503)236-8169  
sburnett@pdx.edu  
sburnett@usgs.gov

Michelle Healy  
(503) 794-8002  
Fax: (503) 794-8005  
michellehea@co.clackamas.or.us

Beth Park  
(503) 236-4918  
bethhark@hotmail.com

Jennifer Shively  
(503) 236-7551  
jeshively@jps.net
Friends of the Trolley Trail

Richard Jones
Chair Person
Oak Lodge Community Council
3205 SE Vineyard Road Road
Oak Grove, OR 97267

Thelma D. Haggenmiller
3405 SE Westview Road
Oak Grove, OR 97267
(503) 659-5590

Other Partners

City of Gladstone
Oak Lodge Community Council
Oak Lodge Sanitary District
Clackamas County - Department of Transportation
and Development
Portland General Electric