South North
Transit Corridor Study

South/North Corridor Project

Parklands, Recreation Areas, Wildlife and Waterfowl Refuges (Section 4(f)) Impacts Results Report

(RR-4)

February 1998

Parklands, Recreation Areas Wildlife and Waterfowl Refuges Impacts Results Report

South/North Transit Corridor Study
Draft Environmental Impact Statement

February 1998

Metro

Prepared by: Metro
Parametrix, Inc.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

S. SUMMARY

S.1 Introduction

Some properties falling within the South/North Transit Corridor have special regional or neighborhood significance because of unique features. Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 (49 USC 303) requires that USDOT agencies, including the FTA, "not approve the *use* of land from a significant publicly-owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless there is no feasible and prudent alternative to the *use* of land from the property and the action includes all possible planning to minimize harm to the property resulting from the *use*." In the context of Section 4(f), the term "use" means:

- Taking or acquiring a resource through the construction of a transportation facility; or
- Substantially impairing the intended use of the resource through the construction of a transportation facility (referred to as "constructive use").

The purpose of this report is threefold:

- Prepare an inventory of Section 4(f) resources within the South/North Transit Corridor;
- Assess the impacts on Section 4(f) resources from the proposed alignments and options for the South/North Light Rail Transit system; and
- Identify possible measures to avoid use and minimize harm where it is determined that a Section 4(f) resource will be impacted by one of the selected alternatives.

The DEIS will include a preliminary Section 4(f) evaluation. This information will be used in the selection of the Locally Preferred Strategy (LPS) after public feedback and hearings. Following selection of the LPA, the Section 4(f) evaluation will be circulated for consultation and comment to the Department of Interior and to any federal, state and local agencies with jurisdiction. Following consideration of comments and changes to project plans, the final Section 4(f) evaluation will be prepared and included in the Final Environmental Impact Statement (FEIS).

S.2 Affected Environment

The South/North Corridor was inventoried to identify potential Section 4(f) properties within the vicinity of the South/North Alignment Alternatives under consideration. Properties inventoried included parks and recreation lands, wildlife and waterfowl refuges, historic, cultural and archaeological sites.

The area evaluated extended one-half block (approximately 100 feet) on either side of each alignment alternative in urban areas and 200 feet on either side of each alignment alternative and design option outside of urbanized areas. Table S.1-1 summarizes the number of facilities which were determined to be considered Section 4(f) resources within each segment.

Table S.1-1
Section 4(f) Resource Inventory Summary

Segment	Historic	Archeological	Parkland
Clackamas Regional Center	1	2	4
East Milwaukie	3	3	1
Milwaukie Regional Center	6	1	4
McLoughlin Boulevard		1	3*
South Willamette River Crossing	4		2
Downtown Portland	74	3	2
Eliot			2
North Portland	7		8
Hayden Island/Vancouver	11	1	4
Totals	106	11	30

* Includes Oaks Bottom Wildlife Refuge

S.3 Environmental Consequences

The total number of Section 4(f) resources that would be affected by the "No-Build" and Light Rail Length Alternatives is summarized in Table S.2-1 below:

Table S.2-1
Preliminary Evaluation of Adverse Effects on Eligible Historic, Archaeological and Cultural Resources and Use of Public Parklands by Length Alternatives

		Archaeological Sites		
Length Alternative	Adverse Effects on Historic Resources	Potential Effects on Known Resources	Potential Effects on High Probability Areas[1]	Use of Public Parklands or Wildlife Refuges
No-Build	0	0	0	0
Full-Length	7	1	6	3
MOS 1 (Bi-State)	3	1	4	2
MOS 2 (Rose Quarter)	7	0	5	3[2]
MOS 5 (Lombard)	7	0	5	2

Source: *Historic, Archaeological and Cultural Resources (Section 106) Impacts Results Report* and *Parklands, Recreation Areas, Wildlife and Waterfowl Refuges (Section 4(f) Impacts Results Report* (Metro: October 1997).

[1] These are areas with a high probability for finding either historical archaeological resources or hunter-fisher- gatherer sites.
[2] This includes a potential constructive use due to LRT wheel squeal at Holladay Park.

The analysis of Light Rail Length Alternatives is based upon a common set of alignment alternatives and design options (see Section 3.2.3.2.1.1 for more detail). The impacts to cultural, historic and parkland resources associated with the length alternatives would change depending upon which alignment alternatives and design options are selected with the LPS:

- **Clackamas Regional Center Segment.** Both the North and South of Clackamas Town Center alignment alternatives would have an adverse effect on one historic resource and a potential effect on an area with a high probability for archaeological resources.

- **East Milwaukie Segment.** Both Railroad Avenue Alignment Alternatives would have an adverse effect on three historic resources, a potential effect on an area with a high probability for archaeological resources, and would use one public parkland. The Highway 224 Alignment Alternative would have no adverse effect on historic resources and a potential effect on an area with a high probability for archaeological resources.

- **Milwaukie Regional Center Segment.** The alignment in this segment would have an adverse effect on one historic resource, a potential effect on an area with a high probability for archaeological resources and would use one public parkland.

- **McLoughlin Boulevard Segment.** The alignment would have no adverse effect on historic resources and a potential effect on areas with a high probability for archaeological resources.

Table S.3-1
Preliminary Evaluation of Adverse Effects on Eligible Historic, Archaeological and Cultural Resources and Use of Public Parklands by Alignment Alternatives and Design Options

Alignment Alternative	Design Option	Historic	Archaeological Sites		Parklands
			Known	High Probability	
Clackamas Regional Center Segment					
North of CTC	All Options	1	0	1	0
South of CTC	All Options	1	0	1	0
East of Milwaukie Segment					
Railroad Avenue/Through Traffic		3	0	1	1
Railroad Avenue/Local Access		3	0	1	1
Highway 224		0	0	1	0
Milwaukie Regional Center Segment					
Main Street/Tillamook Branch Line		1	0	1	1
McLoughlin Boulevard Segment					

Alignment Alternative	Design Option	Historic	Archaeological Sites		Parklands
			Known	High Probability	
McLoughlin Boulevard		0	0	1	0
South Willamette River Crossing Segment					
Ross Island	All Options	0	0	0	0
Caruthers	All Options	0	0	0	1
Downtown Portland Segment					
Full Mall	Glisan	2	0	1	0
	Irving	2	0	1	0
Half Mall		1	0	1	0
Eliot Segment					
Wheeler/Russell	All Options	0	0	0	0[2]
East I-5/Kerby	All Options				
North Portland Segment					
I-5	All Options	0	0	0	0
Interstate Avenue		4	0	0	0
Hayden Island/Vancouver Segment					
I-5/Washington Street	All Options	0	1	1	1

Source: *Historic, Archaeological and Cultural Resources Impacts Results Report* (Metro: December 1997) and *Parkland, Recreation Area, Wildlife and Waterfowl Refuges (Section 4(f)) Impacts Results Report* (Metro: December 1997)

Note: Term. = Terminus option; Comm = Commercial; Ind = Industrial; Bus = Business; SF = Single-family; MF = Multi-family; Res = Residential; Inst = Institutional; Pub = Public Facility. All displacements are reported as units rather than buildings.

[1] There are areas with a high probability for finding either historical, archaeological resources or hunter-fisher-gatherer sites.
[2] With MOS 2, there would be a potential constructive use of Holladay Park due to LRT wheel squeal.

- **South Willamette River Crossing Segment.** The Caruthers Crossing Alignment Alternative would use one public parkland. The Ross Island Crossing would have no adverse effects on historic resources and no use of public parklands.

- **Downtown Portland Segment.** The Full-Transit Mall Alignment would have an adverse effect on two historic resources. The Half-Transit Mall would have an adverse effect on one historic resource. Both alignment alternatives would have a potential effect on an area with a high probability for archaeological resources.

- **Eliot Segment.** Neither the East I-5/Kerby nor the Wheeler/Russell Alternatives would have an adverse effect on historic resources or use of public parklands. However, with MOS 2, LRT wheel squeal would have a potential constructive use of Holladay Park.

- **North Portland Segment.** The Interstate Avenue Alignment Alternative would have an adverse effect on four historic resources. The I-5 Alignment Alternative would have no adverse effect on historic resources and no use of public parklands.

- **Hayden Island/Vancouver Segment.** The alignment in this segment would have a potential effect on one known historic, archaeological resource and one high probability area for archaeological resources and would result in the use of one public parkland.

S.4 Potential Mitigation

For each Section 4(f) resource affected, specific alternatives to avoid the potential effects have been identified and, if necessary, mitigation measures have been developed to address the anticipated effects. These resources and corresponding measures are summarized in Table S.4-1 below:

Table S.4-1 Mitigation Measures

Site	Type of Section 4(f) Resource	Type of Impact	Proposed Mitigation
Clackamas Regional Center Segment			
Harmony Elementary School	Historic	Right-of-way	Noise wall, landscaping screen to reduce noise and visual impacts.
East Milwaukie Segment			
Hector Campbell Elementary School Playing Field	Parkland	Partial ballfield impact	Railroad Avenue Local Access Alignment Alternative reduces use of resource; maintain recreational uses by relocating baseball diamond within playing-field boundary.
Adams House	Historic	Demolition of two outbuildings	Recordation and relocation of the outbuilding elsewhere on the property.
Keil House Ensemble	Historic	Right-of-way	Minimize visual impacts through use of architecturally compatible walls.
Keil Ensemble, Bungalow	Historic	Demolition of structure	Move the bungalow north on the parcel. If demolition cannot be avoided, recordation and salvage of the facility could be completed.

Site	Type of Section 4(f) Resource	Type of Impact	Proposed Mitigation
Milwaukie Regional Center Segment			
Scott Park	Parkland	Right-of-way/ noise	Replacement parkland opportunities are being developed as part of a cooperative planning process between the City of Milwaukie and North Clackamas Parks & Recreation District.
Oregon Worsted Company	Historic	Demolition	Recordation and salvage of the structure.
Downtown Portland Segment			
Portland City Hall	Historic	Visual and access	Relocation and redesign of the proposed LRT station to be compatible with the historic character of City Hall. Current renovation of City Hall may avoid access impacts.
Warehouse on Glisan Street (#104)	Historic	Demolition	Recordation and salvage of the building.
Hotel Medford	Historic	Demolition	Redesign of the first floor facade to allow for a sidewalk next to the building and to accommodate the LRT could avoid demolition. Otherwise, recordation and salvage of the building is suggested.
Pacific Building	Historic	Constructive use/noise	Full-Transit Mall Alternative would avoid impact. Wheel squeal could be reduced by track modification or lubricant.
Eliot Segment			
Holladay Park	Parkland	Constructive use/noise	Wheel squeal could be reduced through the application of wheel lubricant.
North Portland Segment			
Nicolai Company Office Ensemble (#133)	Historic	Demolition	Recordation and salvage of the building.
Polish American Citizens Club	Historic	Constructive use/vibration	Use of a ballast mat is recommended under the Interstate Avenue; selection of the I-5 Alignment avoids any Section 4(f) use.

Site	Type of Section 4(f) Resource	Type of Impact	Proposed Mitigation
St. Stanislaus Church	Historic	Constructive use/vibration	Use of a ballast mat is recommended under the Interstate Avenue; selection of the I-5 Alignment avoids any Section 4(f) use.
Hayden Island/Vancouver Segment			
Clark College Sports Arena	Parkland	Right-of-way	Relocate baseball and soccer fields and planned jogging trail slightly south of current location, but still within the property boundary.

1. INTRODUCTION

1.1 Background

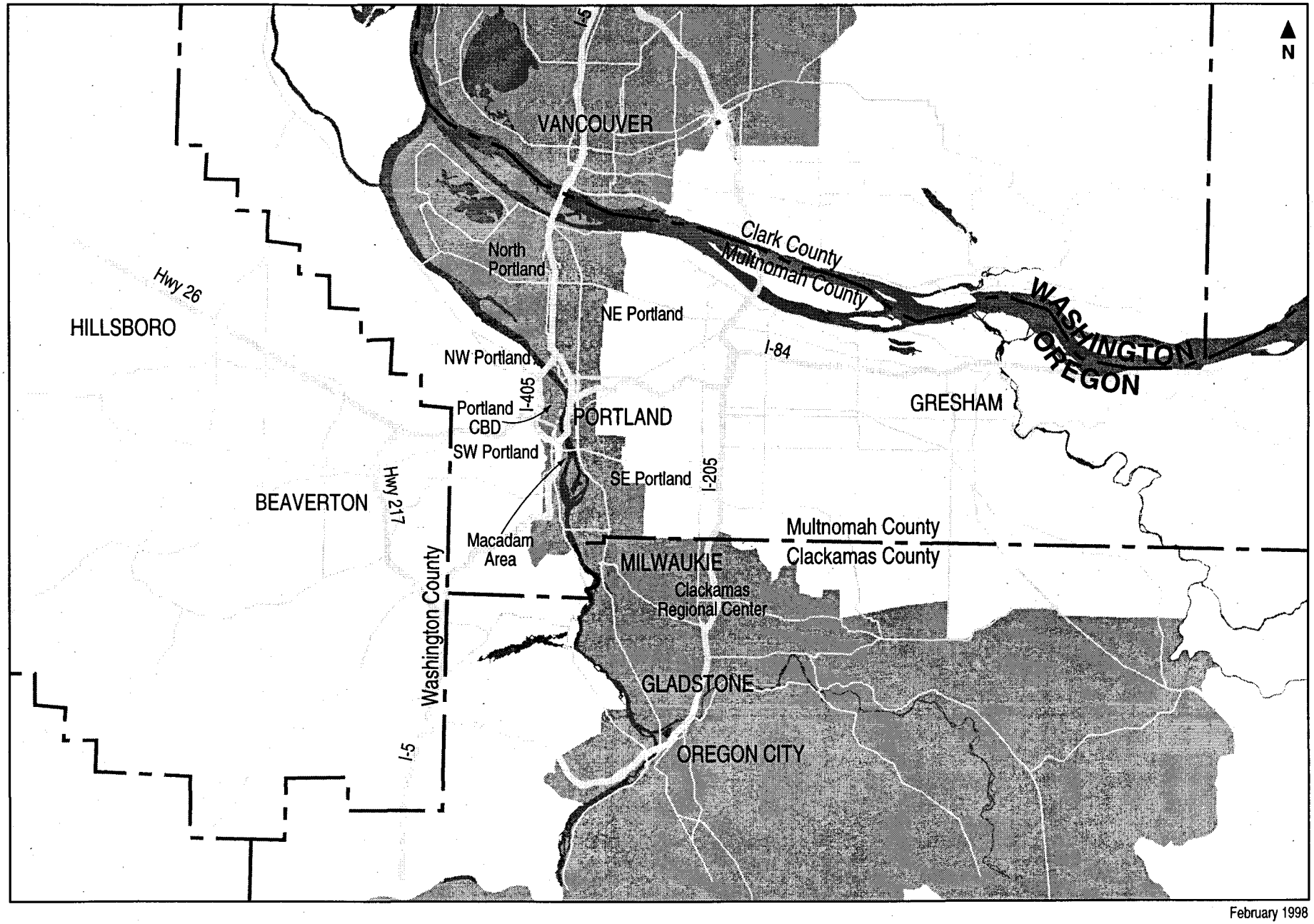
The South/North Corridor lies within the Portland/Vancouver metropolitan region (the Region) and encompasses portions of Clackamas and Multnomah Counties in Oregon and Clark County in Washington (Figure 1.1-1). The corridor is defined as a travel shed which extends north from the Oregon City area in Clackamas County, through downtown Portland and into Clark County north of Vancouver. The travel shed captures the trips that could benefit from the major transit investments being evaluated, either on light rail exclusively, or through a system of bus routes or park-and-ride lots which connect to light rail.

Light Rail Transit (LRT) connection points are defined by key activity centers within the South/North Corridor. These key activity centers include Oregon City, the Clackamas Town Center (CTC) area and the downtowns of Milwaukie, Portland and Vancouver. The corridor also includes other important centers such as the Central Eastside Industrial District, Oregon Museum of Science and Industry (OMSI), the North Macadam area, Portland State University (PSU), the Union Station/North River District area, the Rose Quarter, Portland Community College in north Portland, the Veterans Administration (VA) Medical Center and Clark College.

The South/North Corridor includes almost half of the Portland/Vancouver metropolitan region. It is characterized by high employment and residential growth with the potential for deteriorating travel conditions. In the next 20 years growth rates for population and employment in the Region are projected to be 37 percent and 47 percent, respectively. Growth in Clark and Clackamas Counties for the same period is expected to exceed these regional growth rates.

In April 1993, following the analysis of transportation, design, cost and environmental issues, the Region selected the South/North Corridor as the priority for defining and evaluating high capacity transit alternatives. The South/North Transit Corridor Study was initiated in October 1993 when the Federal Transit Administration (FTA) issued notice in the Federal Register of the intent to publish a Draft Environmental Impact Statement (DEIS) for the South/North Corridor. Because of the size of the South/North Corridor and the complexity of the issues involved, the study was divided into two tiers. In Tier I, completed in 1995, light rail was selected as the preferred high capacity transit mode and study termini. In addition, a small number of promising alignment alternatives (the locally preferred design concept and scope) were identified for further study in Tier II. The purpose of Tier II, initiated in January 1996, is to evaluate the alternatives defined in Tier I, to prepare and publish a DEIS and to select a Locally Preferred Strategy (LPS).

In response to the November 1996 failure of Ballot Measure 32, which would have secured State of Oregon funding for South/North light rail, the South/North Steering Committee and Metro Council requested that staff develop a range of options and design changes to significantly reduce project cost. This work was completed in May 1997 when the Metro Council adopted amendments to the range of alternatives to be studied in the DEIS to reflect the most promising cost-cutting measures.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VANCOUVER
Clark County
Multnomah County
WASHINGTON
OREGON
North Portland
NE Portland
I-84
GRESHAM
Hwy 26
HILLSBORO
NW Portland
I-405
Portland CBD
PORTLAND
SW Portland
SE Portland
I-205
Hwy 217
BEAVERTON
Macadam Area
Multnomah County
Clackamas County
MILWAUKIE
Clackamas Regional Center
Washington County
GLADSTONE
I-5
OREGON CITY
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Figure 1.1-1
South/North Corridor
Corridor
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MILE

Following is a list of documents summarizing the steps taken in the process of narrowing alternatives described above:

- **Scoping Process.** *Scoping Process Narrowing Report* (Metro: December 1993) and the *Tier I Description of Alternatives Report* (Metro: December 1993);

- **MIS Process.** *Tier I Final Report* (Metro: December 1994), the *Downtown Portland Tier I Final Report* (Metro: December 1996) and the *MIS Final Report* (Metro: November 1995);

- **Design Option Narrowing Process.** *Design Option Narrowing Final Report* (Metro: January 1996); and

- **Cost-Cutting Process.** *Cost-Cutting Measures Final Report* (Metro: May 1997).

This report contains findings and impacts which will be summarized in the DEIS and used in the selection of the LPS. The DEIS and supporting documents will provide a summary of the significant benefits, costs and environmental impacts associated with the alternatives and design options described below. Where choices are to be made between alternatives and design options, the DEIS will also summarize the trade-offs between those choices. Following publication of the DEIS and receipt of public comment, the Region will select the preferred alternatives and design options (termed the LPS) to advance into the Final Environmental Impact Statement, final design and construction. The process, criteria and measures to be used in the LPS selection process are described in the *Evaluation Methods Report* (Metro: May 1996).

1.2 Purpose and Need

The following range of problems and opportunities within the South/North Corridor and the Portland/Vancouver metropolitan region defines the purpose and need for the South/North Transit Corridor Study:

- **Growth.** Over the next 20 years, population growth for the Portland/Vancouver metropolitan region is forecast to exceed 600,000 new residents, an increase of almost 40 percent. Historical and current population and employment growth within the South/North Corridor is occurring at a faster rate than for the Region as a whole.

- **Traffic Problems.** Traffic in the South/North Corridor is exceeding the capacity of many roads and intersections within the highway system. For example, most of McLoughlin Boulevard is currently highly congested with a level-of-service of E or F. In the north, traffic across the Columbia River has almost doubled since the opening of the I-205 Bridge with projections for continued growth well into the future. This growth is causing demand to exceed capacity during peak commute periods.

- **Transit Problems.** As the highway network becomes congested, the bus system, which shares the road with cars and trucks, experiences longer travel times and high levels of

unreliability. Deterioration in speed and reliability of buses increases operating costs, deters ridership and costs transit riders thousands of hours a day through longer bus trips.

- **Regional Plans.** For over 20 years, the Region has shaped its land use and transportation plans based upon the expectation that high capacity transit (HCT) would be provided within the South/North Corridor. Those plans have sized the road network, defined the comprehensive land use plans and implemented a bus network to enhance, and be served by, an HCT facility.

- **State Regulations.** Local jurisdictions in Oregon and Washington are implementing new state regulations which require the integration of transportation and land use planning. Oregon requires that the Region plan for a twenty percent reduction in the per capita vehicle miles traveled (VMT) and a ten percent reduction in the per capita number of parking spaces. In Washington, the Clark County area is required to adopt a commute trip reduction ordinance that would result in a thirty-five percent drop in trips to major employers by 1999.

- **Economic Health.** There is growing concern that reduced accessibility within the South/North corridor may reduce the Region's ability to attract and retain industrial and commercial development. In addition, requirements within Washington could limit new development if the transportation system is inadequate to handle the associated increase in demand.

- **Air Quality.** The Environmental Protection Agency (EPA) redesignated the Region as being in attainment of the federal ozone pollution standard in April 1997. EPA redesignation of the region as being in attainment of the carbon monoxide standard is anticipated in October 1997. Transit expansion is a key element of the Region's adopted Air Quality Maintenance Plans to ensure continued compliance with federal standards for these pollutants.

1.3 Definition of Alternatives

The DEIS evaluates the No-Build (All-Bus) Alternative and the proposed Light Rail Transit (LRT) Alternative for the South/North Corridor. The transit and roadway capital improvements and the transit operating improvements for the No-Build and light rail length alternatives are described in Sections 1.3.1 and 1.3.2, respectively. Characteristics about each alternative are described in more detail in the *Definition of Alternatives Compendium.*

The analysis for the DEIS is based upon the same transit fare policy, service frequency policy (policy headways), vehicle type and vehicle loading standards for all alternatives. Service policies for Tri-Met and C-TRAN are described briefly below. Consistent with adopted Tri-Met and C-TRAN policy, fares are projected to keep pace with inflation.

Tri-Met. Tri-Met currently has a three-zone fare system. In the South/North Corridor, Zone 1 extends from downtown Portland to N/NE Fremont Street in the north and SE Holgate Boulevard in the south. Zone 2 extends from N/NE Fremont Street to Jantzen Beach in the north and from SE

Holgate Boulevard to SE Tacoma Street/Johnson Creek Boulevard in the south. Zone 3 extends from Jantzen Beach to Vancouver, Washington in the north and from SE Tacoma Street/Johnson Creek to Clackamas Community College in the south. Travel within one or two zones costs $1.05. The fare for travel within three zones is $1.35. Monthly passes cost $36 for one or two zones and $46 for three zones. Fares are discounted for senior or handicapped citizens and school-aged riders. Tri-Met's policy has been to increase fares every other year, such that passenger revenue per vehicle grows at approximately an average annual rate of 4.5 percent. Transfers are free and may be used to transfer between buses and LRT. Transit trips within the downtown Portland "fareless square" zone are free. Fares for LRT and bus service are identical. There is no fee to park an automobile in a Tri-Met park-and-ride lot.

Tri-Met's weekday service policy calls for ten to 15 minutes between buses during the morning peak period (7:00 to 9:00 a.m.) and evening peak period (4:00 to 6:00 p.m.), with more frequent service if demand warrants, on most in-city bus lines and on regional radial trunk lines. Suburban local/feeder buses are to run every 30 minutes during peak periods. During midday periods, buses on most in-city bus lines run every 15 minutes, and buses on suburban bus lines run every 30 minutes. Most bus lines operate every 30 minutes or less frequently after 9:30 p.m.

Tri-Met operates standard 40-foot buses accommodating 44 seated and 20 standing passengers; 60-foot articulated buses accommodating 64 seated and 47 standing; and 88-foot light rail vehicles (LRVs) seating 76 with room for 90 standing passengers. LRVs are operated in either one-car or two-car train configurations, depending upon demand and vehicle availability.

C-TRAN. C-TRAN currently has a four-zone fare system. Zone 1 extends from downtown Portland to N/NE Fremont Street, Zone 2 extends from N/NE Fremont Street to Jantzen Beach, Zone 3 extends from Jantzen Beach to NE 134th Street and Zone 4 extends from NE 134th Street to Ridgefield and La Center. Zone fares are $0.60 for one zone, $0.85 for two zones, $1.10 for three zones and $1.35 for four zones. Monthly passes are set at $18 for one zone, $25 for two zones, $32 for three zones and $40 for four zones. Discounts are offered to seniors. C-TRAN's service policy calls for an average 15 minutes between buses on the heavily used urban routes and 30 minutes on all other routes. C-TRAN operates seventeen 25-foot buses each seating 16; twenty-five 30-foot buses each seating 30; twenty-two 35-foot buses each seating 37; and forty-seven 40-foot buses each seating 45. In addition, C-TRAN also operates a van-pool program that includes seven vehicles each seating 15.

Table 1.3-1 summarizes the transit and roadway capital improvements that would be included within the No-Build and light rail alternatives. Table 1.3-2 summarizes the transit vehicles and service characteristics of the No-Build and light rail alternatives. Table 1.3-3 summarizes the primary transit facilities that would be included with the No-Build and light rail alternatives.

1.3.1 No-Build (All-Bus or Transportation Systems Management) Alternative

The bus service network, related facilities and roadway improvements for the No-Build (All-Bus) Alternative would be consistent with the *1995 Interim Federal Regional Transportation Plan's* (Metro: July 1995) financially constrained transit and road network.

Table 1.3-1
Summary of Transit and Roadway Capital Improvements: No-Build and Light Rail Length Alternatives [1,2]

Alternative	Transit Improvements [3]		Road Improvements [4]
No-Build Alternative	**Tri-Met:** • Existing 1994 service • 1994 Annual Service Plan Improvements • 1995 service improvements • Westside MAX/Bus routes • Primary Transit Network Trunklines • Tri-Met service standards • Annual service level improvements.	**C-TRAN:** • Existing 1994 Service • 1994 Annual Service Plan • 1995 service improvements • Urban Transit Routes • Commuter Express Routes • Annual service level improvements.	Road improvements are limited to those in the RTP's financially constrained highway network.
	Annual service level improvements would increase the systemwide average weekly revenue vehicle hours from 28,600 in 1994 to 39,750 in 2015, a 39 percent increase.		
Full-Length Alternative: Clackamas Regional Center to VA Medical Center/Clark College	Adjustment from No-Build bus network to: 1) eliminate or modify routes that would duplicate light rail service; and 2) modify routes to connect to light rail stations or modified transit centers. 20.6-mile, double-tracked new LRT alignment from the Clackamas Regional Center to Clark College (Vancouver, WA). A new LRT O&M facility would be sited at one of three locations. The Full-Length Alternative includes 37-42 LRT stations, depending on the specific alignment alternatives. Transit centers are located at Clackamas Town Center, downtown Milwaukie, downtown Portland transit mall, Rose Quarter and downtown Vancouver, (7th Street). The Full-Length Alternative includes park-and-ride facilities with capacity for 3,500 - 4,100 parking spaces in the southern portion of the corridor and 3,500 - 3,900 parking spaces in the northern portion of the corridor.		Road improvements include those in the RTP's financially constrained highway network and other changes specific to the alignment alternatives and design options under study.
MOS 1: Milwaukie Marketplace to VA Medical Center/Clark College	Adjustment from No-Build bus network to: 1) eliminate or modify routes that would duplicate light rail service; and 2) modify routes to connect to light rail stations or modified transit centers. 16.7-mile, double-tracked new LRT alignment from the Milwaukie Regional Center to Clark College (Vancouver). LRT stations, transit centers and park-and-ride facilities for this MOS are the same as for the corresponding segments of the LRT Full-Length Alternative. MOS 1 includes park-and-ride facilities with capacity for 1,300 parking spaces in the southern portion of the corridor and 3,500 - 3,900 parking spaces in the northern portion of the corridor. A new LRT O&M facility would be located at one of three locations.		Road improvements include those in the RTP's financially constrained highway network and other changes specific to the alignment alternatives and design options under study.
MOS 2: Clackamas Regional Center to Rose Quarter Transit Center	Adjustment from No-Build bus network to: 1) eliminate or modify routes that would duplicate light rail service; and 2) modify routes to connect to light rail stations or modified transit centers. 11.7-mile, double-tracked new LRT alignment from the Clackamas Regional Center to the Rose Quarter Transit Center.		Road improvements include those in the RTP's financially constrained highway network and other changes specific to the alignment alternatives and design options under study.

Alternative	Transit Improvements [3]	Road Improvements [4]
	LRT stations, transit centers and park-and-ride facilities for this MOS are the same as for the corresponding segments of the LRT Full-Length Alternative. MOS 2 includes park-and-ride facilities with capacity for 3,500 - 4,100 parking spaces in the southern portion of the corridor. No new facilities would be sited in the northern portion of the corridor. A new LRT O&M facility would be located at one of three locations.	
MOS 5: Clackamas Regional Center to N Lombard Street	Adjustment from No-Build bus network to: 1) eliminate or modify routes that would duplicate light rail service; and 2) modify routes to connect to light rail stations or modified transit centers. 15.3-mile, double-tracked new LRT alignment from the Clackamas Regional Center to N Lombard Street in north Portland. LRT stations, transit centers and park-and-ride facilities for this MOS are the same as for the corresponding segments of the LRT Full-Length Alternative. A new LRT O&M facility would be located at one of three locations.	Road improvements include those in the RTP's financially constrained highway network and other changes specific to the alignment alternatives and design options under study.

Source: Definition of Alternatives Compendium (Metro: February 1998).
Note: RTP=Regional Transportation Plan; VA=Veterans Administration; LRT=Light Rail Transit; O&M=Operating and Maintenance; and MOS=Minimum Operable Segment.

[1] MOS 3 and 4 were eliminated from further study during Cost-Cutting.

[2] Length Alternatives are based upon a common set of alignment alternatives and terminus and design options, see Section 1.3.2.1.1. Characteristics will vary depending upon which alignment alternatives and terminus and design options are selected as a part of the Locally Preferred Strategy.

[3] Refer to Sections 5 and 7 of the *Definition of Alternatives Compendium* for maps and descriptions of the transit routes included within each alternative.

[4] Refer to Section 15, Financially Constrained RTP Highway Atlas, of the *Definition of Alternatives Compendium* for a list of the highway improvements included in the alternatives.

Through consultation with the FTA, it was determined that the financially constrained transit network used within the RTP and in the DEIS as the No-Build Alternative would serve in lieu of the Transportation Systems Management (TSM) Alternative and as the baseline for calculating a Federal cost effectiveness index. This agreement was based upon the recognition that the financially constrained transit network included service increases and service improvement measures typically found in a TSM Alternative (see the *Major Investment Study Final Report*, pp. 42, 44; Metro: November 1995).

1.3.1.1 Capital Improvements

Transit Improvements. Under the No-Build Alternative, the Salmon Creek park-and-ride lot would be expanded to approximately 500 spaces, and a new park-and-ride lot would be constructed at Central County (approximately 500 spaces). Other capital improvements, such as additional shelters and buses, would be made to the existing transit system through Tri-Met's and C-TRAN's capital improvement programs, which are included within the transit districts' financial plans.

Roadway Improvements. The No-Build Alternative would include those highway improvements currently identified in the *1995 Interim Federal Regional Transportation Plan* and RTC's 1994 *Metropolitan Transportation Plan*. Following is a list of the significant roadway improvements that would occur within the South/North Corridor under the No-Build Alternative. Refer to the

Table 1.3-2
Transit Vehicles [1] and Service Characteristics: No-Build and LRT Length Alternatives [2,3]

		No-Build	Full-Length	MOS 1 (Bi-State)	MOS 2 (Rose Quarter)	MOS 5 (Lombard)
Number of Transit Vehicles [1] – South/North Corridor						
BUSES						
Tri-Met	In Service	346	318	309	325	328
	In Service with Spares	433	398	386	406	410
C-TRAN	In Service	91	82	86	89	92
	In Service with Spares	114	103	108	111	115
LRV	In Service	0	50	42	30	34
	In Service with Spares	0	59	50	36	41
Number of Transit Vehicles – Systemwide						
BUSES						
Tri-Met	In Service	636	610	601	617	616
	In Service with Spares	795	763	751	771	770
C-TRAN	In Service	120	110	115	118	121
	In Service with Spares	150	138	144	148	151
LRV	In Service	68	118	110	98	102
	In Service with Spares	80	139	130	116	121
Transit VMT [4] (Weekday)						
South/North Corridor	Bus	50,300	49,100	49,300	49,800	49,600
	LRV	0	4,910	3,670	2,800	3,190
Non-Corridor	Bus	52,800	53,000	53,000	53,000	53,000
	LRV	7,500	7,500	7,500	7,500	7,500
Systemwide	Bus	103,100	102,100	102,300	102,800	102,600
	LRV	7,500	12,410	11,170	10,300	10,690
Place Miles [5] (Weekday)						
South/North Corridor	Bus	3,319,800	3,240,600	3,253,800	3,286,800	3,273,600
	LRV	0	1,630,120	1,218,440	929,600	1,059,080
Non-Corridor	Bus	3,484,800	3,498,000	3,498,000	3,498,000	3,498,000
	LRV	2,490,000	2,490,000	2,490,000	2,490,000	2,490,000
Systemwide	Bus	6,840,600	6,738,600	6,571,800	6,784,800	6,771,600
	LRV	2,490,000	4,120,120	3,708,440	3,419,600	3,549,080
Revenue Hours (Weekday)						
South/North Corridor	Bus	3,290	3,100	3,090	3,170	3,180
	LRV	0	298	238	176	198
Non-Corridor	Bus	3,300	3,300	3,300	3,300	3,300
	LRV	354	354	354	354	354
Systemwide	Bus	6,590	6,400	6,390	6,470	6,480
	LRV	354	652	592	530	552

Source: Metro, Tri-Met, 1997.

[1] LRV = Light rail vehicles.

[2] MOS 3 and 4 were eliminated from further study during Cost-Cutting.

[3] Length Alternatives are based upon a common set of alignment alternatives and terminus and design options, see Section 1.3.2.1.1. Characteristics will vary depending upon which alignment alternatives and terminus and design options are selected as a part of the LPS.

[4] VMT = Revenue Vehicle Miles Traveled.

[5] Place Miles = Transit Vehicle Capacity (seated and standing) multiplied by VMT.

Table 1.3-3
Primary Transit Facilities: No-Build and Light Rail Length Alternatives [1,2]

Length Alternatives	One-way South/North LRT Track Miles	South/North Stations [3]	South/North Park-and-Ride Lots	South/North Park-and-Ride Spaces	Maintenance Facility-Land (acres)/Bldg. (sq ft) [4]
No-Build	0	0	0	0	0/0
Full-Length	20.6	37	6	8,000	23.0/89,000
MOS 1 (Bi-State)	16.7	32	3	5,200	22.8/75,109
MOS 2 (Rose Quarter)	11.7	22	5	4,100	18.8/54,817
MOS 5 (Lombard)	15.3	28	5	4,100	20.9/65,000

Source: *Definition of Alternatives Compendium* (Metro: February 1998).
[1] MOS 3 and 4 were eliminated from further study as a result of the Cost-Cutting process.
[2] Length Alternatives are based upon a common set of alignment alternatives and terminus and design options, see Section 1.3.2.1.1. Characteristics will vary depending upon which alignment alternatives and terminus and design options are selected as a part of the LPS.
[3] Two additional stations are currently under study and are not reflected in these totals. One could be located in the south entry of downtown on SW Harrison Street and the other could be located in North Portland between the Expo Center and Portland International Raceway.
[4] Based upon a proposed maintenance facility at Brooklyn Yard; other sites are under study that could be larger or smaller than the Brooklyn Yard site.

Definition of Alternatives Compendium for a more detailed list of the roadway improvements for the No-Build Alternative.

- Greeley/North Banfield Phase II (excluding the NE First Avenue frontage road between NE Holladay and NE Weidler Streets);
- SW Harrison Street Connector between SW Front Avenue and SW Moody Avenue;
- SE Monterey Avenue overpass of I-205 with a new frontage road to SE Sunnyside Road;
- Reconstruction of SE Sunnybrook Street and SE Sunnyside Road intersections with I-205 into a split-diamond interchange;
- Extension of SE Sunnybrook Street between I-205 and SE Sunnyside Road; and
- Extension of SE Water Avenue from OMSI to SE Division Place.

1.3.1.2 Operating Characteristics

Bus Operations. The No-Build Alternative would provide peak-hour, trunkline bus service between the Portland CBD and the South/North Corridor, with buses operating on an average headway of four minutes and 3.5 minutes in the southern and northern portions of the corridor, respectively. Other buses would operate at the frequencies presented below. Current, peak-period-only bus lines would be upgraded to all-day operations. New routes, feeder buses and shuttle bus service would be added to meet trunkline buses at transit centers. Buses in the South/North Corridor would continue to operate in mixed traffic on increasingly congested streets and highways.

The No-Build bus system would provide approximately 39,750 of weekly revenue hours, 39 percent more than is currently provided. The No-Build Alternative is constrained by what would be funded through revenue sources by the year 2015 consistent with the *1995 Interim Federal RTP*. The service improvements associated with the No-Build Alternative include the following significant changes to the existing bus network:

Tri-Met

- All existing transit service that was new in 1995 and not included in the 1994 base network;
- All routes identified as Recommended New Routes in the *1994 Tri-Met Multimodal Annual Service Plan*;
- Recommended headway and route improvements suggested in the Tri-Met's annual service plan;
- All routes and headways proposed in the LRT Build Alternative in the *Hillsboro Corridor Final Definition of Alternatives Report* (Metro: October 1992) for the Hillsboro Corridor;
- All routes identified as "Trunkline Bus" in the Tri-Met Primary Transit Network (Tri-Met: September 1995), with minimum all-day headway of ten minutes are included in the No-Build network (These include: Routes 4 Division; 6 King/Lombard; 14 Hawthorne; 14 Sandy (12 Sandy); 15 Belmont; 15 NW 23rd Avenue; 33 McLoughlin; 35 Macadam; 54 Beaverton-Hillsdale; 66 Tualatin Valley Highway (57 Forest Grove); 72 Killingsworth/82nd Avenue);
- All Tri-Met fixed-routes (existing and future) would be at minimum policy headway as outlined in *Tri-Met Service Standards* (Tri-Met: May 1989) (These include: Urban Grid Routes, Regional/Urban Trunks (10 Peak; 15 Base), City Radials and Crosstown (15 Peak; 15 Base); and Suburban Timed Transfer, Regional Trunks (15 Peak; 30 Base), Suburban Radials/Feeders (30 Peak; 30 Base) and Peak-Only Radials/Feeders (30 Peak); and
- Light rail headway and routing would be as proposed in the Tri-Met FY 96 *Rail Operations Five Year Plan,* including a Gresham to Hillsboro line with a 10-minute base headway.

C-TRAN

- All existing transit service that was new in 1995 and not included in the 1994 base network;
- New routes, route improvements, service hour changes and headway adjustments recommended in the Service Plan of C-TRAN's *1996-2001 Transit Development Plan*;
- C-TRAN urban routes experiencing high ridership and increasing demand to provide service at 15-minute headways or less all day (These include: Routes 3 Rosemere/Brandt; 4 Fourth Plain; 6 Hazel Dell; 32 Evergreen; 37 Mill Plain; 38 MacArthur/Cascade Park; and 71 Highway 99); and
- C-TRAN's highly productive commuter express routes (existing and future) operating at 10-minute to 12-minute headways during the peak periods, and the addition or expansion of midday service.

Refer to Section 7 of the *Definition of Alternatives Compendium* for a complete listing of bus route changes for the No-Build Alternative.

LRT Operations. With the No-Build Alternative, LRT service would operate between Gresham, downtown Portland, Beaverton and Hillsboro with 6-minute peak and 10-minute daybase headways.

One extra peak-hour run from Portland CBD to Gresham would be operated at a 60 minute headway to accommodate demand. There would be no light rail service within the South/North Corridor under the No-Build Alternative.

1.3.2 Light Rail Alternatives

Light rail alternatives include a range of length alternatives, alignment alternatives, design options and terminus options. Following is a description of how these four terms are used to define the Light Rail Alternatives evaluated for the DEIS (see Figure 1.3-1):

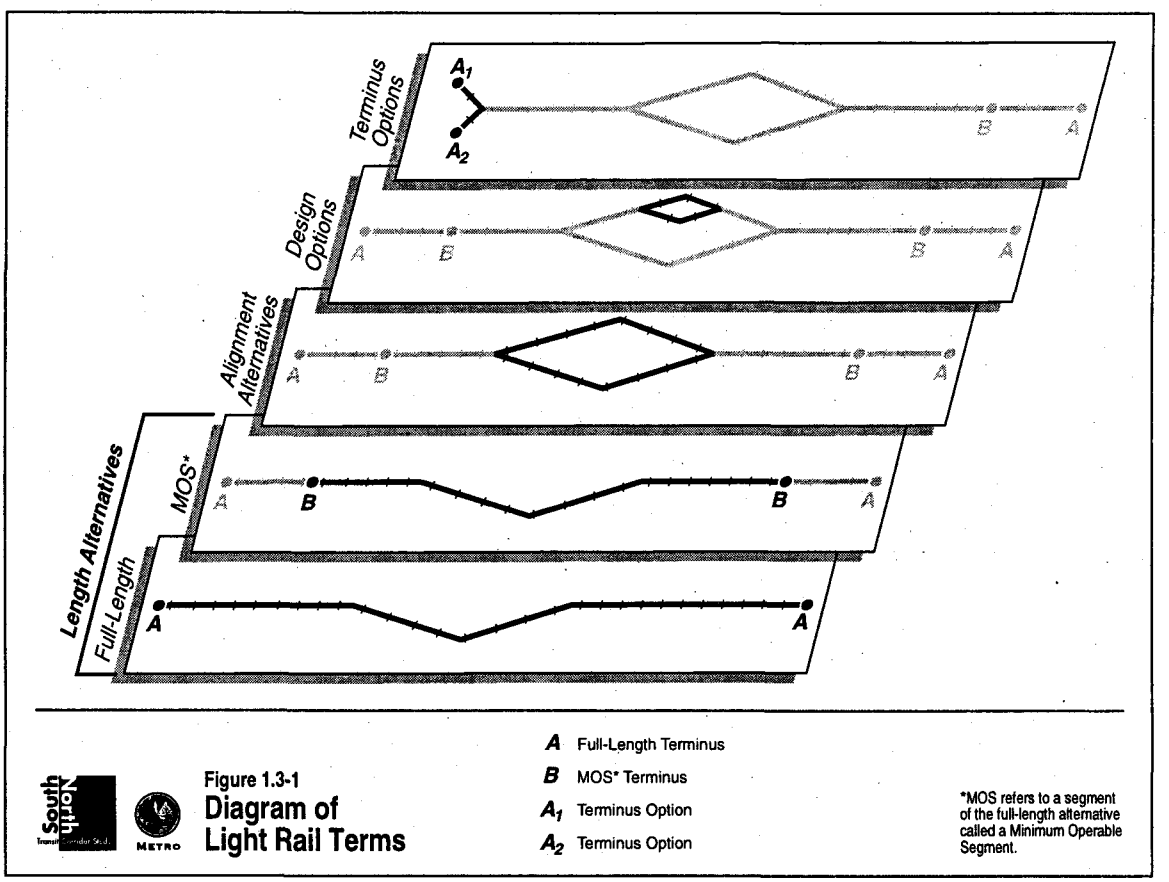
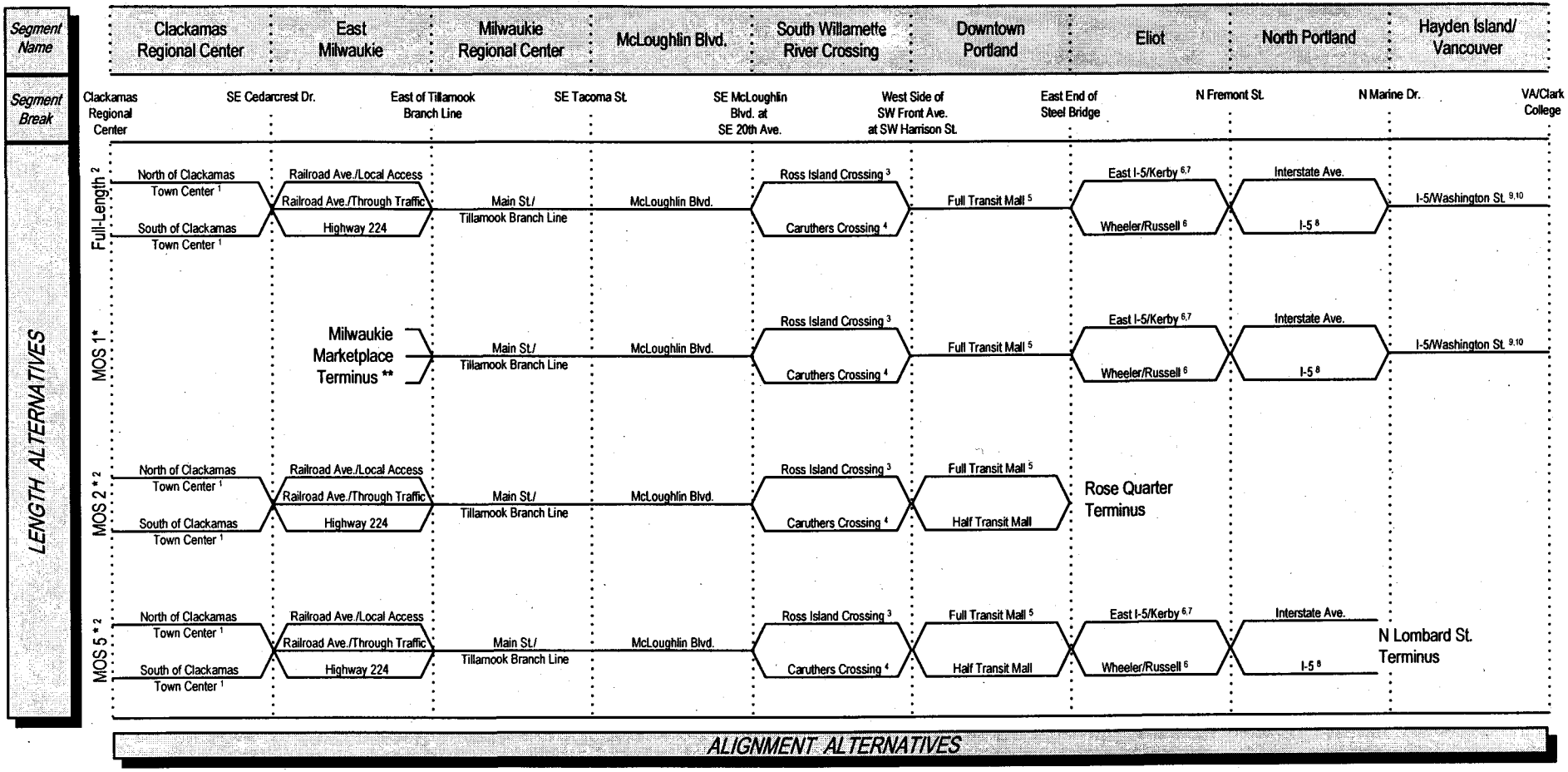


Figure 1.3-1
Diagram of Light Rail Terms

- **Length Alternatives.** Length alternatives specify alternatives that vary in the designation of south and north terminus points (and thus, the overall length of the project) for the proposed light rail line. Length alternatives other than the Full-Length Alternative are considered to be interim phases of the full South/North Project and are termed Minimum Operable Segments (MOSs);
- **Alignment Alternatives.** Alignment alternatives specify the general location of light rail alignment choices within a given segment of the South/North Corridor;
- **Design Options.** Design options specify detailed route choices within an alignment alternative; and
- **Terminus Options.** Terminus options are alternate sites or facility configurations for the northern or southern terminus location associated with a length alternative.

Figure 1.3-2
South/North Light Rail Alternatives and Design Options



Design Options

1 South or North of CTC Alignment
- South of OIT/CCC Design Option
- North of OIT/CCC Design Option

2 Clackamas Regional Center Terminus Options
- North of CTC Transit Center Terminus Option
- South of CTC Transit Center Terminus Option
- 93rd Avenue Terminus Option
- 105th Avenue Terminus Option

3 Ross Island Crossing
- East of McLoughlin Blvd. Design Option
- West of McLoughlin Blvd. Design Option

4 Caruthers Crossing
- Moody Avenue Design Option
- South Marquam Design Option

5 North Entry Downtown Alignment
- Glisan St. Design Option
- Irving St. Design Option

6 Rose Quarter Transit Center
- At-Grade Rose Quarter Transit Center
- Multi-Level Rose Quarter Transit Center

7 East I-5-Broadway/Weidler
- At-Grade Design Option
- Grade-Separated Design Option

8 I-5 Alignment
- Modify Alberta Ramps Design Option
- Retain Alberta Ramps Design Option

9 Downtown Vancouver Alignment
- West side of Washington St. Design Option
- East side of Washington St. Design Option

10 North Terminus Park-and-Ride
- Surface VA Park-and-Ride Design Option
- Structured VA Park-and-Ride Design Option

Notes

* *MOS refers to a segment of the Full-Length alternative called a minimum operable segment.*

** *The configuration of Railroad Avenue/Local Access and Railroad Avenue/Through Traffic alternatives are identical between the Tillamook Branch Line and the Milwaukie Marketplace station.*

Schematic is not to scale.

February 1998

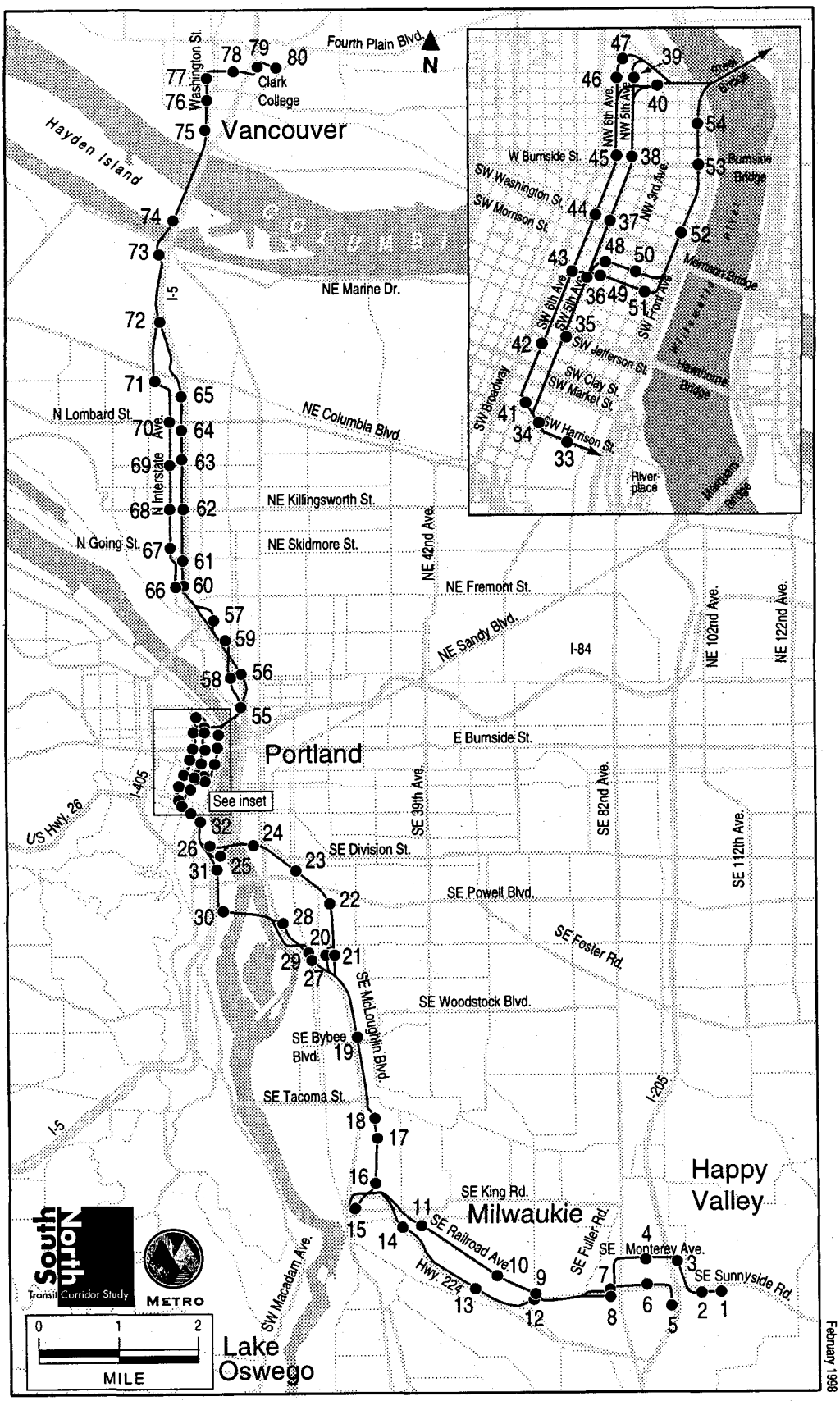


Figure 1.3-3

South/North Corridor Station Names

LRT Alignment Alternative

Station

Note: Alignment and station locations are currently under study and may change.

ID#	Station Names
80	Clark College Station
79	VA Station
78	Arnada Station
77	Uptown Station
76	Civic Center Station
75	Downtown Vancouver TC
74	Hayden Island Station
73	Expo Center Station
72	PIR Station (Under Study)
71	Kenton Station W
70	Lombard Station W
69	Portland Blvd. Station W
68	Killingsworth Station W
67	Going Station
66	Edgar Kaiser Station W
65	Kenton Station E
64	Lombard Station E
63	Portland Blvd. Station E
62	Killingsworth Station E
61	Skidmore Station
60	Edgar Kaiser Station E
59	Russell Station
58	Broadway Station W
57	Kerby Avenue Station
56	Broadway Station E
55	Rose Quarter TC
54	Old Town/Chinatown Station
53	Skidmore Fountain Station
52	Oak Street Station
51	Yamhill District Station
50	3rd Avenue Station
49	Pioneer Place - Morrison Station
48	Pioneer Place - Yamhill Station
47	Irving Station NB (North Option)
46	Irving Station NB (South Option)
45	Burnside Station NB
44	Washington Station NB
43	Taylor Station NB
42	Jefferson Station
41	PSU Station NB
40	Glisan Station (Option)
39	Irving Station SB (Option)
38	Burnside Station SB
37	Washington Station SB
36	Taylor Station SB
35	City Hall Station
34	PSU Station SB
33	Harrison Street Station (Under Study)
32	RiverPlace Station
31	Porter Street Station
30	Gaines Street Station
29	Schiller Street Station N (Option)
28	Center Street Station (Option)
27	Schiller Street Station S (Option)
26	North Marquam Station (Option)
25	South Marquam Station (Option)
24	OMSI Station
23	Clinton Street Station
22	Lafayette Street Station
21	Holgate w/o MF Station (Option)
20	Holgate w/ MF Station (Option)
19	Bybee Station
18	Tacoma Street Station (Option)
17	Ochoco Station (Option)
16	Hanna-Harvester Station (Option)
15	Milwaukie Transit Center
14	Milwaukie Marketplace Station W
13	Freeman Way Station
12	Linwood/Harmony Station S
11	Milwaukie Marketplace Station E
10	Wood Avenue Station (Option)
9	Linwood/Harmony Station N
8	OIT/Aquatic Center Station S (Option)
7	OIT/Aquatic Center Station N (Option)
6	South CTC Transit Center
5	93rd Avenue Station
4	North CTC Transit Center
3	New Hope Church Station
2	Kaiser Sunnyside Station
1	Sunnyside/105th Avenue Station

Table 1.3-4
Alignment Alternatives and Design Options Used for Length Alternative Analysis

Segment	Alignment Alternative	Design Option	Terminus Options
Clackamas Regional Center	South of CTC	South of OIT/CCC	SE 93rd Avenue
East Milwaukie [1]	Railroad Avenue/ Through Traffic	N/A	N/A
Milwaukie Regional Center [2]	Main Street/Tillamook Branch Line	N/A	N/A
McLoughlin Boulevard [3]	McLoughlin Boulevard	N/A	N/A
South Willamette River Crossing [4]	Ross Island	East of McLoughlin Blvd.	N/A
Downtown Portland	Full Transit Mall	Glisan Street	N/A
Eliot	East I-5/Kerby	Grade-Separated Broadway/Weidler and Multi-Level Rose Quarter TC [5]	N/A
North Portland	I-5	Retain Alberta Ramps	N/A
Hayden/Island Vancouver [6]	I-5/Washington Street	Eastside of Washington Street	Structured P&R Lot

Source: *South/North Definition of Alternatives Compendium* (Metro: February 1998).
[1] With Wood Avenue Station.
[2] With a Tacoma Street park-and-ride lot.
[3] With rebuilding of Bybee Overpass.
[4] Concrete segmental bridge type with a Brooklyn Yard maintenance facility.
[5] MOS 2 is based upon minimal improvements to the Rose Quarter Transit Center and at NE 11th Avenue and NE Holladay Street.
[6] Bow-string bridge type for Columbia River Crossing.

A. Transit Improvements

Full-Length Alternative – Clackamas Regional Center to VA Medical Center/Clark College

The Full-Length Alternative would consist of an approximately 21-mile, double-tracked LRT alignment from the Clackamas Regional Center to the VA Medical Center/Clark College in Vancouver, Washington. There are several terminus options for the Full-Length Alternative. The south terminus would be at one of four possible locations: 1) SE Sunnyside Road and SE 105th Avenue; 2) SE Sunnybrook Road and SE 93rd Avenue; 3) SE Monterey Avenue just north of the Clackamas Town Center; or 4) the north side of SE Sunnyside Road just south of the Clackamas Town Center (see Section 1.3.2.1.2 for more detail). The north terminus would be at a station near Clark College in Vancouver, Washington.

In the southern portion of the corridor, the Full-Length Alternative, with a terminus at either SE 93rd Avenue or SE 105th Avenue, would have park-and-ride capacity of approximately 4,100 spaces. With a terminus at a transit center just north or south of the Clackamas Town Center, park-and-ride capacity in the south would be approximately 3,500 spaces. In the northern portion of the corridor, two different park-and-ride lot configurations are possible with total capacity ranging from approximately 3,500 to 3,900 spaces (see Section 1.3.2.1.2 for more detail).

The Full-Length Alternative would include between 38 and 42 LRT stations (counting the six possible paired stations in downtown Portland as single stations) depending on the specific alignment alternatives and station locations under study. Transit centers would be located at the Clackamas Town Center (CTC) Mall, downtown Milwaukie, Portland State University, downtown Portland transit mall, Rose Quarter and downtown Vancouver (W 7th Street).

MOS 1 – Milwaukie Regional Center to VA Medical Center/Clark College

MOS 1 would be an approximately 17-mile, double-tracked LRT alignment from the Milwaukie Regional Center to VA Medical Center/Clark College in Vancouver, Washington. LRT stations, transit centers and park-and-ride facilities for this MOS would be the same as for the corresponding segments of the Full-Length Alternative. The south terminus would be the Milwaukie Marketplace station, instead of a Clackamas Regional Center southern terminus with the Full-Length Alternative (see Section 1.3.2.1.2 for more detail). The north terminus would be the same as with the Full-Length Alternative.

In the southern portion of the corridor, only a North Milwaukie park-and-ride lot (approximately 900 spaces) and the Milwaukie Marketplace park-and-ride lot (approximately 400 spaces) would be built under MOS 1. In the northern portion of the corridor, the park-and-ride lot would be the same as for the Full-Length Alternative. In the northern portion of the corridor, two different park-and-ride lot configurations are possible with total capacity ranging from approximately 3,500 to 3,900 spaces (see Section 1.3.2.1.2 for more detail).

MOS 2 – Clackamas Regional Center to Rose Quarter

MOS 2 would be an approximately 12-mile, double-tracked alignment from the Clackamas Regional Center to the Rose Quarter Transit Center continuing along the existing MAX line to a turn-around point in the vicinity of NE 11th Avenue and NE Multnomah Boulevard. LRT stations, transit centers and park-and-ride facilities for this MOS would be the same as for the corresponding segments of the Full-Length Alternative. The south terminus would be the same as for the Full-Length Alternative and the north terminus would be at the Rose Quarter (see Section 1.3.2.1.2 for more detail). Alternate north terminus locations could be in Kenton, either at the Kenton East Station or the Kenton West Station, or at the Expo Center.

The location and capacity of park-and-ride lots in the southern portion of the corridor would be identical to the Full-Length Alternative. A new park-and-ride lot would be developed in the northern portion of the corridor at Central County (approximately 500 spaces) and Salmon Creek park-and-ride lot would be expanded to approximately 500 spaces, identical to the No-Build (All-Bus) Alternative.

MOS 5 – Clackamas Regional Center to North Lombard Street

MOS 5 would be an approximately 16-mile, double-tracked alignment from the vicinity of the CTC to N Lombard Street in north Portland. The south terminus and LRT stations, transit centers and park-and-ride facilities for this MOS would be the same as for the corresponding segments of the Full-Length Alternative. The north terminus would be at the N Lombard Street station either at N Interstate Avenue or between I-5 and N Montana Avenue (see Section 1.3.2.1.2 for more detail). Alternate north terminus sites could be located at Kenton or the Expo Center.

The location and capacity of park-and-ride lots in the southern portion of the corridor would be identical to those for the Full-Length Alternative. A new park-and-ride lot would be developed in

the northern portion of the corridor at Central County (approximately 500 spaces) and the Salmon Creek park-and-ride lot would be expanded to approximately 500 spaces.

B. Roadway Improvements

Roadway improvements with the Full-Length, MOS 1, MOS 2 and MOS 5 Alternatives would be consistent with the *1995 Interim Federal Regional Transportation Plan's* financially constrained highway network and the No-Build Alternative (see Section 1.3.1.1). Refer to Section 15 of the *Definition of Alternatives Compendium* for a detailed list of these roadway changes. Other roadway improvements and modifications that are specific to a particular alignment alternative or design option are noted in Section 1.3.2.1.2.

1.3.2.1.2 Alignment Alternatives

Following is a description of the alignment alternatives under consideration within each of the segments in the corridor. Table 1.3-5 summarizes the characteristics of alignment alternatives and design and terminus options for each segment of the South/North Corridor, including: 1) the segment's LRT track length; 2) the number of South/North LRT stations and park-and-ride lots and spaces within the segment; and 3) the number of corridor LRT vehicles.

A. Transit Improvements

Clackamas Regional Center Segment

The Clackamas Regional Center would be the location of the southern terminus of the Full-Length, MOS 2 and MOS 5 alternatives. The segment extends from the vicinity of SE 105th Avenue east of the Clackamas Town Center (CTC), to approximately SE Harmony Road and SE Cedarcrest Drive. Two alignment alternatives (each with two terminus options and two design options) are examined in this segment (see Figure 1.3-4).

- **South of CTC Alignment Alternative with 93rd Avenue Terminus Option.** This alignment would begin with a terminus station near SE 93rd Avenue and SE Sunnybrook Street co-located with a surface park-and-ride lot (approximately 600 spaces). From there, the alignment would run north to a grade-separated overcrossing of SE Sunnyside Road and would then turn west and run along the north side of SE Sunnyside Road to a new transit center south of CTC. This alignment would continue west along SE Sunnyside Road crossing over SE 82nd Avenue and would then turn south on SE 80th Avenue to connect to SE Harmony Road.

Proceeding west from SE 82nd Avenue there are two design options:

- ***South of Clackamas Community College (CCC)/Oregon Institute of Technology (OIT) Design Option.*** This southern design option would cross SE Harmony Road at grade and then enter a station and park-and-ride lot (approximately 900 spaces) south of SE Harmony Road and west of SE 80th Avenue. The park-and-ride lot would be divided into two facilities; a structured 600-space lot located just south of SE

Table 1.3-5
Characteristics of South/North LRT Alternatives Summary: Alignment Alternatives and Design Options [1]

Segment	Alignment Alternatives and Options	One-Way LRT Track Miles [2,3]	S/N Stations [2]	S/N Park-and-Ride Lots [2]	S/N Park-and-Ride Spaces [2]	Corridor LRT Vehicles [4]
Clackamas Regional Center	South of CTC with South of OIT/CCC Design Option [5]	1.66	3	2	1,500	59
	South of CTC with North of OIT/CCC Design Option [5]	1.64	3	2	1,500	59
	North of CTC with South of OIT/CCC Design Option [6]	2.54	5	3	1,500 [7]	62
	North of CTC with North of OIT/CCC Design Option [6]	2.52	5	3	1,500 [7]	62
East Milwaukie	Railroad Ave [8]	2.19	3	2	1,750	59
	Highway 224	1.38	3	2	1,750	60
Milwaukie Regional Center	Main St./Tillamook Branch Line	2.05	2	1	900	59
McLoughlin Blvd.	McLoughlin Blvd.	0.97	1	0	N/A	59
South Willamette River Crossing	Ross Island Crossing with East of McLoughlin Design Option	3.03	5	0	N/A	59
	Ross Island Crossing with West of McLoughlin Design Option	3.04	4	0	N/A	59
	Caruthers Crossing with Caruthers/Moody Design Option	3.2	5	0	N/A	60
	Caruthers Crossing with Caruthers/South Marquam Design Option	3.33	5	0	N/A	60
Downtown Portland [9]	Full Transit Mall with Glisan Street Design Option	1.8	6	0	N/A	59
	Full Transit Mall with Irving Street Design Option	1.91	6	0	N/A	60
	Half Transit Mall	1.93 [10]	7 [11]	0	N/A	59
Eliot	East I-5/Kerby	1.76	3	0	N/A	59
	Wheeler/Russell	1.75	3	0	N/A	60
North Portland [12]	I-5	4.15	7	0	N/A	59
	Interstate Avenue	4.27	7	0	N/A	60
Hayden Island/ Vancouver [13]	I-5/Washington Street with Surface VA Park-and-Ride Design Option	3.03	7	2	2,500	59
	I-5/Washington Street with Structured VA Park-and-Ride Design Option	3.03	7	1	3,900	59

Source: *South/North Definition of Alternatives Compendium* (February 1998).

1 Additional design options are under consideration, however they would have no affect on the information in this table.

2 Data is presented by segment.

3 Based upon a proposed maintenance facility at Brooklyn Yard and a park-and-ride lot at SE Tacoma Street. Downtown Portland Segment length is an average of the LRT line on SW 5th and 6th Avenues.

4 The number of light rail vehicles includes spares and is based on the Full-Length Alignment Alternative (see Section 1.3.2.1.1). See the *Capital Cost Results Report* (Metro: February 1998) for information on how differences in LRT vehicle requirements for different alignment alternatives are reflected in capital cost estimates.

5 Based on 93rd Avenue Terminus Option. With a CTC Transit Center Terminus Option: LRT track miles would be reduced by .45 miles; there would be two LRT stations and one park-and-ride lot with 900 spaces; and it would require three fewer light rail vehicles.

[6] Based on 105th Avenue Terminus Option. With a CTC Transit Center Terminus Option: LRT track miles would be reduced by 1.05 miles; there would be two LRT stations and one park-and-ride lot with 900 spaces at the 82nd Avenue park-and-ride lot; and it would require three fewer light rail vehicles.

[7] Any combination of the 105th Avenue, New Hope Church and 82nd Avenue park-and-ride lots could be selected with varying capacities (combination would not exceed 1,500 spaces total).

[8] Same for Local Access and Through Traffic Alternatives.

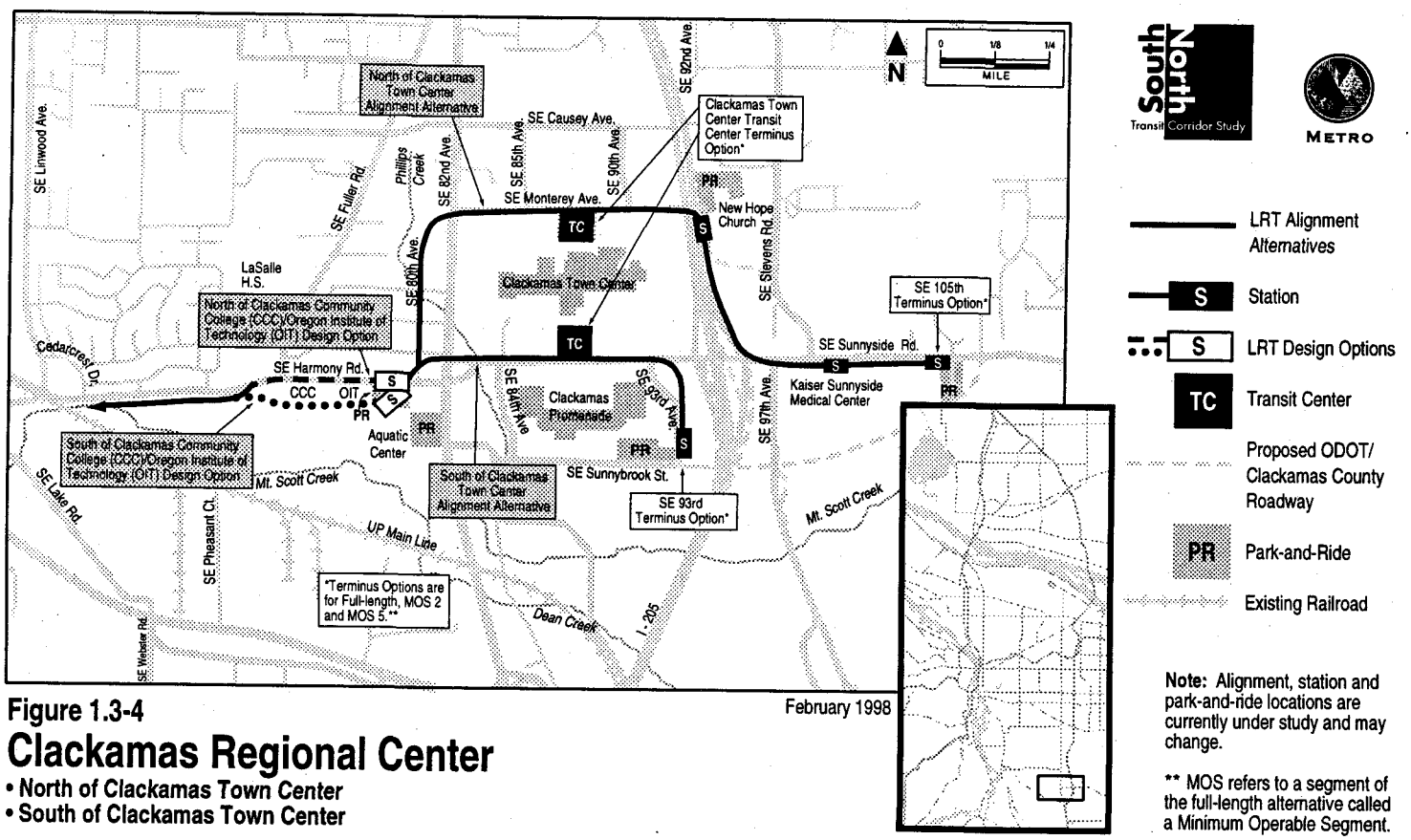
[9] An additional station in the vicinity of SW Harrison Street is currently under study and is not reflected in these totals.

[10] Includes 1.06 miles of existing Banfield MAX track.

[11] Number of stations includes five existing MAX stations.

[12] An additional station is currently under study in north Portland between Expo Center and Portland International Raceway.

[13] Includes 1,000 spaces at the VA site and 1,500 spaces in the vicinity of NE 88th Avenue and I-5.



Note: Alignment, station and park-and-ride locations are currently under study and may change.

** MOS refers to a segment of the full-length alternative called a Minimum Operable Segment.

Figure 1.3-4
Clackamas Regional Center
- **North of Clackamas Town Center**
- **South of Clackamas Town Center**

February 1998

Harmony Road, east of SE 80th Avenue; and a 300-space surface lot located northwest of the intersection of SE Sunnybrook Street and SE 82nd Avenue. The LRT alignment would then proceed west, immediately south of the OIT and Clackamas Community College (CCC) buildings. From CCC, the alignment would proceed west, parallel to and south of SE Harmony Road, to the vicinity of SE Cedarcrest Drive.

– ***North of Clackamas Community College (CCC)/Oregon Institute of Technology (OIT) Design Option.*** This northern design option would cross SE Harmony Road at grade to a station and park-and-ride lot (approximately 900 spaces with the same configuration as described above for the South of CCC/OIT Design Option) located between Oregon Institute of Technology (OIT) and SE 80th Avenue. The alignment

would then proceed west to SE Fuller Road in the existing right-of-way currently used by SE Harmony Road, relocating SE Harmony Road to the north of the LRT alignment. West of SE Fuller Road, the alignment would continue on the south side of the existing SE Harmony Road to SE Cedarcrest Drive.

- **South of CTC Alignment Alternative with South of CTC Transit Center Terminus Option.** This alternative, including design options, would be identical to the 93rd Avenue Terminus with the South of CTC Alignment Alternative, except it would begin at a transit center located south of CTC just north of Sunnyside Road, rather than at SE 93rd Avenue. This terminus option would result in a shorter length and one less park-and-ride lot.

- **North of CTC Alignment Alternative with 105th Avenue Terminus Option.** This alignment would begin with a terminus station at SE Sunnyside Road and SE 105th Street, which would be co-located with a structured park-and-ride lot (approximately 900 spaces). It would then proceed west on the south side of SE Sunnyside Road past the Edgar Kaiser Medical Facility. The alignment would turn north, crossing SE Sunnyside Road on a grade-separated overcrossing and would then run parallel to the east side of I-205 to a station and park-and-ride lot (approximately 600 spaces) at the New Hope Church. From the church, the alignment would turn west, crossing over I-205 on structure and would then follow the south side of SE Monterey Avenue to a reconfigured transit center on the north side of the CTC mall. The alignment would continue west crossing SE 82nd Avenue at grade and then turn south on SE 80th Avenue to connect to SE Harmony Road. At SE Harmony Road there are two design options that would be identical to the design options for the 93rd Avenue Terminus with the South of CTC Alignment Alternative.

  The analysis of the North of CTC Alignment Alternative with the 105th Avenue Terminus is based upon a capacity of 1,500 park-and-ride spaces in this segment. For the purposes of the DEIS analysis, the 105th Avenue Terminus Option would include a 600-space park-and-ride lot at the New Hope Church and a 900-space park-and-ride lot at SE 105th Avenue. If this alternative and terminus option were selected as part of the LPS, final determination of the park-and-ride lot location and capacity would be determined prior to completion of the FEIS. Any combination of the 105th Avenue, New Hope Church and 82nd Avenue park-and-ride lots (see Figure 1.3-4) could be selected, with a total capacity of 1,500 spaces.

- **North of CTC Alignment Alternative with North of CTC Transit Center Terminus Option.** This alternative, including design options, would be identical to the 105th Avenue Terminus with North of CTC Alignment Alternative, except it would begin at a terminus located at the reconfigured transit center north of CTC rather than at SE 105th Avenue. This terminus option would result in a shorter length and one opportunity for a park-and-ride lot located south of SE Harmony Road, just east of OIT.

East Milwaukie Segment

The East Milwaukie Segment extends from SE Cedarcrest Drive and SE Harmony Road to just east of the Tillamook Branch Line near Highway 224 and the southern portion of the North Milwaukie industrial area. The southern terminus for MOS 1 would be located at the Milwaukie Marketplace. Three alignment alternatives are examined in this segment (see Figure 1.3-5a) and are described in detail below.

- **Highway 224 Alignment Alternative.** From SE Cedarcrest Drive and SE Harmony Road, the Highway 224 alignment would continue along the south side of SE Harmony Road to a station and park-and-ride lot (approximately 1,300 spaces) located near SE Harmony Road and SE Linwood Avenue. Light rail would cross over the existing freight and intercity passenger rail line on a new structure southeast of the intersection of SE Harmony Road and SE Railroad Avenue. The alignment would proceed west on the south side of SE Harmony Road and would cross SE Harmony Road diagonally at grade at the intersection of SE Harmony Road, SE Lake Road and SE International Way. It would then continue on the north side of Highway 224, with a station at SE Freeman Way and a station and 400-space structured park-and-ride lot at SE Oak Street, closing access on the north side of Highway 224 between SE Oak and Harrison Streets. Northwest of SE Monroe Street, the alignment would cross under SE Harrison Street.

  With the Full-Length, MOS 2 and MOS 5 length alternatives, the Highway 224 would be as described above. With MOS 1, the Highway 224 alignment would terminate at the south side of the Milwaukie Marketplace with a three track island/side platform station near Highway 224 and SE Oak Street and a 400-space structured park-and-ride lot.

- **Railroad Avenue/Through Traffic Alignment Alternative.** From SE Cedarcrest Drive, the light rail alignment would continue along the south side of SE Harmony Road to a station and park-and-ride lot (approximately 1,300 spaces) located near SE Harmony Road and SE Linwood Avenue. The alignment would proceed west, adjacent to and on the north side of the Union Pacific (UP) Main Line in the area currently occupied by SE Railroad Avenue. SE Railroad Avenue would be reconstructed just north of and adjacent to the LRT alignment. This alignment could be built with or without a station near SE Wood Avenue. That station would include pedestrian access to the industrial area to the south. A Milwaukie Marketplace station and surface park-and-ride lot (approximately 400 spaces) would be located just west of SE 37th Avenue. The alignment would cross SE Oak Street at grade and would cross under the UP Main Line and SE Harrison Street.

  At the intersection of SE Linwood Avenue and SE Harmony Road, the existing road network would be raised to cross over the existing freight rail lines. Light rail would cross the raised SE Harmony Road at grade. Automobile lanes on SE Railroad Avenue with this alignment alternative would be narrowed from 12 feet to ten feet. New bicycle lanes would be five feet wide and a new sidewalk on the north side of the street would vary in width from four to six feet.

With the Full-Length, MOS 2 and MOS 5 Length Alternatives, the Railroad Avenue/Through Traffic Alternative would be as described above. With MOS 1, the alignment would terminate at the Milwaukie Marketplace (SE 37th Avenue) with a three-track station and a 400-space surface park-and-ride lot.

- **Railroad Avenue/Local Access Alignment Alternative.** This alignment alternative would close sections of SE Railroad Avenue to through traffic by rebuilding only certain sections of the road. The proposed road design is illustrated in Figure 1.3-5b. Light rail would follow the same route as with the SE Railroad Avenue Through Traffic Alignment Alternative and could be built with or without a station near SE Wood Avenue. At the intersection of SE Linwood Avenue and SE Harmony Road, the existing road network would be raised to cross over the existing freight rail lines. Light rail would cross the raised SE Harmony Road at grade.

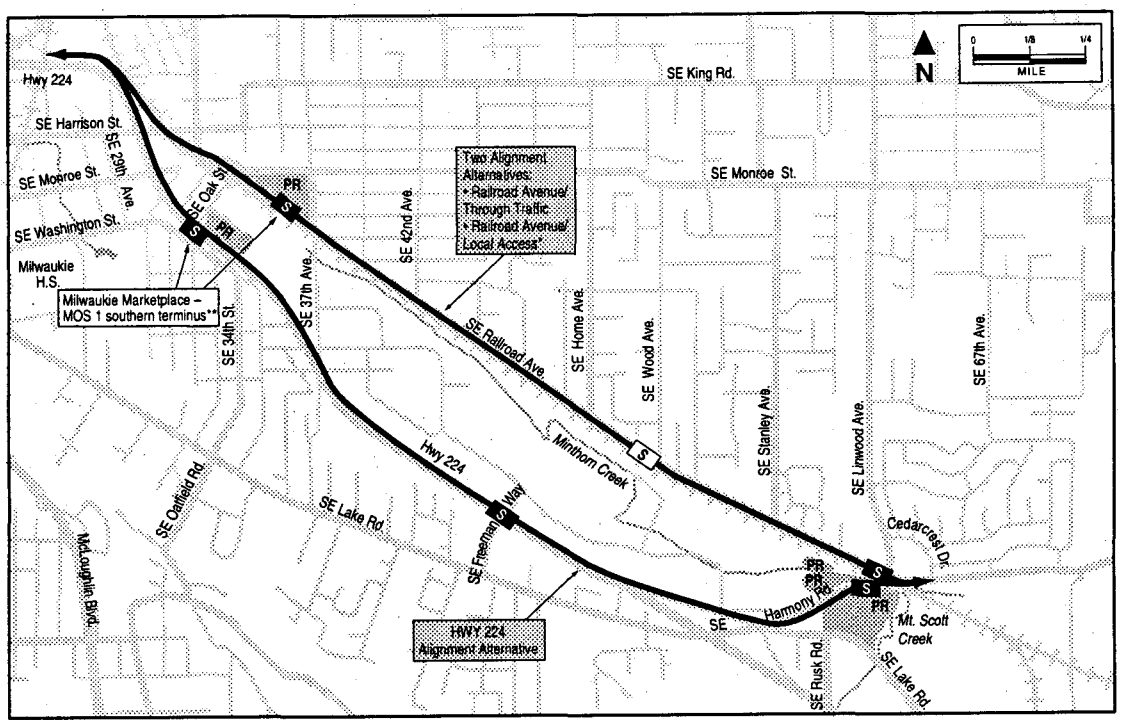
  With the Full-Length, MOS 2 and MOS 5 Length Alternatives, the Railroad Avenue/Local Access alignment would be as described above. The alignment would be identical to the Railroad Avenue/ Through Traffic Alternative with MOS 1.

Milwaukie Regional Center Segment

The Milwaukie Regional Center Segment extends from north of Highway 224 just east of the Tillamook Branch Line near the north Milwaukie industrial area to SE Tacoma Street in the City of Portland. One alignment alternative is examined in this segment (see Figure 1.3-6).

Three possible sites for a North Milwaukie park-and-ride lot and two of the three possible sites for an operations and maintenance facility are located in this segment. These sites are shown in Figure 1.3-6. For a more detailed description of the North Milwaukie park-and-ride lot and operations and maintenance facility sites refer to the *Operations and Maintenance Facility and North Milwaukie Park-and-Ride Results Report* (Metro: February 1998).

- **Main Street/Tillamook Branch Line Alignment.** Starting from north of Highway 224 just east of the Tillamook Branch Line, the alignment would cross over the Tillamook Branch Line on a structure, would cross under the Highway 224 on/off ramps and would cross SE Main Street at grade. It would then extend south, parallel to and east of SE McLoughlin Boulevard, turning east just north of SE Scott Street to a station and transit center located in the vicinity of the currently vacant Safeway store. From the transit center, the alignment would curve north to the east of Kellogg Bowl. It would then curve northeast and cross under Highway 224 and the light rail alignment through a new underpass. North of Highway 224, the alignment would make a wide curve through the Heiberg Garbage transfer station east of the Hanna-Harvester site and then extend north, parallel to and west of the Tillamook Branch and UPRR Main Line. A new connection of freight spur tracks to the Tillamook Branch Line would be constructed just north of SE Mailwell Drive and would cross the light rail alignment at grade. The alignment would cross over Johnson Creek on a bridge and under an existing span of the SE Tacoma Street overpass.



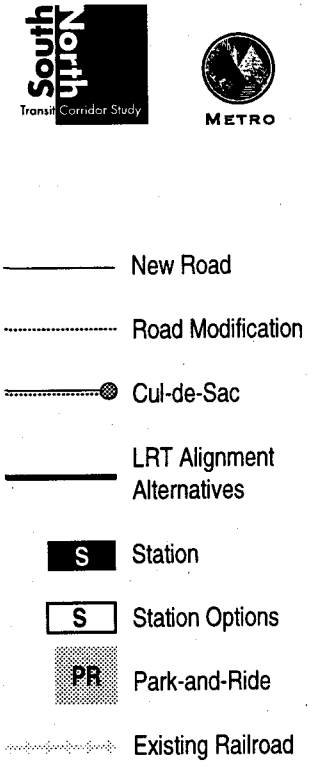
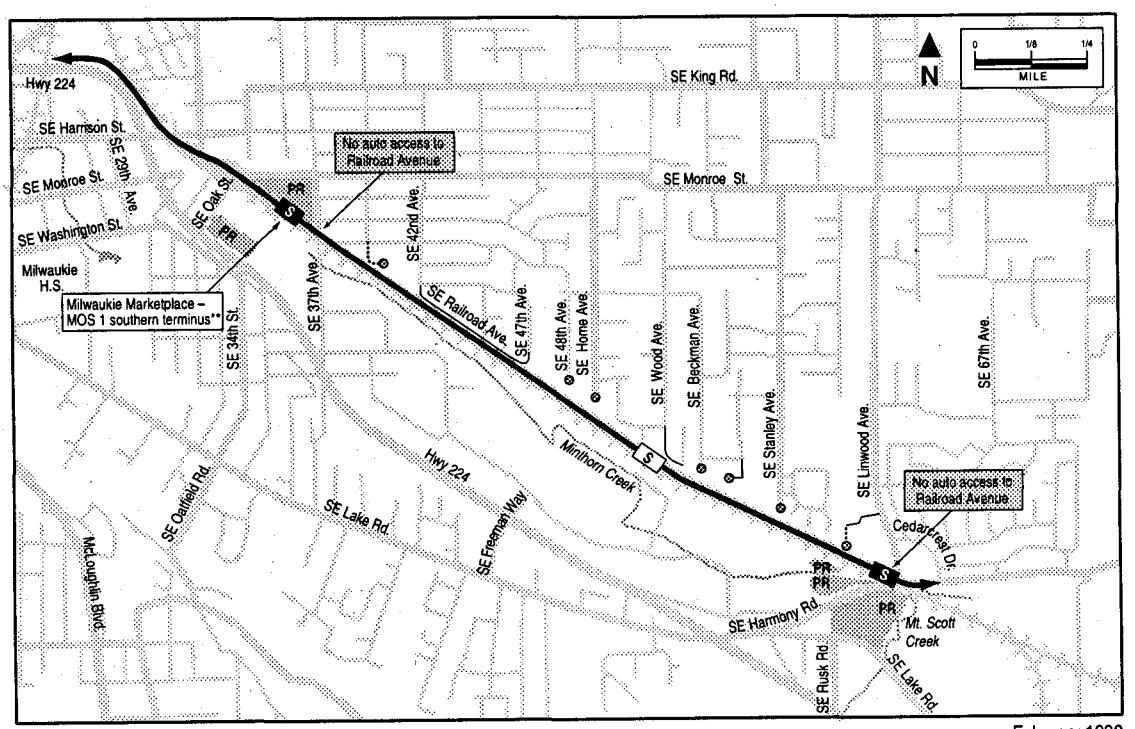


Figure 1.3-5a

East Milwaukie

- **Railroad Avenue/Through Traffic**
- **Railroad Avenue/Local Access***
- **Highway 224**



February 1998

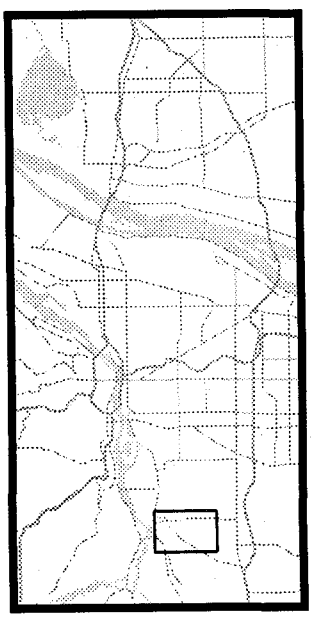
Figure 1.3-5b

Railroad Avenue/Local Access Alignment Alternative and Resulting Road Network Modification

Note: Alignment, station and park-and-ride locations are currently under study and may change.

* Refer to figure 2.3-4b for resulting road network modifications.

** MOS refers to a segment of the full-length alternative called a Minimum Operable Segment.



McLoughlin Boulevard Segment

The McLoughlin Boulevard Segment extends from SE Tacoma Street to SE McLoughlin Boulevard at SE 20th Avenue. One alignment is being evaluated in this segment (see Figure 1.3-7).

- **McLoughlin Boulevard Alignment.** From SE Tacoma Street, the alignment would proceed north along the east side of SE McLoughlin Boulevard (between the roadway and the UPRR railroad) past the Eastmoreland golf course. It would pass under SE Bybee Boulevard and would include an LRT station just north of SE Bybee Boulevard. The alignment would then proceed north to SE McLoughlin Boulevard and SE 20th Avenue in the vicinity of the Brooklyn Yard.

  A design consideration with this alignment is whether to retain or rebuild the existing SE Bybee Boulevard overpass. If the existing overpass is retained, a new pedestrian bridge would be built immediately north of the existing overpass to allow station access from both sides of SE McLoughlin Boulevard. If rebuilt, the approaches to the overpass would be regraded to facilitate station access and bus transfers.

South Willamette River Crossing Segment

The South Willamette River Crossing Segment extends from SE McLoughlin Boulevard at SE 20th Avenue to the east side of SW Front Avenue at SW Harrison Street. For costing purposes and for the visual and aesthetic analysis, a concrete segmental bridge type and one unique design variation was developed for both river crossings. The actual bridge type would be determined for the preferred crossing in the early stages of Preliminary Engineering, prior to completion of the FEIS.

One of the three possible sites for an operations and maintenance facility is located in this segment (see Figure 1.3-8). For a more detailed description of the North Milwaukie park-and-ride lot and operations and maintenance facility site, refer to the *Operations and Maintenance Facility and North Milwaukie Park-and-Ride Results Report* (Metro: February 1998).

- **Ross Island Crossing Alignment Alternative.** From the southwest side of Brooklyn Yard, this alignment would continue parallel to the east side of SE McLoughlin Boulevard to a station in the vicinity of SE Schiller Street. From this location west to the river crossing, there are two design options:

  - ***East of McLoughlin Design Option.*** The East of McLoughlin Design Option would follow the east side of SE McLoughlin Boulevard with a station near SE Center Street. From the Center Street station, the alignment would cross under SE McLoughlin Boulevard and would cross the Willamette River on a new bridge in the vicinity of the northern portion of Ross Island.

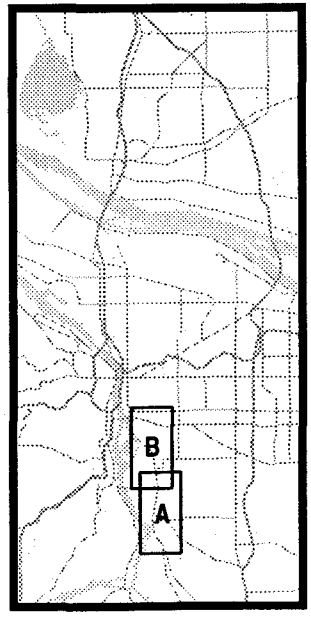
  - ***West of McLoughlin Design Option.*** From the Schiller Street station, the West of McLoughlin Design Option would continue north paralleling SE Milwaukie Avenue for a short distance and would then turn west crossing over SE McLoughlin Boulevard on a new grade-separated structure. The alignment would then proceed

South North Transit Corridor Study

METRO

- LRT Alignment Alternative
- S — Station
- S — Station Options
- Existing Railroad
- TC — Transit Center
- MF — LRT Operations and Maintenance Facility
- PR — Park-and-Ride

Note: Alignment, station, LRT operations and maintenance facility and park-and-ride locations are currently under study and may change.



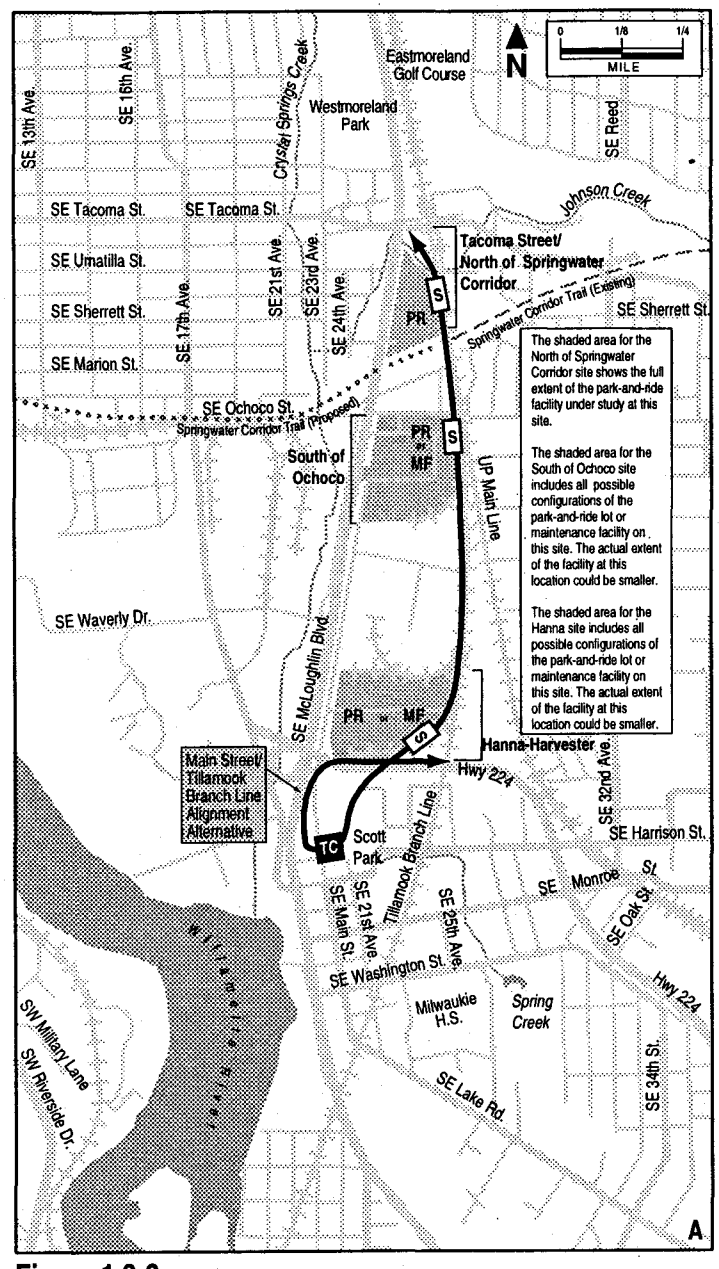


Figure 1.3-6

Milwaukie Regional Center

• Main Street/Tillamook Branch Line

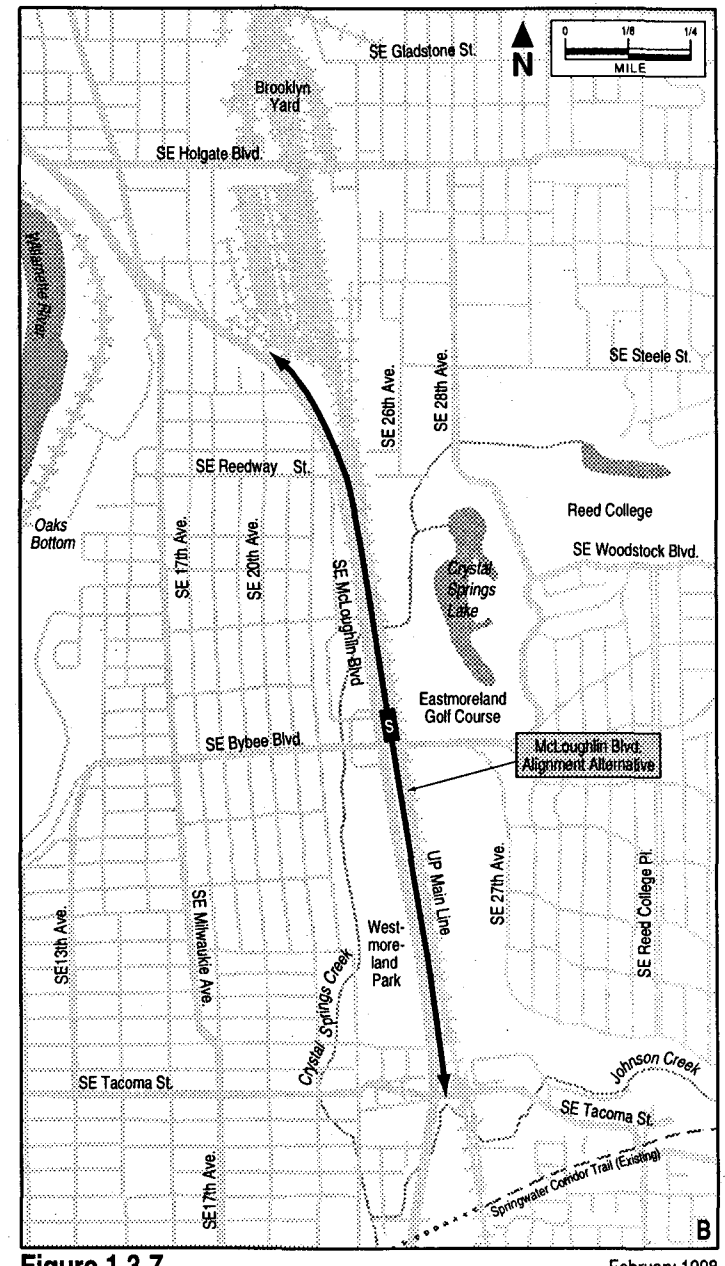


Figure 1.3-7

February 1998

McLoughlin Boulevard

along the west side of SE McLoughlin Boulevard to the river crossing (identical in the two design options). There would be no Center Street Station with this design option.

The new light rail bridge would span the Holgate Slough with a vertical clearance of 72 feet (CRD) and a horizontal clearance of 300 feet and would span the Willamette River with a vertical clearance of 99 feet (CRD) and a horizontal clearance of 250 feet (see Sections 3.2.7 and 4.4 for more information). The bridge would span a northern section of Ross Island and would land on the west side of the Willamette River near SW Moody Avenue with a station in the vicinity of SW Gaines Street. The alignment would then follow the west side of SW Moody Avenue to a SW Porter Street station and proceed north to the RiverPlace station over SW Harbor Drive.

- **Caruthers Crossing Alignment Alternative.** This alignment would separate from SE McLoughlin Boulevard and immediately turn north between SE McLoughlin Boulevard and SE Holgate Boulevard. There are two station options in this area. Station location depends on whether or not Brooklyn Yard is selected as the location of the South/North operations and maintenance facility. With a Brooklyn Yard operations and maintenance facility, light rail would proceed north on the east side of SE 17th Avenue to a station near SE Holgate Boulevard and SE 18th Avenue. Without the operations and maintenance facility, light rail would proceed north, east of SE 17th Avenue to a station near SE Holgate Boulevard and SE 18th Avenue.

  At SE Holgate Boulevard, the alignment would continue north, generally between parcels fronting on SE 17th Avenue and Brooklyn Yard. The alignment would continue to follow the west side of Brooklyn Yard to a station in the vicinity of SE Lafayette Street with pedestrian access across the UPRR main line to the East Brooklyn neighborhood.

  The alignment would continue north, crossing over SE Powell Boulevard on an elevated structure, paralleling the existing UPRR Main Line. From SE Powell Boulevard the alignment would extend north and would cross SE 11th and 12th Avenues at grade. A station would be located at approximately SE 12th Avenue and SE Clinton Street. Light rail would then cross under the existing McLoughlin Boulevard viaduct and would cross the Portland Traction Company freight rail line at grade with a station located just south of OMSI.

  From the OMSI station, light rail would cross the Willamette River on a fixed-span bridge with a vertical clearance of 72 feet (CRD) and a horizontal clearance of 300 feet. Note that if a Caruthers Crossing Alternative is selected within the *Locally Preferred Strategy Report*, the final determination of bridge height would be made through a permit process managed by the US Coast Guard. That process would conclude following completion of the Federal environmental process. The Caruthers bridge high-sensitivity analysis summarizes the significant changes to costs, benefits and impacts that would be associated with varying Caruthers bridge heights.

On the west bank of the Willamette River there are two design options:

- ***Moody Avenue Design Option.*** The Moody Avenue Design Option would extend from the Caruthers Bridge west, under the west end of the Marquam Bridge. The alignment would extend northwest, at grade, parallel to and north of SW Moody Avenue. It would then turn north, running east of and parallel to SW Harbor Drive. An at-grade North Marquam station could be located at SW Moody Avenue and SW River Parkway.

- ***South Marquam Design Option.*** The South Marquam Design Option would extend southwest from the Caruthers Bridge, generally south of, and parallel to, the Marquam Bridge approach ramps. A second-story light rail station could be integrated into a proposed development just south of the proposed light rail alignment. After crossing SW Moody Avenue at grade, the alignment would turn

  north, running parallel to SW Harbor Drive. North of SW Moody Avenue, the alignment would head northwest to cross SW Harbor Drive on a new structure.

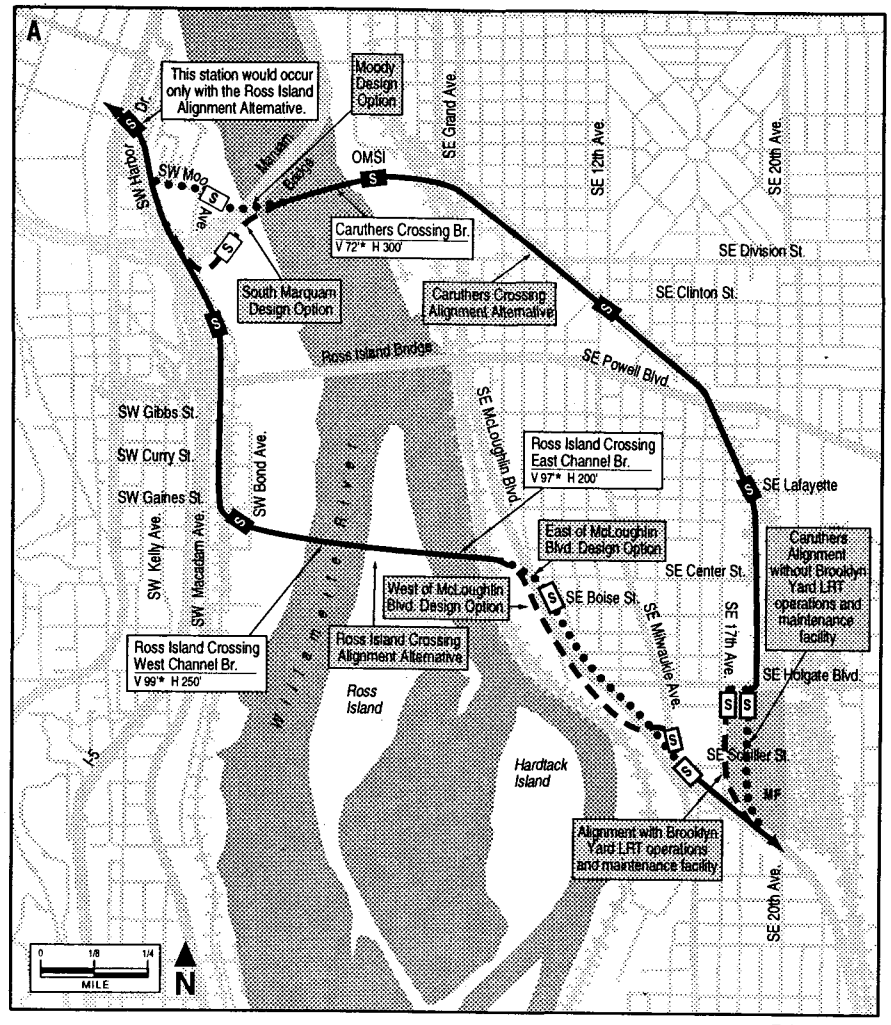
Downtown Portland Segment

The Downtown Portland Segment extends from SW Front Avenue at SW Harrison Street to the east end of the Steel Bridge. Two alignments are examined in this segment (see Figure 1.3-9).

- **Downtown Portland Full Transit Mall Alignment Alternative**

  South Entry: This portion of the downtown Portland alignment extends west from just east of SW Front Avenue. Crossing SW Front Avenue at grade, the alignment would continue west in the median of SW Harrison Street between SW 1st and 4th Avenues. From the corner of SW Harrison Street and SW 4th Avenue, the alignment would travel diagonally to connect to the SW 5th and 6th Avenue couplet. A station pair would be located in the area bordered by SW Harrison and Mill Streets and SW 4th and 6th Avenues serving PSU and the surrounding area. The RiverPlace area, the South Auditorium area and PSU are evaluated in the Portland CBD Station Access Study to determine which combination of stations should advance into the FEIS for further study.

  South Mall: This portion of the downtown Portland alignment extends north from SW Mill Street to SW Madison Street. Light rail would be placed in the left lane on SW 5th and 6th Avenues in the South Mall area with autos and buses sharing two general purpose lanes to the right of the LRT alignment. SW 5th and 6th Avenues would be reconstructed between SW Madison Street and the PSU Transit Center with improvements similar to those used on the Central Mall. Two pairs of auto-accessible stations would occur in this portion of the alignment. The first pair would be located at SW 5th and 6th Avenues on a diagonal alignment between SW Harrison and Mill Streets. The second pair would be located at SW Columbia Street and SW 6th Avenue and SW Jefferson Street and SW 5th Avenue.



February 1998

Figure 1.3-8

South Willamette River Crossing

- Caruthers Crossing
- Ross Island Crossing

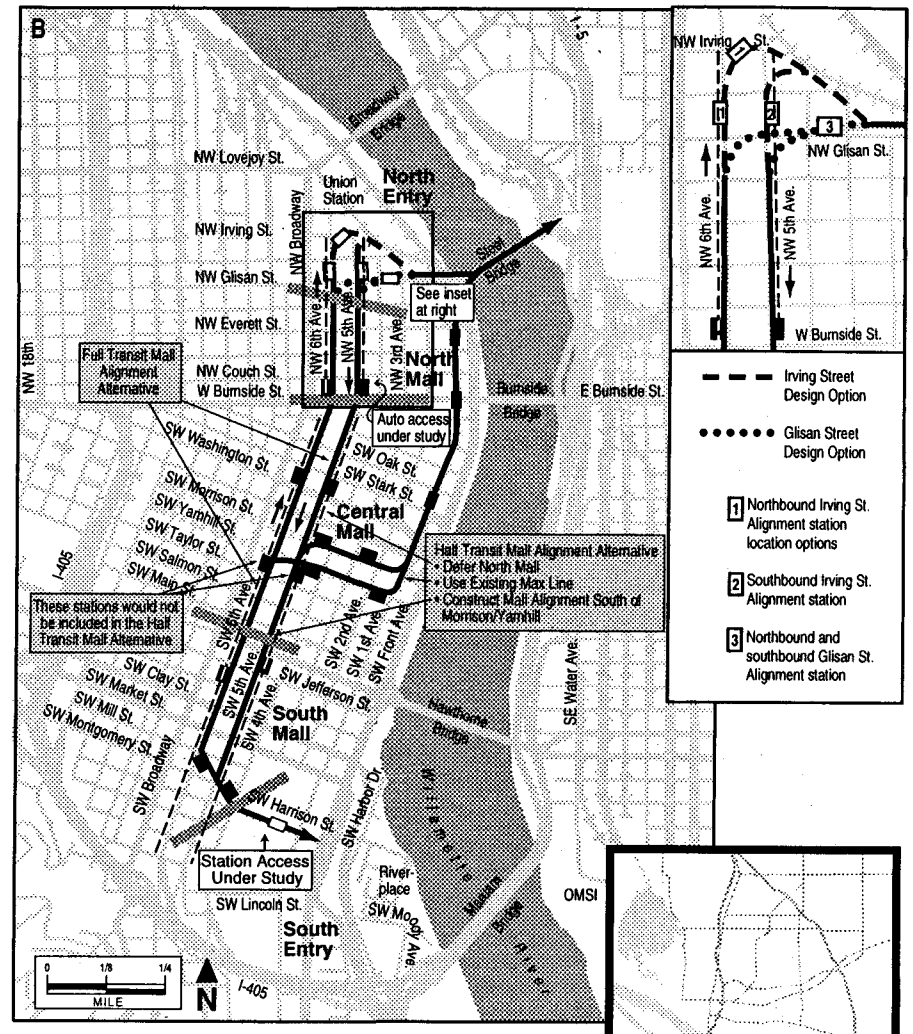


Figure 1.3-9

Downtown Portland

- Full Transit Mall
- Half Transit Mall

METRO

South North Transit Corridor Study

LRT Alignment Alternative

LRT Design Options

S Station

Existing Railroad

Mall Auto Access

Station with auto access on Mall

Station with no auto access on Mall

MAX

Westside LRT

MF LRT Operations and Maintenance Facility

Note: Alignment, station and LRT operations and maintenance facility locations are currently under study and may change.

*Proposed maximum vertical clearances are Columbia River Datum - see section 3.2.7.

Central Mall: This portion of the downtown Portland alignment extends north from SW Madison Street to W Burnside Street. Light rail in this area would be located in the center lane of SW 5th and 6th Avenues. Two pairs of non auto-accessible stations would occur in this portion of the alignment. The first pair of stations would be located between SW Taylor and Yamhill Streets on SW 5th and 6th Avenues and the second pair would be located between SW Washington and Stark Streets on SW 5th and 6th Avenues.

North Mall: This portion of the downtown Portland alignment extends north of W Burnside Street to just south of NW Glisan Street. A station would be located between W Burnside and NW Couch Streets on NW 5th and 6th Avenues. Light rail would be located in the left lane on NW 5th and 6th Avenues in the North Mall with buses and autos sharing the right lane.

North Entry: This portion of the downtown Portland alignment extends from NW Glisan Street to the east end of the Steel Bridge in Northeast Portland. There are two design options for the north entry connection to the Steel Bridge from NW 5th and 6th Avenues. This area is evaluated in greater detail in the Portland CBD Station Access Studies.

- ***Glisan Street Design Option.*** The alignment for the Glisan Street Design Option would turn from NW 5th and 6th Avenues onto NW Glisan Street with a proposed station on NW Glisan Street between NW 3rd and 4th Avenues (serving both northbound and southbound). From the station, the alignment would continue east connecting to the existing MAX tracks across the Steel Bridge.

- ***Irving Street Design Option***. The alignment for the Irving Street Design Option would continue two blocks farther north than the Glisan Street Design Option with a southbound station on NW 5th Avenue between NW Glisan and Hoyt Streets and a northbound station on NW 6th Avenue between NW Glisan and Hoyt Streets or adjacent to NW Irving Street at NW 6th Avenue. From the NW Irving Street area, the alignment would curve and travel diagonally to NW Glisan Street and would then continue east connecting to the existing MAX tracks across the Steel Bridge.

On the Steel Bridge, the alignment would continue east using the existing MAX tracks. Motor vehicles would be excluded from the center lanes of the Steel Bridge. Improvements to the bridge's expansion joints and bushings would be made to increase LRT operating speeds across the bridge.

- **Downtown Portland Half Transit Mall Alignment Alternative.** The Downtown Portland Half Transit Mall Alignment Alternative would be identical to the Full Transit Mall alignment from the South Entry through PSU and the South Mall. In the Central Mall, this alignment alternative would connect the northbound track on SW 6th Avenue with the existing eastbound MAX track on SW Yamhill Street and the southbound track on SW 5th Avenue with the existing westbound MAX track on SW Morrison Street. No new track would be installed in the area generally north of SW Morrison Street. The South/North mall improvements north of SW Yamhill and Morrison Streets would be deferred to a later phase of project development when warranted by demand and/or funding availability.

Because of projected ridership and capacity constraints (of approximately three-minute headways in each direction) on the shared-track section of the existing MAX tracks, the Half Transit Mall Alternative would not be feasible with the Full-Length or the MOS 1 Length Alternatives. Current travel demand and operations analysis indicate that the Half Transit Mall Alternative would be feasible with MOS 2 and MOS 5 through the forecast year of 2015. Increasing demand on the east/west and south/north lines, either over time or due to extensions of the LRT lines, would require the construction of the remaining Full Transit Mall Alternative due to headway limitations on the shared-track segment of the existing MAX tracks.

Eliot Segment

The Eliot Segment extends from the east end of the Steel Bridge to the Edgar Kaiser Medical Facility. For the Full-Length, MOS 1 and MOS 5 Length Alternatives, this segment includes two alignment alternatives: East I-5/Kerby and Wheeler/Russell (see Figure 1.3-10). Each of these alignment alternatives includes two common design options for the Rose Quarter Transit Center: the Multi-Level Transit Center and the At-Grade Transit Center Design Options. The East I-5/Kerby

Alignment Alternative also includes two additional design options for crossing the N/NE Broadway/Weidler Street couplet: the At-Grade and the Grade-Separated Design Options.

Alignment Alternatives

- **East I-5/Kerby Alignment Alternative.** The East I-5/Kerby Alignment Alternative would proceed east from the Rose Quarter Transit Center (see design options below) and turn north along the eastern edge of I-5. The alignment would continue north between I-5 and the Harriet Tubman Middle School, crossing over N Russell Street on structure, to a station on N Kerby Avenue between N Graham and Stanton Streets, west of Emanuel Hospital. The alignment would curve west, passing over I-5 on structure to a location just west of the freeway, near the Edgar Kaiser Medical Facility.

- **Wheeler/Russell Alignment Alternative.** The Wheeler/Russell Alignment Alternative would proceed north from the Rose Quarter Transit Center (see design options below) and would pass along the eastern edge of the Rose Garden Arena parallel to N Wheeler Avenue, with a station north of the arena, between N Broadway and N Weidler Street. The alignment would cross N Weidler Street and N Broadway at grade. After crossing over I-5 on a new structure the alignment would proceed north along the east side of N Flint Avenue. The alignment would turn west at N Russell Street with a station on N Russell Street at the south end of the Emanuel Hospital campus. The alignment would then be elevated on a structure and would pass over N Kerby Avenue, Stanton Yard and N Mississippi Avenue. The alignment would then curve to the west, passing over I-5 on structure to a location just west of the freeway, near the Edgar Kaiser Medical Facility.

Rose Quarter Transit Center Design Options

As noted above, the East I-5/Kerby and Wheeler/Russell Alignment Alternatives share the following common design options at Rose Quarter Transit Center:

- ***Multi-Level Rose Quarter Transit Center.*** The Multi-Level Rose Quarter Design Option would include a multi-level Rose Quarter Transit Center with the light rail crossing over N Interstate Avenue. With the multi-level design option, the transit center functions (i.e., bus-to-bus transfers, bus-to-rail transfers, pedestrian-to-bus access and pedestrian-to-rail access) would all occur above the N Interstate Avenue street grade with auto traffic below. This design option would also include a grade-separated pedestrian connection between the Rose Quarter Transit Center and the Rose Garden Arena.

- ***At-Grade Rose Quarter Transit Center.*** This design option would include an at-grade crossing of N Interstate Avenue west of the Rose Quarter Transit Center. With this design option, the transit center functions (i.e. bus-to-bus transfers, bus-to-rail transfers, pedestrian-to-bus access and pedestrian-to-rail access) would all occur at the existing street level.

East I-5/Kerby Design Options at N Broadway and Weidler Streets

In addition to the Rose Quarter Transit Center design options described above, the I-5/Kerby Alignment Alternative has the following two additional design options for crossing the NE Broadway/Weidler Street couplet:

- ***Grade-Separated Design Option.*** With the Grade-Separated Design Option, the light rail alignment would cross over NE Weidler Street and NE Broadway on a new structure. The Broadway Station would be elevated between NE Broadway and NE Weidler Street, with access via stairs and an elevator.

- ***At-Grade Design Option.*** With the At-Grade Design Option, the light rail alignment would cross NE Broadway and NE Weidler Street at grade (at the current street level). The Broadway Station would also be at grade between NE Broadway and NE Weidler Street.

With MOS 2, the light rail alignment would terminate at the Rose Quarter Transit Center. A light rail turnback area would be located near NE 11th Avenue and NE Holladay Street in the vicinity of the Lloyd Center.

North Portland Segment

The North Portland Segment extends from the Edgar Kaiser Medical Facility to N Marine Drive. Two alignment alternatives are examined in this segment (see Figure 1.3-11). N Lombard Street in this segment represents the northern terminus for MOS 5 with alternate terminus sites at Kenton and the Expo Center. Alignment alternatives in this segment are described in detail below.

- **I-5 Alignment Alternative.** From the station at the Edgar Kaiser Medical Facility, the light rail alignment would proceed north along the top of the western bank of I-5 to a station south

of N Skidmore Street. The alignment would then continue north, passing beneath N Going Street in a box structure, then run adjacent to I-5 at the same general elevation as N Minnesota Avenue (west of the freeway ramps) from N Going Street to a station at N Killingsworth Street. The alignment would then proceed along the top of the freeway bank and then curve west along the freeway ramps to a N Portland Boulevard street-level station and continue north along the west bank of the freeway to a station on the south side of N Lombard Street. This station would serve as the northern terminus for MOS 5. The alignment would proceed over N Lombard Street on a structure staying on the west side of I-5 with a station in the Kenton area. It would then cross over N Columbia Boulevard and it would cross the Columbia Slough over a new bridge with a vertical clearance of 44 feet (CRD) and a horizontal clearance of 94 feet. The alignment would continue north between N Expo Road and I-5 to a station located on retained fill, 17 feet above the Expo Center parking lot.

With the Full-Length and MOS 1 Length Alternatives, the I-5 alignment alternative would be as described above. With MOS 5, the alignment would terminate with a station at N Lombard Street between I-5 and N Montana Avenue as shown in Figure I-29. This alignment alternative is not included in MOS 2, which terminates at the Rose Quarter Transit Center.

There are two design options for the I-5 Alignment Alternative:

- ***Modify Alberta Street Ramps Design Option.*** Light rail would be located within the right-of-way vacated by the closure of the Alberta Street southbound I-5 on and off ramps.

- ***Retain Alberta Street Ramps Design Option.*** This design option would retain the Alberta Street I-5 ramps as they are today.

- **Interstate Avenue Alignment Alternative.** From a street-level station located diagonally across from the Edgar Kaiser Medical Facility near the existing Town Hall building, the alignment would turn onto N Interstate Avenue near N Overlook Boulevard and proceed north in the center of N Interstate Avenue. A single traffic lane would be provided on either side of the LRT tracks, except at the approaches to N Going Street and N Lombard Street where two lanes of traffic in each direction would be provided. Major intersections would be signalized, at-grade crossings, appropriately widened to accommodate turn lanes. Stations would be located at N Going Street, N Killingsworth Street, N Portland Boulevard, N Lombard Street and N Denver Avenue in the Kenton commercial district.

  From the Kenton station, the alignment would parallel the east side of the N Denver Avenue viaduct. It would proceed on an elevated structure over N Columbia Boulevard and would cross the Columbia Slough over a new bridge with a vertical clearance of 34 feet (CRD) and a horizontal clearance of 66 feet. Near West Delta Park, the track would climb for approximately ½ mile and cross over Highway 99 adjacent to N Expo Road. The alignment would be located between N Expo Road and I-5 and would proceed to a station located on retained fill, 17 feet above the Expo Center parking lot.

With the Full-Length and MOS 1 Length Alternatives, the Interstate Avenue Alignment Alternative would be as described above. With MOS 5, the alignment would terminate with a station located south of N Lombard Street on N Interstate Avenue. This alignment alternative is not included in MOS 2, which would terminate at the Rose Quarter Transit Center.

- **Crossover Options.** A crossover option between the Overlook Neighborhood and the Kenton Neighborhood may be the outcome of detailed technical studies. The *LPS Report* will specify whether or not an examination of specific crossover options will be evaluated during the FEIS phase of the project.

Hayden Island/Vancouver Segment

The Hayden Island/Vancouver Segment extends from N Marine Drive north of the Expo Center, across the Columbia River to the vicinity of Clark College in Vancouver, Washington. The VA Medical Center/Clark College area in Vancouver represents the northern terminus for the Full-Length Alternative and MOS 1. One alignment is being evaluated in this segment (see Figure 1.3-12).

- **I-5/Washington Street Alignment Alternative.** Traveling north from the Expo Center on the west side of I-5, the alignment would cross over N Marine Drive, the North Portland Harbor and N Jantzen Street on a bridge structure. Over North Portland Harbor the LRT span would have a vertical clearance of 35 feet (CRD) and a horizontal clearance of 215 feet. A station would be located near N Jantzen Street. The alignment would pass under the I-5 ramps, then continue north along the west side of the freeway to a new lift-span bridge crossing the Columbia River. The light rail bridge would parallel the west side of the existing I-5 southbound bridge and would be approximately the same height above the river. The LRT bridge would have a lift span directly adjacent to the existing lift spans and would provide a vertical clearance of 178 feet (CRD) in the full open position, with a horizontal clearance of 263 feet. An alternate barge channel to the south would have a vertical clearance of 46 feet (CRD) and a horizontal clearance of 511 feet. The alignment would pass over Columbia Way in Vancouver and then would cross under the Burlington Northern railroad berm before connecting with the southern end of Washington Street.

  From the southern end of Washington Street, the light rail alignment would proceed north to stations at W 7th Street (transit center), between W 11th and 12th Streets and between W 16th and 17th Streets. At McLoughlin Boulevard, the alignment would turn east, proceeding in the center of E McLoughlin Boulevard to the east side of I-5. A station would be located on E McLoughlin Boulevard between "D" and "E" Streets.

  There are two design options on Washington Street in downtown Vancouver between W 5th and 8th Streets:

  - ***West side of Washington Street.*** With this design option, light rail would operate on the west side of Washington Street. A transit center would be located in the vicinity

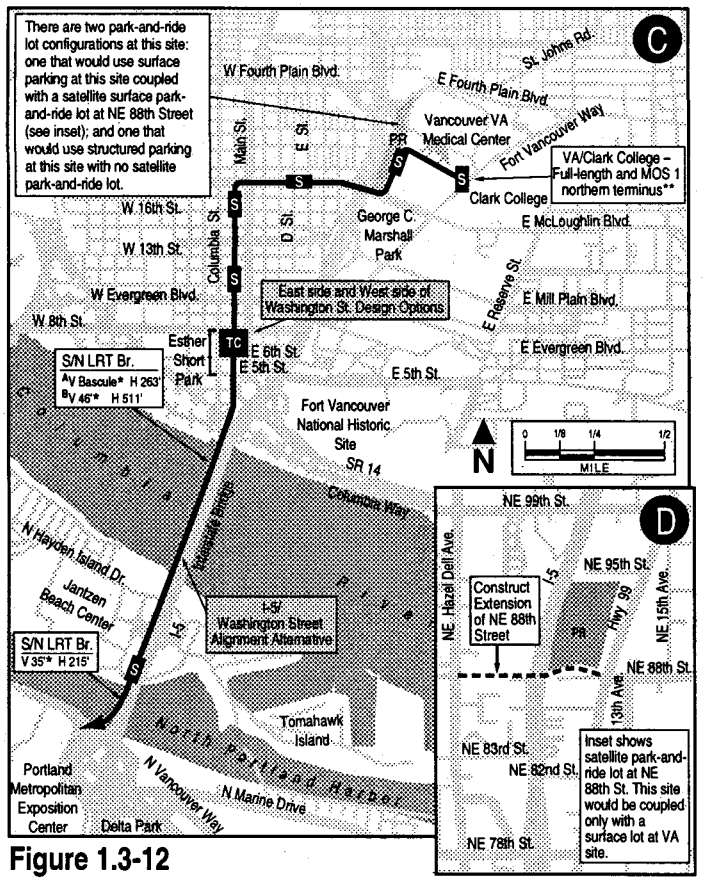


Figure 1.3-12

Hayden Island/Vancouver

- I-5/Washington Street

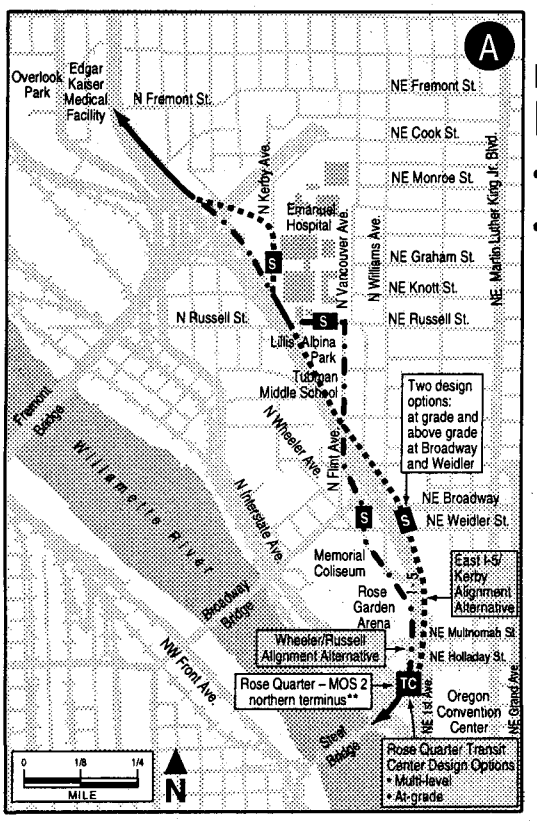
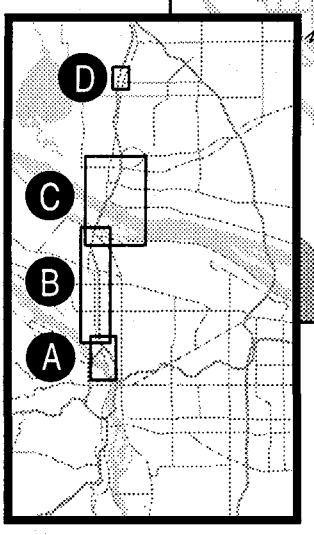


Figure 1.3-10

Eliot

- Wheeler/ Russell
- East I-5/ Kerby



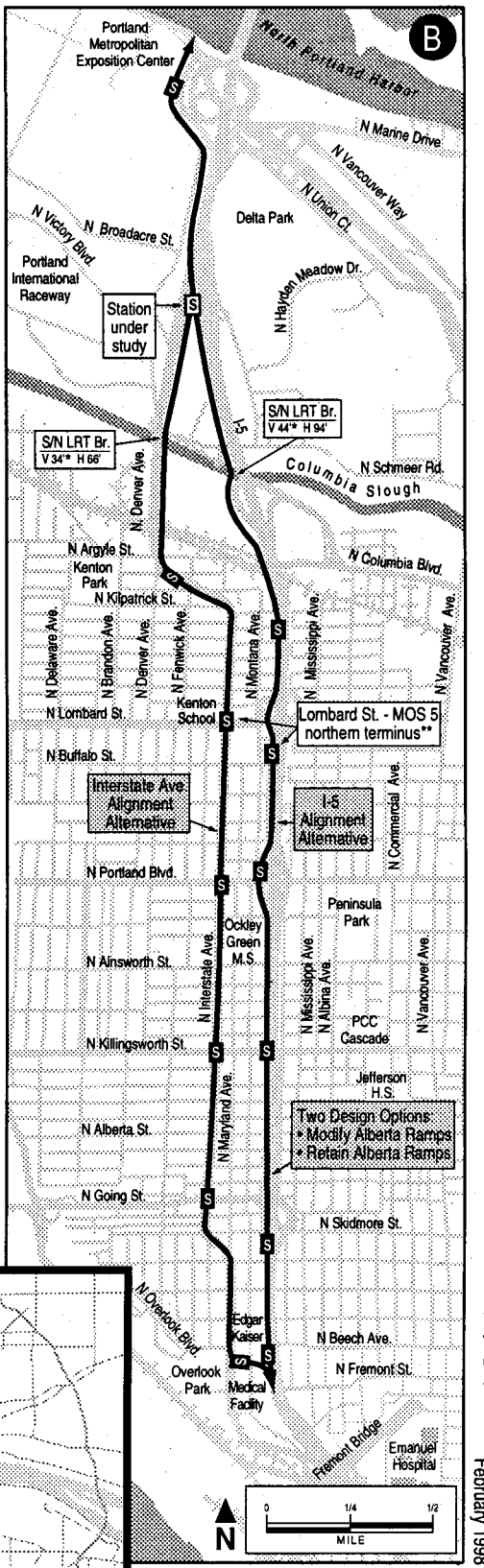


Figure 1.3-11

North Portland

- Interstate Avenue
- I-5

South North Transit Corridor Study

METRO

- Wheeler/ Russell LRT Alignment Alternative
- East I-5/ Kerby LRT Alignment Alternative
- Common LRT Alignments
- S — Station
- Existing Railroad
- TC — Transit Center
- PR — Park-and-Ride

Note: Alignment, station and LRT operations and maintenance facility locations are currently under study and may change.

In their open position bascule bridges would have no vertical clearance limitiation.

*Proposed maximum vertical clearances are Columbia River Datum - see section 3.2.7.

[A] Main Channel
[B] Alternate barge channel

**MOS refers to a segment of the full-length alternative called a Minimum Operable Segment.

February 1998

of W 7th Street near the Esther Short redevelopment parcel bordered by W 5th and 7th Streets and Main and Columbia Streets.

- ***East side of Washington Street.*** With this design option, light rail would operate on the east side of Washington Street. A transit center would be located in the vicinity of W 7th Street near the C-TRAN transit center.

From the station on E McLoughlin Boulevard, the alignment would cross under I-5, turn north and proceed along the east side of I-5 to a park-and-ride lot east of I-5 between E McLoughlin Boulevard and E Fourth Plain Boulevard. From the VA Medical Center park-and-ride lot and station, the alignment would turn east, proceeding to the terminus station west of Fort Vancouver Way and across the street from Clark College.

There are two design options for providing park-and-ride capacity for the north terminus in Clark County.

- ***Surface VA Park-and-Ride Design Option.*** This design option would include a surface park-and-ride lot (approximately 1,000 spaces) in the vicinity of the VA Medical Center. With the surface park-and-ride lot design option, an additional satellite park-and-ride lot (approximately 1,500 spaces) would be developed at NE 88th Street, linked to the light rail line by shuttle bus service.

- ***Structured VA Park-and-Ride Design Option.*** This design option includes a station and structured park-and-ride lot (approximately 3,900 spaces) in the vicinity of the VA Medical Center.

B. Highway Improvements

Highway improvements would be consistent with those included in the *1995 Interim Federal Regional Transportation Plan's* financially constrained highway network. For a complete listing of those improvements refer to the *South/North Definition of Alternatives Compendium* (Section 15, RTP Financially Constrained Highway Project Atlas). Following is a summary by corridor segment of the additional roadway improvements that would be associated with the proposed light rail alignment alternatives and design options.

Clackamas Regional Center Segment. Highway improvements associated with the South of Clackamas Town Center Alignment Alternative would include: a new signalized crossing of SE Harmony Road in the vicinity of SE 80th Avenue; and traffic signal modifications at the entrances to Clackamas Town Center. Roadway improvements associated with the North of Clackamas Town Center Alignment Alternative would include: a new signalized crossing of SE Harmony Road near SE 80th Avenue; a half-street improvement of SE 80th Avenue between SE McBride and SE Sunnyside Drive; the modification of signals at SE 82nd Avenue and SE Monterey; the reconstruction of portions of the south side of SE Monterey; the reconstruction of the entrance to Clackamas Town Center mall to align with newly signaled SE 85th and SE 90th Avenues; and the construction of gated crossings on the south side of SE Sunnyside Road between I-205 and SE 105th Avenue.

East Milwaukie Segment. Highway improvements related to the Railroad Avenue/Through Traffic and the Railroad Avenue/Local Access Alternatives would include: the reconstruction of the SE Linwood Avenue and SE Harmony Road intersection as a grade-separated crossing over the UPRR; and the closure of SE Railroad Avenue between SE Oak and SE Harrison Streets. Roadway improvements associated with the Railroad Avenue/Through Traffic Alternative would also include: the reconstruction of SE Railroad Avenue between SE Linwood Avenue and SE 37th Avenue; and the realignment of the intersection of SE Railroad and SE Linwood Avenues to a newly signalized intersection with SE Cedarcrest Drive. Highway improvements related to the Railroad Avenue/Local Traffic Alternative would also include: the closure of the existing SE Railroad Avenue at various points; the reconstruction of several segments of SE Railroad Avenue to provide local property access; and the construction of a multi-use path along the entire length of SE Railroad Avenue (see Figure 1.3-5b). Highway improvements associated with the Highway 224 Alternative would include: the reconstruction, realignment and signal modifications of intersections along Highway 224; and the closure of the east leg of the intersection of SE Monroe Street at Highway 224.

McLoughlin Boulevard Segment. Under one option, the SE Bybee Boulevard overpass of SE McLoughlin Boulevard would be reconstructed with wider travel lanes, bike lanes, sidewalks and bus pullouts; the other option would retain the existing roadway structure for vehicular traffic and would add a separate pedestrian bridge just north and parallel to the existing structure to provide improved pedestrian access to the light rail station. Highway improvements would include the reconstruction of the SE McLoughlin Boulevard northbound on-ramp to SE Tacoma Street.

South Willamette River Crossing Segment. Highway improvements associated with the Ross Island Crossing would include the reconstruction of SW Gibbs Street between SW Macadam Avenue and SW Bond Avenue. SW Curry Street, SE Long Street and SE 18th Avenue would be closed with the Ross Island Alternative. SE 9th Avenue, SE Mall Street and SE Reynolds Street would be modified with the Ross Island Alternative. Roadway modifications associated with the Caruthers Crossing would include: the closure of SE Clinton Street between SE 11th and 12th Avenues and the reconstruction of the SE 17th Avenue overpass of SE Powell Boulevard; the closure of portions of SE Clinton Street, SE 18th Avenue, SE Haig Street and SE Rhine Street; and the relocation of adjacent bike lanes.

Downtown Portland Segment. Highway improvements for both the Full Transit Mall Alternative and the Half Transit Mall Alternative would include the extension of the downtown Portland transit mall from SW Madison Street to SW Harrison Street; the reconstruction of portions of SW Harrison Street, SW 5th Avenue and SW 6th Avenue; and the modification of traffic signals at several intersections. Roadway modifications associated with the Glisan Street Design Option would include: the reconstruction of portions of NW Glisan Street; and the widening of the west approach to the Steel Bridge. Roadway modifications for the Irving Street Design Option would include: the reconstruction of the north portion of the downtown Portland transit mall; the closure of a portion of NW Hoyt Street; the reconstruction of and/or relocation of NW Irving Street; and the widening of the west approach to the Steel Bridge.

Eliot Segment. Highway improvements that would be common to both light rail alignment alternatives within this segment would include: the closure of the middle two lanes on the Steel

Bridge to auto, truck and bus traffic; and the reconstructing portions of NE Interstate Avenue and NE Williams Avenue. Highway improvements associated with the East I-5/Kerby Alternative would include: the reconstruction of portions of N Kerby Avenue and NE Multnomah Street; the closure of portions of N Monroe Street and NE Hancock Street; the construction of a local access road; and the modification of signals at various intersections. Highway improvements associated with the East I-5/Kerby Alternative with the at-grade design option would include the reconstruction of the northbound I-5 exit ramp to NE Weidler Street and NE Broadway. Roadway modifications of the Wheeler/Russell Alternative would include: the modification of NE Multnomah Street to provide a bus-only turnaround with the at-grade Rose Quarter Transit Center Design Option; the removal of one southbound travel lane along N Wheeler Street; the conversion of portions of N Flint Avenue to one-way southbound operations, the relocation of the southbound I-5 to N Broadway Street ramp; the relocation of N Mississippi Street near the I-405 ramps; the closure of N Page Street at N Flint Avenue; and the closure of N Center Court and reconstruction of N Winning Way to maintain access to the Rose Garden parking garage structures.

North Portland Segment. Highway improvements associated with the I-5 Alternative would include: the closure of portions of N Prescott Street, N Minnesota Avenue, N Humboldt Street and one-block of N Montana Avenue; the reconstruction of portions of N Humboldt Street, N Holman Street, N Liberty Street, N Webster Street, N Kilpatrick and one block of N Baldwin Street as cul-de-sacs; and the reconfiguration of two segments of N Minnesota Avenue. Highway improvements associated with the Interstate Avenue Alternative would include the reconstruction of portions of N Interstate Avenue generally from a four-lane section to a two-lane section. Reconstruction of the roadway would include new sidewalks, curbs and gutters, auto and bicycle lanes, turn and/or auxiliary lanes at intersections and parking lanes at mid-block locations. Additional roadway improvements would include: the construction of a new segment of N Overlook Boulevard, the realignment of N Farragut Street; the reconfiguration of the street network in the Kenton area; the modification and addition of traffic signals and additional left-hand turn restrictions.

Hayden Island/Vancouver Segment. Highway improvements with the I-5/Washington Street Alternative would include: the elimination W 3rd Street access to Washington Street; vacating W 4th Street between Washington and Columbia Streets; the restriction of eastbound and westbound left turn movements along portions of E McLoughlin Boulevard; and the reduction of Washington Street's three southbound travel lanes to two southbound lanes. In addition, one northbound lane would be provided along Washington Street between W 7th and W 11th Streets and between W 12th and W 16th Streets. LRT vehicles would operate with full traffic signal preemption within this segment and all intersections with cross-traffic movements would be signalized. With the East Side of Washington Street Design Option, the northbound lane on Washington Street would begin at W 7th Street. With the West Side of Washington Street Design Option, the northbound lane would begin at W 8th Street. With a Surface VA Park-and-Ride Lot at the northern terminus, a NE 88th Street extension between Highway 99 and NE Hazel Dell Avenue would be constructed.

1.3.2.2. Transit Operations

The light rail alternatives would affect both light rail and bus operations within the corridor, as described below.

1.3.2.2.1 LRT Operations

LRT operations in the South/North Corridor would vary by length alternative and by alignment alternative, as described below.

A. Length Alternatives

Table 1.3-6 summarizes LRT operating characteristics for the light rail length alternatives. Light rail travel times have been developed through simulations that account for grades, curvature, speed and vehicle characteristics. Light rail travel times between stations for each length and alignment alternative are included in Section 9 of the *Definition of Alternatives Compendium.*

Table 1.3-6
South/North LRT Operating Characteristics: Length Alternatives [1,2]

Operating Characteristics	Full-Length	MOS 1 (Bi-State)	MOS 2 (Rose Quarter)	MOS 5 (Lombard)
One-way LRT track miles	20.6	16.7	11.7	15.3
One-way running time (average through trip in minutes:seconds)	65:23	56:58	41:40	47:32
Layovers, average (minutes:seconds)	14	13	14	15
Weekday headways [3]				
Peak periods (within daybase) (7:00 p.m.-8:00 a.m.; 4:30 p.m.-5:30 p.m.)	6 [4]	6 [4]	7.5	7.5
Daybase (excluding peak periods) (6:00 a.m.-7:00 p.m.)	10	10	10	10
Night (7:00 p.m.-12:00 a.m.)	15	15	15	15
Train (platform) hours, weekday	356	290	229	248
Train miles, weekday	4,910	3,670	2,800	3,190
Car miles, weekday	9,030	6,750	5,150	5,870
Vehicles scheduled in peak periods	50	42	30	34
Vehicles in fleet, including spares	59	50	36	41

Source: Tri-Met, 1997.
[1] MOS 3 and 4 were eliminated from further study as a result of the Cost-Cutting process.
[2] Length alternatives are based upon a common set of alignment alternatives and terminus and design options, see Section 1.3.2.1.1. Characteristics would vary depending upon which alignment alternatives and terminus and design options are selected as a part of the LPS.
[3] Headways are the average number of minutes between trains in a given hour.
[4] Headway times are north of RiverPlace. South of RiverPlace, headways would be 7.5 minutes.

The South/North line would operate in conjunction with the present Eastside MAX route and future Westside line. There would be no through routing from South/North to the east or west line, but schedules would be coordinated to optimize connections. Operation would be from approximately 5:00 a.m. to 1:30 a.m. on weekdays, with later starting hours on Saturdays and Sundays.

Under all length alternatives, trains would be limited to two cars with a total length under 200 feet because blocks in downtown Portland are generally 200 feet long. All trains would be operated with

a one-person crew, and all fares would be prepaid. Random inspection for proof-of-payment would be conducted.

Under all length alternatives, the safety and security of the LRT system would be enhanced through an operations plan that includes a transit security force to patrol both stations and trains, an on-board force of fare inspectors to monitor public adherence to Tri-Met's self-service fare collection system and system-wide CCTV camera surveillance of some LRT facilities. While the exact security staffing and operations plan for the proposed system have not yet been developed. The plan would be coordinated and consistent with Tri-Met's overall security efforts. For example, camera surveillance would monitor pedestrian activity and fare equipment at major stations. Breaches of security or safety would be

reported directly to transit security force personnel or to the local police force. The Central Control facility would be connected to all local fire and police departments and would serve as the transit system's communications center for all security and emergency situations.

Full-Length Alternative. With the Full-Length Alternative, light rail trains would operate from the Clackamas Regional Center to the VA/Clark College terminus at 7.5-minute headways during the peak travel period and 10-minute headways during the off-peak. Additional light rail trains would operate from the RiverPlace Station to the VA/Clark College terminus at 30-minute headways during the peak travel period, resulting in a combined LRT headway of six minutes between RiverPlace and the VA/Clark College area. The one-way travel time from the Clackamas Regional Center to the VA/Clark College terminus would be approximately 65 minutes, depending upon the alignment options and right-of-way conditions.

MOS 1 Alternative. With MOS 1, light rail from the Milwaukie Regional Center to the VA/Clark College terminus would operate at 7.5-minute headways during the peak travel period and 10-minute headways during the off-peak. Additional light rail trains would operate from the RiverPlace Station to the VA/Clark College terminus at 30-minute headways during the peak travel period, resulting in a combined LRT headway of six minutes between RiverPlace and the VA/Clark College terminus. The one-way travel time from the Milwaukie Transit Center to the VA/Clark College terminus would be approximately 57 minutes, depending upon the alignment options and right-of-way conditions.

MOS 2 Alternative. With MOS 2, light rail from the Clackamas Regional Center to the Rose Quarter Transit Center would operate at 7.5-minute headways during the peak travel period and 10-minute headways during the off-peak. The one-way travel time from the Clackamas Regional Center to the Rose Quarter Transit Center would be approximately 42 minutes, depending upon the alignment options and right-of-way conditions.

MOS 5 Alternative. With MOS 5, light rail from the Clackamas Regional Center to the Lombard Transit Center would operate at 7.5-minute headways during the peak travel period and 10-minute headways during the off-peak. The one-way travel time from the Clackamas Regional Center to the Lombard Transit Center would be approximately 48 minutes, depending upon the alignment options and right-of-way conditions.

B. Alignment Alternatives

Differences in light rail running times between alignment alternatives would affect light rail operating characteristics by increasing or decreasing the LRT platform hours and miles and the peak light rail vehicle requirements. Table 1.3-7 summarizes the differences in LRT operating characteristics between the alignment alternatives.

1.3.2.2.2 Bus Operations

A. Length Alternatives

Bus operations would vary depending upon the LRT length alternatives. Section 5 of the *Definition of Alternatives Compendium* includes maps illustrating the bus routing variations. Section 7 of the *Compendium* provides a detailed listing of bus route configurations for each length alternative. Table 1.3-2 summarizes the bus operating characteristic differences between the length alternatives.

B. Alignment Alternatives

Bus operations and levels of service would be substantially similar throughout the corridor independent of the alignment alternatives or design options. Minor variations in bus routing would occur where different alignment alternatives within a segment would change the location of a transit center or bus/light rail transfer location or where light rail service would replace bus service on an adjacent parallel street. Following are the segments where different alignment alternatives would result in minor bus routing variations. Section 5 of the *Definition of Alternatives Compendium* includes maps illustrating these bus routing variations.

- **Clackamas Regional Center Segment.** The North of CTC Alignment Alternative would locate the CTC Transit Center south of SE Monterey Avenue, near its current location. The South of CTC Alignment Alternative would locate the CTC Transit Center north of SE Sunnyside Road and the routing of buses serving the CTC Transit Center would be slightly different.

- **East Milwaukie Segment.** Service on SE Monroe Street, SE Home Avenue and SE Railroad Avenue would vary depending upon the alignment alternative and the corresponding local street network.

- **North Portland Segment.** The I-5 Alignment Alternative would retain the number 5 bus route on N Interstate Avenue. Bus transfers from routes operating on N Lombard Street would be shifted east from N Interstate Avenue to N Minnesota Avenue. The Interstate Avenue Alignment Alternative would shift number 5 bus service west from N Interstate Avenue to N Denver Avenue between Kenton and N Killingsworth Street.

Table 1.3-7
South/North LRT Operating Characteristics: Alignment Alternatives and Design Options

Segment	Alignment Alternatives	Running Time, Average Through Trip [1] (min:sec)	Train Platform Hours [2]	Train Miles [2] (weekday)	Car Miles [2] (weekday)
Clackamas Regional Center	South of CTC with South of OIT/CCC Design Option [3]	5:18	356	4,910	9,030
	South of CTC with North of OIT/CCC Design Option [3]	4:41	354	4,900	9,020
	North of CTC with South of OIT/CCC Design Option [4]	8:43	372	5,120	9,410
	North of CTC with North of OIT/CCC Design Option [4]	8:06	369	5,110	9,400
East Milwaukie	Railroad Ave. [5]	3:14	356	4,910	9,030
	Highway 224	4:31	362	4,950	9,110
Milwaukie Regional Center	Main St./Tillamook Branch Line	5:14	356	4,910	9,030
McLoughlin Blvd.	McLoughlin Blvd.	4:04	356	4,910	9,030
South Willamette River Crossing	Ross Island Crossing with East of McLoughlin Design Option	5:48	356	4,910	9,030
	Ross Island Crossing with West of McLoughlin Design Option	5:32	355	4,910	9,030
	Caruthers Crossing with Moody Avenue Design Option	6:31	360	4,950	9,100
	Caruthers Crossing with South Marquam Design Option	6:47	361	4,980	9,160
Downtown Portland	Full Transit Mall with Glisan Street Design Option	15:01	356	4,910	9,030
	Full Transit Mall with Irving Street Design Option	15:54	360	4,930	9,080
	Half Transit Mall	14:53	356	4,940	9,080
Eliot	East I-5/Kerby	5:27	356	4,910	9,030
	Wheeler/Russell	6:11	360	4,900	9,020
North Portland	I-5	9:24	356	4,910	9,030
	Interstate Avenue	11:07	364	4,940	9,080
Hayden Island/ Vancouver	I-5/Washington Street with Surface VA Park-and-Ride Design Option	12:00	356	4,910	9,030
	I-5/Washington Street with Structured VA Park-and-Ride Design Option	12:00	356	4,910	9,030

Source: Tri-Met, 1997.

[1] Segment running time.

[2] Based on Full-Length Alternative.

[3] Based on 93rd Avenue Terminus Option. With a CTC Transit Center Terminus Option: LRT track miles would be reduced by 0.45 miles; there would be two LRT stations and one park-and-ride lot with 900 spaces; and it would require three fewer light rail vehicles.

[4] Based on 105th Avenue Terminus Option. With a CTC Transit Center Terminus Option: LRT track miles would be reduced by 1.05 miles; there would be two LRT stations and one park-and-ride lot with 900 spaces; and it would require three fewer light rail vehicles.

[5] Same for Local Access and Through Traffic Alternatives. Not building a Wood Avenue Station would reduce travel times by 45 seconds.

2. METHODOLOGY

2.1 Introduction

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 (49 USC 303) requires that USDOT agencies, including the Federal Transit Administration (FTA), "not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless there is no feasible and prudent alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property resulting from the use." This report focuses on such properties in the corridor and discusses uses affected by Section 4(f) regulations.

The preliminary Section 4(f) report identifies resources and describes the uses of these resources by each alignment alternative and design option. A primary purpose of this preliminary report is to compare the impacts of the alternatives and design options. For all alternatives where a Section 4(f) resource would be impacted, this draft report identifies possible measures to avoid use and minimize harm. Following publication of the Draft EIS and Draft Section 4(f) report, a Locally Preferred Strategy (LPS) will be selected based on public feedback, hearings, agency input and other interests. After LPS selection, a formal Draft Section 4(f) report will be produced.

The formal Draft Section 4(f) Report will provide information necessary to complete the Section 4(f) Evaluation, including a description of Section 4(f) uses by the LPS and the no prudent or feasible alternatives analysis. The final report will describe how other alternatives that were not selected—although they avoided Section 4(f) uses—would not be prudent and feasible alternatives.

2.2 Related Federal, State and Local Regulations

An analysis of South/North Corridor alignment alternatives identified potential impacts to Section 4(f) properties, as outlined in 23 CFR 771.135 of the Federal Transit Administration (FTA) Environmental Impact and Related Procedures. The preliminary Section 4(f) Evaluation presented herein addresses Section 4(f) of the Department of Transportation Act of 1966 and FTA regulations outlined in 23 CFR 771.135; it identifies properties that include significant publicly-owned park lands, recreation areas, open spaces, wildlife and waterfowl refuges and historic sites on, or eligible for inclusion on, the National Register of Historic Places. Federal statutes require that Section 4(f) properties may not be used for any transportation project receiving funds or approval from a USDOT agency, unless no feasible or prudent alternative exists.

To acquire or make improvements to parks and recreation areas, state and local governments often obtain grants through the Land and Water Conservation Fund Act. Section 6(f) of this Act does not allow property acquired or developed with such funds to be converted to a non-recreational purpose without the approval of the U.S. Department of Interior's (DOI) National Park Service. Because Section 4(f) lands may have been developed with Section 6(f) funds, a Section 6(f) Analysis has been coordinated with the Section 4(f) evaluation.

Section 106 of the National Historic Preservation Act of 1966, as amended, and Executive Order 11593 Protection and Enhancement of the Cultural Environment, require that federally-assisted

projects be examined for impacts to all historic sites, districts, buildings, structures or objects and archaeological sites listed on, or eligible for inclusion on, the National Register of Historic Places. The Advisory Council for Historic Preservation (ACHP) has established procedures for protection of historic and cultural properties on, or eligible for inclusion in, the National Register (36 CFR 800). Those properties (either on or eligible for inclusion on) the National Register of Historic Places, which are impacted by the South/North Alternatives or Options, have been evaluated under the Section 106 task and coordinated with the Section 4(f) Evaluation and are described in Chapters 4 and 5 in this report. Those properties determined to be used by the project are subject to Section 4(f) evaluation. Historic and cultural resources determined to have an adverse effect by the proposed alignment could also be considered a Section 4(f) use. The resources having an effect (but no adverse effect) were evaluated to determine whether a Section 4(f) use would occur.

In addition to the federal regulations mentioned, local parkland and recreation areas are managed and regulated under the comprehensive plans and regulations of Clackamas County, Multnomah County, Clark County and the cities of Milwaukie and Portland, Oregon and Vancouver, Washington. Oregon's Department of Land Conservation and Development (ODLCD) also has specific planning goals that the local jurisdictions must meet. One such goal, Oregon Statewide Planning Goal 8, is intended to satisfy the recreational needs of citizens and visitors to the state and to provide the siting of necessary recreational facilities. Section 4(f) applies to those state/locally-owned parks and recreational areas acquired and managed to satisfy Oregon State Planning Goal 8.

2.3 Methods

The methods used to identify and analyze potential Section 4(f) uses included written and verbal coordination with agencies with jurisdiction over the resources; a collection of written data, including maps, reports and local agreements and ordinances; evaluating the resources for potential use by any of the light rail alignments and identification of potential measures to avoid or minimize impacts to the resource.

2.3.1 Contacts and Coordination

Potential uses to Section 4(f) lands were assessed, and agencies with jurisdiction over those areas were identified. These properties and their jurisdictional agency are listed below. Meetings with an official having jurisdiction over the Section 4(f) property were arranged to discuss the significance of the property and any probable effects from corridor development. When an official determined that an entire site was not significant, documentation was requested and included in this report. Further consideration under Section 4(f) is not required for sites deemed insignificant.

2.3.1.1 Parklands and Wildlife Refuges

Agency	Potential Resources
Local	
North Clackamas Parks and Recreation District	Neighborhood Playground; Aquatic Center; North Clackamas Regional Storm-water Treatment Facility
City of Portland	Westmoreland Park; Eastmoreland Park; Oaks Bottom Wildlife Refuge; Willamette Greenway Trail; 40-Mile-Loop Trail; South Waterfront Redevelopment Area; Pioneer Square; Kelly Fountain; Holladay Park; Albina Park; West Delta Park; East Delta Park
City of Vancouver	Captain George Vancouver Monument Plaza; Waterfront Renaissance Trail; Central Park including: George C. Marshall Center
City of Milwaukie	Milwaukie City Hall; Scott Park
Schools	
North Clackamas School District	Harmony Elementary School; Milwaukie Junior High School; Hector Campbell Elementary School; LaSalle High School; LaSalle High School Playing Field
Portland Public Schools	Kenton School; Ockley Green School
Clark College	Clark College Sports Area
OIT	OIT Gymnasium

2.3.1.2 Historic, Archaeological and Cultural Resources

During the process of identifying potential historic resources, a series of meetings were held with special interested parties including the Portland Historic Society, the Milwaukie Historical Preservation Committee and the Vancouver City Historic Council. Additionally, representatives of native American tribes and individuals conducting research on potential resources of African-American community history in Portland were included in the investigation of potential historic and cultural resources within the area of potential effect.

Preliminary findings of potential historic and cultural resources within the area of potential effect were presented at meetings of the project's Citizens Advisory Committee and Technical Advisory Committee. Community meetings were held throughout the corridor, where the identified cultural and historic potential impacts to those resources were described.

The resulting inventory of existing and potential historic and/or cultural resources was reviewed with representatives of each affected jurisdiction. Following these coordination meetings, the inventory was reviewed in meetings with the SHPOs. At these meetings, the SHPOs provided project staff

with a preliminary determination of eligibility for historic resources not listed on, or eligible for inclusion on, the National Register of Historic Places.

2.3.2 Data Collection

Data was collected from a number of sources to determine where potential Section 4(f) resources might be located. Criteria used for selection included parks and recreation lands, wildlife and waterfowl refuges, historic, cultural and archaeological sites located within one-half block in central business districts (approximately 100 feet) and within approximately 200 feet in other portions of the study area. Assessors records and interagency agreements were also evaluated to verify ownership and designated uses of some of the sites.

2.3.3 Inventory of Resources

As part of this study, the South/North Corridor was inventoried to identify potential Section 4(f) properties in the vicinity of the South/North Alignment Alternatives under consideration. The inventory describes the type and size of the potential resource and unusual or significant characteristics of the resource.

2.3.3.1 Historic, Cultural and Archaeological Sites

Many structures more than 50 years old occur in the vicinity of several of the South/North Alignment Alternatives and Design Options. Some of these resources are listed on the National Register or have been determined to be eligible for listing according to specific criteria. These criteria require that the resource must:

- Be associated with events that have made a significant contribution to the broad patterns of our history; or
- Be associated with the lives of persons significant in our past; or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Structures meeting these criteria may be eligible for listing on, or eligible for inclusion on, the National Register of Historic Places and, therefore, be subject to Section 4(f) evaluation if potentially affected by the project. Historic/cultural resources were inventoried as part of the Historic, Archaeological and Cultural Resources Impacts (Section 106) Results Report. Any significant historic/cultural resources determined to be used by the alignment alternatives and/or design options are included in this preliminary Section 4(f) evaluation.

2.3.4 Environmental Consequences

All public parks, recreation areas, wildlife and waterfowl refuges and significant historic sites impacted by the South/North Alignment Alternatives and Design Options were analyzed for impacts, and these were described in separate reports. Impacts to wildlife and waterfowl refuges were based on the impact analysis completed for the Ecosystems Results Report, and impacts to historic and cultural resources were based on the Determinations of Effect prepared for the Historic, Archaeological and Cultural Resources Impacts (Section 106) Results Report analysis. Effect(s) would be determined if the alignment alternatives and design options impact the Section 4(f) or Section 6(f) property through a "use" (which in Section 4(f) terms is a direct taking of all or a portion of the site used for Section 4(f) purposes) or a less common "constructive use." Constructive use may occur when the "proximity impacts" (such as noise, vibration, visual quality or project access) are sufficiently serious such that the Section 4(f) site's vital functions are substantially impaired. Where the projected noise increase is barely perceptible (3 dBA or less), compared to the No-Build Alternative, a constructive use would not occur, even if the total projected noise level exceeds the FHWA or FTA criteria (23 CFR 771.135(p)(5).

2.3.4.1 Long-Term Impacts

Long-term impacts under Section 4(f) include permanent use of the Section 4(f) resource, either direct taking or constructive use.

2.3.4.2 Short-Term Impacts

Section 4(f) does not apply to temporary occupancy including those resulting from a right of entry, construction and other short-term arrangements of publicly-owned parks, recreation areas, wildlife and waterfowl refuges, or any historic site.

2.3.4.3 Avoidance Recommendation

Section 4(f) of the Department of Transportation Act is very specific about the order in which steps must be taken when authorizing a use of Section 4(f) properties. Recommendations to avoid use of the Section 4(f) resource are included in this report.

2.3.4.4 Identify Measures to Minimize Harm

During the FEIS phase, if it is found that impacts to Section 4(f) resources occur that cannot be avoided and that measures to minimize harm will be developed, evaluated and agreed upon by the agency with jurisdiction over the resource.

3. AGENCY COORDINATION AND INVOLVEMENT

For this project, agencies with jurisdiction over Section 4(f) resources were involved in resource identification, impact analysis and mitigation concept evaluation.

3.1 Federal

3.2 State

The State Historic Preservation officers from Washington and Oregon were consulted to obtain historical and archaeological information on the corridor. They were also consulted to determine which resources met the criteria for inclusion in the National Register of Historic Places.

3.3 County

Clackamas County

A meeting was held on September 10, 1996 with Clackamas County to discuss the county's ownership of the transportation corridor (location of the temporary neighborhood playground) and parcels of land within the North Clackamas Regional Storm-water facility. An agreement is planned among Clackamas County, Clackamas County Development Agency and the NCP&RD to identify ownership and operational uses to be permitted on the site.

The North Clackamas Parks and Recreation District (NCP&RD) was contacted on May 13, 1996 to discuss the proposed South/North Transit Corridor Alignment Alternative (South of Clackamas Town Center). The design option south of Clackamas Community College (CCC) Oregon Institute of Technology (OIT) alignment's potential impacts to the future North Clackamas Regional District Park were discussed. The NCP&RD provided information such as plans for the future development of the new district park, the shared parking agreement between the NCP&RD and the OIT and the temporary use of OIT property for recreational purposes. Impacts to parking spaces near the aquatic center were also addressed.

On June 5, 1996, a meeting was held at the site of the Aquatic Center to evaluate the potential impacts to the Aquatic Center facility from one of the proposed alignment options. The meeting focused on Aquatic Center use, parking impacts and plans for future recreational development (such as more parking and a temporary recreational field) to complement the Aquatic Center's use. The NCP&RD also provided the project with an inventory of parklands in the City of Milwaukie and in potentially affected parts of Clackamas County.

3.4 Cities

The City of Portland

The City of Portland's Bureau of Parks was contacted during April and May 1996. The Bureau provided inventory sheets of all city parks located either within one-half block or within 200 feet of the proposed alignment alternative and design options. Other data, such as maps and fact sheets that describe in detail the use, size and operation of parks were also provided by the Bureau.

Other park-related plans consistent with the City's comprehensive plan (such as the 40-Mile-Loop Trail or the Lower Willamette Management Plan) were also reviewed. The City of Portland's Planning Bureau was contacted on May 7, 1996 to provide information relating to the Willamette Greenway. This area contains public trails and viewpoints that may be impacted by the proposed alignment alternatives. The City of Portland Development Commission was contacted on July 31, 1997 regarding potential coordination of planning efforts for the LRT crossing of the Willamette River in the vicinity of the South Downtown Waterfront Park Development.

City of Milwaukie

The City of Milwaukie was contacted on March 18, 1996 to discuss Scott Park, Milwaukie City Hall and the previously named Weber Park located north of SE Harmony Road. Weber Park, which was purchased by Clackamas County, is no longer designated as open space but is now considered part of the Harmony Road right-of-way.

The City of Vancouver

A meeting was held on April 11, 1996 with the City of Vancouver's Parks and Recreation and their planning departments to discuss the proposed LRT alignment's potential impacts to the Captain George Vancouver Monument Plaza and the Clark College Sports Area. The City of Vancouver staff offered additional suggestions to the alignment alternatives in the Clark College vicinity.

The Vancouver Parks and Recreation and planning departments also assisted in the inventory by providing several documents, such as zoning maps, GIS maps, land ownership maps and the updated Parks, Recreation and Open Space Plan.

3.5 Schools

North Clackamas School District

The North Clackamas School District was contacted on March 13, 1996 and provided permitting information showing the use of playing fields at Hector Campbell Elementary School and Milwaukie Junior High School. The information describes the public use of playing fields, especially for baseball/softball and soccer leagues.

Portland Public Schools District

The Portland Public Schools District was also contacted about public use of playing fields at public schools. Reference was given to the City of Portland Bureau of Parks Reservations Center, which is responsible for issuing permits for field use.

LaSalle High School

LaSalle High School was contacted on March 18, 1996 to confirm that the private-school playing field is not a public-use space.

Oregon Institute of Technology

OIT was contacted on May 16, 1996 to discuss the agreement between OIT and the North Clackamas Parks and Recreation District for the use of a temporary soccer field in the vacant lot that may be impacted by the proposed alignment alternative.

Clark College

A meeting was held with Clark College officials on April 19, 1996 to discuss the alignment and Clark College's recreational property on the west side of Fort Vancouver Way. Clark College provided information on the use of various playing fields, agreements for use of fields and use reports from the U.S. Department of Education. This federal document has a complete description of the property use by the college education classes as well as summer league teams and intercollegiate teams at Clark College. Leasing rights of the property and maintenance responsibilities are also explained in further detail in this report.

3.6 Neighborhood Groups

The Vancouver Metropolitan 60+ Softball Association was contacted about the use of the Clark College playing fields.

4. AFFECTED ENVIRONMENT

This section presents the inventory of historic, archaeological and parkland resources identified in the corridor. A listing of these resources is provided in Table 4.1, and the location of the resources is shown in Figure 4.1-1.

Table 4.1
Parkland Resources

Site/Location	Acreage	Type	Activities
Clackamas Regional Center Segment			
Aquatic Center SE Harmony Road	3.35	Regional/Community	Swimming, water slides, volleyball
North Clackamas Regional District Park (*Regional Stormwater* Treatment Facility) SE Fuller Avenue	120	Regional	Flood control facility only
Neighborhood Playground SE Harmony Road and Park Road	1.1	Neighborhood	Basketball, playground
East Milwaukie Segment			
Hector Campbell Elementary School SE 47th Avenue and SE Railroad Avenue	3.12	School playing field	Baseball, soccer
Milwaukie Regional Center Segment			
Milwaukie Junior High School SE Harrison Street and SE 21st Avenue	2.81	School playing field	Softball, soccer
City Hall grounds SE Main Street and SE Harrison Street	1.06	City grounds	–
Scott Park SE Main Street and SE Scott Street	2.36	City/neighborhood	Walking area
Springwater Corridor Trail McLoughlin Boulevard/UP/SP Railroad	16.5 miles	Regional	Trail facility

Site/Location	Acreage	Type	Activities
McLoughlin Boulevard Segment			
Westmoreland Park SE Bybee Boulevard and SE McLoughlin Boulevard (west)	47.05	City/neighborhood	Basketball, tennis, baseball/softball, soccer, lawn bowling, playgrounds, casting pool
Eastmoreland Golf Course SE Bybee Boulevard and SE McLoughlin Boulevard (east)	120.0	City/neighborhood	Golf
Oaks Bottom Wildlife Refuge West Bank, Willamette River	163.0	City	Wildlife refuge
South Willamette Crossing Segment			
Willamette Greenway Trail Willamette River	4 miles	City	Walking, biking
South Waterfront Redevelopment Area West Bank, Willamette River	0.3	City	Open space, walking area
Downtown Portland Segment			
Pioneer Square SW 6th Avenue and SW Yamhill Street	1.21	City	Special events, walking space
Kelly Fountain SW 6th Avenue and W Burnside Street	0.01	City	Walking space, benches
Eliot Segment			
Holladay Park NE Holladay and NE Multnomah Streets	4.95	City	Walking, benches
Albina Park NE Flint and NE Russell Streets	4.68	City/neighborhood	Baseball, picnic facilities, playground

Site/Location	Acreage	Type	Activities
North Portland Segment			
Overlook Park N Interstate Avenue and N Overlook Boulevard	12.12	City/neighborhood	Basketball, baseball/softball, soccer, horseshoe pits, shuffleboard, handball, playground
Patton Square Park N Interstate Avenue and N Emerson Street	1.18	City/neighborhood	Playground, cultural center
Ockley Green School N Ainsworth Street and N Montana Avenue	1.72	City/neighborhood	Playing field – baseball, soccer
Kenton School N Interstate Avenue and N Lombard Street	1.86	School playing field	Baseball, playground
40-Mile-Loop Trail North of Columbia Slough	n/a[1]	Regional	Trail facility
West Delta Park Interstate 5 and Columbia River	662.40	City/regional	Golf course, raceway
East Delta Park Interstate 5 and Columbia River	94.10	City/regional	Football, soccer, baseball, softball, horseshoe pits, archery range
Hayden Island/Vancouver Segment			
Captain George Vancouver Monument Plaza and Waterfront Renaissance Trail Interstate Bridge and Columbia Slough	0.01	City	Walking area
Central Park (George C. Marshall Center) E McLoughlin Boulevard and Interstate 5	12.3	City	Swimming pool, softball, soccer, horseshoe pits
Central Park (Clark College Sports Area) E McLoughlin Boulevard and Fort Vancouver Way	23.0	College sports facility	Baseball/softball, tennis, soccer, walking/exercising trail

(1) n/a = facility not constructed yet

4.1 Park and Public Recreation Resources

4.1.1 Clackamas Regional Center Segment

The neighborhood playground and the North Clackamas Regional District Park (Regional Stormwater Treatment Facility) property are owned by the Clackamas County Development Agency (Agency). The Oregon Institute of Technology (OIT) owns property which may be temporarily used as a soccer field. The Aquatic Center is owned and operated by the Park District.

The Agency has acquired the parcels of land where the identified resources are located (see Figure 4.1-2). The Agency has also preserved and set aside a 200-foot Transportation Corridor to provide for present and future transportation needs of the development areas. The Agency has permitted the temporary construction of a neighborhood playground in the Transportation Corridor. The North Clackamas Regional District Park will eventually be constructed and located to the south of the Transportation Corridor within the Regional Stormwater Treatment Facility.

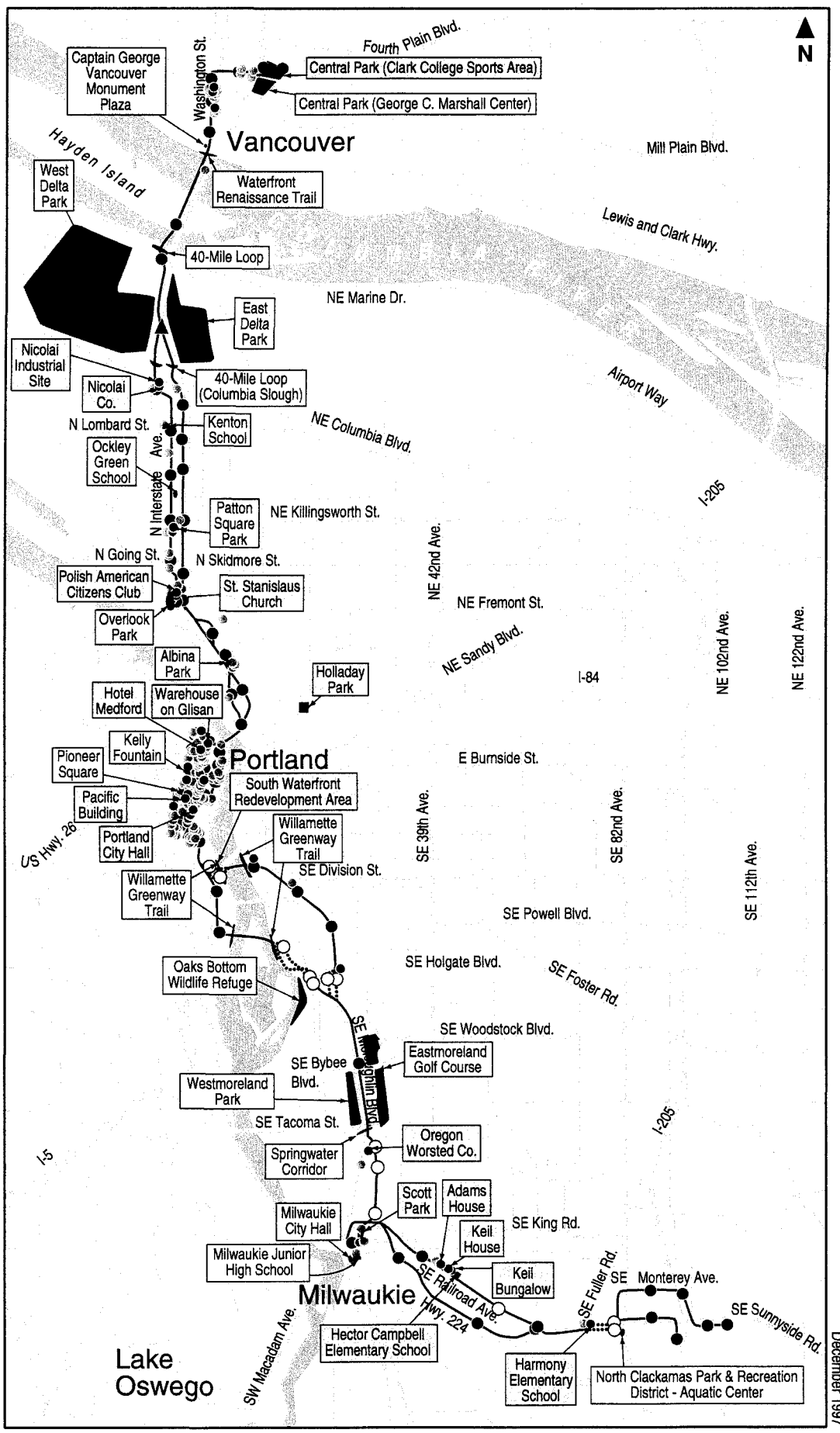
4.1.1.1 Neighborhood Playground

The neighborhood playground is a temporary facility and is located south of SE Harmony Road and north of SE Park Road within the designated set-aside transportation corridor. The 1.10-acre playground includes four half-court basketball courts and a play structure for children. By car, access to the playground is from an access road off SE Harmony Road. There is a parking lot to the east off the access road next to the basketball courts. The playground is also accessible to walkers from the Southgate Neighborhood, located to the north.

The Agency has documented that temporary use of the Transportation Corridor as a playground is allowed until construction of the transportation system occurs. Because there is no official documentation of the site being designated as a park and the area is designated as a transportation corridor, the playground is not considered a 4(f) resource.

4.1.1.2 Aquatic Center

The Aquatic Center is a 3.35-acre facility that is owned by the Park District. Access to the Aquatic Center parking lot is from a two laned paved access road which intersects with SE Harmony Road. The facility includes recreational and lap swimming, aqua exercising, water sliding and diving, an outdoor sand volleyball court and a patio area (see Figure 4.1-2). The properties for the Aquatic Center and OIT are adjacent. OIT and the NCP&RD have a reciprocal parking agreement stating that it is mutually beneficial to provide for joint use of the parking facilities on their respective properties.



South North Transit Corridor Study

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Figure 4.1-1
Public Parklands and Historic and Cultural Resources

- Public Parkland
- Historic and Cultural Resource listed or eligible for the National Register of Historic Places - not affected
- Historic and Cultural Resource listed or eligible for the National Register of Historic Places - not adversely affected
- Historic and Cultural Resource listed or eligible for the National Register of Historic Places - adversely affected, and Section 4(f) use
- Section 4(f) potential "constructive use"
- LRT Alignment Alternatives
- LRT Design Options
- Station
- Station Options
- Station Access Under Study

Note: More detailed maps illustrating the location of specific resources can be found in the Historic, Archaeological and Cultural Resources Impacts and the Section 4(f) Impacts Results Reports (Metro, February 1998).

Alignment, station and LRT facility locations are currently under study and may change.

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4.1.1.3 North Clackamas Regional District Park (Regional Storm-water Treatment Facility)

Clackamas County is planning to utilize a flood control zone as a 120-acre North Clackamas Regional District Park. The land is owned by the Agency and consists of several parcels of land that will be available to be developed into the park (see Figure 4.1-2). The land is located south of SE Harmony Road, north of the Union Pacific Railroad/Southern Pacific Railroad (UP/SP) right-of-way, to the west of SE 82nd Avenue and to the east of the UP/SP Railroad and SE Harmony Road intersection. The proposed southerly boundary of the transportation corridor, south of SE Harmony Road, would be contiguous with the northerly boundary of the park. The Southgate Neighborhood, located north of the future park, will be within walking distance.

The existing land, designated as a flood control zone by the Development Agency, has not been established on any designated plan by the Agency, and any park use will be considered secondary to the designated flood control zone use. Because the site is designated as a flood control facility only and is not currently used for any park purposes, the regional park is not considered a 4(f) resource.

4.1.1.4 Oregon Institute of Technology

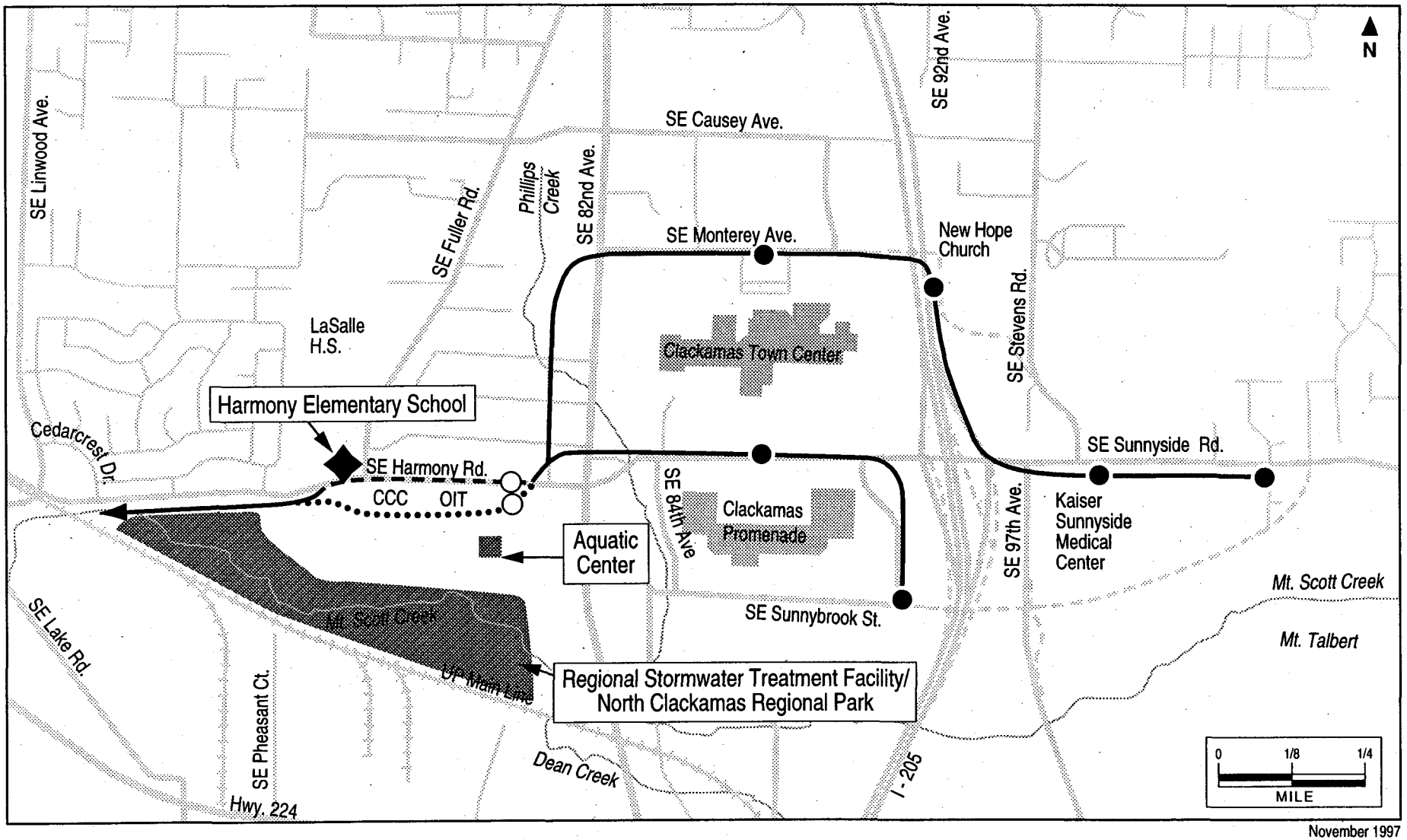
The Oregon Institute of Technology (OIT) is a 6.20-acre site located north of the designated Transportation Corridor. A portion of OIT's facility includes a vacant lot to the east, where construction of a parking lot is planned. The North Clackamas Parks & Recreational District (NCP&RD) and OIT have an intergovernmental agreement for temporary use of the property for a soccer field, until further development of OIT's future parking lot is necessary. The NCP&RD acknowledges that the playing field site is owned by OIT and is designated for a future parking lot. Development, maintenance and operation of this soccer field would be funded and managed by the NCP&RD. Because the temporary soccer field is on property designated as a parking lot, it is not considered a 4(f) resource.

During the week, the OIT gymnasium is used by the NCP&RD for recreational purposes. Facility uses include basketball and volleyball (which is open to the public), a theater for senior citizens and an indoor playground for children. The recreational activities schedule varies throughout the season, but there is some form of recreational use throughout the week.

4.1.2 East Milwaukie Segment

4.1.2.1 Hector Campbell Elementary School

The Hector Campbell Elementary School, located at 11326 SE 47th Avenue in the city of Milwaukie, is bordered by the Linwood Neighborhood to the east and the Hector Campbell Neighborhood to the west. The 3.12-acre playing field, which is located on the north side of SE Railroad Avenue, contains three areas: two fields for baseball and one for tee-ball. The school's playing field is owned and operated by the North Clackamas School District, which also maintains the field grounds. The Milwaukie Soccer Club and Milwaukie Junior Baseball League also contribute to field improvements (see Figure 4.1-3).



November 1997

South North Transit Corridor Study

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Figure 4.1-2

Parks, Recreational, Historic and Cultural Resources

Clackamas Regional Center Segment

- North of Clackamas Town Center
- South of Clackamas Town Center

Park/Recreation Site

Historic and Cultural Resources

LRT Alignment Alternatives

LRT Design Options

Stations

Station Options

Proposed ODOT/Clackamas County Roadway

Existing Railroad

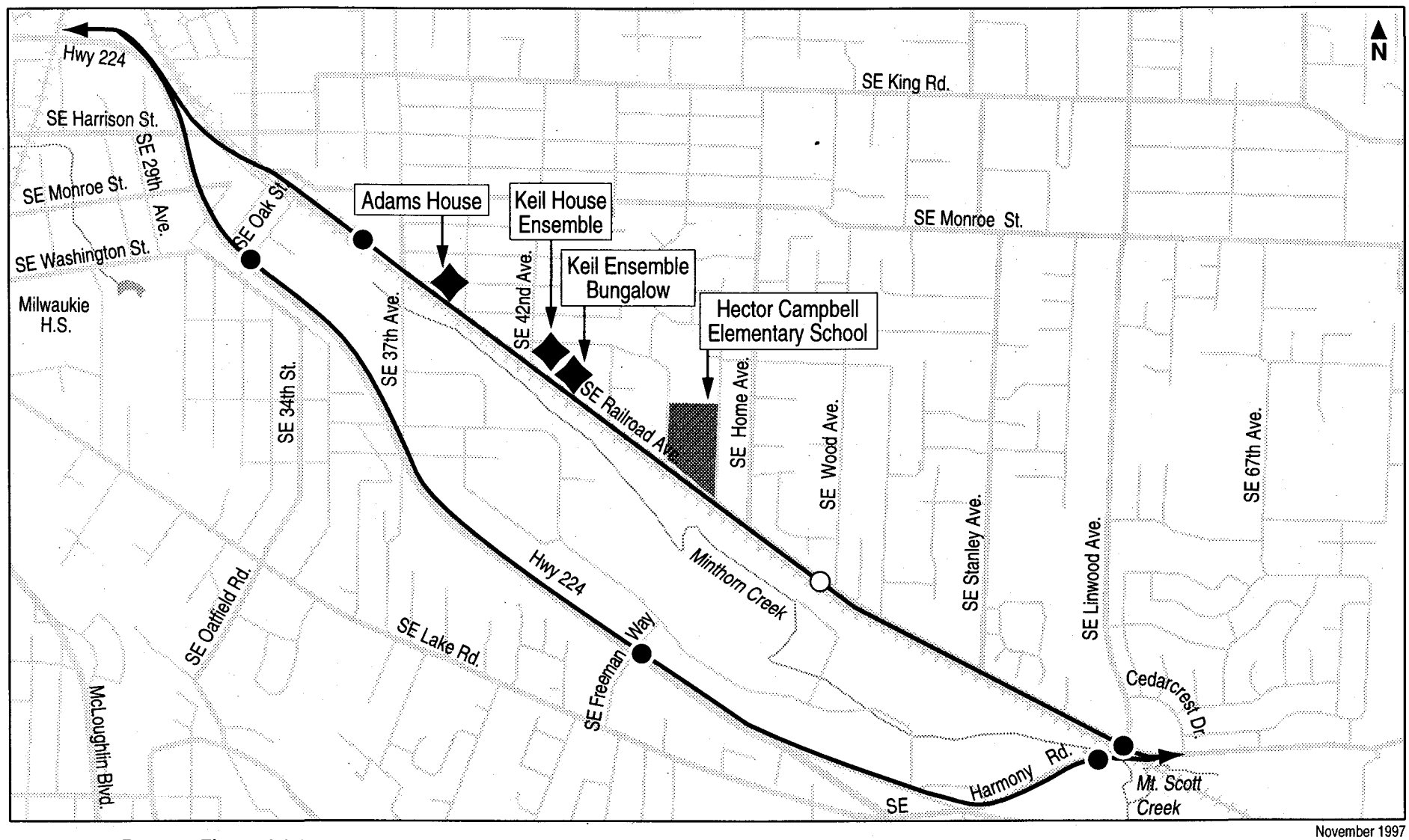

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Figure 4.1-3

Parks, Recreational, Historic and Cultural Resources

East Milwaukie Segment

- **Railroad Avenue/Through Traffic**
- **Railroad Avenue/Local Access**
- **Highway 224**

Park/Recreation Site

Historic and Cultural Resources

LRT Alignment Alternatives

Station

Station Option

Existing Railroad

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The playing fields are used daily for practice by the Milwaukie Junior Baseball League, and their games at the field are held from March 25th through July 26th. Use of the field is scheduled for the Milwaukie Soccer Club from August 1st through November 16th on Mondays through Saturdays. The field is accessible by car, and the school parking lot contains parking spaces for visitors who may enter on SE 47th Avenue from SE Railroad Avenue.

4.1.3 Milwaukie Regional Center Segment

4.1.3.1 Milwaukie Junior High School

Milwaukie Junior High School is located at 2300 SE Harrison Street in the city of Milwaukie, Oregon (see Figure 4.1-4). Between SE Monroe Street and SE Harrison Street, the school has a field of some 2.81 acres. The field and school are owned and operated by the North Clackamas School District. The playing field serves the Historic Milwaukie Neighborhood. From March 15th through July 31st, two playing areas are used by the North Clackamas Junior Softball Association for practices and games. During the fall, both Milwaukie Junior High School and Milwaukie High School use the fields for soccer practices and games. On weekends, the Milwaukie Soccer Club uses the field for its games. Public use of the park is available by contacting the North Clackamas School District's Community Services Department. Parking is available by entering either the school parking lot from SE Harrison Street or the parking lot on the north side of SE Monroe Street.

4.1.3.2 Milwaukie City Hall

City Hall is a 1.06-acre site located in downtown Milwaukie at 10722 SE Main Street between SE Harrison Street and SE Jackson Street (see Figure 4.1-4). City Hall occupies a full block in Milwaukie's commercial core, and the grounds are maintained by the City of Milwaukie. A 1937 deed transferred the property from School District No. 1 of Clackamas County to the City of Milwaukie for park purposes use only.

City Hall is not designated (nor used) as a public park, but the non-park planning designation does not remove the deeded status of the land as a park and is, therefore, considered a Section 4(f) resource. Additional references to City Hall are in Section 4.2.3, Historic Resources, where Milwaukie City Hall is described in detail.

4.1.3.3 Scott Park

Scott Park is approximately 2.36 acres in size and is owned by the City of Milwaukie. The park is located north of SE Main Street and can be entered directly from SE Scott Street. The park is accessible both by foot and car. The Ledding Library is not associated with the park, even though the parking is shared by users of both facilities (see Figure 4.1-4).

The park's attractions include Spring Creek, a small walking trail and a monument dedicated to Richard and Hannah Scott, pioneer farmers in the area. The park receives a limited number of visitors, primarily due to its location, small size and encroaching development.

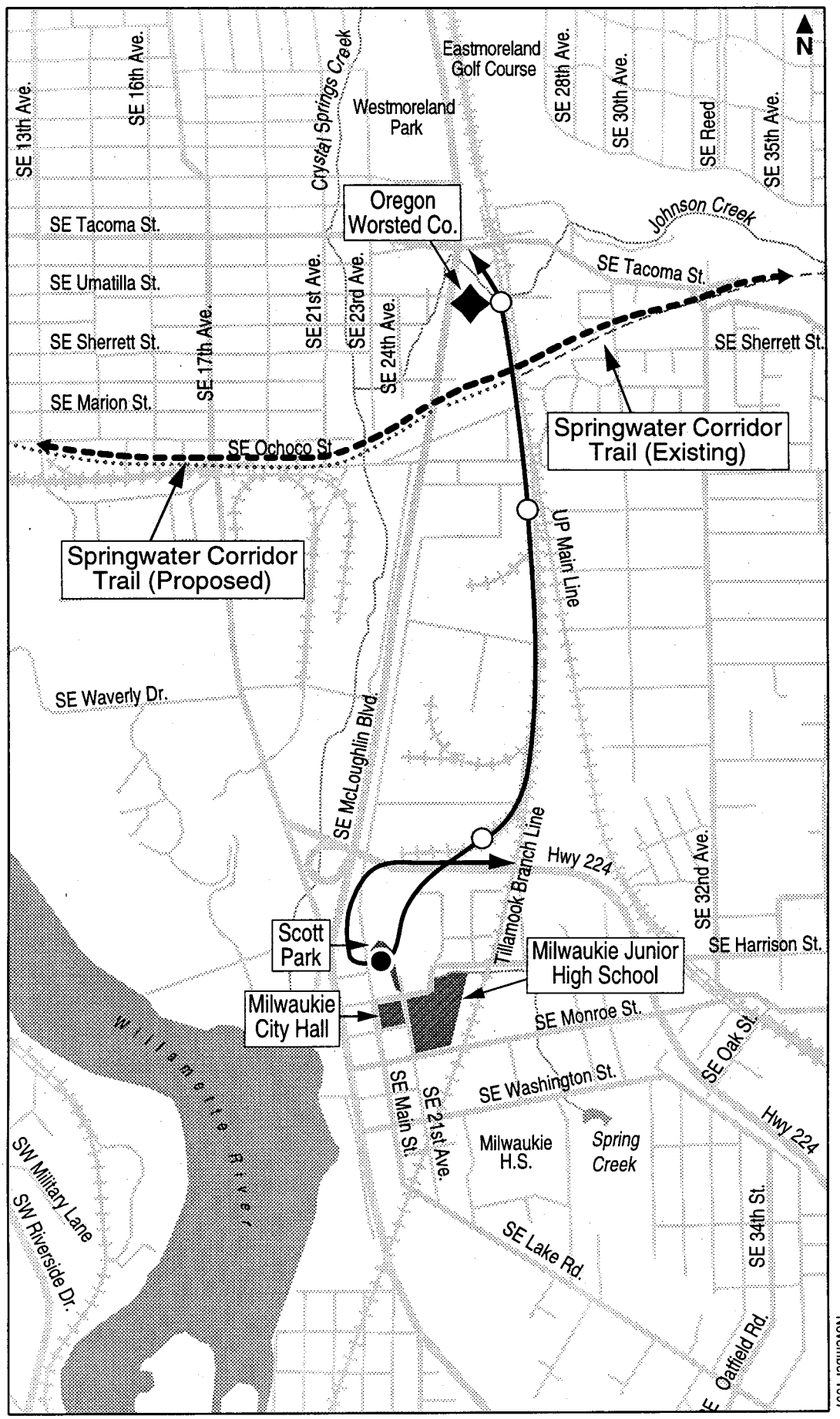

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Figure 4.1-4

Parks, Recreational, Historic and Cultural Resources

Milwaukie Regional Center Segment

- **Main St./Tillamook Branch Line**

Park/Recreation Site

Trail Site

Historic and Cultural Resource

LRT Alignment Alternative

Station

Station Options

Existing Railroad

November 1997

4.1.3.4 Springwater Corridor Trail (40-Mile-Loop Trail)

The westernmost point of the existing Springwater Corridor is a fenced, elevated area to the east of the UP/SP railroad line (see Figure 4.1-4). The corridor continues east for 16.5 miles through the City of Portland, Clackamas County, the City of Milwaukie, a portion of unincorporated Multnomah County and the City of Gresham until it ends at Boring, Oregon. The City of Portland owns all the Springwater Corridor property and is responsible for its overall management and maintenance, although the City of Gresham maintains, manages and funds improvements to the portion of the trail through its jurisdiction.

The Springwater Corridor is planned to extend westerly from the existing location's western terminus to the Sellwood Bridge at Spokane Street. Metro plans to acquire the property between the western terminus of the existing corridor and SE 17th Avenue. Tri-Met may construct the trail in conjunction with a potential light rail transit station and park-and-ride segment over the UP/SP railroad line at SE McLoughlin Boulevard.

The property west of SE 17th Avenue, between SE 17th and the Sellwood Bridge at SE Spokane Street, is planned to be acquired by Metro. Because of an existing operating railroad, authorization for a trail would need to be secured through an easement granted by the railroad owner. The proposed trail to link the existing Springwater Corridor to the Sellwood Bridge and then to downtown Portland is a critically important part of a regionally significant project. Metro could retain ownership of this proposed segment of the Springwater Corridor even though the City of Portland, through its Bureau of Parks and Recreation, would most likely develop and maintain it.

4.1.4 McLoughlin Boulevard Segment

4.1.4.1 Westmoreland Park

Westmoreland Park is a 47.05-acre park located in Southeast Portland, west of SE McLoughlin Boulevard and south of SE Bybee Boulevard (See Figure 4.1-5). The park, which is contiguous over seven city blocks, is owned and maintained by the City of Portland. Permits for use of the playing fields are issued by the Reservation Center at the City of Portland Parks Bureau.

Westmoreland Park is one of the larger city parks and contains several attractions, including two lighted tennis courts, six basketball courts and four lighted fields for baseball and softball. The park also contains a soccer field, a lawn bowling area, a casting pool and two playgrounds.

The Sellwood-Moreland Neighborhood has convenient pedestrian access to the park. The park offers 248 off-street parking spaces and is also very accessible by car. Visitors may enter from the south at SE Nehalem Street or along SE 23rd Avenue.

4.1.4.2 Eastmoreland Golf Course

The Eastmoreland Golf Course, located at 2425 SE Bybee Boulevard, is accessible by foot to residents of the Eastmoreland Neighborhood, and there is off street parking, allowing all Portland residents access to the facility (see Figure 4.1-5). The golf course is located on the east side of SE McLoughlin Boulevard (across from Westmoreland Park), north of SE Tacoma Street and south of SE Reedway Street. The facility is owned and maintained by the City of Portland. The golf course is approximately 120 acres in size.

4.1.5 South Willamette River Crossing

4.1.5.1 The Willamette Greenway Trail

The Willamette Greenway Trail is located along both sides of the Willamette River (see Figure 4.1-6). The land is designated as greenway to increase recreational opportunities, as well as public access to (and along) the Willamette River. The Willamette Greenway Plan includes a minimum 25-foot setback to maintain the river's edge. The Willamette Greenway Trail, typically 10 to 12-feet wide, is developed or planned to be developed inside the greenway setback. There are plans for the recreational trail to continuously extend the full length of the Willamette River in the South/North Transit Corridor Study Area.

The land that the Greenway Trail crosses is both publicly and privately-owned property. Although the width of the greenway varies, only the trail, viewpoints and view corridors are designated for public recreation in most sections of the Greenway and would, therefore, be subject to Section 4(f).

Development changes to property in the Greenway, whether publicly or privately owned, is required to meet standards and design guidelines set forth in the Willamette Greenway Plan, specified by the City of Portland. Private-property owners along the Greenway are required as part of their conditional use permit to dedicate an easement for the Willamette Greenway Trail. In addition, planning requirements may also stipulate that developers construct a trail, or a viewpoint area open to the public, for properties where a recreational trail or view corridor exists as designated in the Willamette Greenway Plan. Although landowners will be required to provide an easement and improvements along their frontage for the Willamette Greenway Trail, they have the option to either maintain the public-use area themselves or transfer the maintenance responsibilities to the City of Portland.

The existing Willamette Greenway Trail on the east bank begins at the Hawthorne Bridge and extends south toward OMSI, below the Marquam Bridge. A portion of this segment, north of OMSI, is not paved but provides access along the water to OMSI, where the trail is developed and dedicated for public use. There is a designated viewpoint on the OMSI property, and the Willamette Greenway Trail continues south from OMSI approximately 175 yards, ending at the Channel 12 building at SE Caruthers Street. There is a paved-access path that leads to the trail, located west of the railroad tracks on SE Caruthers Street. This portion of the trail is accessible to residents of the Brooklyn Neighborhood Association. Currently, the designated Willamette Greenway Trail and viewpoints on the east bank, near the West of McLoughlin option, have not been identified at this time.

On the west bank, the Willamette Greenway Trail continues from the northern end of the RiverPlace shopping area along the water and continues south to the Pacific Gas Transmission (PGT) building plaza area, below the Marquam Bridge. There is access around the building connecting to the bike trail at the intersection of SW River Drive and SW Moody Avenue, but the Greenway Trail along the waterfront ends at the PGT plaza area. The exclusive bike trail along SW Moody Avenue is an Interim Greenway Trail connection through the industrial area. The trail continues south at the SE Moody Avenue and SE Bancroft intersection and eventually turns into another access path heading east toward the river, along the north side of the River Forum building. The Greenway Trail continues south along the Willamette River. On this portion of the Greenway Trail, residents of the Corbett-Terwilliger Neighborhood Association have convenient access.

4.1.5.2 South Waterfront Redevelopment Area

The Portland Development Commission owns property in the vicinity of the Pacific Gas Transmission building plaza area below the Marquam Bridge (see Figure 4.1-6). The property was acquired as part of the South Downtown Waterfront Development utilizing funds provided for in Title I, Section 6(f) of the Land and Water-Conservation Fund Act. Any use of this property would be subject to Section 4(f) and would be required to be replaced with comparably valued property.

4.1.6 Downtown Portland Segment

4.1.6.1 Pioneer Square

Pioneer Square, a city park located at SW 6th Avenue and SW Yamhill Street, is owned by the City of Portland. It occupies one square block in downtown Portland. Pioneer Square is the site for numerous events such as live bands, art exhibits and cultural festivals. The park is also used as a display area for seasonal events such as the Rose Festival. Starbucks, Powell's Travel Book Store and the Tri-Met ticket office are the main enterprises on the premises (see Figure 4.1-7). Access to Pioneer Square is by foot or by existing MAX light rail. The MAX light rail travels by the park on SW Yamhill and SW Morrison streets. On-street parking is available near the park. Residents of the Downtown Neighborhood Association may easily access Pioneer Square by foot.

4.1.6.2 Kelly Fountain

Kelly Fountain borders the downtown and Old Town/Chinatown Neighborhoods and is located at W Burnside Street and SW 6th Avenue (Figure 4.1-7). The fountain is owned and operated by the City of Portland. This city park has trees, planters and five benches in addition to the fountain, which is located on the corner of SW Pine Street and SW 6th Avenue. The fountain area is a space for pedestrians to stop and rest in an urban environment.

4.1.7 Eliot Segment

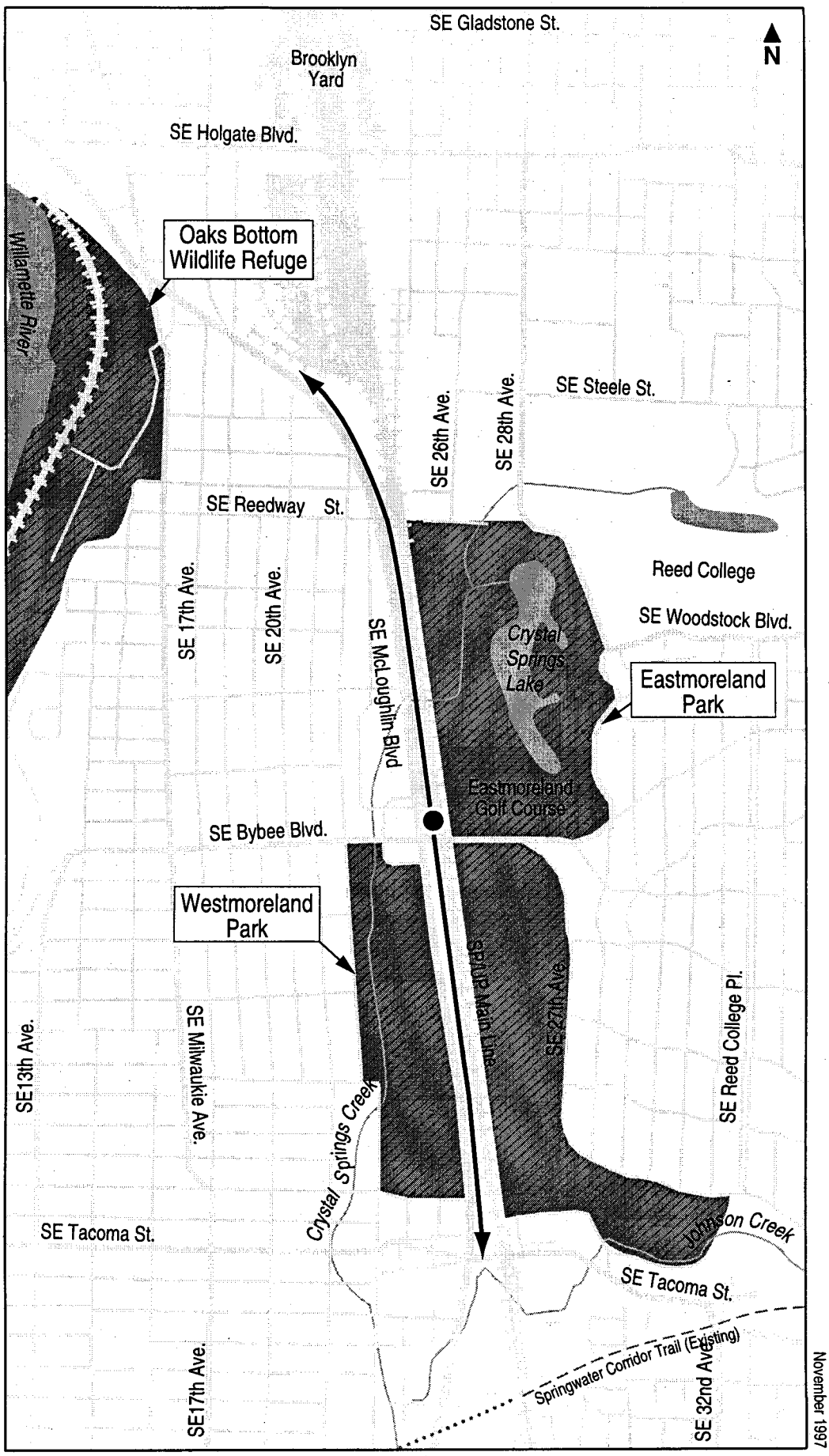
4.1.7.1 Albina Park (Lillis-Albina)

Albina Park is a 4.68-acre park located in northeast Portland at N Flint Avenue and NE Russell Street, east of I-5. Even though Albina Park is located adjacent to Tubman Middle School, the park is owned and maintained by the City of Portland. Albina Park is accessible to, and within walking distance for, residents of the Eliot Neighborhood Association. Use of the playing field is available by contacting the City of Portland Parks Bureau (see Figure 4.1-8).

The park's principal attraction consists of a playing field with picnic tables and bleachers. There is also a playground area for children. The Portland Youth Soccer Association (PYSA) and Little League use the field for organized activities (practices and games) seven days a week.

4.1.7.2 Holladay Park

Holladay Park is an approximately 4.9-acre urban park located south of Multnomah Street between 11th Avenue NE and 13th Avenue NE in the vicinity of Lloyd Center. The park, owned and operated by the City of Portland, includes a courtyard and fountain located at the center of the park, with radial walkways connecting the courtyard to the park's four corners. The walkways provide connections to surrounding uses, including office buildings, Lloyd Center retail mall, theaters, a MAX LRT station and uses to the south across I-84 (see Figure 4.1-8). Parking is limited to the surrounding streets, and entrance to the park is accessible by foot.



South North Transit Corridor Study

METRO

Figure 4.1-5

Parks, Recreational, Historic and Cultural Resources

McLoughlin Boulevard Segment

- Park/Recreation Site
- LRT Alignment Alternative
- Station
- Station Options
- Existing Railroad

0 1/8 1/4 MILE

November 1997

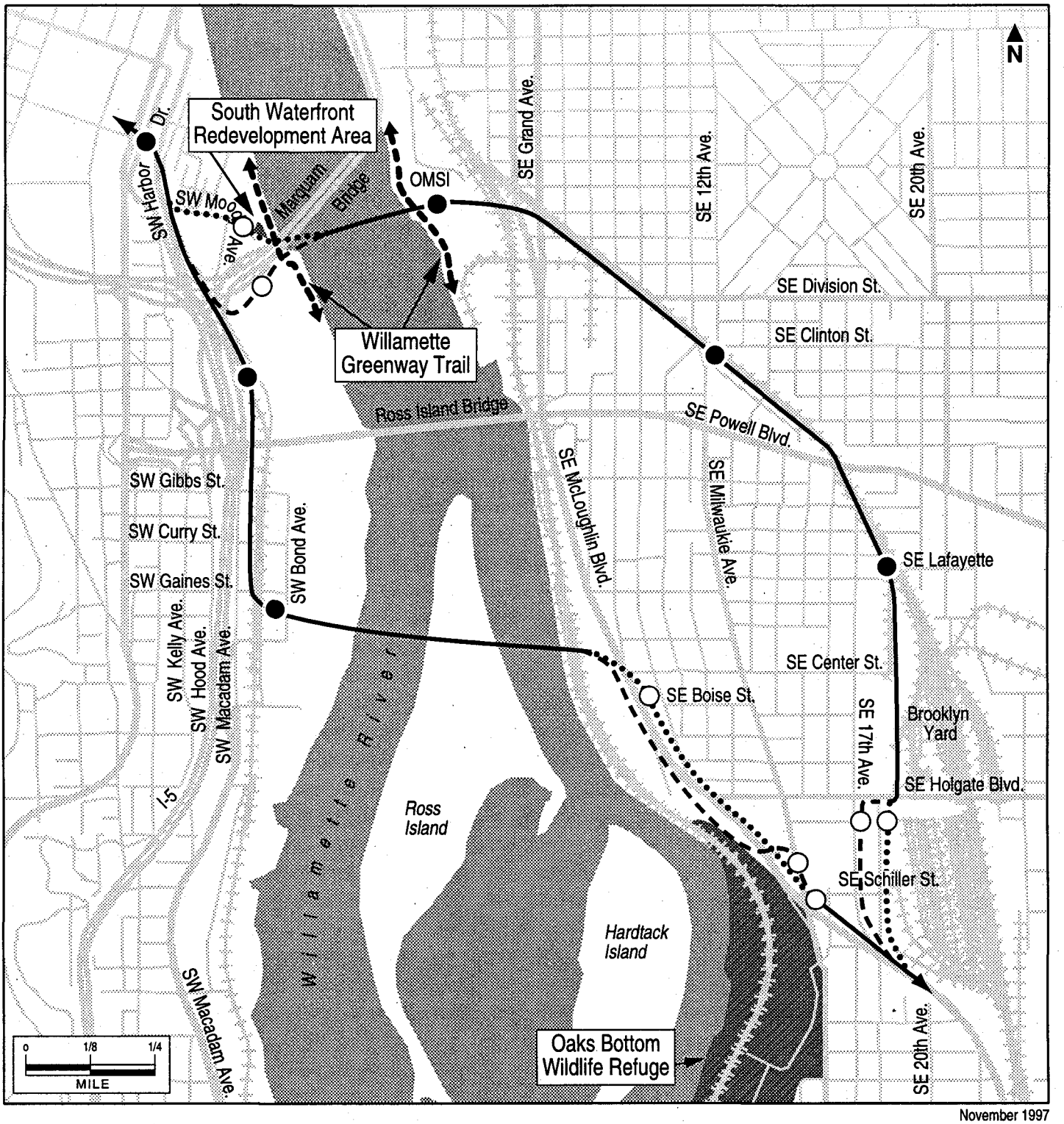


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Figure 4.1-6

Parks, Recreational, Historic and Cultural Resources

South Willamette River Crossing Segment

- Caruthers Crossing
- Ross Island Crossing

Park/Recreation Site

Trail Site

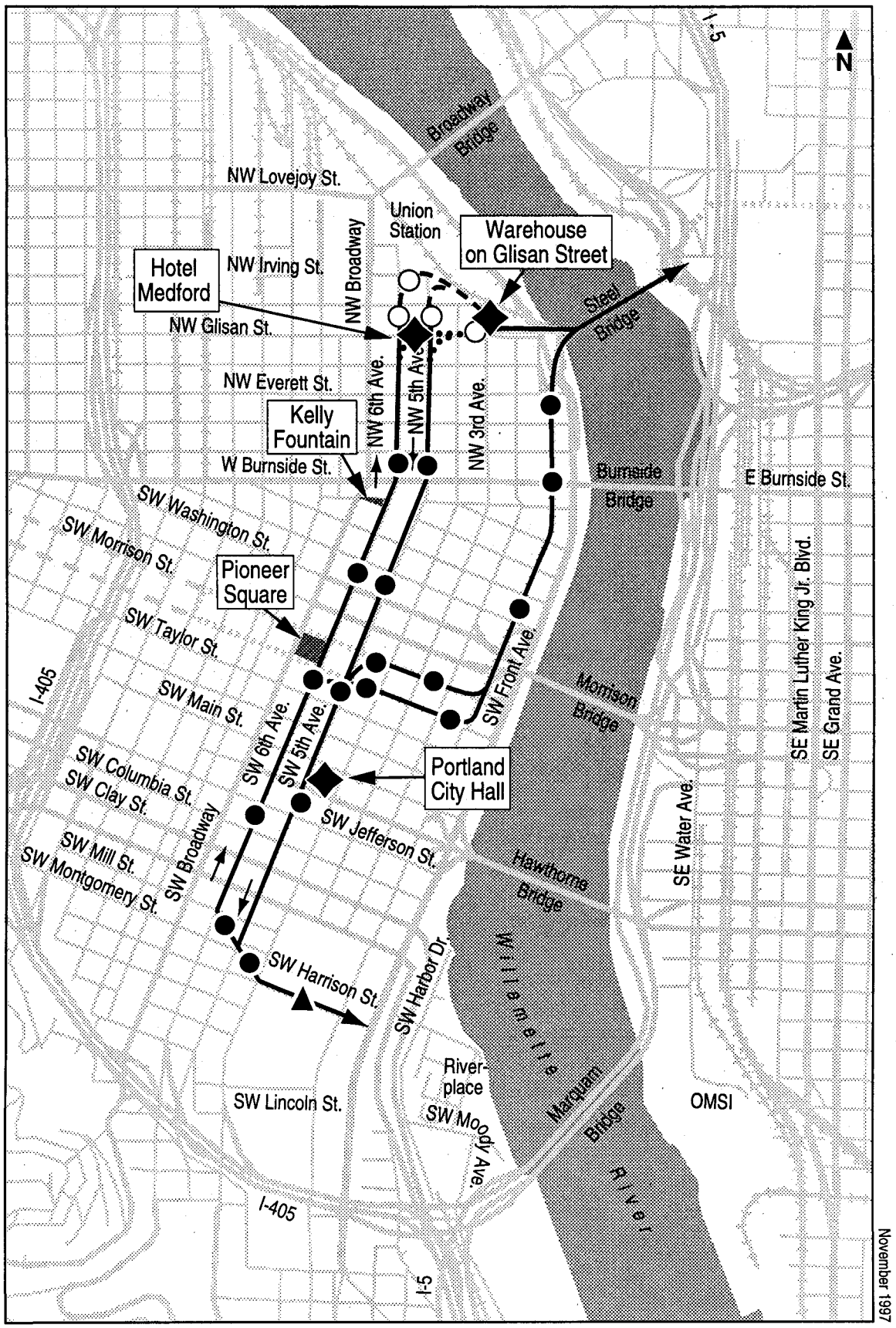
LRT Alignment Alternatives

LRT Design Options

Station

Station Options

Existing Railroad



South North Transit Corridor Study

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Figure 4.1-7

Parks, Recreational, Historic and Cultural Resources

Downtown Portland Segment

- Full Transit Mall
- Half Transit Mall

Park/Recreation Site

Historic and Cultural Resource

LRT Alignment Alternatives

LRT Design Options

Station

Station Options

Station Access Under Study

MAX

Westside LRT

Existing Railroad

0 1/8 1/4 MILE

November 1997

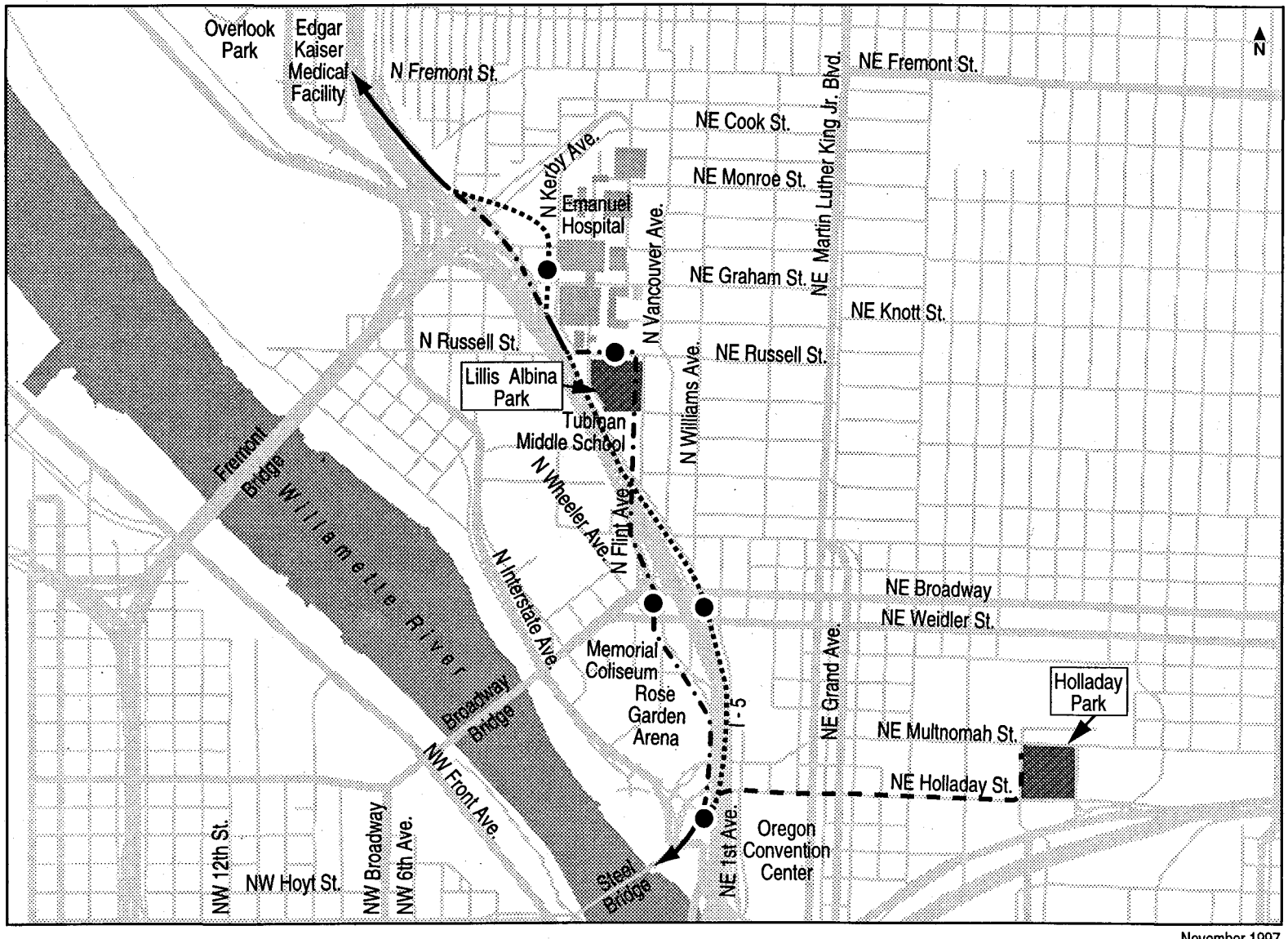

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Figure 4.1-8

Parks, Recreational, Historic and Cultural Resources

Eliot Segment

- **Wheeler/Russell**
- **East I-5/Kerby**

Wheeler/Russell LRT Alignment Alternative

East I-5/Kerby LRT Alignment Alternative

Minimum Operable Segment No. 2 Terminus

Common Alignment

Station

Existing Railroad

0 1/8 1/4 MILE

South North Transit Corridor Study

METRO

4.1.8 North Portland Segment

4.1.8.1 Overlook Park

The Overlook Park is a 12.12-acre park owned and maintained by the City of Portland. It is located west of N Interstate Avenue, between NE Fremont Street to the south and N Overlook Boulevard to the north. The park is within walking distance for residents of the Overlook Neighborhood.

The park's main attractions are its sports facilities, which include a basketball court, three fields for baseball and softball, a soccer field and areas for horseshoes, shuffleboard and handball. There is also a playground area containing a sandbox, a slide and swings. Overlook Park has an organized summer program and is also used for Little League practices and games. The playing fields are also heavily used. Rental arrangements can be made by contacting the City of Portland Parks Bureau (see Figure 4.1-9).

4.1.8.2 Patton Square Park

Patton Square Park, owned by the City of Portland, is a small 1.18-acre park located east of N Interstate Avenue and north of N Emerson Street in northeast Portland. The park has a playground and an open area that is maintained by the City of Portland. Residents of the Overlook Neighborhood are in easy walking distance to the park. An indoor theater, the Interstate Firehouse Cultural Center (IFCC), is located on park premises. The IFCC holds numerous arts and entertainment activities such as lectures, exhibits and plays. Most of these activities occur during the evening, but a limited number of matinees are also provided (see Figure 4.1-9).

For theater guests, the IFCC provides a small parking lot that can be entered from N Interstate Avenue. The park is accessible by foot or by car. On-street parking is available on N Emerson Street and N Maryland Avenue.

4.1.8.3 Ockley Green School

Ockley Green School, located at 6031 N Montana Avenue in northeast Portland, has a playing field of approximately 1.72 acres. Residents of the Arbor Lodge Neighborhood are within close walking distance to the field located adjacent to N Interstate Avenue and north of Ainsworth Street. Ockley Green School is owned by Portland Public School District #1. The playing field provides recreational opportunities for students and is used for organized baseball practices and games between March and August. During fall and winter, the gyms and soccer fields are also used. Schools belonging to Portland's Public School District #1 have the City of Portland Parks Bureau issue permits for use of their playing fields. The City of Portland Parks Bureau has a partnership with Portland Public School District #1 (see Figure 4.1-9).

4.1.8.4 Kenton School

Kenton School, which is located at 7528 N Fenwick Avenue in northeast Portland, has a playing field of approximately 1.86 acres. The field is located at N Interstate Avenue and NE Lombard Street; it contains a playground area, a sandbox and an open field that provides recreational opportunities for students. The City of Portland Parks Bureau also issues permits for use of the

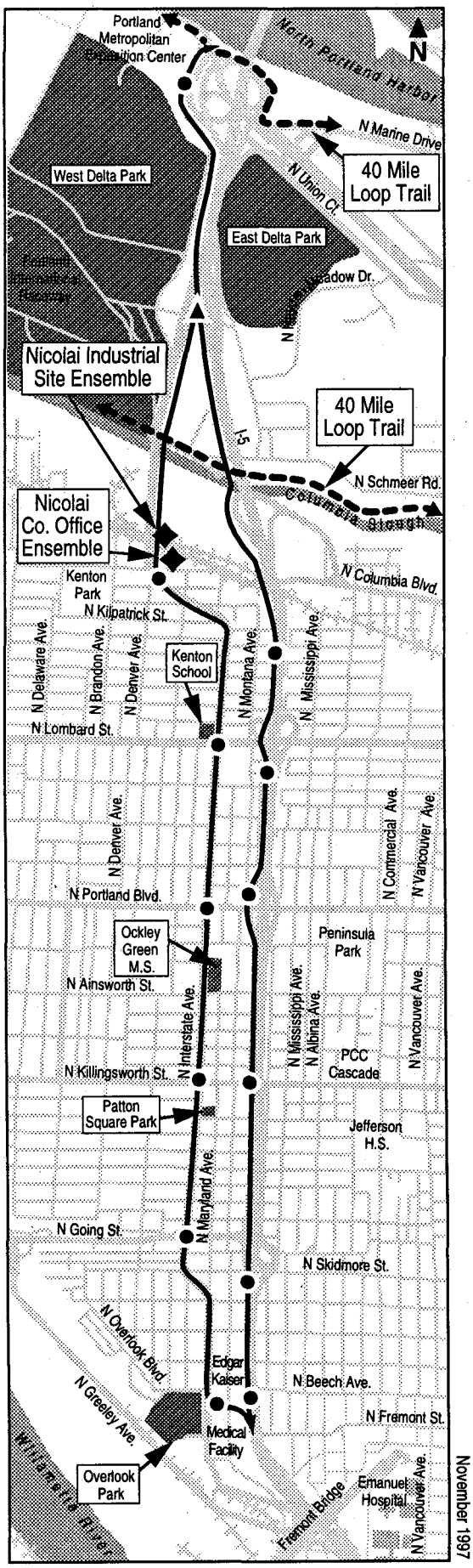

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Figure 4.1-9

Parks, Recreational, Historic and Cultural Resources

North Portland Segment

- Interstate Ave.
- I-5

Park/Recration Site

Trail Site

Historic and Cultural Resources

LRT Alignment Alternatives

Station

Station Access Under Study

Existing Railroad

0 1/4 1/2 MILE

Kenton School playing fields. The field is used for baseball practices and games between March and August. For Kenton Neighborhood residents, the playing field is within walking distance (see Figure 4.1-9).

4.1.8.5 40-Mile Loop Trail(North of Columbia Slough)

The 40-Mile-Loop Trail will connect numerous parks in the metropolitan Portland area, including those along the Columbia, Sandy and Willamette rivers. Although the trail does not currently exist on the north side of the Columbia Slough, there are plans for its future development and use. It is to be located right above the dike (see Figure 4.1-9). The proposed trail will extend west (past West Delta Park) and east past Martin Luther King Jr. Boulevard (Hwy 99 E).

4.1.8.5 West Delta Park

West Delta Park, with some 662.40 acres of parkland, is owned and operated by the City of Portland. Located north of Columbia Slough, south of N Marine Drive, east of N Portland Road and west of N Denver Avenue and N Force Avenue, the park's main attractions include a golf course and raceway. The park is accessible by car; a parking lot for raceway spectators is located on the east side of the park (see Figure 4.1-9).

4.1.8.6 East Delta Park

East Delta Park is a 94.10-acre facility located at N Denver Avenue and N Union Court. The park is owned and maintained by the City of Portland. East Delta Park contains numerous playing fields for football, soccer, baseball and softball. Fields are also available specifically for horseshoes, archery and radio-controlled toys. Entrance to the park is by car only from north of the intersection of N Union Avenue and N Victor Boulevard (see Figure 4.1-9).

4.1.8.7 40-Mile-Loop Trail (Marine Drive)

Marine Drive, south of the North Portland Harbor, has a continuous trail along the waterfront that is part of the proposed 40-Mile-Loop Trail connection, created as part of the City of Portland's Comprehensive Plan. On the east side of I-5, the trail is designated as part of the existing 40-Mile-Loop Roadway Connection. To the west of I-5, the trail is part of the proposed future 40-Mile-Loop Trail (see Figure 4.1-9).

4.1.9 Hayden Island/Vancouver Segment

4.1.9.1 Captain George Vancouver Monument Plaza

The Columbia River Renaissance Project is a vision plan for Vancouver's waterfront. Some primary goals of the vision plan are to:

- Develop an attractive, vital and safe urban waterfront;
- Facilitate public access and enjoyment of the Columbia River; and
- Preserve, promote and interpret the historical and environmental resources of the Columbia River.

The Captain George Vancouver Monument Plaza, located near the waterfront north of Interstate Bridge, is included in the Columbia River Renaissance Project. The monument plaza area is approximately 2,000 square and consists of a 14-foot-high monument, planters, benches and a dedication plaque that briefly describes Captain George Vancouver's history and explorations upon his arrival in 1792. L Parking is available at the Red Lion Inn parking lot, and visitors may walk over to the plaza area along the waterfront (see Figure 4.1-10).

This monument plaza, which is owned by the City of Vancouver, was originally constructed in the Columbia Way right-of-way as part of a road-improvement project. The exact location of the monument does not signify a specific event that occurred, nor is its location designated as a park (see Figure 4.1-10). Because the plaza is not a designated park by the City of Vancouver, it is not considered a Section 4(f) resource.

4.1.9.2 Waterfront Renaissance Trail

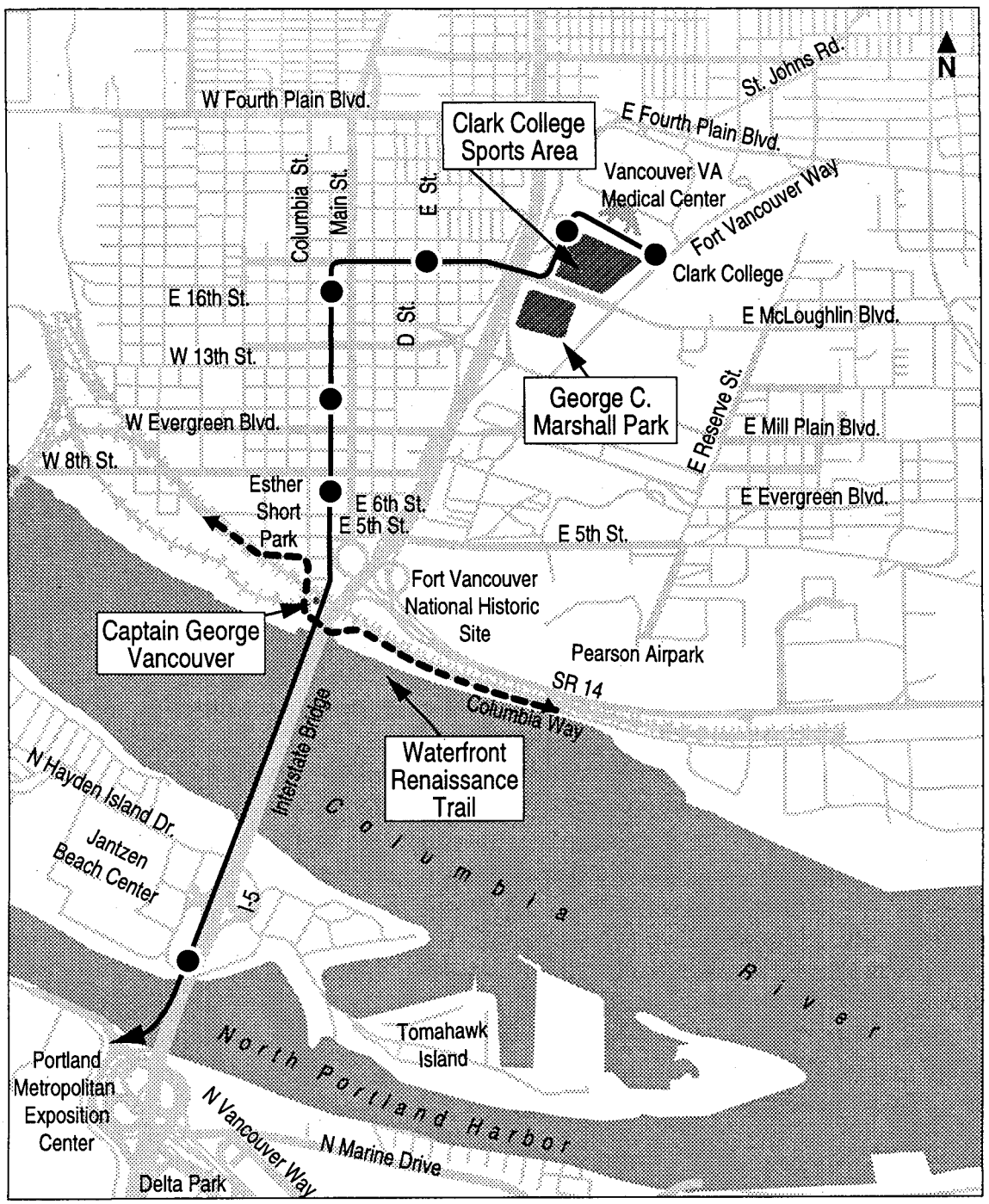
The walking area along the waterfront, located at the base of the monument plaza, is designated as a scenic trail for the Waterfront Renaissance Trail. The Columbia River Renaissance vision is a plan to create a waterfront that has a diversity of uses; expresses community values through its public art and events; integrates Vancouver's unique history; and provides river access, views and open space. The Waterfront Renaissance Trail connects Vancouver's businesses and neighborhoods to the waterfront and provides pedestrian access to the I-5 Bridge.

The scenic trail is also identified in a brochure called Vancouver Greenspaces, which was published by the City of Vancouver in 1992. The existing trail extends east from the base of the Captain George Vancouver Monument Plaza and under the I-5 Bridge (see Figure 4.1-10). This document is a part of the Metropolitan Greenspaces project, which is a cooperative, bi-state effort between Oregon and Washington to protect parks and greenspaces, wildlife habitat, greenway corridors and scenic trails.

4.1.9.3 Central Park

Central Park is a specially-zoned district that includes land occupied by several federal, state and local agencies in addition to a few private entities. Central Park encompasses land bordered by I-5 to the west, East Reserve Street to the east, Fourth Plain Boulevard to the north and SR 14 to the south (Figure 4.1-10).

The area of Central Park is described in detail in "A Park for Vancouver," adopted by City Council (Figure 4.1-10). The plan establishes the overall concept for Central Park. Central Park



November 1997

South North Transit Corridor Study

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Figure 4.1-10

Parks, Recreational, Historic and Cultural Resources

Hayden Island/ Vancouver Segment

- I-5/Washington Street

Park/Recreation Site

LRT Alignment Alternatives

Station

Existing Railroad

0 1/8 1/4 1/2

MILE

contains two potential 4(f) resources — George C. Marshall Center and Clark College Sports Area — within its boundaries. The goal of the Vancouver Central Park Plan effort is to protect, enhance, provide direction to and promote the cultural, historical and recreational assets of the Vancouver Central Park area.

George C. Marshall Center. George C. Marshall Center, which lies within a specially zoned area of Central Park, is located south of E McLoughlin Boulevard, north of E Mill Plain Boulevard , east of I-5, and west of Fort Vancouver Way. Two entrances access George C. Marshall Center from E McLoughlin Boulevard. The 12.3-acre park is owned and operated by the City of Vancouver, Washington. Marshall Center is a recreation center that is equipped with a swimming pool and offers numerous recreational activities and classes for all ages. The Rudy Luepke Senior Center is also located on park premises. Facilities include a softball field that is used by the Hudson's Bay High School girls' varsity softball team, a women's city softball league, various sports clinics and summer playground programs. Although softball leagues operate between April and October, during the fall, the playing fields are used for soccer clinics as well. The park's horseshoe pits are used for tournaments, but also receive heavy use throughout the year (see Figure 4.1-10.)

Clark College Sports Area. Clark College lies within the specially zoned area of Central Park. A 1974 deed transferred the property from the U.S. Secretary of Education and Welfare to the State of Washington on behalf of Clark Community College.

The Clark College sports complex is located south of the Veterans Administration Hospital, north of E McLoughlin Boulevard, east of the former Washington Department of Transportation Tourist Information Center (closed in 1995) and west of Fort Vancouver Way (see Figure 4.1-10). The sports complex comprises approximately 23 acres. A baseball field is maintained by Clark College and a local construction company, whereas a softball field is maintained by Clark College and the Vancouver Metropolitan 60+ Senior Softball Association.

Although the senior league uses the softball field, Clark College uses the remainder of the park for classes. After the spring season, the senior league continues playing softball through September, and Clark College also uses the field for soccer. The baseball field, located north of the softball field, is used by the Clark College baseball team and a private construction company, that leases and contributes to the maintenance of the ball field.

4.2 Wildlife and Waterfowl Refuges

4.2.1 McLoughlin Boulevard Segment

4.2.1.1 Oaks Bottom Wildlife Refuge

Oaks Bottom Wildlife Refuge is a major wetland area under the City of Portland's jurisdiction. The reserve area begins north of the Sellwood Bridge and ends near the intersection of SE Milwaukie Avenue and SE McLoughlin Boulevard The Oaks Bottom Wildlife Refuge is accessible by foot or by car. Visitors may enter from SE Bybee Boulevard to SE Sellwood Boulevard or from SE Milwaukie Avenue. The Willamette Greenway Trail is also planned along the railroad right-of-way. The wetland has a high wildlife species diversity in the Willamette River study area and is one of the larger remaining areas of natural environment. The wildlife refuge is located in the vicinity of the

Sellwood Moreland Neighborhood (see Figure 4.1-5).

4.3 Historic and Cultural Resources

A total of 187 individual potential historic and cultural resources were analyzed as part of the initial South/North Transit Corridor Study database. Three historic districts and one combining district also were analyzed as part of this study. The historic and cultural resource inventory analysis identified a total of 106 National Register eligible, formally determined eligible (DOE) or potentially eligible, historic resources within the South/North Transit Corridor study area. All potentially eligible resources have been evaluated, and the application of eligibility criteria for inclusion in the National Register of Historic Places has been summarized (Table 4.3-1). A detailed description of the historic and architectural development patterns of these resources is provided in the Historic Context Statement (Appendix A). Numbers next to the resources name refer to the resource number shown (see Historic, Archaeological and Cultural Resources Impacts Results Report Figures 4.3-1 - 4.3-16 and Table 4.3-1). All of the resources that were initially included in the South/North Transit Corridor Study Inventory have been listed (see Table 4.3-1).

4.3.1 Existing National Register Resources

There were 66 historic and cultural resources, including three historic districts, identified within the South/North Transit Corridor study area, which were previously listed in the National Register of Historic Places and are listed below:

Table 4.3-1
National Register of Historic Places Sites

Reference No.	Resource/Address
21	PGE Station L/1841 SE Water Street, Portland
26	Commercial Building/421-439 NW Third, Portland
30	Multnomah Co. Courthouse/1021 SW 4th Avenue, Portland
38	Auto Building/208 NW 5th Avenue, Portland
39	Warehouse/234 NW 5th Avenue, Portland
40	Warehouse/310 NW 5th Avenue, Portland
41	Commercial Building/338 NW 5th Avenue, Portland
43	Povey Building/408 NW 5th Avenue, Portland
44	Commercial, Industrial/412 NW 5th Avenue, Portland
45	Harper Brassworks/416 NW 5th Avenue, Portland
47	Lumberman's Building/333 SW 5th Avenue, Portland
49	First National Bank/409 SW 5th Avenue, Portland
50	Lipman Wolfe & Co./521 SW 5th Avenue, Portland
51	Yeon Building/522 SW 5th Avenue, Portland
53	Meier & Frank Building/621 SW 5th Avenue, Portland
54	Kress, SH, Building/638 SW 5th Avenue, Portland
61	Portland City Hall/1220 SW 5th Avenue, Portland
73	Oregon Cracker Co./427-435 NW 6th Avenue, Portland
75	Wells Fargo Building/309 SW 6th Avenue, Portland
76	U.S. National Bank/321 SW 6th Avenue, Portland
77	Bank of California/330 SW 6th Avenue, Portland

Table 4.3-1
National Register of Historic Places Sites

Reference No.	Resource/Address
78	Equitable Building/421 SW 6th Avenue, Portland
82	Bedell Building/520 SW 6th Avenue, Portland
84	Public Service Building/920 SW 6th Avenue, Portland
88	Ambassador Apartments/1209 SW 6th Avenue, Portland
89	University Club/1225 SW 6th Avenue, Portland
97	Selling Building/610 Alder Street, Portland
105	Commercial Building/340 NW Glisan, Portland
106	Warehouse/406 NW Glisan Street, Portland
115	Steam Plant/501 NW Irving Street, Portland
116	U.S. Courthouse/620 SW Main Street, Portland
120	Commercial Building/340 NW Glisan, Portland
124	Corbett Bros. Garage/630 SW Pine Street, Portland
129	Pacific Building/520 SW Yamhill Street, Portland
148	Fire Station/5340 N Interstate Street, Portland
153	Columbia River Interstate Bridge (Northbound)
154	Vancouver Telephone Exchange Bldg./112 W 11th Street, Vancouver
156	Hidden Houses/100-110 W 13th Street, Vancouver
175	Commercial Building/804 SW 3rd Avenue
176	Thomas Mann Building/140 SW Yamhill Street
177	Franz Building/124 SW Yamhill Street
178	Van Rensselaer Building/71-73 SW Yamhill Street
179	Love Building/728 SW 1st Avenue
180	Harken Building/728 SW 1st Avenue
181	Strowbridge Building/101 SW Yamhill Street
182	Willamette Block/722-738 SW 2nd Avenue
183	Commercial Building/220 SW Morrison Street
184	Falling Building/235 SW 1st Avenue
185	Seaffert Building/224 SW 1st Avenue
186	Smith Block/10 SW Ash and 111, 117 SW Front Avenue
187	New Market Theater/50 SW 2nd Avenue, Portland
188	Skidmore Fountain/SW 1st Avenue and SW Ankeny Street
189	Reed (Packer Scott) Building/28 SW 1st Avenue
190	Blagen Block/78 NW Couch Street
194	Ross Island Bridge
D-1	Portland's Chinatown Historic District, Portland
D-4	Skidmore/Old Town Historic District, Portland
D-5	Yamhill Historic District, Portland

4.3.2 Existing Resources Determined Eligible for National Register

Listed below are 15 historic and cultural resources within the South/North Transit Corridor study area that previously were determined to be eligible for the National Register of Historic Places.

Table 4.3-2
Eligible Sites for the National Register of Historic Places

Reference No.	Resource/Address
12	ODOT Building/9200 SE McLoughlin Street, Portland
27	Firehouse/510 NW 3rd Avenue, Portland
31	York Apartments/5 NW 5th Avenue, Portland
33	Warehouse/19 NW 5th Avenue, Portland
35	Warehouse/107 NW 5th Avenue, Portland
36	Commercial/115 NW 5th Avenue, Portland
37	Factory, Commercial/125-135 NW 5th Avenue, Portland
42	Oregon Casket Co./403-411 NW 5th Avenue, Portland
68	Apostolic Faith/16-34 NW 6th Avenue, Portland
70	Butte Hotel/129-137 NW 6th Avenue, Portland
71	Athens Hotel/230 NW 6th Avenue, Portland
72	Biltmore, Hood Hotel/302-318 NW 6th Avenue, Portland
104	Warehouse/321 NW Glisan Street, Portland
130	Steel Bridge/Portland
155	Street James Cathedral/204 W 12th Street, Vancouver

4.3.3 National Register Eligible Resources

All potentially eligible historic and cultural resources were reviewed for inclusion in the National Register. Thirty-six sources met the criteria for inclusion in the National Register as set forth in 36 CFR part 60.4 (see Table 4.3-3). These National Register eligible resources are listed below. A list of non-eligible historic and cultural resources and historic districts have been identified (see South/ North Historic, Archaeological and Cultural Resources Results Report).

Table 4.3-3
Eligible Resources for the National Register of Historic Places

Reference No.	Resource/Address	Previous Inventory
2	Harmony Elementary School/12451 Fuller Road, Milwaukie	CCRS
3	Adams House/3924 SE Adams Street, Milwaukie	CCRS
4	Keil House Ensemble/ 4217 SE Railroad Avenue, Milwaukie	CCRS
5	Keil Ensemble Bungalow/ 4219 SE Railroad Ave., Milwaukie	CCRS
7	Philip Strieb House/10565 SE 23rd Avenue, Milwaukie	MHCRI
8	Milwaukie Jr. High/2300 SE Harrison Street, Milwaukie	MHCRI
10	Masonic Lodge/10636 SE Main Street, Milwaukie	MHCRI
11	Milwaukie City Hall/10722 SE Main Street, Milwaukie	MHCRI
19	Brooklyn Yard/2001 SE Holgate Street, Portland	PHRI
20	Ford Building (Mult. Co. Bldg.)/2505 SE 11th Ave., Portland	PHRI
28	Signal Tower/600-610 NW 4th Avenue, Portland	PHRI
46	Hotel Medford/506-510 NW 5th Avenue, Portland	PHRI
48	J.K. Gill/408 SW 5th Avenue, Portland	PHRI
52	Failing Building/620 SW 5th Avenue, Portland	PHRI
66	Theater/9-13 NW 6th Avenue, Portland	PHRI
69	Commercial/121-127 NW 6th Avenue, Portland	PHRI
79	Hibernian Building/505 SW 6th Avenue, Portland	PHRI
80	Wilcox Building/506 SW 6th Avenue, Portland	PHRI
81	Olds and King Store/514 SW 6th Avenue, Portland	PHRI
98	Oregonian Building/1320 SW Broadway Street, Portland	PHRI
122	Office/421 SW Oak Street, Portland	PHRI
125	Union Bus Depot/509 SW Taylor Street, Portland	PHRI
128	Swetland Building/520 SW Yamhill Street, Portland	PHRI
133	Nicolai Co. Office Ensemble /1935 N Argyle Street, Portland	ACHRI
134	Nicolai Indus. Site/1812-1930 N Columbia St., Portland	ACHRI
137	Kenton Stockyard School/7528 N Fenwick Street, Portland	ACHRI
139	Polish American Citizens/Club 3832 N Interstate St., Portland	ACHRI
140	Street Stanislaus Church/3916 N Interstate Street, Portland	ACHRI
151	Residence/1422 N McClellan Street, Portland	ACHRI
158	Y's Buys/113 W 7th Street, Vancouver	DVS
160	Residence/502 E McLoughlin Street, Vancouver	DVS
161	Residence/510 E McLoughlin Street, Vancouver	DVS
162	Residence/700 E McLoughlin Street, Vancouver	DVS
169	Luepke Flowers/1300 Washington Street, Vancouver	DVS
170	Spic n' Span/1411 Washington Street, Vancouver	No previous
171	Koplan's Furnishings/1012 Washington, Vancouver	No previous
172	Oregon Worster Co./8300 SE McLoughlin Blvd., Milwaukie	PHRI

Note: The abbreviations for Previous Inventories that were used as sources for this chapter are as follows:

- CCRS, Clackamas County Cultural Resource Survey (1983);
- MHCRI, City of Milwaukie Historic and Cultural Resources Inventory (1988);
- PHRI, City of Portland Historic Resource Inventory (1984);
- ACHRI, Albina Community Historic Resource Inventory (1992);
- VHRI, City of Vancouver Historic Resources Inventory (1980);
- DVS, Downtown Vancouver Survey (1992);
- CCCRI, Clark County Cultural Resources Inventory (1977-79); and
- HTCCGISS, Heritage Trust of Clark County Geographic Inventory of Sites and Structures.

4.4 Archaeological Resources

A survey of archaeological resources was completed and is included in the South/North Light Rail Corridor Archaeological Resource Report (Appendix C, bound separately). There is one potential historic archaeological site within the study area and several high probability areas exist within the study area for additional historic archaeological sites as well as hunter-fisher-gatherer archaeological resource sites.

4.5 Historic and Cultural Resources Determination of Eligibility

The following table contains all historic and cultural resources that were evaluated as part of the study for their eligibility for inclusion in the National Register of Historic Places (see Table 4.5-1).

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
Clackamas Regional Center Segment							
1	Residence/12345 SE Fuller Road	NE					Demolished
2	Harmony Elementary School/12451 Fuller Road	Eligible	X		X		
East Milwaukie Segment							
3	Adams House/3924 SE Adams Street	Eligible			X		
4	Keil House Ensemble/4217 SE Railroad Ave.	Eligible			X		
5	Keil Ensemble Bungalow/4219 SE Railroad Ave.	Eligible			X		
6	Milwaukie Museum/11022 SE 37th Avenue	NE					Loss of integrity
Milwaukie Regional Center Segment							
7	Philip Strieb House/10565 SE 23rd Avenue	Eligible			X		
8	Milwaukie Junior High/2300 SE Harrison Street	Eligible			X		
9	Ledding Library/10722 SE Harrison Street	NE					Loss of integrity
10	Masonic Lodge/10636 SE Main Street	Eligible	X		X		
11	Milwaukie City Hall/10722 SE Main Street	Eligible			X		
12	ODOT Building/9200 SE McLoughlin Street	DOE					
172	Oregon Worster Co./8300 SE McLoughlin Blvd.	Eligible	X				
South Willamette River Crossing Segment							
19	Brooklyn Yard/2001 SE Holgate Street	Eligible	X				
20	Ford Building (Mult. Co)/2505 SE 11th Avenue	Eligible			X		
21	PGE Station L/1841 SE Water Street	NRNR					
194	Ross Island Bridge	NR					
Downtown Portland Segment							
22	Office/1800 SW 1st Avenue	NE					Not 50 years of age
23	Office/1859 SW 1st Avenue	NE					Not 50 years of age
24	Condos/2211-31 SW 1st Avenue	NE					Not 50 years of age
25	Office/2300 SW 1st Avenue	NE					Not 50 years of age
26	Commercial Building/421-439 NW 3rd Avenue	NR					

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
27	Firehouse/510 NW 3rd Avenue	DOE 1991					
28	Signal Tower/600-610 NW 4th Avenue	Eligible	X		X		
29	Commercial/721-735 SW 4th Avenue	NE					Demolished
30	Multnomah Co. Courthouse/1021 SW 4th, Ave.	NR					
31	York Apartments/5 NW 5th Avenue	DOE 1991					
32	Commercial Building/10-14 NW 5th Avenue	NE					
33	Warehouse/19 NW 5th Avenue	DOE 1991					
34	Fithian-Barker Shoe Store/20 NW 5th	NE					
35	Warehouse/107 NW 5th Avenue	DOE 1991					
36	Commercial/115 NW 5th Avenue	DOE 1991					
37	Factory, Commercial/125-135 NW 5th Avenue	DOE 1991					
38	Auto Building/208 NW 5th Avenue	NR					
39	Warehouse/234 NW 5th Avenue	NR	X		X		
40	Warehouse/310 NW 5th Avenue	NR	X		X		
41	Commercial Building/338 NW 5th	NR					
42	Oregon Casket Co./403-411 NW 5th Avenue	DOE 1991					
43	Povey Building/408 NW 5th Avenue	NR					
44	Commercial, Industrial/412 NW 5th Avenue	NR					
45	Harper Brassworks/416 NW 5th Avenue	NR					
46	Hotel Medford/506-510 NW 5th Avenue	Eligible			X		
47	Lumberman's Building/333 SW 5th Avenue	NR					
48	J.K. Gill/408 SW 5th Avenue	Eligible		X	X		
49	First National Bank/409 SW 5th Avenue	NR, P					
50	Lipman Wolfe & Co./521 SW 5th Avenue	NR					
51	Yeon Building/522 SW 5th Avenue	NR					
52	Failing Building/620 SW 5th Avenue	Eligible			X		
53	Meier & Frank Building/621 SW 5th Avenue	NR					
54	Kress, SH, Building/638 SW 5th Avenue	NR					
55	College Building/722-728 SW 5th Avenue	NE					Demolished
56	Josiah Failing Residence/810 SW 5th Avenue	NE					Demolished
57	Office/824-838 SW 5th Avenue	NE					Not 50 years of age
58	Office/900 SW 5th Avenue	NE					Not 50 years of age
59	Orbanco/1001 SW 5th Avenue	NE					Not 50 years of age
60	Portland Building/1120 SW 5th Avenue	NE					Not 50 years of age
61	Portland City Hall/1220 SW 5th Avenue	NR,P					
62	Bank-Office/1300 SW 5th Avenue	NE					Not 50 years of age

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
63	Apartment Building/1834 SW 5th Avenue	NE					Loss of integrity
64	Residence/1962 SW 5th Avenue	NE					Demolished
65	Residence/2005 SW 5th Avenue	NE					Loss of integrity
66	Theater/9-13 NW 6th Avenue	Eligible	X		X		
67	Hotel/15-23 NW 6th Avenue	NE					Demolished
68	Apostolic Faith/16-34 NW 6th Avenue	DOE 1991					
69	Commercial/121-127 NW 6th Avenue	Eligible			X		
70	Butte Hotel/129-137 NW 6th Avenue	DOE 1991					
71	Athens Hotel/230 NW 6th Avenue	DOE 1991					
72	Biltmore, Hood Hotel/302-318 NW 6th Avenue	DOE 1991					
73	Oregon Cracker Co./427-435 NW 6th Avenue	NR, P					
74	Garage/624-628 NW 6th Avenue	NE					
75	Wells Fargo Building/309 SW 6th Avenue	NR					
76	U.S. National Bank/321 SW 6th Avenue	NR,P					
77	Bank of California/330 SW 6th Avenue	NR, P					
78	Equitable Building/421 SW 6th Avenue	NR, P					
79	Hibernian Building/505 SW 6th Avenue	Eligible			X		
80	Wilcox Building/506 SW 6th Avenue	Eligible			X		
81	Olds and King Store/514 SW 6th Avenue	Eligible			X		
82	Bedell Building/520 SW 6th Avenue	NR					
83	Central School Mult. Hotel/721 SW 6th Ave.	NE					Demolished
84	Public Service Building/920 SW 6th Avenue	NR					
85	Portland Hilton/921 SW 6th Avenue	NE					Not 50 years of age
86	Gazebo/1050 SW 6th Avenue	NE					Not 50 years of age
87	Standard Plaza/1100 SW 6th Avenue	NE					Not 50 years of age
88	Ambassador Apartments/1209 SW 6th Avenue	NR					
89	University Club/1225 SW 6th Avenue	NR,P					
90	Bank, Office/1300 SW 6th Avenue	NE					Not 50 years of age
91	University Station/1505 SW 6th Avenue	NE					Not 50 years of age
92	Steel, George, A., Residence/1524 SW 6th Ave.	NE					Demolished
93	Office/1800 SW 6th Avenue	NE					Not 50 years of age
94	Thompson, Mary Residence/1928 SW 6th Ave.	NE					Demolished
95	Residence/2013 SW 6th Avenue	NE					Loss of integrity
96	Oregonian Building/601 SW Alder Street	NE					Demolished
97	Selling Building/610 Alder Street	NR					
98	Oregonian Building/1320 SW Broadway Street	Eligible		X	X		
99	Duniway Residence/434 SW Clay Street	NE					Demolished
100	Mitchell, John Residence/610 SW Clay Street	NE					Demolished
101	Pickle Factory/420 SW College Street	NE					Loss of integrity

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
102	Warehouse/605 NW Everett Street	NE					Alterations
103	Commercial, Whse./401-419 NW Flanders St.	NE					101
104	Warehouse/321 NW Glisan Street	DOE 1991					102
105	Commercial Building/340 NW Glisan	NR					
106	Warehouse/406 NW Glisan Street	NR					
107	United Brewery/1860 SW Harbor Street	NE					Demolished
108	Industrial/50 SW Harrison Street	NE					Demolished
109	Apartment/111 SW Harrison Street	NE					Not 50 years of age
110	Steam Plant/220 SW Harrison Street	NE					Demolished
111	Apartment/222 SW Harrison Street	NE					Not 50 years of age
112	Apartment/255 SW Harrison Street	NE					Not 50 years of age
113	Pettygrove Park/275 SW Harrison Street	NE					Not 50 years of age
114	Greyline Building/521 NW Hoyt Street	NE					Demolished
115	Steam Plant/501 NW Irving Street	NR					
116	U.S. Courthouse/620 SW Main Street	NR					
117	Mortuary/432 SW Montgomery Street	NE					Demolished
118	Marquam Bridge/2500 SW Moody Street	NE					Not 50 years of age
119	Corbett Building/420-423 SW Morrison Street	NE					Not 50 years of age
120	Pioneer Courthouse/520 SW Morrison Street	NR, NHL					
121	Marquam Building/622 SW Morrison Street	NE					
122	Office/421 SW Oak Street	Eligible			X		
123	U.S. National Bank Plaza/555 SW Oak Street	NE					Not 50 years of age
124	Corbett Bros. Garage/630 SW Pine Street	NR					
125	Union Bus Depot/509 SW Taylor Street	Eligible	X		X		
126	Greyhound Bus Sign/511 SW Taylor Street	NE					Moved
127	Bank, Office/425 SW Washington Street	NE					Not 50 years of age
128	Swetland Building/520 SW Yamhill Street	Eligible	X		X		
129	Pacific Building/520 SW Yamhill Street	NR					
130	Steel Bridge	DOE					
173	The Fifth and Yamhill Food Market/444-476 SW Morrison Street	NE					Demolished
174	Goodnough Building/730 SW 5th Street	NE					Demolished
175	Commercial Building/804 SW 3rd Avenue	NR					
176	Thomas Mann Building/140 SW Yamhill Street	NR					
177	Franz Building/124 SW Yamhill Street	NR					
178	Van Rensselaer Building/71-73 SW Yamhill St.	NR					
179	Love Building/730 SW 1st Avenue	NR					
180	Harker Building/728 SW 1st Avenue	NR					
181	Strowbridge Building/101 SW Yamhill Street	NR					
182	Willamette Block/722-738 SW 2nd Avenue	NR					
183	Commercial Building/220 SW Morrison Street	NR					
184	Falling Building/235 SW 1st Avenue	NR					

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
185	Seaffert Building/224 SW 1st Avenue	NR					
186	Smith Blk./10 SW Ash & 111, 117 SW Front Ave.	NR					
187	New Market Theater/50 SW 2nd Avenue	NR					
188	Skidmore Fountain/SW 1st Avenue & SW Ankeny Street	NR					
189	Reed (Packer Scott) Building/28 SW 1st Avenue	NR					
190	Blagen Block/78 NW Couch Street	NR					
Eliot Segment							
131	Emanuel Hospital/2800 N Commercial Street	NE					Loss of integrity
132	Warehouse/222-240 N Broadway Street	NE					Loss of integrity
191	John H. Nowood Residence/226 N Page Street	NE					Not 50 years of age
192	Worthy Bridges-Walter Callison Residence/2404 N Flint Street	NE					Not 50 years of age
193	Otis Cain Residence/2310 N Page Street	NE					Not 50 years of age
North Portland Segment							
133	Nicolai Co. Office Ensemble/1935 N Argyle Street	Eligible	X	X	X		
134	Nicolai Industrial Site Ensemble/1812-1930 N Columbia Street.	Eligible	X	X			
135	Residence/1520 N Emerson Street	NE					Loss of integrity
136	Residence/1416 N Failing Street	NE					Lack of archival signif.
137	Kenton Stockyard School/7528 N Fenwick Street	Eligible	X				
138	Sign/3801 N Interstate Street	NE					Not 50 years of age
139	Polish American Citizens Club/3832 N Interstate Street	Eligible			X		
140	Street Stanislaus Church/3916 N Interstate Street	Eligible	X		X		
141	Sign/3971 N Interstate Street	NE					Not 50 years of age
142	Sign/4024 N Interstate Street	NE					As per SHPO
143	Sign/4333 N Interstate Street	NE					Not 50 years of age
144	Sign/4739 N Interstate Street	NE					Not 50 years of age
145	Sign/4801 N Interstate Street	NE					Not 50 years of age
146	Sign/5205 N Interstate Street	NE					Not 50 years of age
147	Sign/5226 N Interstate Street	NE					Not 50 years of age
148	Fire Station/5340 N Interstate Street	NR					
149	Residence/6933 N Interstate Street	NE					Lack of archival signif.
150	Paul Bunyan/8401 N Interstate Street	NE					Not 50 years of age
151	Residence/1422 N McClellan Street	Eligible			X		
152	Residence/1224 N Shaver Street	NE					Lack of archival signif.
Hayden Island/Vancouver Segment							
153	Columbia River Interstate Bridge (Northbound)	NR					
154	Vancouver Telephone Exchange Building/112 W 11th Street	NR					

Table 4.5-1
Historic and Cultural Resources Inventory Determination of Eligibility

Map Ref.	Resource/Address	National Register Status	National Register Criteria A	B	C	D	Reason for Omission
155	St. James Cathedral/204 W 12th Street	DOE 1986					
156	Hidden Houses/100-110 W 13th Street	NR		X	X		
158	Y's Buys/113 W 7th Street	Eligible			X		
159	Municipal Building/8th Street	NE					Demolished
160	Residence/502 E McLoughlin Street	Eligible			X		
161	Residence/510 E McLoughlin Street	Eligible			X		
162	Residence/700 E McLoughlin Street	Eligible					
169	Luepke Flowers/1300 Washington Street	Eligible			X		
170	Spic n' Span/1411 Washington Street	Eligible			X		
171	Koplan's Furnishings/1012 Washington Street	Eligible					

5. ENVIRONMENTAL CONSEQUENCES

This chapter contains an evaluation of the use of the alignment alternatives and the LRT Design Option on Section 4(f) resources, including parklands, historic, cultural and archaeological resources. It also presents a comparative evaluation to assist in the selection of the Locally Preferred Strategy (LPS). The determinations of potential effects included below are preliminary until the preferred alignment alternative is selected. Section 5.1 summarizes impacts for the length alternatives and Section 5.2 summarizes long-term impacts for the alignment alternatives and design options.

5.1 Long-Term Impacts - Length Alternatives

This portion of the report contains a description of long-term (year 2005) impacts on the identified Section 4(f) resources by each of the South/North length alternatives. As described in Chapter 1, the South/North Length Alternatives include a No-Build Alternative, a Full-Length LRT Alternative and three Minimum Operable Segments (MOS's) that represent a specific set of alignment alternatives and design options and differing sets of termini.

The total number of Section 4(f) resources (historic, archaeological high probability areas and parklands) that would be affected by each of the length alternatives is summarized in Table 5.1-1.

Table 5.1-1
Preliminary Evaluation of Adverse Effects on Eligible Historic, Archaeological and Cultural Resources and Use of Public Parklands by Length Alternatives

		Archaeological Sites		
Length Alternative	Adverse Effects on Historic Resources	Potential Effects on Known Resources	Potential Effect on High Probability Areas*	Use of Public Parklands or Wildlife Refuges
No-Build	0	0	0	0
Full-Length	7	1	6	3
MOS 1 (Bi-State)	3	1	4	2
MOS 2 (Rose Quarter)	7	0	5	3
MOS 5 (Lombard)	7	0	5	2

Source: *Historic, Archaeological and Cultural Resources (Section 106) Impacts Results Report* and *Parklands, Recreation Areas, Wildlife* and *Waterfront Reference (Section 4(f)) Impacts Results Report* (Metro: October 1997).

* Areas with a high probability for finding either historical archaeological resources or hunter-fisher-gatherer sites.

Due to identification of high probability areas for hunter-fisher-gatherer archaeological resources, all alternatives could result in construction impacts to these potential resources.

5.1.1 No-Build Alternative

Under the No-Build Alternative, the transportation improvements would be limited to those included in the Regional Transportation Plan's "Financially Constrained" highway network. There are no long-term adverse effects anticipated to Section 4(f) resources (parklands, historic, cultural and archaeological) with the No-Build Alternative.

5.1.2 Clackamas Regional Center to Vancouver/Clark College Alternative (Full-Length)

The Full-Length Alternative would impact the following resources:

- Harmony Elementary School;
- Hector Campbell Elementary School (playing field);
- Adams House;
- Keil House Ensemble;
- Keil Ensemble Bungalow;
- Scott Park;
- Oregon Worsted Company;
- Portland City Hall;
- Hotel Medford/Warehouse on SW Glisan Street; and
- Clark College Sports Area.

Detailed description of effects and use of Section 4(f) resources is included in Section 5.2.1 through 5.2.9.

5.1.3 Milwaukie Marketplace to Vancouver/Clark College Alternative (MOS 1)

The MOS 1 Alternative would impact the following resources:

- Scott Park;
- Oregon Worsted Company;
- Portland City Hall;
- Hotel Medford/Warehouse on SW Glisan Street; and
- Clark College Sports Area.

Description of Section 4(f) resources used by MOS 1 is included in Sections 5.2.3 through 5.2.9.

5.1.4 Clackamas Regional Center to Rose Quarter Alternative (MOS 2)

The MOS 2 Alternative would impact the following resources:

- Harmony Elementary School;
- Hector Campbell Elementary School (playing field);
- Adams House;
- Keil House Ensemble;

- Keil Ensemble Bungalow;
- Scott Park;
- Oregon Worsted Company;
- Portland City Hall;
- Hotel Medford/Warehouse on SW Glisan Street; and
- Holladay Park.

Description of Section 4(f) resources used by MOS 2 is included in Section 5.2.1 through 5.2.6.2

5.1.5 Clackamas Regional Center to North Lombard Street Alternative (MOS 5)

The MOS 5 Alternative would impact the following resources:

- Harmony Elementary School;
- Hector Campbell Elementary School (playing field);
- Adams House;
- Keil House Ensemble;
- Keil Ensemble Bungalow;
- Scott Park;
- Oregon Worsted Company;
- Portland City Hall; and
- Hotel Medford/Warehouse on SW Glisan Street.

Description of Section 4(f) resources used by MOS 5 is included in Sections 5.2.1 through 5.2.8.

5.2 Long-Term Impacts - Alignment Alternatives and Options

5.2.1 Clackamas Regional Center Segment

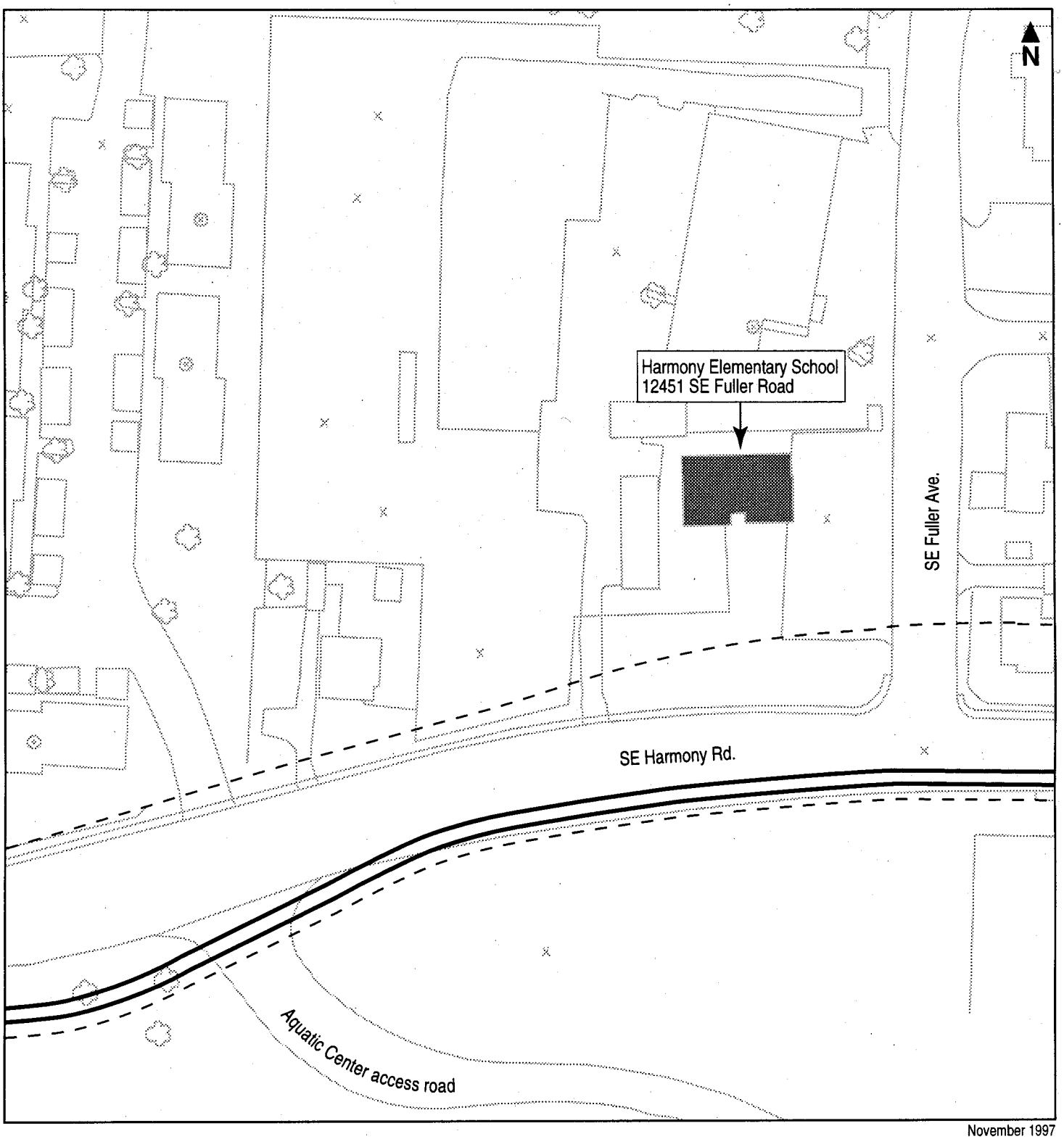
5.2.1.1 North and South CTC Alignment Alternatives

A. North of CCC/OIT Design Option

Harmony Elementary School. The Harmony Elementary School, located at 1411 SE Washington Street, has been identified in this alignment alternative. There would be acquisition of an additional 50 feet of right-of-way from the southern edge of the school property and reconstruction of SE Harmony Road. Neither the Harmony Elementary School, nor associated outbuildings, would be directly affected. There would be a 7 to 8 dBA increase in traffic noise levels compared to the No-Build Alternative (see Figure 5.2-1). The use of the school as an office building will not be affected by this design option.

B. South CCC/OIT Design Option

Aquatic Center. The proposed alignment would cross diagonally through a vacant site owned by the OIT and through a parking lot jointly used by OIT and the Aquatic Center, but operated by the Parks District. This proposed alignment does not physically use any of the Aquatic Center's property. The shared parking lot has approximately 320 parking spaces. The Aquatic Center's reported peak-hour usage (early afternoon on weekends and every day during the summer) requires



November 1997

South North Transit Corridor Study

METRO

Figure 5.2-1

Clackamas Regional Center Segment

North of OIT/CCC Design Option

Harmony Elementary School
12451 SE Fuller Road

Affected Resource

LRT Alignment

Proposed Road

0 50 100

FEET

some use of the OIT parking lot to accommodate visitors. The proposed alignment would displace approximately 62 spaces, including four spaces for handicapped drivers. In the summer during peak-hour facility use, there would be sufficient parking, despite the decrease in the number of parking spaces from this alignment alternative. The displacement of the parking spaces would not result in a substantial impairment to the Aquatic Center's parking accommodations. As a result, there would not be a Section 4(f) use of the Aquatic Center.

5.2.2 East Milwaukie Segment

5.2.2.1 Railroad Avenue/Through Traffic Option

Hector Campbell Elementary School Playing Field. This alignment alternative/design option would be located within the existing right-of-way on SE Railroad Avenue at SE 47th Avenue. Approximately 0.46-acre of the 2.88-acre playing field would be acquired for the relocation of SE Railroad Avenue. There is a baseball diamond on the southeast corner of the field. The south part of this playing field is approximately 30 feet away from the existing southern property line. SE Railroad Avenue would be moved 40 feet to the north, encroaching approximately 10 feet into one of the school baseball fields (see Figure 5.2-2). The realignment of SE Railroad Avenue would result in a 1 to 2 dBA increase in traffic noise because of the closer proximity of the road. There would not be a constructive use of the Hector Campbell Elementary School, because of the small noise increase and it is a playing field for active recreational use.

Keil Ensemble Bungalow. There would be a use of the residence associated with the Keil House, located at 4219 SE Railroad Avenue, as a result of the demolition of the building (see Figure 5.2-3).

Keil House Ensemble. There would be a use of the Keil House, located at 4217 SE Railroad Avenue, as a result of the taking of 50 feet of right-of-way along the southern property boundary for the reconstruction of SE Railroad Avenue (see Figure 5.2-4). The realignment of SE Railroad Avenue would also increase noise levels. Noise impacts would come from the road's closer proximity to the residence, and from the light rail transit.

Adams House. There would be a use of the Adams House, located at 3924 SE Adams Street, as a result of the taking of right-of-way and the demolition of two outbuildings associated with the residence (see Figure 5.2-5).

5.2.2.2 Railroad Avenue/Local Access Option

Hector Campbell Elementary School. This alignment alternative would be located within the existing right-of-way on SE Railroad Avenue at SE 47th Avenue. Approximately .14 acre of the 2.88-acre playing field would be acquired for the relocation of SE Railroad Avenue. The south part of this playing field is approximately 30 feet away from the existing right-of-way. SE Railroad Avenue would be moved 20 feet to the north, remaining approximately 10 feet away from the school baseball field. The realignment of SE Railroad Avenue would result in a 1 to 2 dBA increase in traffic noise, because of the closer proximity of the road. There would not be a constructive use of

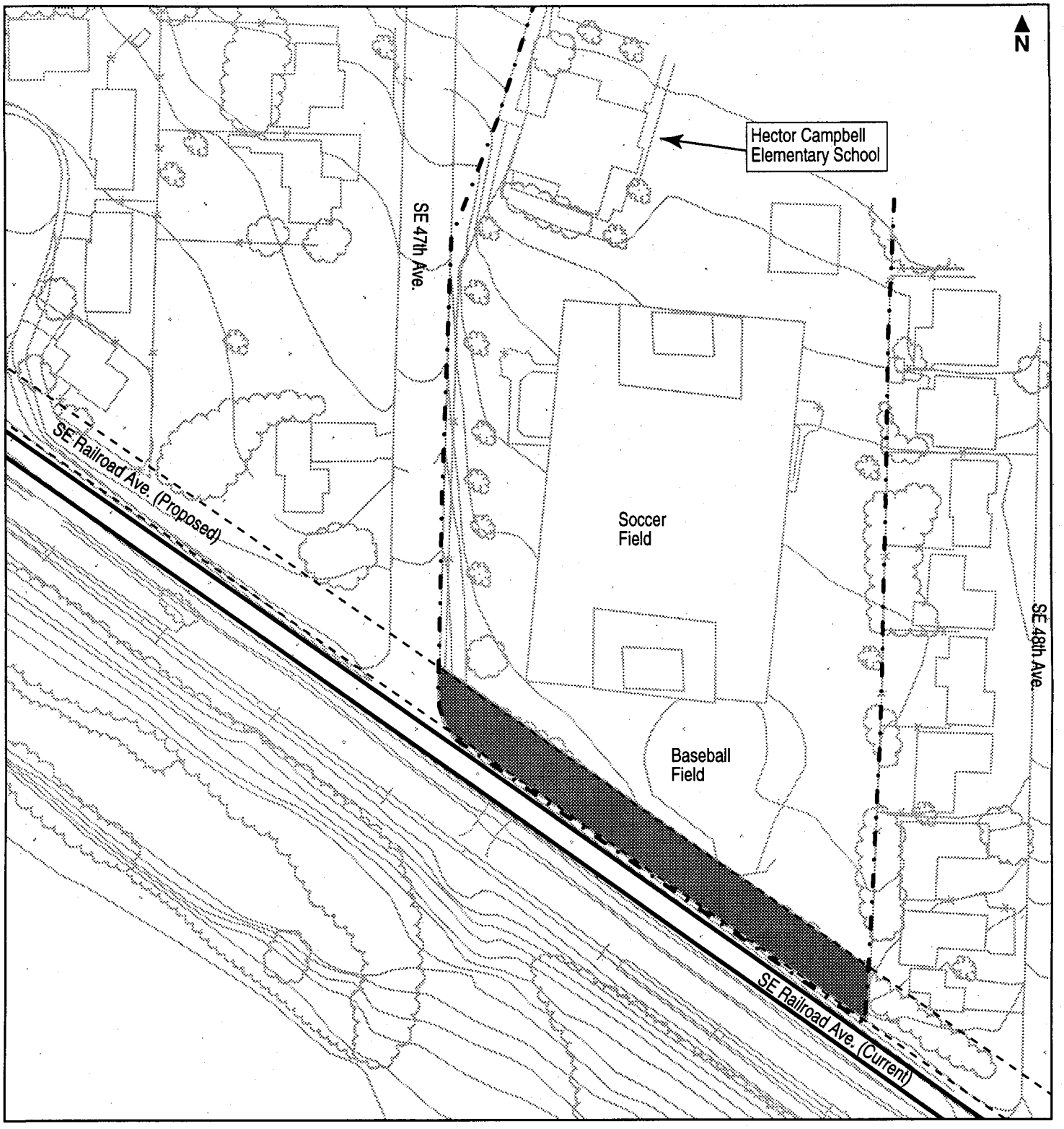


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Figure 5.2-2

East Milwaukie Segment

SE Railroad Avenue/Through Traffic Alignment Alternative

Hector Campbell Elementary School Playing Field
11326 SE 47th Avenue

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Affected Park

LRT Alignment

Property Line

Road Relocation

0 50 100

FEET

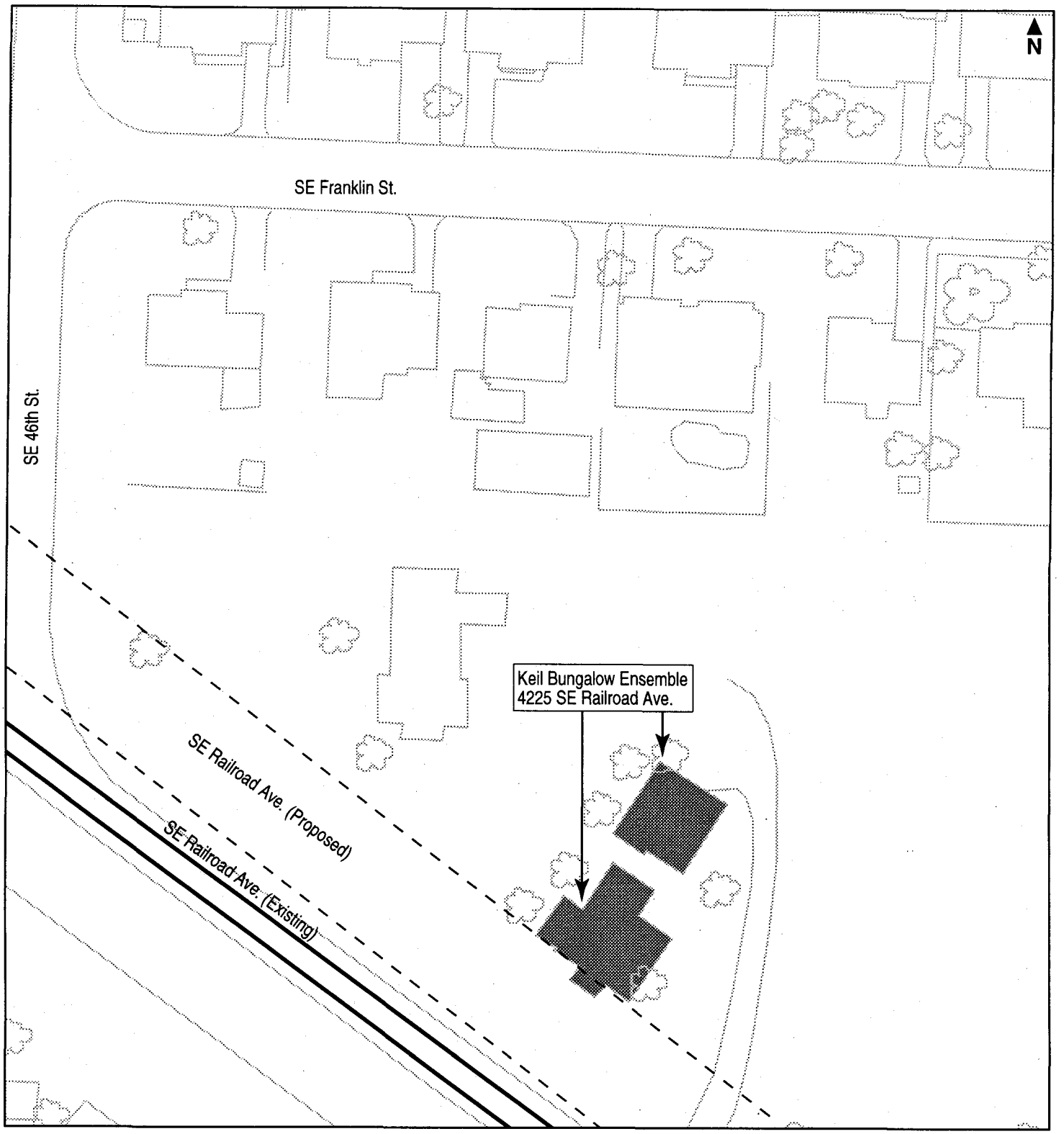

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Figure 5.2-3

East Milwaukie Segment

SE Railroad Avenue/Through Traffic and Local Access Alignment Alternatives

Keil Bungalow Ensemble
4225 SE Railroad Ave.

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Proposed Road

0 25 50

FEET

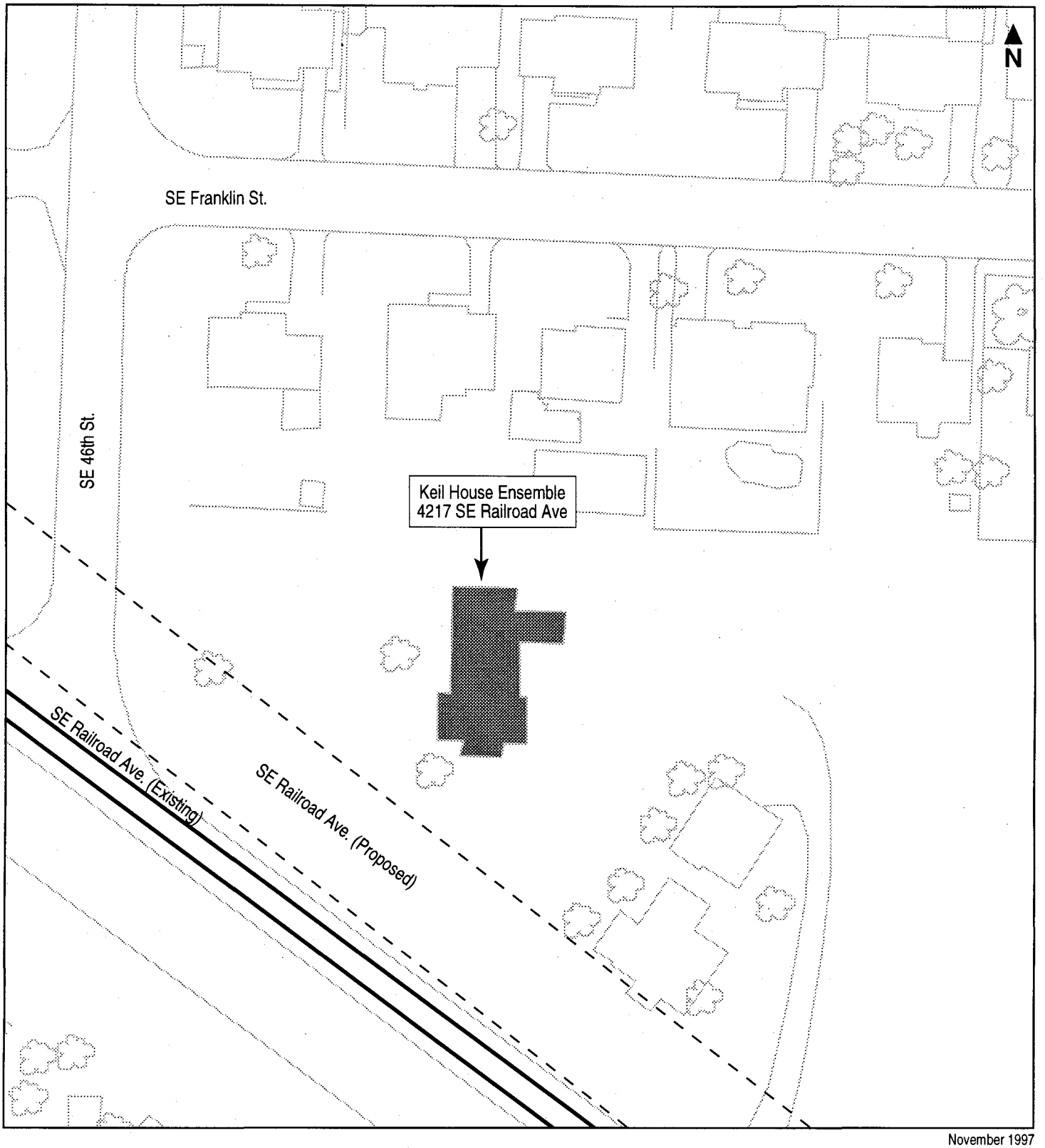

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Figure 5.2-4

East Milwaukie Segment

SE Railroad Avenue/Through Traffic Alignment Alternative

Keil House Ensemble
4217 SE Railroad Avenue

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Proposed Road

0 25 50
FEET

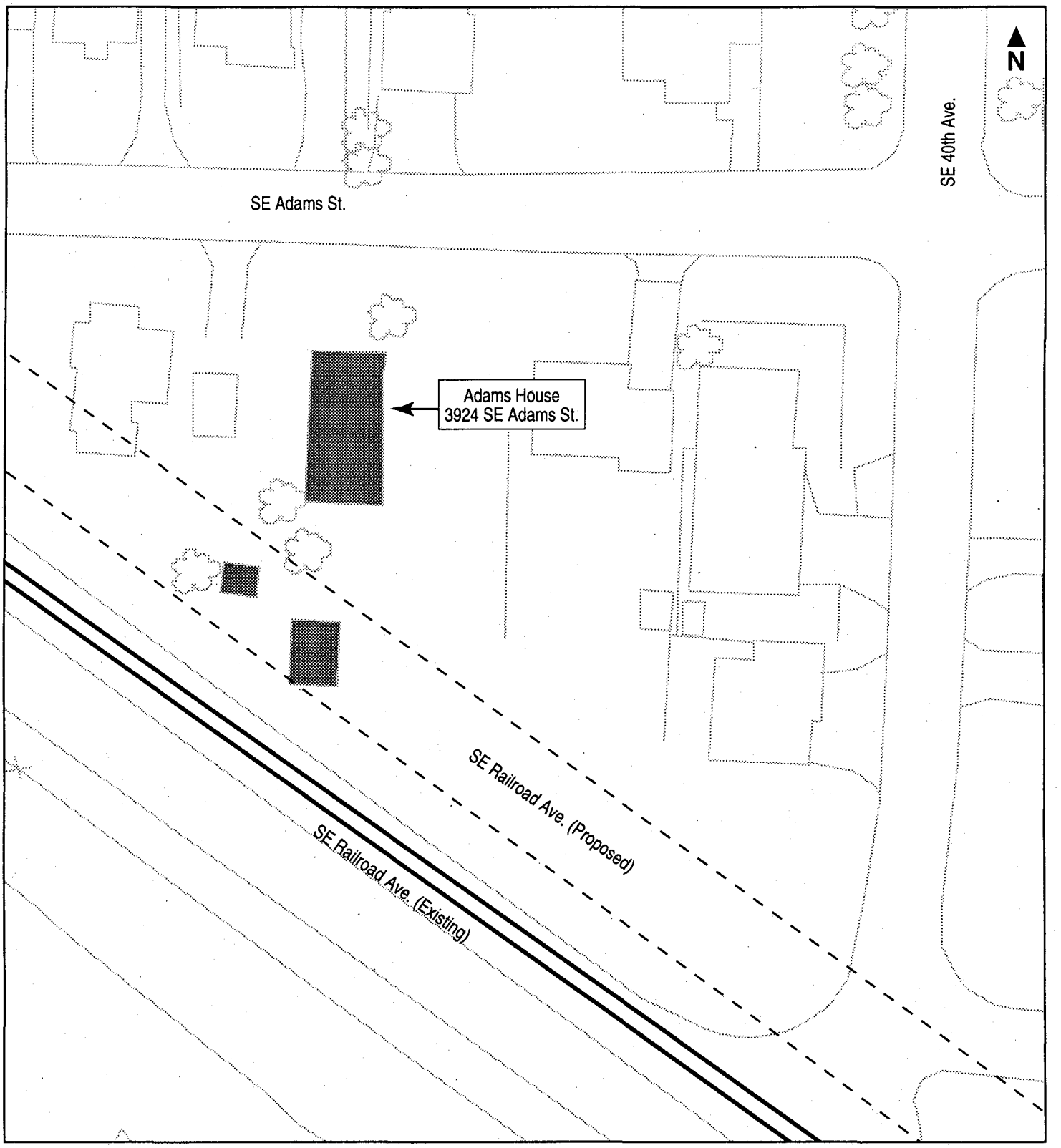

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Figure 5.2-5

East Milwaukie Segment

SE Railroad Avenue/Through Traffic Alignment Alternative

Adams House
3924 SE Adams Street

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Proposed Road

0 25 50

FEET

Hector Campbell Elementary School, because of the small noise increase and it is a playing field for active recreation.

Keil Ensemble Bungalow. There would be a use of the residence associated with the Keil House, located at 4219 SE Railroad Avenue, as a result of the demolition of the building (see Figure 5.2-3).

Keil House Ensemble. There would be a use of the Keil House, located at 4217 SE Railroad Avenue, as a result of the taking of 35 feet of right-of-way along the southern property boundary. The realignment of SE Railroad Avenue would also increase noise levels. Noise impacts would come from the road's closer proximity to the residence and from the light rail transit. The 1 to 2 dBA increase in noise level is not considered a use because of the small noise increase.

Adams House. There would be a use of the Adams House, located at 3924 SE Adams Street as a result of the taking of right-of-way and demolition of one outbuilding associated with the residence. There would be a 1 to 2 dBA increase in traffic noise, because of closer proximity of the road. There would not be a constructive use of the Adams House because of the small noise increase.

5.2.3 Milwaukie Regional Center Segment

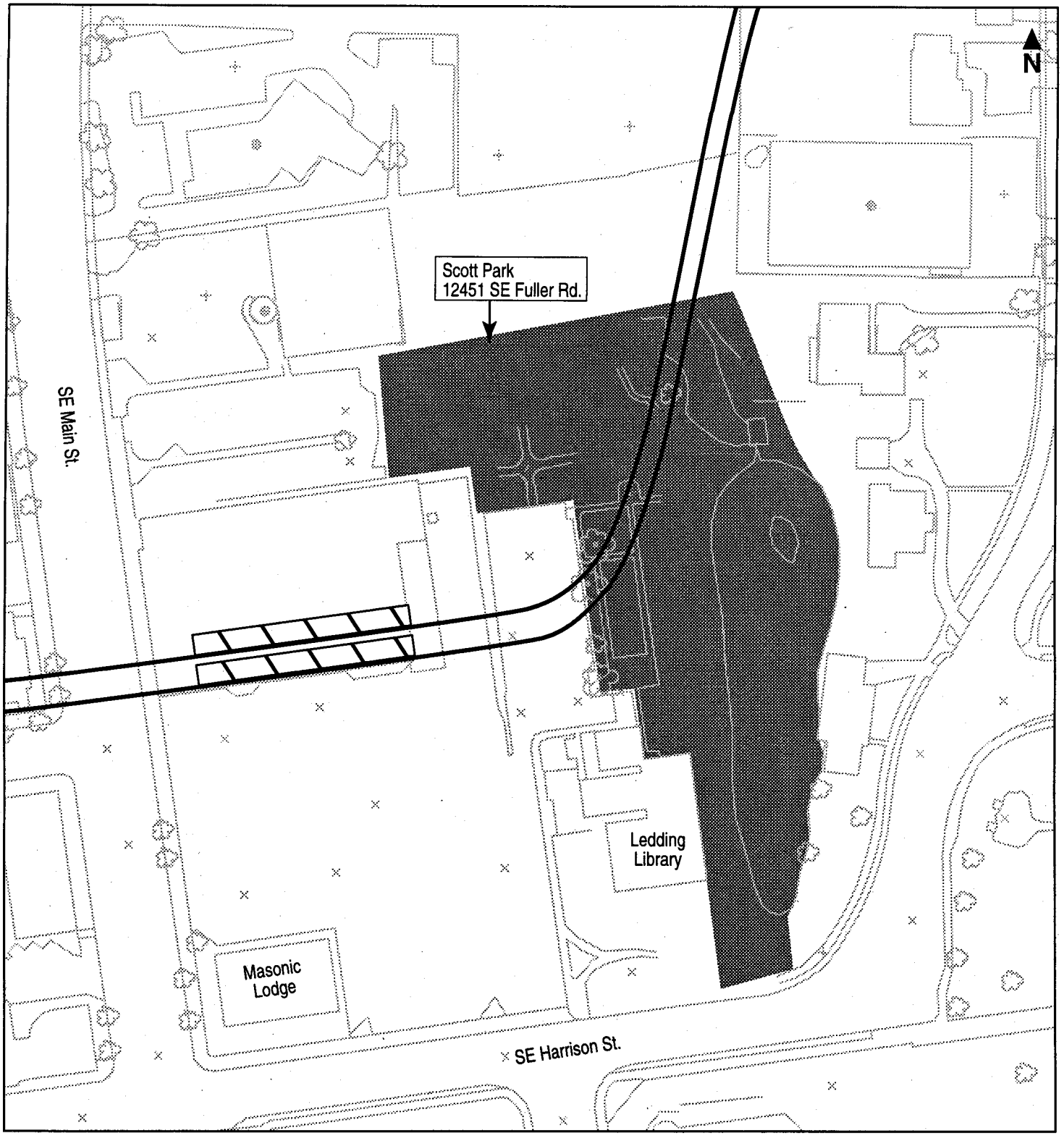
5.2.3.1 Main Street/Tillamook Branch Line

Milwaukie Junior High School. The Milwaukie Junior High School playing field is located north of SE Monroe Street and east of SE 21st Avenue. This alignment alternative would include a transit center in the vicinity of SE Harrison Street and SE Main Street. There would be no physical use of the junior high school or playing field, since it is located approximately one block south of this alignment alternative. Because this alignment would not create any impairment to the playing field, there would be no Section 4(f) use of the junior high school playing field under this alternative.

Milwaukie City Hall. The alignment alternative would include a station on the north side of SE Scott Street east of Main Street. The alignment and station would be a minimum of 300 feet north of Milwaukie City Hall; therefore, there would be no Section 4(f) use of this resource.

Scott Park. This alignment alternative would include a loop at the vicinity of SE Main Street and Pacific Highway East, and that would require the acqisition of approximately 0.28 acre of the 2.36-acre park. This alignment alternative would enter the western edge of the park at-grade, curve northward and cross spring creek on a low bridge. The alignment would bisect the park, adversely affecting the park's walking trail and isolating approximately 0.55 acre of the northwest portion of the park from the main park area (see Figure 5.2-6). The LRT operation would increase noise levels in the isolated 0.55-acre portion of the park with noise levels at the new LRT ROW/park boundary increasing by 12 to 14 dBA over existing.

Oregon Worsted Company. The Oregon Worsted Company located at 8300 SE McLoughlin Boulevard would be used by the Main Street/Tillamook Branch Line alignment alternative. It is anticipated that this building would require demolition by this alignment alternative (see Figure 5.2-7).



November 1997

Figure 5.2-6

Milwaukie Regional Center Segment

Main Street/Tillamook Branch Line Alignment Alternative

Scott Park
12451 SE Fuller Rd.

South North Transit Corridor Study

METRO

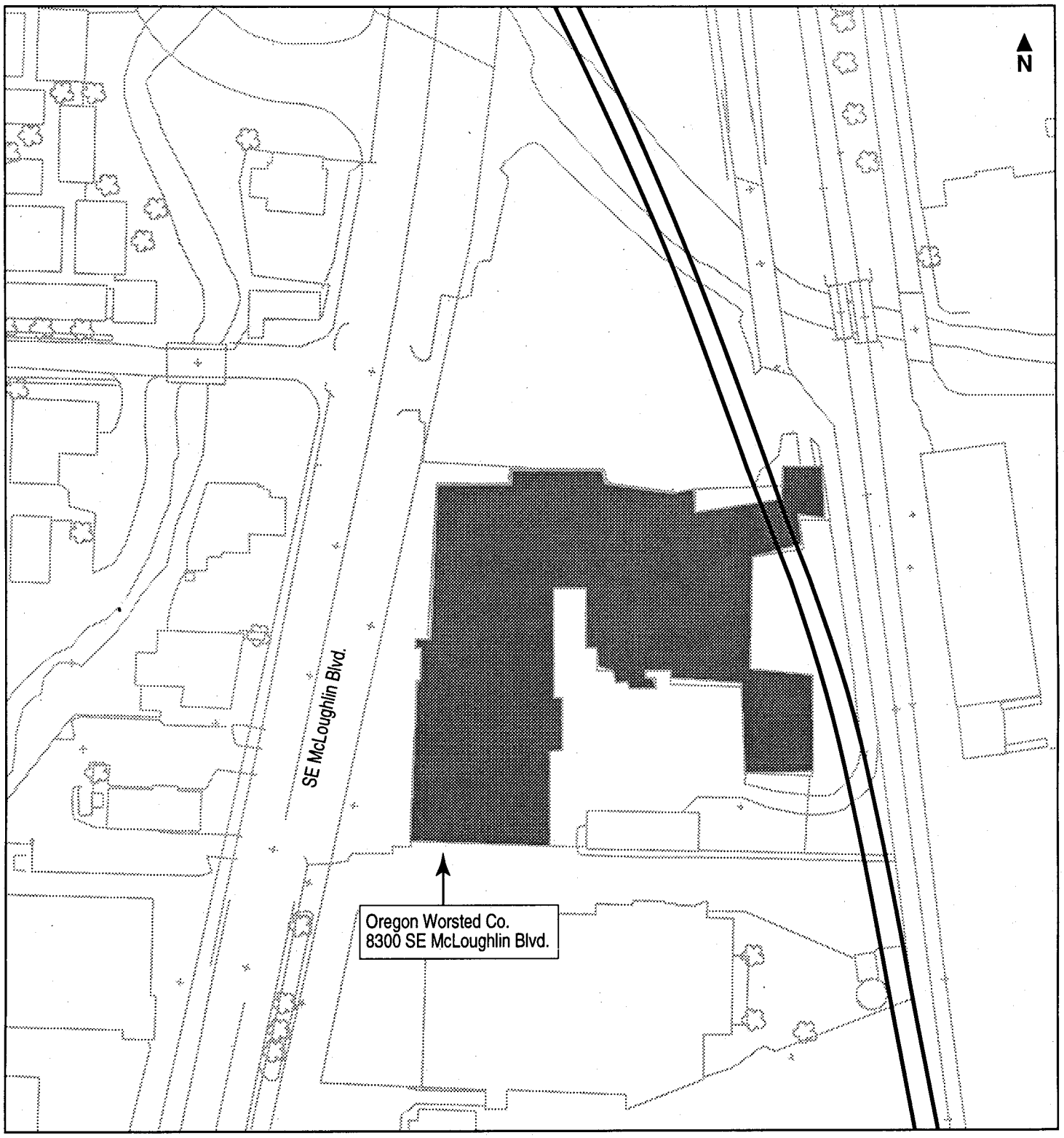
Affected Resource

LRT Alignment

Station

0 50 100

FEET



November 1997

Figure 5.2-7

Milwaukie Regional Center Segment

Main Street/Tillamook Branch Line Alignment Alternative

Oregon Worsted Co.
8300 SE McLoughlin Blvd.

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

0 100 200

FEET

The proposed LRT would increase noise levels by 12 to 14 dBA, which would substantially reduce the attributes of the remaining 2.36 acres of the park.

Springwater Corridor Trail (40-Mile-Loop Trail). The portion of the Springwater Corridor Trail that would cross this LRT alignment has yet to be constructed. The westernmost point of the existing Springwater Corridor is a fenced, elevated area to the east of the Southern Pacific railroad line. Metro plans to acquire the property between the western terminus of the existing corridor and SE 17th Avenue. Metro could retain ownership of this proposed segment of the Springwater Corridor even though the City of Portland, through its Bureau of Parks and Recreation, would most likely develop and maintain it. The trail will be elevated approximately 20 feet above the LRT alignment as it crosses McLoughlin Boulevard and the UP/SP rail line. A trail connection across the LRT right-of-way will provide for a continuous trail to Boring. The proposed alignment would not affect the function and use of the trail; and, therefore, there would be no Section 4(f) use of this resource.

5.2.4 McLoughlin Boulevard Segment

Eastmoreland Golf Course. Eastmoreland Golf Course is located to the east of both SE McLoughlin Boulevard and the UP/SP railroad tracks. This LRT alignment would be located approximately 90 feet east of the golf course property. The proposed alignment would be located between the UP/SP tracks and SE McLoughlin Boulevard. No physical use of the golf course would result.

No functional impairment of the golf course would result from this alignment alternative. Access to the golf course would remain unchanged; and, therefore, there would be no Section 4(f) use of this resource.

Westmoreland Park. This alignment alternative would be approximately 180 feet from the park property. The alternative, located to the east of SE Mcloughlin Boulevard, would not physically use the park, nor otherwise impair park functions; and, therefore, there would be no Section 4(f) use.

Oaks Bottom Wildlife Refuge. Both South/North Alignment Alternatives in the segment of the South/North Corridor Transit Study would be located on the east side of both SE McLoughlin Boulevard and SE Milwaukie Avenue approximately 400 feet from the Oaks Bottom Wildlife Refuge. This alignment would not impair the function, nor use of the refuge; and, therefore, there would be no Section 4(f) use of these resources.

5.2.5 South Willamette River Crossing Segment

Both LRT alignment alternatives in the segment of the South/North Corridor Transit Study would be located on the east side of both SE McLoughlin Boulevard and SE Milwaukie Avenue approximately 400 feet from the Oaks Bottom Wildlife Refuge. This alignment would not impair the function, nor use of the refuge; and, therefore, there would be no Section 4 (f) use of this resource.

5.2.5.1 Ross Island Crossing

A. East of McLoughlin Design Option

Willamette Greenway Trail. The East of McLoughlin design option would cross designated Primary Greenway Trail on both the east and west banks of the Willamette River. The proposed alignment would be built on a structure approximately 85 feet high where it crosses the proposed Greenway Trail on either side of the river.

The Greenway Trail (not yet built) will be located within 25 feet of the east and west banks. The Greenway Corridor on the east bank is located approximately 300 feet away from the closest transit pier. The trail, which is located on the existing ground at approximately 30-foot elevation, leaves approximately 50 feet of vertical clearance to the bottom of the bridge structure. The bridge pier on the west bank is approximately 20 feet from the Greenway setback. There is an approximate clearance of 52 feet where the trail passes under the LRT bridge. The proposed alignment would not use, nor affect the function of, the trail on either bank of the Willamette River. This alignment will not result in any Section 4(f) use of the Willamette Greenway.

B. West of McLoughlin Design Option

Willamette Greenway Trail. The West of McLoughlin design option would extend north on the west side of McLoughlin Boulevard. This alignment follows the same alignment as the east of McLoughlin Design Option where it crosses the Willamette Greenway Trail. The proposed alignment would not impede trail development; and, therefore, there would be no Section 4(f) use of the resource.

5.2.5.2 Caruthers Crossing

A. Moody Design Option

Brooklyn Yard. Brooklyn Yard, located at 2001 SE Holgate Boulevard, has been identified in this segment of the corridor and is eligible for the National Register of Historic Places. There would not be a use of Brooklyn Yard, because the proposed alignment would only be located near the historic site; and, therefore, there would be no Section 4(f) use to the historic site.

PGE Station L (OMSI). The PGE Station L (OMSI), located at SE Water Avenue, currently is listed on the National Register. There would be no use of the PGE Station within this design option. The proposed alignment and LRT station would be located near the PGE Station but would not require the use of any of the historic site's property, nor result in any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Willamette Greenway Trail. Caruthers Bridge would encounter the Greenway on both east and west banks of the Willamette River. The proposed OMSI light rail station is approximately 250 feet away from the existing Greenway Trail. The closest bridge pier for this alignment would be located approximately 50 feet away from the Greenway Trail on the east side. The alignment would provide a 10-foot vertical clearance over the Greenway Trail.

On the west bank, a pier will be located approximately 70 feet from the primary location for the proposed Greenway Trail. The alignment would provide a 10-foot minimum vertical clearance over the trail. The proposed alignment would not impede trail development; and, therefore, there would be no Section 4(f) use of the resource.

South Waterfront Redevelopment Area. The alignment would require approximately .033 acres of land acquired as part of the Willamette Greenway on land owned by Portland Development Commission that used funds from the Land and Water Conservation Act Fund (see Figure 5.2-8).

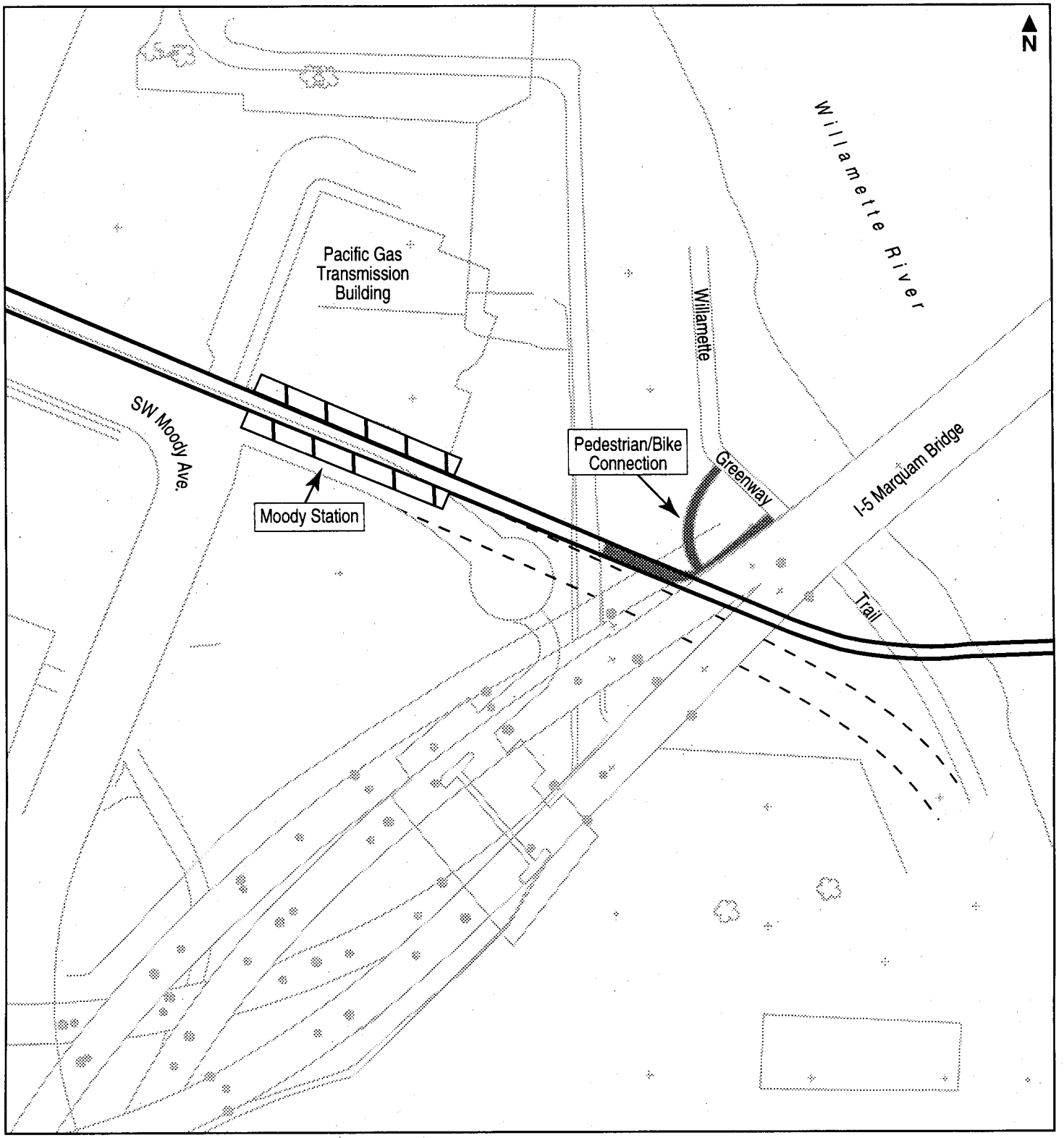


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Figure 5.2-8

South Willamette River Crossing Segment

Caruthers Alignment Alternative
• Moody Station Design Option
South Waterfront Redevelopment Area

South North Transit Corridor Study

METRO

Affected Resource
LRT Alignment
Station
Proposed Road

0 50 100
FEET

B. South Marquam Design Option

Willamette Greenway Trail. There would be no use of the Willamette Greenway Trail, Brooklyn Yard and PGE Station. The nearest bridge pier would be approximately 100 feet from the trail.

5.2.6 Downtown Portland Segment

There are two alignment alternatives in this segment: Full Transit Mall Alignment Alternative, which has two design options, Glisan Street and Irving Street, and the Half-Transit Mall Alignment Alternative.

5.2.6.1 Full-Transit Mall Alternative

Kelly Fountain. The 6th Avenue Alignment in downtown Portland would be located in the existing right-of-way, so the sidewalk and fountain area would remain in its existing form; and, therefore, there would be no Section 4(f) use of Kelly Fountain.

J.K. Gill Building. The J.K. Gill Building, located at 408 SW 5th Avenue, would be near the proposed alignment and LRT station on SW 5th Avenue, between SW Stark Street and SW Washington Street. The alignment and station would not require any use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

The Theater. The Theater, located at 9-13 SW 6th Avenue, would be near the proposed alignment and LRT station on SW 6th Avenue, between NW Couch Street and W Burnside. The alignment and station would not require any use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

The Equitable Building. The Equitable Building, located at 421 SW 6th Avenue, would be near the proposed alignment and LRT station on SW 6th Avenue, between SW Washington Street and SW Stark Street. The alignment and LRT station would not require any use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Portland's Chinatown Historic District. The proposed alignment would go through Portland's Chinatown Historic District, located along NW 4th Avenue, north of W Burnside. The proposed alignment and LRT stations would not require the use of any historical properties through Chinatown; and, therefore, no Section 4(f) use would occur.

Portland City Hall. There would be a use of the Portland City Hall, located at 1220 SW 5th Avenue. The proposed location of an LRT station in front of the SW 5th Avenue entrance to Portland City Hall would result in visual impacts to the building and inhibit established vehicular access to and from the building (see Figure 5.2-9).

A. Glisan Street Design Option

Fire Station. The proposed alignment would head east on NW Glisan Street near the fire station located at 510 NW 3rd Avenue. The alignment would not require any use of the historical site's

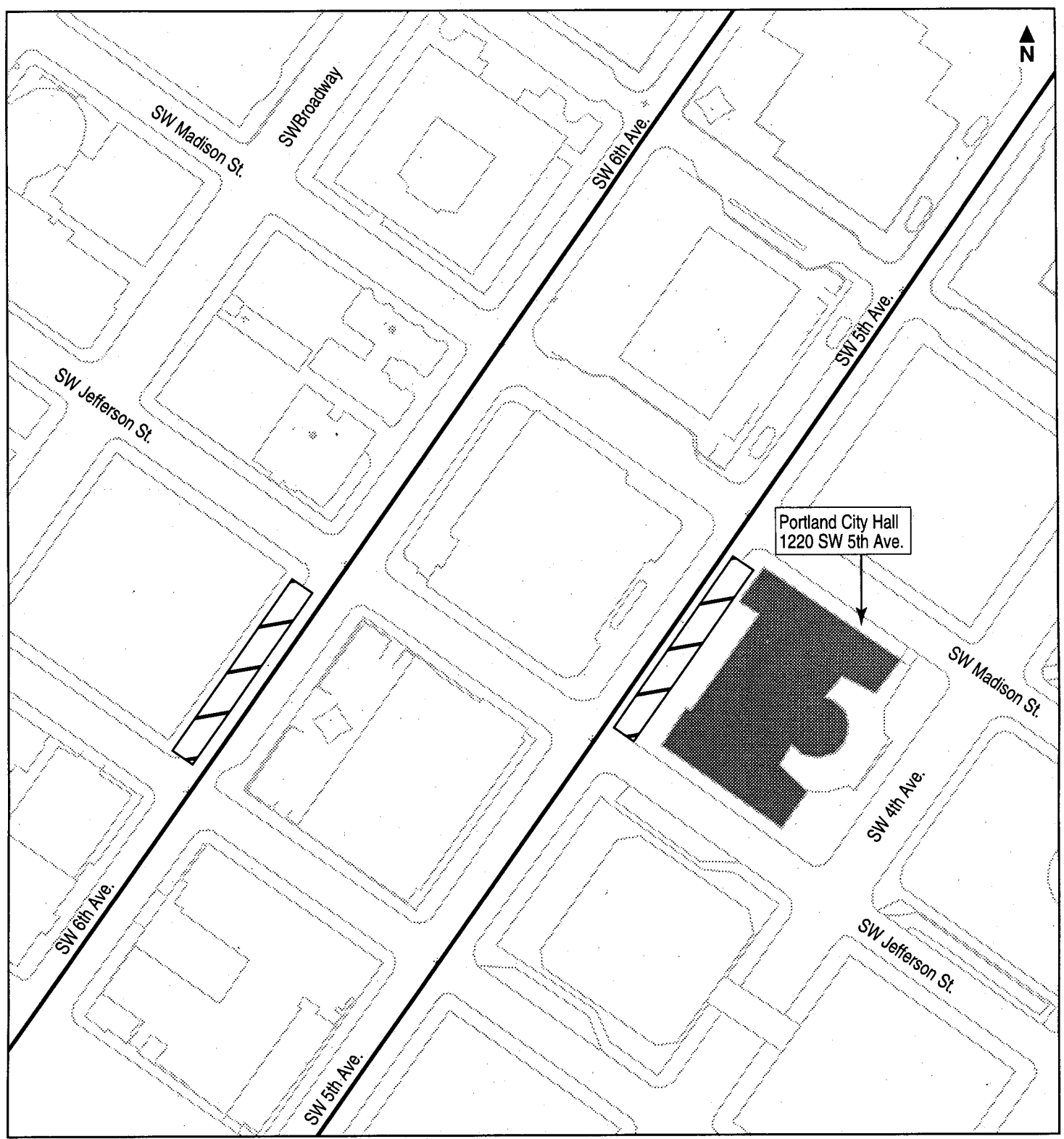

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Figure 5.2-9

Downtown Portland Segment

Full and Half Mall Alignment Alternatives

Portland City Hall
1220 SW 5th

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Station

0 100 200
FEET

property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Portland's Chinatown Historic District. The proposed alignment would go through Portland's Chinatown Historic District, located along NW 4th Avenue, north of W Burnside. The proposed alignment and LRT stations would not require the use of any historical properties through Chinatown; and, therefore, no Section 4(f) use would occur.

Hotel Medford. There would be a use of the Hotel Medford, located at 506-10 NW 5th Avenue. The site would be demolished as a result of the Glisan Street Design Option (see Figure 5.2-11).

B. Irving Street Design Option

Fire Station. The proposed alignment would head east on NW Irving Street and continue in the southeast direction until it heads east on NW Glisan Street toward the river crossing. The proposed alignment on NW Glisan Street would be near the fire station on 510 NW 3rd Avenue. The alignment would not require the use of any of the historical site, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Hotel Medford. The proposed alignment would continue in the northerly direction near the Hotel Medford, located at 506-10 NW 5th Avenue. A LRT transit station, located between NW Glisan Street and NW Hoyt Street, would also be located adjacent to the historic site. The proposed alignment and transit station would not require the use of any of the historical site, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Steam Plant. The proposed alignment would extend east on NW Irving Street. Near the Steam Plant at 501 NW Irving Street, the alignment would turn to the southeast direction. The alignment would not require the use of any of the historical site, nor have any substantial impacts to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Warehouse on Glisan Street. There would be a use of the warehouse, located at 406 NW Glisan Street, which would be demolished as a result of this design option (see Figure 5.2-10).

Chinatown Historic District. The proposed alignment would go through Portland's Chinatown Historic District, located along NW 4th Avenue, north of W Burnside. The proposed alignment and LRT stations would not require the use of any historical properties through Chinatown; and, therefore, no Section 4(f) use would occur.

5.2.6.2 Half-Transit Mall Alignment Alternative

Portland City Hall. There would be a Section 4(f) use on the Portland City Hall, 1220 SW 5th Avenue. The proposed location of the LRT station in front of the SW 5th Avenue entrance to Portland City Hall would result in visual impacts and inhibit established vehicular access to and from the building.

Pacific Building. The Pacific Building, located at 520 SW Yamhill Street, would be adjacent to the proposed LRT alignment. There would be no direct take of the Pacific Building property. LRT operations would generate noise levels of 88 dBA at the building exterior due to the sharp turning

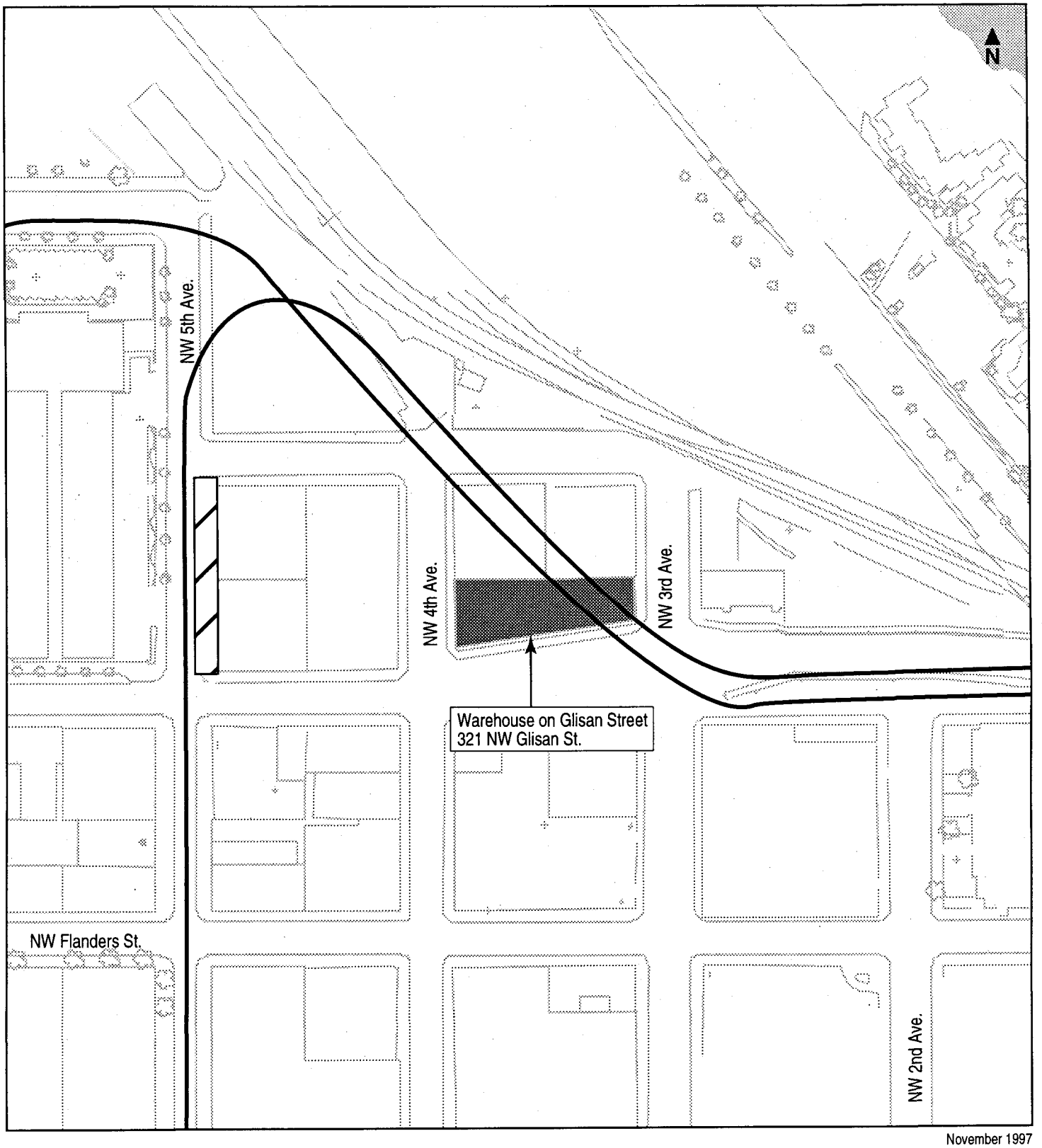

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Figure 5.2-10

Downtown Portland Segment

Full Mall Alignment Alternative
Irving Street Design Option
Warehouse on Glisan Street
321 NW Glisan Street

South North Transit Corridor Study

METRO

Affected Resource
LRT Alignment
Station

0 100 200
FEET

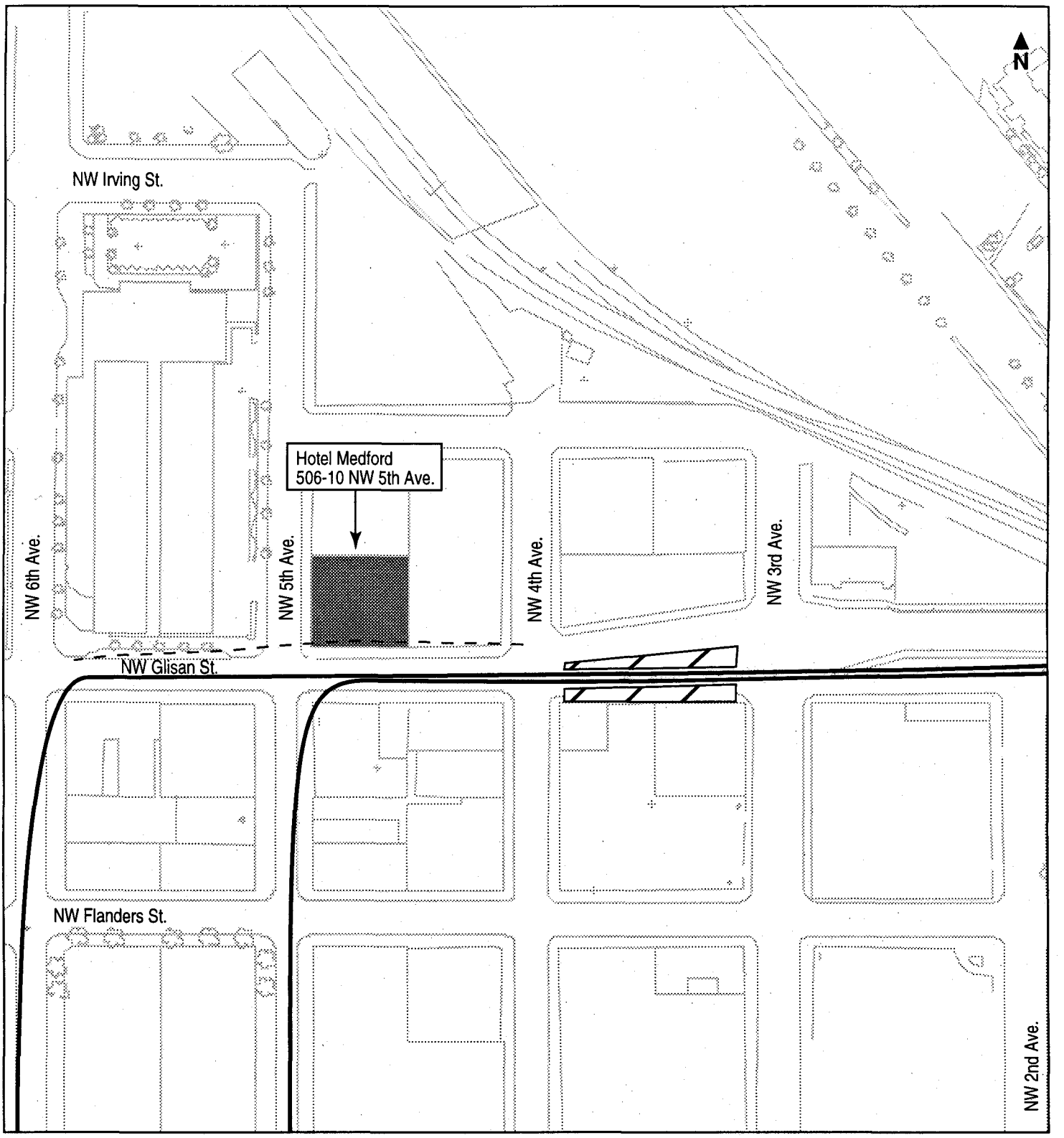

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Figure 5.2-11

Downtown Portland Segment

Glisan Street Design Option

Hotel Medford
506-10 NW 5th Avenue

South North Transit Corridor Study

METRO

Affected Resource
LRT Alignment
Station
Proposed Road

0 100 200
FEET

radius in the vicinity of the Pacific Building. This is 3 dBA greater than the applicable FTA criteria of 83 dBA. This noise level would constitute a "constructive use" of this Section 4(f) resource.

5.2.7 Eliot Segment

5.2.7.1 East I-5/Kerby Alignment Alternative

Holladay Park. With the MOS 2 length alternative, the alignment would end at the Rose Quarter Transit Center. A light rail turnaround area would be located near NE 11th Avenue and NE Holladay Street on the west side of the park. Sharp-turning radii would increase noise levels to 83 dBA at the southwest corner of Holladay Park, 3 dBA greater than FTA threshold criteria (see Figure 5.2-12).

A. At-Grade Crossing of Weidler/Broadway Design Option

Albina Park. The proposed I-5 Alignment Alternative would not require any physical use of the Albina Park playing field. The N Commercial Street right-of-way separates the park from the proposed alignment which is located to the east of I-5. The alignment would be approximately 40 feet away from the playing field property line. No use or functional impairment of the Albina Park playing field would result.

B. Grade-Separated Crossing of Weidler/Broadway Design Option

Albina Park. There would be no physical use of the Albina Park playing field as described above.

5.2.7.2 Wheeler/Russell Alignment Alternative

Albina Park. This alignment alternative would require no physical use of the Albina Park playing field. The alignment would be located on the N Flint right-of-way, east of the Albina Park playing field by approximately 40 feet. The alignment crosses N Russell and extends west, where the Russell Station would be located. The Albina Park playing field would be located approximately 75 feet south of this alignment alternative. N Russell separates the park from the alignment and station. No Section 4(f) use of the Albina Park playing field would result.

5.2.8 North Portland Segment

5.2.8.1 I-5 Alignment Alternative

40-Mile-Loop Trail (North of Columbia Slough). The proposed light rail alignment would cross over the designated future 40-Mile-Loop Trail north of the Columbia Slough. This portion of the proposed trail system, which will be located along the bank, has not yet been constructed. Clearance under the bridge is 10.5 feet, which is adequate clearance for the trail. This alignment alternative is elevated and would not result in a Section 4(f) use of the trail.

5.2.8.2 Interstate Avenue Alignment Alternative

Overlook Park. The Interstate Avenue Alignment Alternative crosses diagonally over to N Interstate Avenue from I-5 at the N Overlook Boulevard intersection. The Overlook Park is located on the southwest corner of N Interstate Avenue and N Overlook Boulevard The proposed alignment, which would not physically touch the park, would be approximately 100 feet away from the park's property line. No Section 4(f) use of the Overlook Park would result.

St. Stanislaus Church. The St. Stanislaus Church, located at 3916 N Interstate Avenue, would be in close proximity to the LRT improvements, but there would be no right-of-way take. The realignment of N Interstate Avenue would generate vibration levels at the church in excess of applicable FTA vibration criteria. This proximity impact may substantially impair the value of the church's use, which would constitute a "constructive use" of the site (Figure 5.2-13).

Polish American Citizens Building. The Polish American Citizens Building, located at 3832 N Interstate Avenue, would be in close proximity to the LRT improvements, but there would be no right-of-way take. The realignment of N Interstate Avenue would generate vibration levels at the site in excess of applicable FTA vibration criteria. This would constitute a "constructive use" (see Figure 5.2-14).

Patton Square Park. Patton Square Park is located on the east side of N Interstate Avenue. The Interstate Avenue Alignment Alternative would run along N Interstate Avenue, approximately 30 feet away from the park's property line. The N Interstate Avenue Alignment Alternative would be realigned to accommodate the LRT. Traffic noise impacts would increase by 1 dBA because of the road's closer proximity to the park. There would not be a substantial impairment to the park as a result of the proximity impacts. No Section 4(f) use or constructive use of Patton Square Park would result from this alignment.

Fire Station. The fire station, located at 5340 N Interstate Avenue, would be in close proximity to the LRT improvements, but there would be no right-of-way take. There is no right-of-way take for these properties, but they are located in close proximity to the LRT improvements. The realignment of N Interstate Avenue would result in an increase of traffic noise. Traffic would be in closer proximity to the fire station, but there would be no substantial impairment to the site. No Section 4(f) use would occur to these resources as described in the I-5 Alignment Alternative description.

Ockley Green School. The Ockley Green playing field is located on the east side of N Interstate Avenue. This alignment alternative would run along N Interstate Avenue, but there would be no physical use of the playing field. The proposed alignment would be approximately 30 feet away from the playing field. N Interstate Avenue would be realigned to accommodate the LRT. Traffic noise levels would increase because of the road's closer proximity to the playing field. There would not be a substantial impairment to the Ockley Green playing field, because the site is used for active recreational purposes. No Section 4(f) use of the school playing field would result from this alignment.

Kenton School. The Kenton School playing field is located on the west side of N Interstate Avenue. This Alignment Alternative would be located along N Interstate Avenue about 40 feet away from the playing field property line. N Interstate Avenue would have to be realigned to accommodate the

LRT. There would not be a substantial impairment to the Kenton School playing field, because the site is used for active recreational purposes. No Section 4(f) use of the school playing field would result from this alignment.

Nicolai Company Office Ensemble. There would be a use of the Nicolai Company Office Ensemble, located at 1935 N Argyle Street. The site would be demolished as a result of the N Interstate Alignment Alternative (see Figure 5.2-15).

Nicolai Company Industrial Site Ensemble. There would be a use of the Nicolai Company Industrial Site Ensemble, located at 1812-1930 N Columbia Boulevard. The building would be partially demolished as a result of the N Interstate Avenue Alignment Alternative (see Figure 5.2-16).

40-Mile-Loop Trail (North of Columbia Slough). The proposed Light Rail Alignment would cross over the designated future 40-Mile-Loop Trail north of the Columbia Slough. This portion of the trail, which will be located along the bank, has not yet been constructed. Clearance under the bridge is 16.5 feet, which is adequate clearance for the trail. This alignment alternative is elevated and would not result in a Section 4(f) use of the trail.

East Delta Park. East Delta Park is located on the east side of Interstate 5 (I-5). The proposed I-5 Alignment Alternative would be located on the west side of I-5, between the freeway and N Expo Road. This alignment alternative would be located on the other side of the freeway, approximately 200 feet west of the park. The proposed I-5 Alignment Alternative would not have any Section 4(f) use of the park.

West Delta Park. West Delta Park is located on the west side of N Denver Avenue and I-5. The proposed N Interstate Avenue Alignment Alternative would be located to the east of Denver Avenue, approximately 120 feet away from the western edge of the N Denver Avenue right-of-way. The alignment continues north past N Victory Boulevard to N Brodacre Street (does not physically touch the park). The alignment would not result in any Section 4(F) use or impairment of use of West Delta Park.

5.2.9 Hayden Island/Vancouver Segment

5.2.9.1 I-5/Washington Street Alignment Alternative

40-Mile-Loop Trail (N Marine Drive). The proposed alignment would cross over existing 40-Mile-Loop Trail along N Marine Drive. There is a minimum 17-foot vertical clearance between the alignment and the location of the trail. The trail has not yet been constructed, and the proposed alignment will allow for future construction. The alignment and pier locations would not require any use of the trail; and, therefore, no Section 4(f) use would occur.

Columbia River Interstate Bridge. One historic resource, the Columbia River Interstate Bridge, is currently listed on the National Register. The proposed alignment would be constructed alongside the Columbia River Interstate Bridge. No Section 4(f) use of the historic resource would occur.

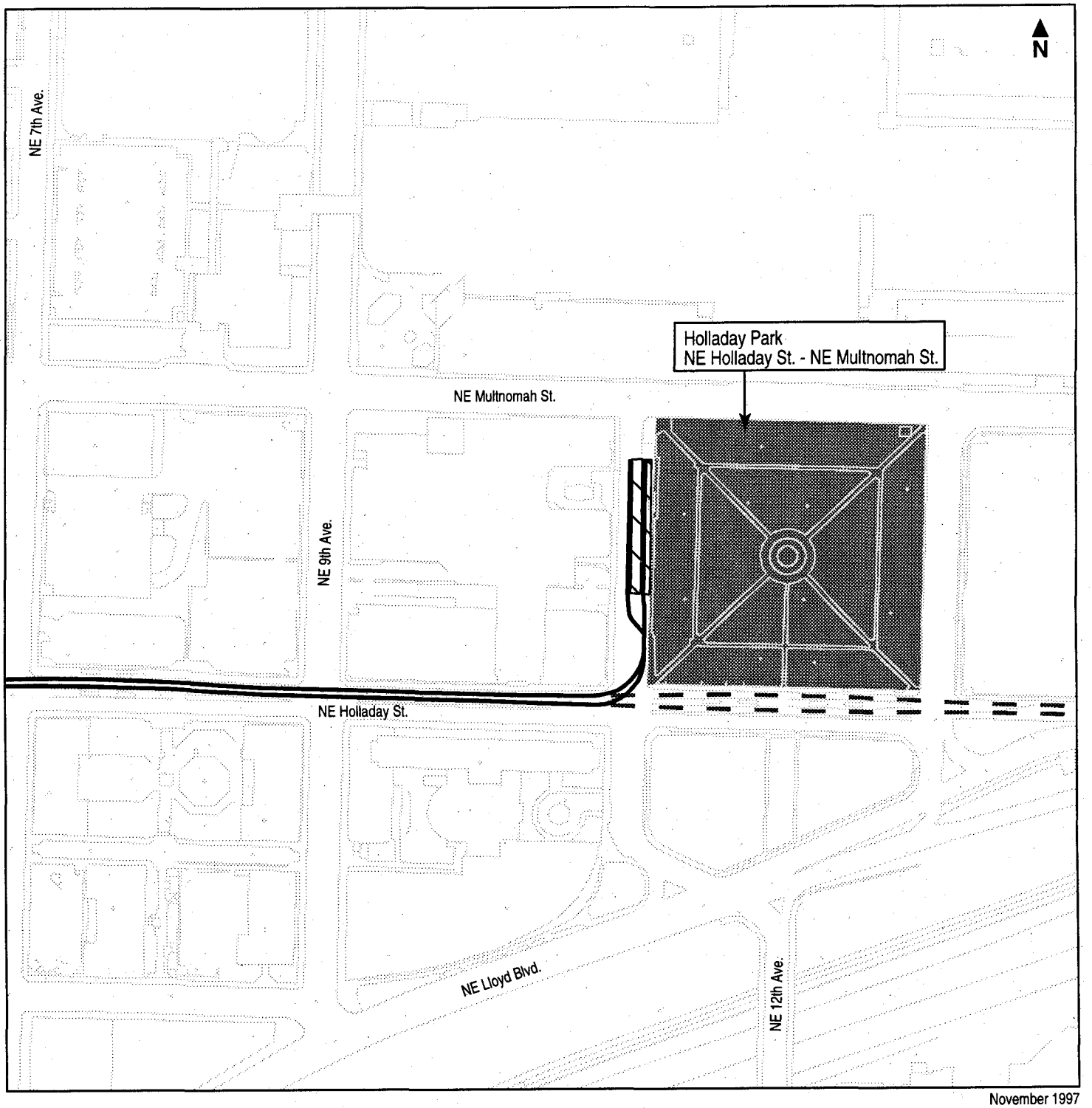

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Figure 5.2-12

Eliot Segment

MOS 2

Holladay Park

NE Holladay Street - NE Multnomah Street

Affected Resource

LRT Alignment

Existing MAX

Station

0 100 200

FEET

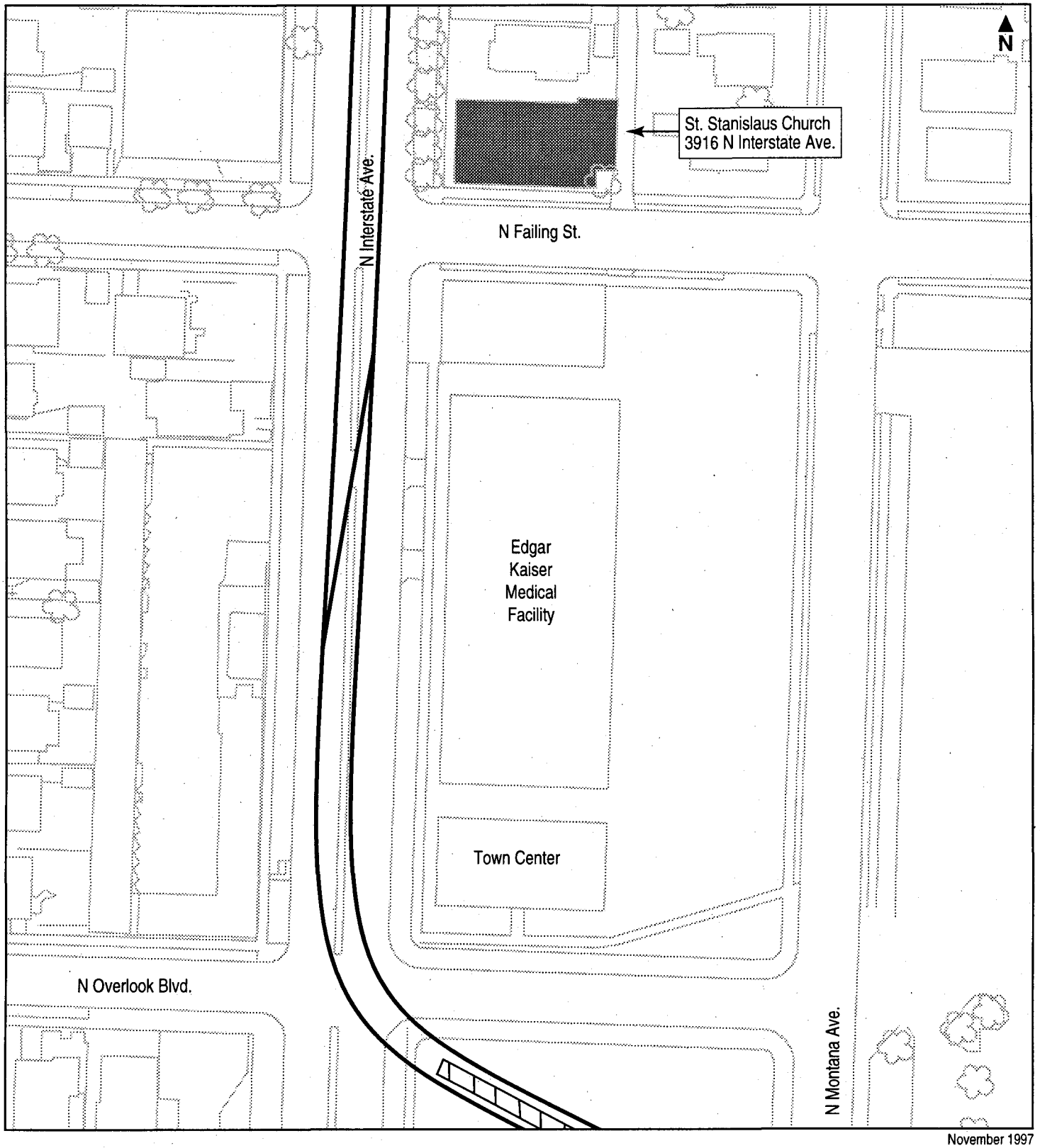

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Figure 5.2-13

North Portland Segment

Interstate Avenue Alignment Alternative

St. Stanislaus Church
3916 N Interstate Avenue

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Station

0 50 100

FEET

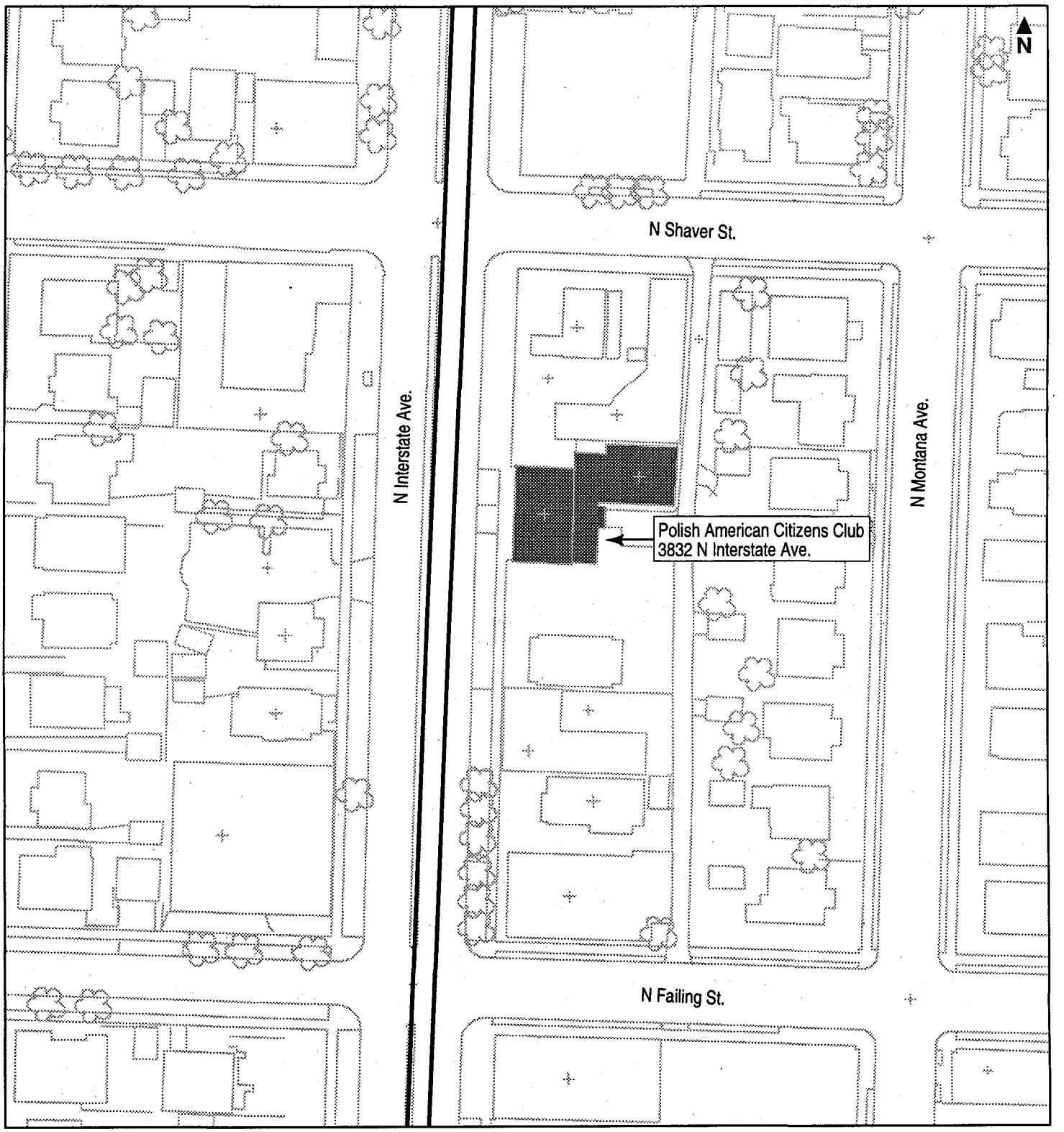

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Figure 5.2-14

North Portland Segment

Interstate Avenue Alternative

Polish American Citizens Club
3832 N Interstate Ave.

Affected Resource

LRT Alignment

Station

0 50 100

FEET

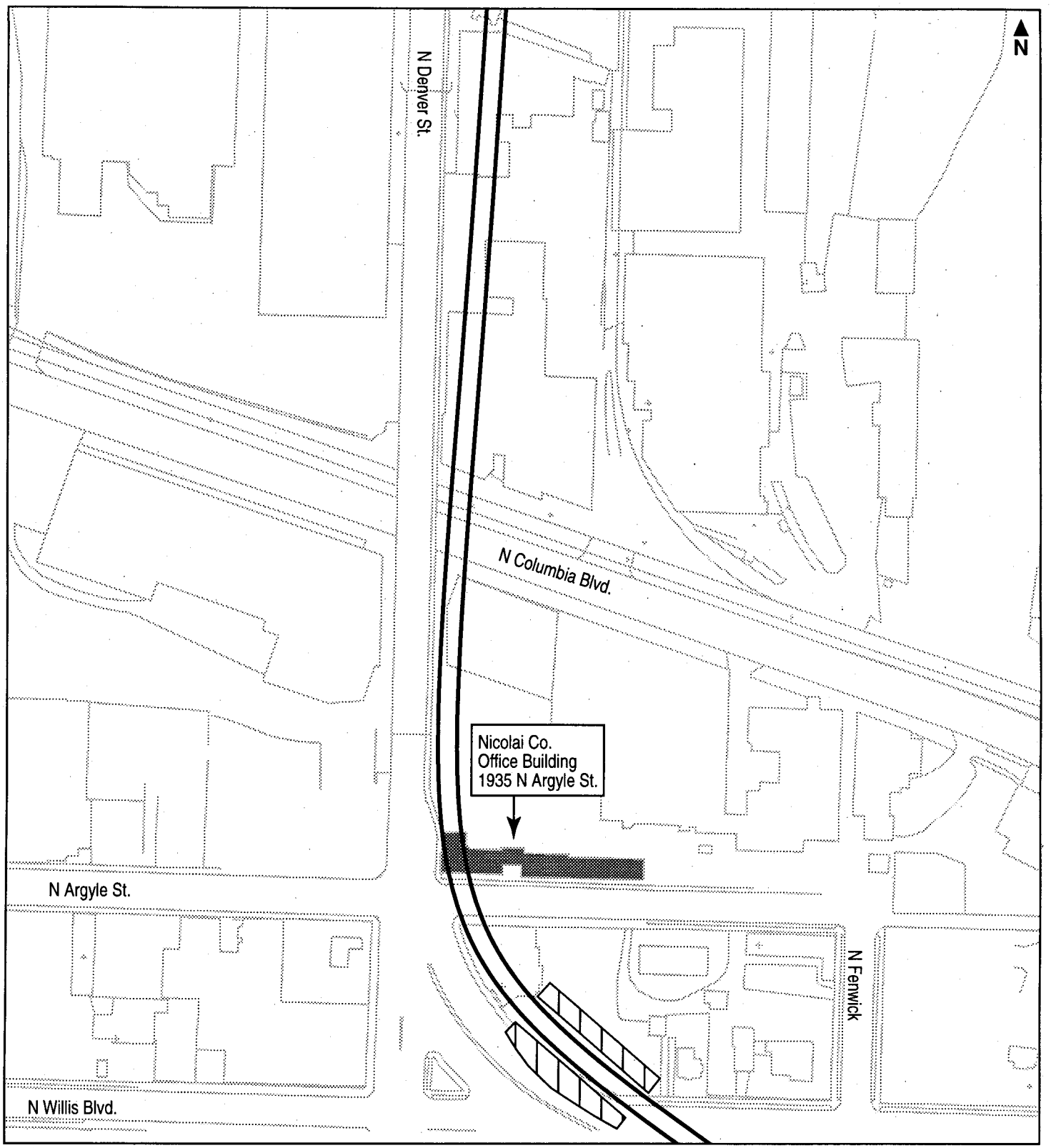

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Figure 5.2-15

North Portland Segment

Interstate Avenue Alignment Alternative

Nicolai Co. Office Building
1935 N. Argyle Street

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Station

0 100 200

FEET

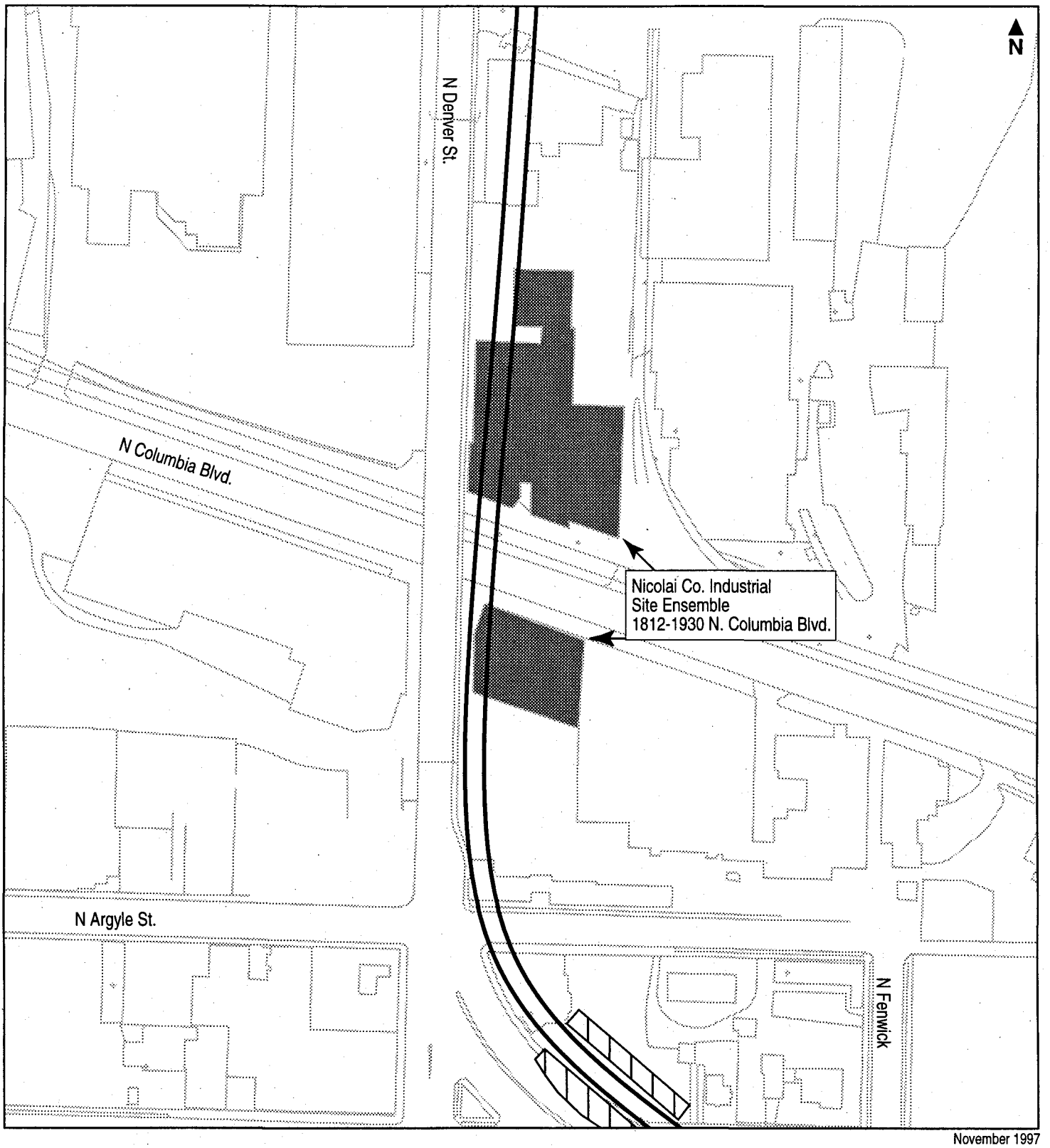

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Figure 5.2-16

North Portland Segment

Interstate Avenue Alignment Alternative

Nicolai Co.Industrial Site Ensemble
1812-1930 N. Columbia Blvd.

South North Transit Corridor Study

METRO

Affected Resource

LRT Alignment

Station

0 100 200

FEET

Captain George Vancouver Monument Plaza. The Captain George Vancouver Monument Plaza is not a designated park. The proposed light rail alignment parallels the I-5 Interstate Bridge from Hayden Island into Vancouver. The elevated LRT alignment would cross over the monument plaza's current location. There is a vertical clearance of 17 feet where the alignment crosses over the plaza area. The LRT bridge pier may also be located within the plaza boundaries, and shadowing may occur over the plaza area, which would have a detrimental effect to the pedestrian circulation in the plaza. If it is necessary to accommodate the proposed alignment, the monument plaza may be relocated to a mutually agreeable location.

Waterfront Renaissance Trail. This alignment would also cross the walking area along the waterfront that is currently designated as a scenic trail under the Waterfront Renaissance Trail conceptual plan. There would be no use of the recreation trail. However, there is an existing trail beneath the Interstate Bridge. Because the proposed alignment would be elevated, it would allow the existing trail to continue underneath the bridge. There is no Section 4(f) use of this resource.

A. West Side of Washington Street Design Option

Vancouver Telephone Exchange Building. The proposed alignment and LRT station would be located on Washington Street adjacent to the Vancouver Telephone Exchange building located at 122 W 11th Street. The proposed alignment and LRT station located between NW 12th Street and NW 11th Street would not require the use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Y's Buys Building. The proposed alignment and LRT station would be located on Washington Street, near the Y's Buys building located at 113 W 7th Street. The proposed alignment and LRT station located between NW 6th Street and NW 7th Street would not require the use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

Spic n' Span Building. The proposed alignment and LRT station would be located on Washington Street near the Spic n' Span building located at 1411 Washington Street (see Figure 6.18). The proposed alignment located would not require the use of the historical site's property, nor have any substantial impact to the site; and, therefore, there would be no Section 4(f) use to the historic site.

B. East Side of Washington Street Design Option

Vancouver Telephone Exchange Building. The Vancouver Telephone Exchange building located at 122 W 11th Street would be located in close proximity to the LRT improvements, but there would be no right-of-way take. There would be no Section 4(f) use to the site.

Y's Buys Building. The Y's Buys building located at 113 W 7th Street would be in close proximity to the LRT improvements, but there would be no right-of-way take. There would be no Section 4(f) use to the site.

Spic n' Span Building. The Spic n' Span building located at 1411 Washington Street would be in close proximity to the LRT improvements, but there would be no right-of-way take. There would be no Section 4(f) use of the site.

5.2.9.2 Veterans Administration Medical Center Park-and-Ride

A. Surface Park-and-Ride Design Option

George C. Marshall Center. The George C. Marshall Center is located south of E McLoughlin Boulevard. The alignment would extend east on E McLoughlin Boulevard, then transition to the north away from the park. The proposed alignment would be approximately 40 feet away from the park's property line, where the main parking lot sits. There are two entries to the community center, located at the entrance to the park. There would be no Section 4(f) use of the park, although the proposed alignment would restrict left-turn access exiting the park from the main parking area.

Clark College Sports Area. The proposed alignment alternative would require the use of approximately 40 feet along the northern edge of the Clark College Sports Area. The proposed alignment would require the use of approximately 1.21 acres of the playing field located to the north of the existing baseball field, concession stand and the new soccer field. Use of the baseball field and soccer field would likely occur as a result of the LRT construction. The concession stand would have to be relocated, and the soccer field (fence and bleachers) would have to be shifted to the south because of the proposed Clark College LRT station. The area north of the new soccer field has a planned jogging trail that would have to be relocated (see Figure 5.2-17). Along with the direct use, LRT wheel-squeal levels would exceed the 80 dBA APTA Standard, within 80 to 90 feet of the LRT track. This could be a "conditional use."

Structured Park-and-Ride Design Option. Impacts would be the same as with the Surface Park-and-Ride Design Option. See description of George C. Marshall Park and Clark College Sports Area above.

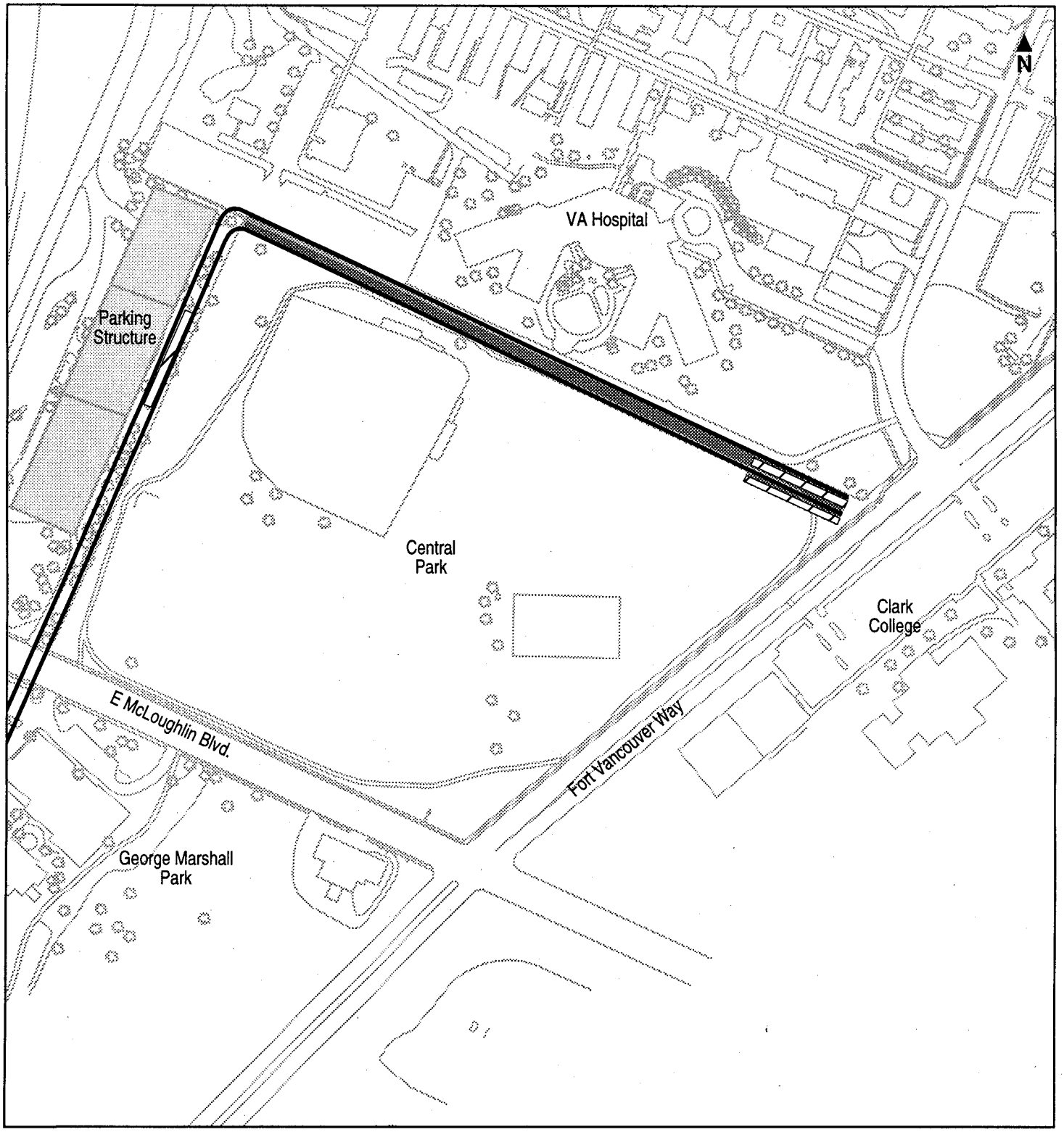

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Figure 5.2-17

Hayden Island/ Vancouver Segment

I-5/Washington Street Alignment Alternative

Clark College Sports Area

South North Transit Corridor Study

METRO

Affected Parkland

LRT Alignment

Station

0 100 200

FEET

6. POTENTIAL MITIGATION MEASURES

6.1 Avoidance and Mitigation Recommendations

As part of the Section 4(f) evaluation, potential design modifications that would avoid or minimize use of the Section 4(f) resources were evaluated and recommendations to mitigate impacts were identified.

6.1.1 Clackamas Regional Center Segment

A. North or South of CTC Alignment Alternative/North of OIT/CCC Design Option

Harmony Elementary School. Harmony Elementary School would be used by the Full-Length, MOS 2 and MOS 5 Alternatives. The Harmony Elementary School would be affected by loss-of-site integrity and noise and visual impacts as a result of right-of-way associated with the North or South of Clackamas Regional Center Alignment Alternatives with the North of OIT/CCC Design Option. Use of the resource would be avoided by the south of OIT/CCC Design Option (associated with either the North of CTC or South of CTC Alignment Alternatives) and MOS 1 with a southern terminus at Milwaukie Marketplace. Mitigation measures to reduce impacts to the school could include a noise wall and landscaping along the alignment at this location to screen the roadway, roadway noise and LRT from the historic school.

6.1.2 East Milwaukie Segment

A. Railroad Avenue/Through Traffic Option

Hector Campbell Elementary School. Hector Campbell Elementary School would be used by the Full-Length, MOS 2 and MOS 5 Alternatives. This alignment would require the realignment of Railroad Avenue, resulting in the use of the Hector Campbell playing field. The encroachment would also require that the existing baseball field be realigned, because there is a backstop located at the south end of the field. To avoid use, the proposed alignment could be located on the south side of the SP railroad right-of-way. This new alignment would occur in an area of steep terrain, requiring considerable fill. Much of required fill would be placed in wetlands along the railroad right-of-way. The Highway 224 Alignment Alternative and MOS 1 would also avoid use of this resource. The Railroad Avenue/Local Access Alignment Alternative would reduce impacts on this resource. It may be possible to relocate the baseball diamond within playing-field boundaries.

Keil Ensemble Bungalow. Right-of-way is required from this resource if the Full-Length LRT or MOS 2 or MOS 5 Alternative is built based on the conceptual design. The Keil House Ensemble would be adversely affected by the anticipated demolition of the associated bungalow at 4225 Railroad Avenue. The Highway 224 Alignment Alternative and MOS 1 would avoid use of the resource. Possible mitigation could include moving the bungalow north on the parcel away from the alignment. There could be noise impacts, and there would be visual impacts to both resources because of their proximity to the alignment. These effects could be minimized through the use of architecturally compatible walls. If demolition could not be avoided, the recordation and salvage of the Kiel House Ensemble Bungalow could be completed.

Keil House Ensemble. Right-of-way is required from the Keil House property if the Full-Length or MOS 2 or MOS 5 Alternative is built, based on the conceptual design. The Highway 224 Alignment Alternative and MOS 1 would avoid use of this resource. Access to the house would be altered, and this could be mitigated by relocation of the driveway. There could be sound and visual impacts to both resources because of their proximity to the alignment. These effects could be minimized through the use of architecturally compatible walls.

Adams Residence. Based on the conceptual design, right-of-way is required from this resource if the Full-Length, MOS 2 or MOS 5 Alternative is built. This resource would be used by the demolition of two outbuildings associated with the primary residence which provide an architectural context for the resource. The Highway 224 Alignment Alternative and MOS 1 would avoid use of this resource. The Local Access Option would require removal of only one outbuilding. Mitigation measures would include recordation and relocation of the outbuildings elsewhere on the property or recordation before demolition.

B. Railroad Avenue/Local Access Option

Hector Campbell Elementary School. The Hector Campbell Elementary School would be used by the Full-Length, MOS 2 and MOS 5 Alternatives. This alignment would require the realignment of Railroad Avenue, resulting in the use of the Hector Campbell playing field. The encroachment would also be near the existing baseball field. To avoid use, the proposed alignment could be located on the south side of the SP railroad right-of-way. This new alignment would occur in any area of steep terrain, requiring considerable fill. Much of required fill would be placed in wetlands along the railroad right-of-way. The Highway 224 Alignment Alternative and MOS 1 would avoid use of this resource. It may be possible to maintain the field's recreational uses by relocating the baseball diamond within the playing-field boundaries.

Keil Ensemble Bungalow. Right-of-way is required from this resource if the Full-Length LRT or MOS 2 or MOS 5 Alternative is built based on the conceptual design. The Keil House Ensemble would be adversely affected by taking approximately 45 feet along the southern property boundary. The Highway 224 Alignment Alternative and MOS 1 would avoid use of the resource. There could be noise impacts, and there would be visual impacts to both resources because of their proximity to the alignment. These effects could be minimized through the use of architecturally compatible walls.

Keil House Ensemble. Right-of-way is required from the Keil House property if the Full-Length LRT or MOS 2 or MOS 5 Alternative is built, based on the conceptual design. The Highway 224 Alignment Alternative and MOS 1 would avoid use of this resource. Access to the house would be altered, and this could be mitigated by relocation of the driveway. There could be sound and visual impacts to both resources because of their proximity to the alignment. These effects could be minimized through the use of architecturally compatible walls.

Adams Residence. Based on the conceptual design, right-of-way is required from this resource if the Full-Length LRT, MOS 2 or MOS 5 Alternative is built. This resource would be used by the demolition of two outbuildings associated with the primary residence which provide an architectural context for the resource. The Highway 224 Alignment Alternative would avoid use of this resource. The Local Access Option would require removal of only one outbuilding. Mitigation measures

would include recordation and relocation of the outbuildings elsewhere on the property or recordation before demolition.

6.1.3 Milwaukie Regional Center Segment

Scott Park. This proposed alignment alternative would require the use of 0.28 acre of Scott Park. During conceptual design, numerous alternatives, intended to reduce or avoid impacts to Scott Park, were developed and considered. However, they were rejected for a variety of reasons including, but not limited to, one or more of the following: they would not have provided LRT access to the core of the Milwaukie Regional Center; they would have precluded reasonable options for future corridor extensions; or they would have resulted in considerably more displacements and neighborhood impacts than the current alignment alternative.

A cooperative planning process has begun with the City of Milwaukie and North Clackamas Parks and Recreation District to develop a mitigation plan for Scott Park. Adverse effects of the McLoughlin Boulevard Alignment Alternative could be mitigated through compatible and sensitive design of the station and alignment in the area of the park to integrate the station into overall park design or provide replacement parkland. Recommendations for reducing noise levels in the park include modification of the vehicle, modification of the track or lubrication of the track.

Oregon Worsted Company. Based on conceptual design, if the Main Street/Tillamook Branch Line Alignment Alternative is chosen, this resource would be used by demolition. Also, if the Tacoma Street/North of Springwater Park-and-Ride is chosen, the resource would be adversely affected by demolition. This would apply to the Full-Length, MOS 1, MOS 2 or MOS 5 Alternatives. Because no avoidance is possible, mitigation for the loss of this resource could include recordation and salvage of the structure.

6.1.4 South Willamette River Crossing

Caruthers Crossing. The Caruthers Crossing would require the taking of approximately 0.33 acres of South Waterfront Redevelopment Area property acquired with Section 6(f) funds under the Land and Water Conservation Act Fund. Avoidance recommendations for the South Waterfront Redevelopment Area include the following:

- In this alignment alternative crossing, the relocation of the alignment southerly approximately 30 feet would avoid any physical use of the Greenway property; and
- The Ross Island Alignment would avoid use of the Willamette Greenway Trail on both sides of the bank.

6.1.5 Downtown Portland

Hotel Medford. With the Glisan Option in the Full-Transit Mall, Full-Length MOS 1 or 3 Alternatives, the Hotel Medford would be used because of a right-of-way take based on the conceptual design, resulting in demolition of the building. This impact could be avoided if the Irving Street Design Option of the Full-Transit Mall Alignment in the Full-Length, MOS 1, MOS 2 or the Half-Transit Mall with MOS 5 Alternatives was selected. Alteration to the design of the alignment

or the redesign of the first-floor facade of the building to allow for a sidewalk next to the building and to accommodate the LRT, also could avoid this impact. Mitigation for the adverse effect of the demolition could include recordation and salvage of the building as well as relocation of the rehabilitation center currently located in the building.

Portland City Hall. The Portland City Hall would be used by proposed construction of any of the LRT Build Options based on the conceptual design because of a proposed station located in front of the structure. Effects would include visual and access impacts that could be avoided or minimized if creative solutions, compatible with the existing historic character of Portland City Hall, were applied to the design and location of the station. Current renovation of Portland City Hall will provide pedestrian-only access on SW 5th Avenue, and the adverse effect of a LRT station in front of the Portland City Hall would be avoided.

Pacific Building. With the Half Transit Mall Alignment Alternative for any of the MOS alternatives, the noise and vibration levels would exceed FTA criteria. Impacts could be avoided and reduced with the Full-Transit Mall Alignment Alternative, which would avoid the sharp turning radius on the Half-Mall Alignment Alternative. Measures to reduce noise and vibration on the Half-Mall Alignment Alternative could include modification of vehicles, modification of track or lubrication of the track.

Warehouse on Glisan Street. Based on conceptual design, this warehouse would be used by a right-of-way take associated with the Irving Option for the Full-Transit Mall Alignment Alternative for either the Full-Length LRT, MOS 1 or MOS 2. This resource would result in demolition of the building with these alternatives. This impact could be avoided with either the Full-Transit Mall Alignment Alternative with the Glisan Street Design Option or the Half-Transit Mall Alignment Alternative.

If the Irving Option is chosen, there does not appear to be an opportunity to avoid the anticipated adverse effect to the warehouse. Recordation and salvage of the building could mitigate for the loss of the structure.

6.1.6 Eliot Segment

Holladay Park. This resource would be used only by the MOS 2 Length Alternative because of increased noise levels that exceed FTA threshold criteria. This impact would be avoided by selection of any of the other MOS Length Alternatives. Other noise mitigation recommendations for the MOS 2 Alternative include modification of the vehicle, modification of the track or lubrication of the track.

6.1.7 North Portland Segment

A. Interstate Avenue Alignment Alternative

Nicolai Company Office Ensemble and Nicolai Company Industrial Site Ensemble. These resources would be used because of a right-of-way take associated with the conceptual design of the Interstate Avenue Option with the Full-Length or MOS 1 Alternative, which would result in demolition of the building. This impact could be avoided if the I-5 Alignment Alternative or MOS 2

is chosen. If the Interstate Alignment Alternative is selected, avoidance alternatives could include adjustment of the alignment closer to the southern side of N. Argyle Street to avoid the Nicolai Building or use of the existing Portland viaduct for the LRT. Recordation and salvage of the building could mitigate for the loss of the structure if no feasible opportunities for avoidance are identified.

Polish American Citizens Club Building. The Interstate Avenue Alignment Alternative would be built and operated adjacent to this resource. There would be no direct take of the Polish American Citizens Club Building, but there would be an increase in vibration levels. Potential vibration mitigation (such as a ballast mat) would reduce vibration impacts to the Polish American Citizens Club below the FTA vibration impact criterion and avoid constructive use of this resource. Also, selection of the I-5 Alignment Alternative would avoid any use of this resource.

Saint Stanislaus Church. Potential vibration mitigation measures (such as ballast mat) to reduce impacts generated by the Interstate Avenue Alignment Alternative would reduce vibration impacts to the church below the FTA vibration impact criterion and avoid constructive use of this resource. Also, selection of the I-5 Alignment Alternative would avoid any 4(f) use of this resource. With either of the avoidance alternatives, no additional mitigation would be necessary.

6.1.8 Hayden Island/Vancouver Segment

A. Veterans Administration Medical Center Surface Park-and-Ride Option

Central Park (Clark College Sports Area). This proposed alignment alternative would require the use of approximately 1.21 acres of the Clark College Sports Area. Avoidance Recommendations for the Clark College Sports Area includes the following:

- Select either the MOS 2 or MOS 5 Length Alternatives;
- The proposed alignment would end at the northern portion of the Department of Transportation property. This realignment would avoid crossing eastbound into the Clark College property and any use of the playing fields; and
- Terminate the LRT Alignment Alternative at the Veterans Administration Park-and-Ride.

It may be possible to maintain the baseball field's, soccer field's and planned jogging trail's recreational uses by relocating them slightly south of their current locations, but still within the property boundaries. Recommendations to reduce noise levels include increasing the turning radius at the northwest corner of the sports area, modifying the track or vehicle (including track lubrication) and constructing a sound barrier between the track and the sports area.

B. Veterans Administration Medical Center Structure Park-and-Ride Option

Central Park (Clark College Sports Area). The impacts and mitigation for this alternative would be the same as with the Surface Park-and-Ride Option.