CORVALLIS CASE STUDY:
Indirect Land Use and Growth Impacts of Highway Improvements

Final Report

SPR Project 327

by

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and

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for

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Also available for this study: A Guidebook for Estimating the Indirect Land Use and Growth Impacts of Highway Improvements, Final Report and Appendices, and six case study reports (Albany, Bend, Corvallis, Grants Pass, La Grande/Island City, and McMinnville).

16. Abstract

To improve environmental analysis of indirect land use impacts of highway capacity improvements, this study analyzed the land use and growth patterns of 20 Oregon communities over 20 years. Using a Geographic Information System and aerial photos, growth patterns were categorized and mapped. Factors related to land use and transportation were evaluated for their relationships to resulting growth patterns. These relationships were further investigated in six in-depth case studies of development prior to, during, and after construction of a highway capacity improvement.

A guidebook was produced to provide guidance to ODOT staff for completing environmental analysis and documentation on indirect land use impacts of highway improvements, based on the findings of the study. One finding was that most highway capacity increases do not cause development to be dramatically different from local land use plan guidance, or from what would have occurred in the absence of the highway improvement. In Oregon, local governments hold the tools to determine development patterns, using zoning and public utilities such as water, sewer and roads.

The guidebook is not a directive but a compilation of recommendations for a systematic look and consistent approach to predicting the indirect land use impacts of highway improvements. Appendices A-F of this report provide background on the study findings, including the literature review, growth trends analysis and six in-depth case studies. Also included in the appendices are a discussion of population and employment forecasting issues and a summary of ODOT processes for project evaluation. This report is the full case study report for one community – Corvallis.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
AREA				
in^2	square inches	645.2	millimeters squared	mm^2
ft^2	square feet	0.093	meters squared	m^2
yd^2	square yards	0.836	meters squared	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	kilometers squared	km^2
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	meters cubed	m^3
yd^3	cubic yards	0.765	meters cubed	m^3
NOTE: Volumes greater than 1000 L shall be shown in m^3.				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5(F-32)/9	Celsius temperature	°C

APPROXIMATE CONVERSIONS FROM SI UNITS

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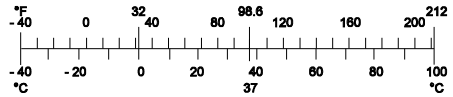
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
AREA				
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
ha	hectares	2.47	acres	ac
km^2	kilometers squared	0.386	square miles	mi^2
VOLUME				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3
MASS				
g	grams	0.035	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams	1.102	short tons (2000 lb)	T
TEMPERATURE (exact)				
°C	Celsius temperature	1.8 + 32	Fahrenheit	°F



***** SI is the symbol for the International System of Measurement

(4-7-94 jbp)

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DISCLAIMER

CORVALLIS CASE STUDY:
INDIRECT LAND USE AND GROWTH IMPACTS

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1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This case study is part of a larger study sponsored by the Oregon Department of Transportation (ODOT) to quantify the impacts of its highway improvement projects on land use. Any significant highway improvement projects that ODOT undertakes will require Environmental Impact Statements, which in turn require an assessment of the improvements on land use in addition to other environmental and socioeconomic impacts.

The larger study consists of three research components and a final report. The three research components are:

- *Literature Review.* Review of state and national studies to summarize empirical estimates of the relationship between highway and land use change, especially at the urban fringe.

- *20-Site Analysis.* Analysis of historical aerial photographs and highway maps to show the association between highway improvements and land use changes over 20 years in 20 Oregon cities.

- *Case Study Analysis.* More detailed analysis of highway projects in six Oregon cities to try to explain the reasons for the observed change in land use and highways. The case study cities are Albany, Bend, Corvallis, Grants Pass, Island City, and McMinnville.

This report is the case study analysis for the City of Corvallis only. It does not try to generalize to other situations, or to integrate this case study with the other research. The final report will do that and will include a summary of key findings of the literature review, the 20-site analysis and all the case studies.

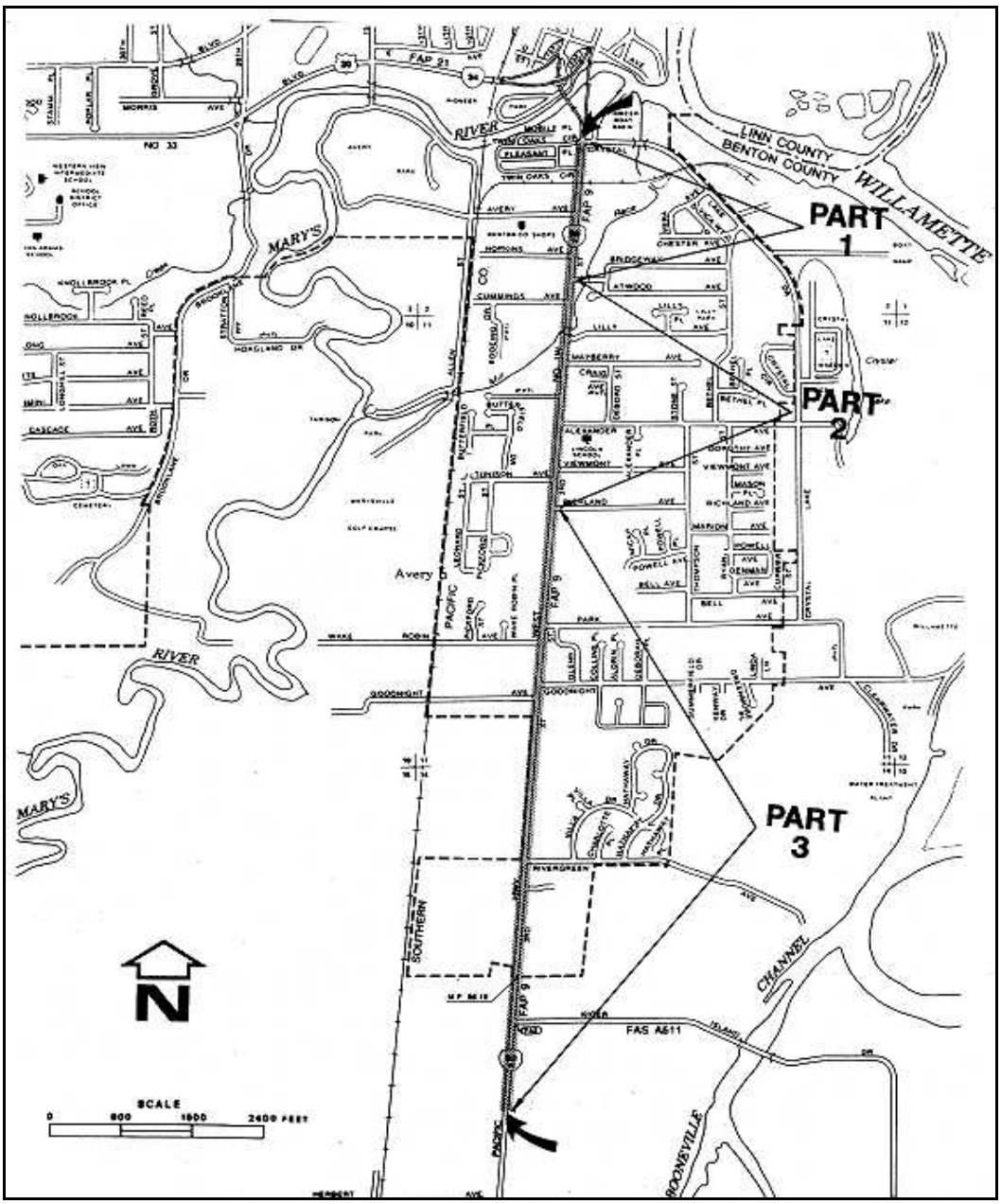
1.2 DESCRIPTION OF THE CASE STUDY HIGHWAY PROJECT

The Corvallis case study evaluates the land use impacts of improvements to a 2.2 mile section of Oregon Highway 99W (Pacific Highway West)[1] from the Mary's River on the north to Kiger Island Drive on the south (this stretch is also known as South Third Street). Highway 99W is a major north-south highway and connects Corvallis to Eugene to the south and Salem to the north. This section of highway serves as the southern entrance to Corvallis and is the only arterial serving this section of town known as South Corvallis. Highways 34 and 20 are the major east-west routes.

Figure 1.1 shows the location of the project. Before the project, the facility had four lanes between the Mary's River bridges and the Lincoln School block and two lanes south of the

[1] The original roadway was built in 1920.

Lincoln School block. Sidewalks existed on both sides of the road north of Richland Avenue and deep, wide ditches bordered the road south of Richand Avenue. There were no provisions for bicyclists and no on-street parking. A pedestrian-activated light was located by Lincoln School at Alexander Avenue. The improvement widened the highway to four travel lanes with a continuous left-turn lane, shoulder/bike lanes, and sidewalks from the Mary's River bridges to Kiger Island Drive. The project also included a full-phase signal at Alexander Avenue (at Lincoln School).



Source: Environmental Assessment, Mary's River to Kiger Island Drive, Oregon 99W-Pacific Highway West, Benton County-Corvallis-Oregon, Federal Highway Administration and Oregon Department of Transportation, 1985.

Figure 1.1: Project Location

The initial form of the project was proposed in 1974 and consisted of four travel lanes with center left-turn lane between the end of the Third/Fourth Street couplet and what was then the south city limits just past Goodnight Avenue. Funding limitations and research indicating development needs caused the project scope to undergo several changes. After 1981, the project was extended further south to just past Kiger Island Drive to address the recent subdivisions and planned industrial uses inside the city's UGB.

According to the focus group, a regional priorities initiative led by the Governor combined with a regional group facilitated by the COG prioritized highway improvements and convinced the communities along the highways to pass resolutions supporting the improvement projects identified. This had a big influence in the timing of the widening of South Third Street as well as other projects in the area. The focus group also attributed the timing of the project and the Corvallis Bypass to the leadership of city's mayor at the time.

A full Environmental Impact Statement (EIS) was not completed for the Mary's River to Kiger Island Drive Project. The Environmental Assessment (EA) for the South Third Street improvement was completed in 1985. Project construction began in 1990 and was completed in 1992. The EA had described a staged construction for funding purposes, but the actual project construction occurred as a whole.

According to the EA, the purpose of the project was to improve vehicle, pedestrian (particularly school children), and bicycle safety, improve levels of service, and improve the facility's appearance. At the time the EA was written (1985), numerous, small commercial establishments and residential neighborhoods along the highway generated traffic and turn movements, and industrial uses were designated near the south end of the project. Turning and rear-end collisions were the main type of accidents occurring, and the EA expected that as the project area developed, traffic volume would increase 50% by the year 2000. The merge from four to two lanes in the Lincoln School block also created a hazard and was eliminated by the project. The project's curbs and an underground storm sewer system replaced the unsafe ditches.

One other highway project, the construction of the Corvallis Bypass in 1992, influences land use in the South Corvallis area but is not the object of this case study. The Bypass provides an eastern route around the Corvallis central business district for travel between Highways 99W and 34. Since the Bypass and the widening of South Third Street were completed at about the same time, it is difficult to separate their individual impacts on land use. The Bypass improved access to and from South Corvallis and Highway 34 leading to Interstate 5. This case study discusses the Bypass' potential influence, but does not evaluate it with the level of detail collected for the study area.

1.3 METHODS

As with most policy research, the intent of this case study is to be able to isolate the impacts (the effects) that are uniquely attributable to a change in public policy. Figure 1.2 illustrates the concept. The shaded box represents a world that does not exist but one that an analyst must somehow describe. It is a world that *would have* existed but for the introduction of the new policy. As it relates to this case study, the improvement to Highway 99W is the policy. The case study can document, to the extent the data allow, what happened after that policy (box on bottom right). Describing what *would have happened* without the improvement (the shaded box) is more

speculative. As applied to this case study, the method does not formally define a hypothetical world and compare it to an actual one. Rather, it relies on expert opinion about the contribution of the project to the changes observed between "Existing Conditions" (1985) and the "Actual World" (2000).

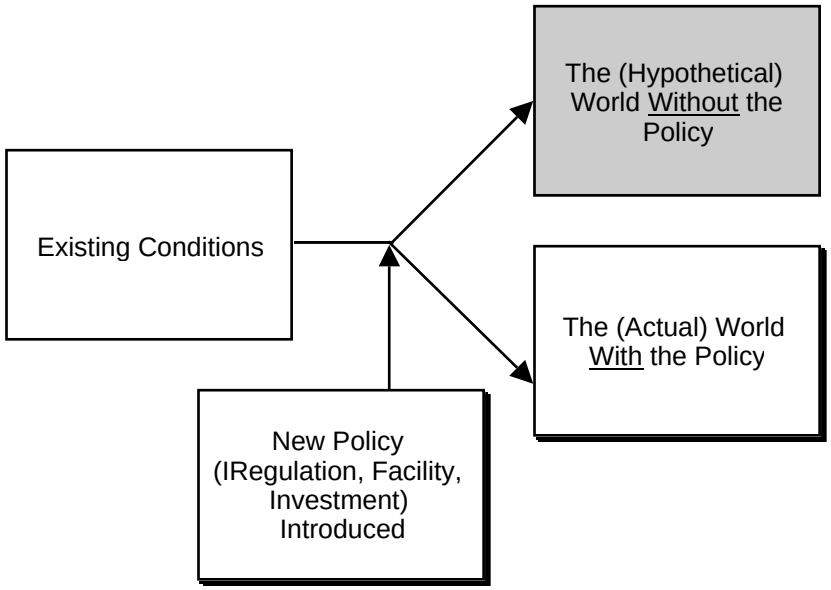


Figure 1.2: Case Study Method, in Concept

As originally scoped, this case study was about Corvallis. When the EA was issued in 1985, the project corridor was inside the Corvallis Urban Growth Boundary (UGB). The improvement included a small section (near the southern terminus) outside the Corvallis city limits.

The study area boundaries were established based on the physical barriers provided by the Mary's River to the north and west and the Willamette River to the east, and the Corvallis UGB to the south (see Figure 1.3). The study area corresponds to the area known locally as South Corvallis. While the focus of the case study is on the Highway 99W corridor, we also evaluated data citywide to provide a broader picture of where development occurred and when. Without that larger context, it would be difficult to make judgements about whether the highway improvement caused changes in development patterns.

The analysis in this report is both quantitative and qualitative. To conduct the baseline analysis, we reviewed the Environmental Assessment and interviewed City of Corvallis staff. Those sources are the basis for our description of existing conditions before the case study highway improvements.

This report uses the following sources to describe changes in land use:

- Aerial photographs from 1970, 1980 and 1990.
- City building permit data to identify the location, timing and value of residential, commercial, and industrial development.

- City residential development project approval data to identify the timing and size of existing and planned residential development.
- Capital improvement programs and geographic information systems (GIS) maps to identify the location and timing of transportation, water and sewer infrastructure projects.
- City planning documents that show changes in land use and identify public policy.

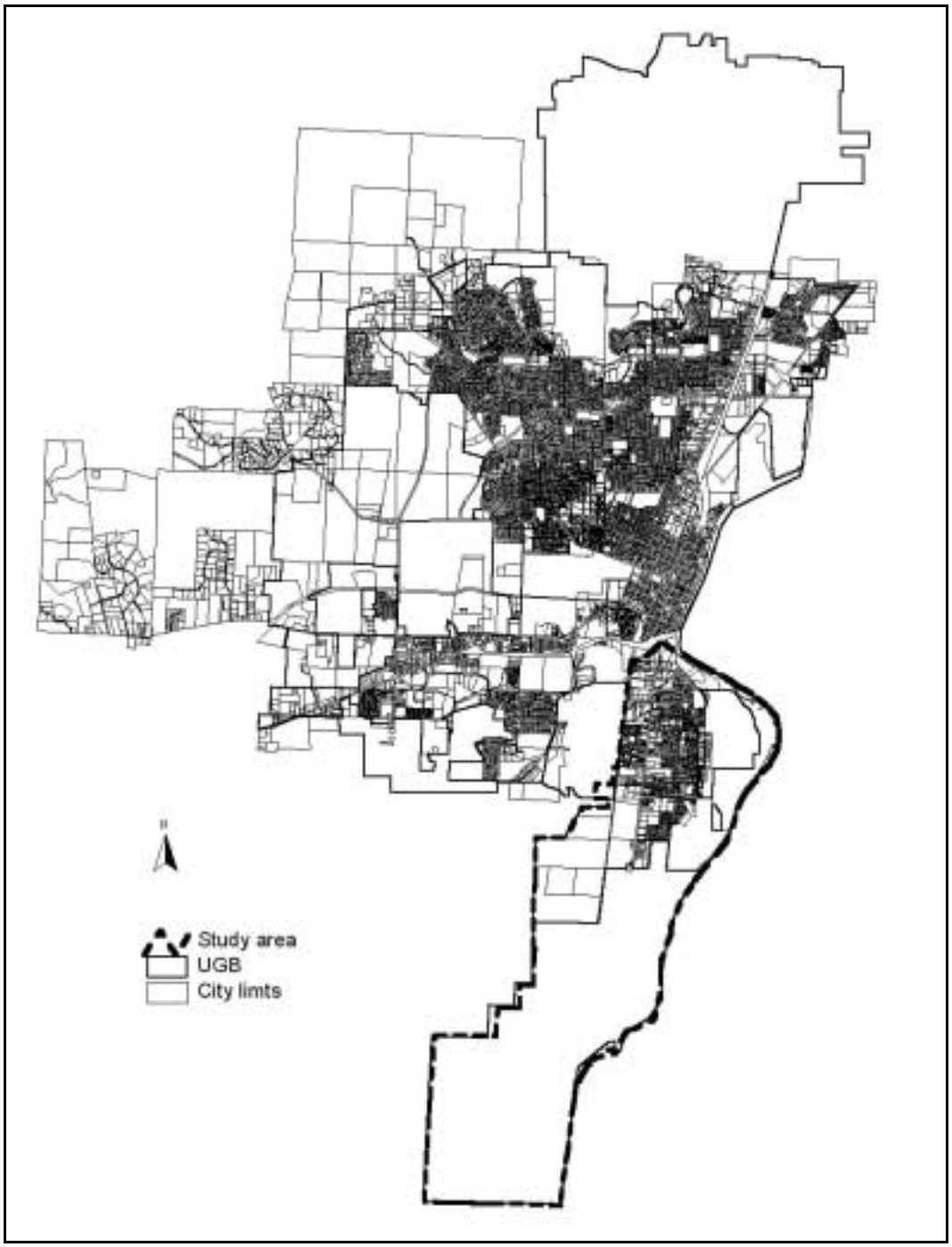


Figure 1.3: Study Area Location

We describe the alternative future through the focus group. The group consisted of Corvallis staff and others with knowledge of development patterns in the Corvallis area. No ODOT representative was available to attend the focus group meeting because ODOT was holding a regional meeting at the same time and other scheduling conflicts existed. The purpose of the focus group session was to get comments on the preliminary conclusions made from review of secondary data sources and to gain insights into the public policy decisions and market factors that contributed to the observed development patterns.

1.4 ORGANIZATION

This report is organized as follows:

Chapter 2: Conditions prior to 1985 describes socioeconomic, land use, infrastructure and transportation patterns in Corvallis at the time the project's EA was issued.

Chapter 3: Changes between 1985 and 2000 describes socioeconomic, land use, infrastructure and transportation changes in the study area and throughout Corvallis.

Chapter 4: Conclusions presents conclusions about the impact of the highway project on land use based on the data reviewed in Chapters 2 and 3.

2.0 CONDITIONS BEFORE THE PROJECT

This chapter describes existing conditions in the case study area and Corvallis when the project's Environmental Assessment (EA) was issued in 1985. The description of existing conditions including maps and tables primarily relies on data in the EA.[2] Secondary sources include the interviews with City staff and the focus group.

2.1 SOCIOECONOMIC CONDITIONS

In 1980, Corvallis (population 40,960) was the largest city in Benton County (population 68,211) and the county seat. Table 2.1 shows historic and forecast population in Corvallis between 1960 and 2000. In 1980, Oregon State University, located in Corvallis, had a student population of 17,700.

Table 2.1: Historic and Forecast Population in Corvallis and Benton County

Year	City of Corvallis	Benton County
Historic		
1960	20,669	39,167
1970	35,056	53,775
1980	40,960	68,211
Change 1960-80	98%	74%
AAGR[a] 1960-80	3.5%	2.8%
Forecasted		
2000	78,000[b]	84,300
Change 1980-2000	90%	24%
AARG[b] 1980-2000	3.3%	1.1%

aAAGR is average annual growth rate.
bThe slowing economy in 1985 caused Corvallis to revise its population forecast to 60,000 people in the year 2000.

According to the Oregon Economic and Community Development Department (OECDD, 2000), the number of housing units in Corvallis in 1980 was 15,114. As shown in Table 2.2, from 1960 to 1980, Corvallis experienced a change in the housing mix with a large increase in the proportion of multi-family units and a trend toward more renter-occupied units.

In 1980, Oregon State University employed about 8,300 people (about 28% of the total county workforce), Hewlett Packard (an electronics firm) employed 900 people, and Evans Products (a

[2] The requirements for completion of an Environmental Assessment (EA) are less stringent than those that govern Environmental Impact Statements (EIS). EIS's generally include technical reports that describe socioeconomic, land use, traffic, and other conditions before the project and impacts anticipated from the alternatives considered. The EA completed for the Mary's River to Kiger Island Drive Project included only a cursory analysis of socioeconomic, land use, right of way, and traffic impacts. Thus, the level of detail presented in this chapter is much less detailed that the other case studies completed for projects that required EIS's.

millwork manufacturer) employed 400 people. In the early 1980s, the region was experiencing steady growth in the "high-tech" industries.

Table 2.2: Housing by Type and Tenure In 1960 and 1980, Corvallis

Housing	1960	1980
Type		
Single family	74%	51%
Multiple family	25%	46%
Mobile homes	1%	3%
Tenure		
Owner occupied	54%	45%
Renter occupied	46%	55%

Table 2.3 shows right-of-way and fiscal impacts of the South Third Street widening project. As is typical of highway improvement projects, the EA stated that right-of-way acquisition would impact some businesses. The project required right-of-way acquisition of five feet on each side of the roadway totaling 2.5 acres at an estimated cost of $200,000.[3] The improvement involved 133 parcels, but no buildings were displaced. Three businesses were directly affected by the project: a gas station may have lost the use of one side of a pump island, and two businesses (both under the same ownership) lost some parking spaces. The total project cost was estimated at $4.8 million. The EA estimated the assessed value of land removed from the property tax rolls at $165,000.

Table 2.3: Right-of-Way Structure Requirements and Total Costs (1985 dollars)

Year	Impact
Acres to be acquired	2.5
Number of involved parcels	133
Number of affected structures	0
Number of businesses impacted	3
Estimated right-of-way cost	$200,000
Assessed value of land removed from tax rolls	$165,000
Total project cost	$4,800,000

The EA anticipated that the project would improve accessibility to businesses along the project corridor, especially by making turning movements easier.

2.2 LAND USE PATTERNS AND PLANS

2.2.1 Land use patterns

The study area (South Corvallis) is situated south of the confluence of the Mary's River on the west and the Willamette River on the east. This was a low-lying area with elevation of 200 to 240 feet above sea level. The Corvallis central business district lay directly north of the confluence

[3] Costs in this section are in 1985 dollars.

and along the western bank of the Willamette River. Highway 99W was the south entrance to the city and the only arterial serving the South Corvallis area.

The study area had mixed residential, commercial, public service/institutional development with many uses in effect prior to zoning in this area. Development along the project corridor at the time of the EA is shown in the aerial photographs of Figures 2.1 and 2.2. The general categories of land use along the project corridor in 1985 are shown in Figure 2.3. Land use from the Mary's River to the Mill Race was predominantly commercial. Retail stores included a pizza parlor, two motels, a food cooperative, a picture framing and furniture store, a gas station, and a used car dealership. Two offices with truck loading bays, a church, residences, and a power substation were also in the area.

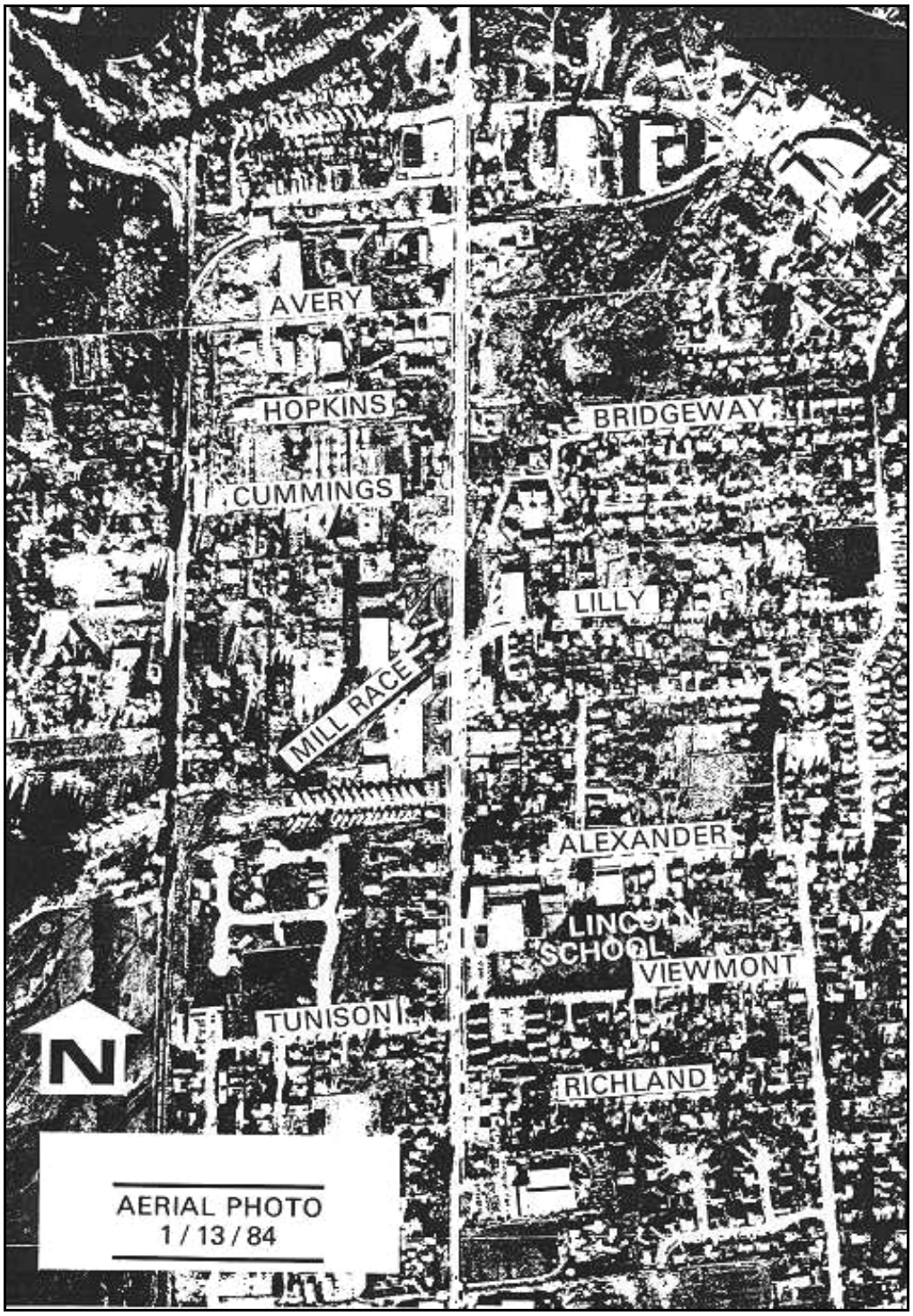


Figure 2.1: Aerial Photograph, Northern Portion of South Third Street, 1984

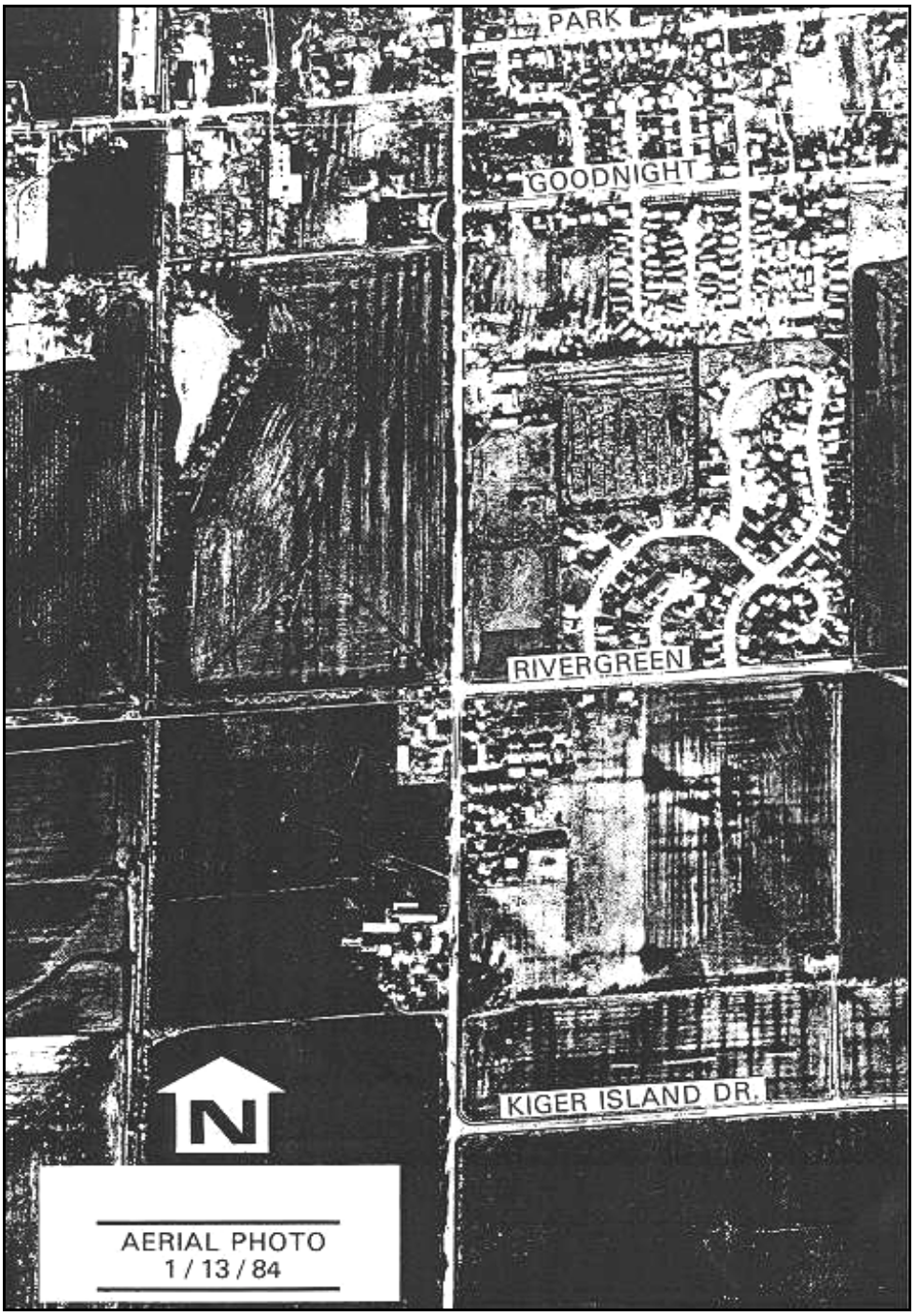


Figure 2.2: Aerial Photograph, Southern Portion of South Third Street, 1984

The Southgate Plaza on South Third Street across from Mayberry Avenue housed several retail and personal service shops. Retail businesses were interspersed along the highway south of the Plaza and included a tavern, a fast food drive-in, an auto parts store, a gas station, two motorcycle shops, a used appliance store, and a mini-mart. Larger businesses included a farm machinery sales center, a livestock auction yard, and a wrecking yard.

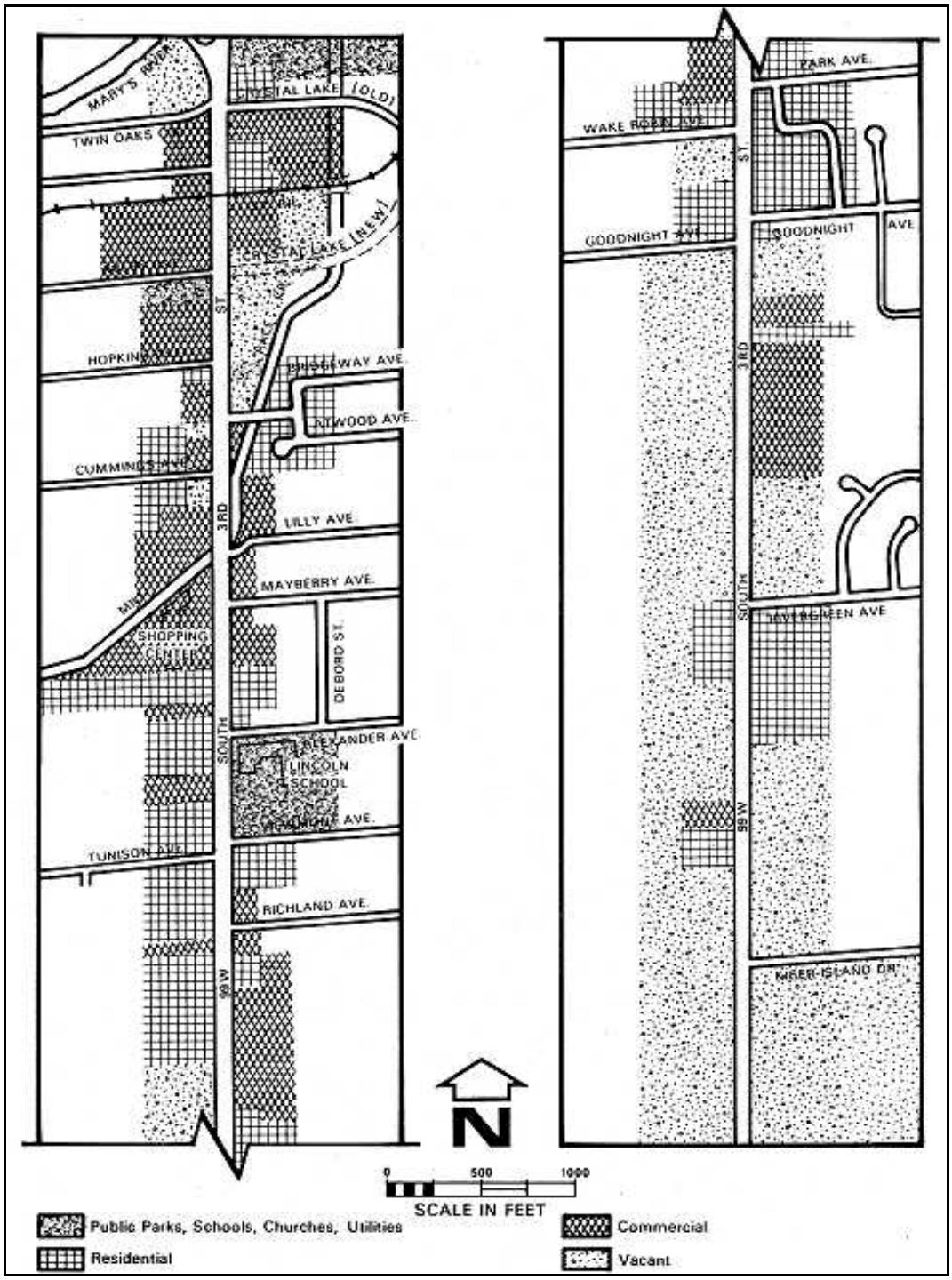


Figure 2.3: Land Use, South Third Street, 1985

The residences, apartment buildings, and mobile home parks bordering South Third Street varied in age and condition. The EA reported continued construction of subdivisions in South Corvallis. Much of the land use away from the highway was residential. At the time of the EA, the more recent housing developments were located off of Rivergreen and Goodnight Avenues.

The Lincoln Elementary School, the Corvallis Municipal Airport, and the Corvallis Water Treatment Plant were the main public service/institutional uses in the study area. Lincoln Elementary School (kindergarten through fifth grades) was located at the corner of South Third Street and Alexander Avenue and had an attendance of 350 children drawn from South Corvallis. The Corvallis Airport was located on the western side of the highway about one mile south of the project's southern terminus. The Corvallis Water Treatment Plant was located adjacent to the Willamette River at the eastern end of Goodnight Avenue. The Corvallis Christian Center was on the corner of Avery Avenue and South Third Street.

Several parks and recreational facilities existed in the study area. Avery Park was located in the northwest portion of the study area and received the greatest usage of any park in the city. The Pioneer Boat Basin was located just north of the project's northern terminus. The Willamette Park (161 acres) was located in the mid-eastern portion of the study area adjacent to the Willamette River (near the water treatment plant). Several small neighborhood parks were also present in the study area as well as a private golf course. South of Goodnight Avenue, several parcels of open land, some in agricultural use were found.

2.2.2 Land Use Designations

The entire project was located within the Corvallis UGB and all but a short section of the project at the southern end was within the Corvallis city limits. Land use in the city limits was guided by the city's Land Development Code (i.e., zoning) and Comprehensive Plan (acknowledged by the Land Conservation and Development Commission (LCDC) in 1984). Land use within the Corvallis UGB, but outside the city limits, was governed by the Benton County Comprehensive Plan (also acknowledged by LCDC in 1984). Land use designations along the project corridor are shown in Figure 2.4.

Open space conservation and professional office areas were designated near the Mary's River floodplain (see Figure 2.5). Between this area and Alexander Avenue, linear (strip) commercial use was designated along with some light industrial use. The linear commercial use designations were clustered near the Southgate Plaza and at a proposed shopping area south of Richland Avenue. Linear development was specifically discouraged in the city's plans south of Alexander Avenue. The EA expected linear commercial development pressures to continue to be exerted along South Third Street even though the city is opposed to it.

Continued residential use was supported and expansion encouraged especially along the eastern side of the highway. The EA stated that the project could allow for increased growth and higher residential densities, especially south of Goodnight Avenue.

A strip of land on the west side of the highway and adjacent to the Southern Pacific Railroad (see Figure 2.6) was designated light industrial and represented one of the largest undeveloped light industrial areas in the city. This designation prohibited residential use and limited retail use. At the time of the EA, a large parcel of land between Goodnight and Herbert Avenues west of the railroad lines and designated for industrial uses was proposed for annexation because it was a

Superfund site.[4] The EA stated that the project could facilitate conversion to industrial use and accommodate the resulting increase in heavy truck traffic along South Third Street.

The South Corvallis area 100-year floodplains are shown in Figure 2.5. The floodway follows the channel of the Fisher Mill Race in the northwest portion of the study area. The primary function of the Mill Race is to carry storm runoff. Minor wetlands were located north of the Mill Race bridge and the channel itself was considered a wetland. The drainage ditches bordering the southern end of the project also served some of the functions of wetlands. No threatened or endangered species were known to occur in the project area, although a candidate species, a plant commonly known as Meadow Checker Mallow, was found along the west side of the highway between Goodnight and Rivergreen Avenues.

[4] According to City staff, the site had chromium contamination from a previous industrial operation. The remediation is now (2000) complete.

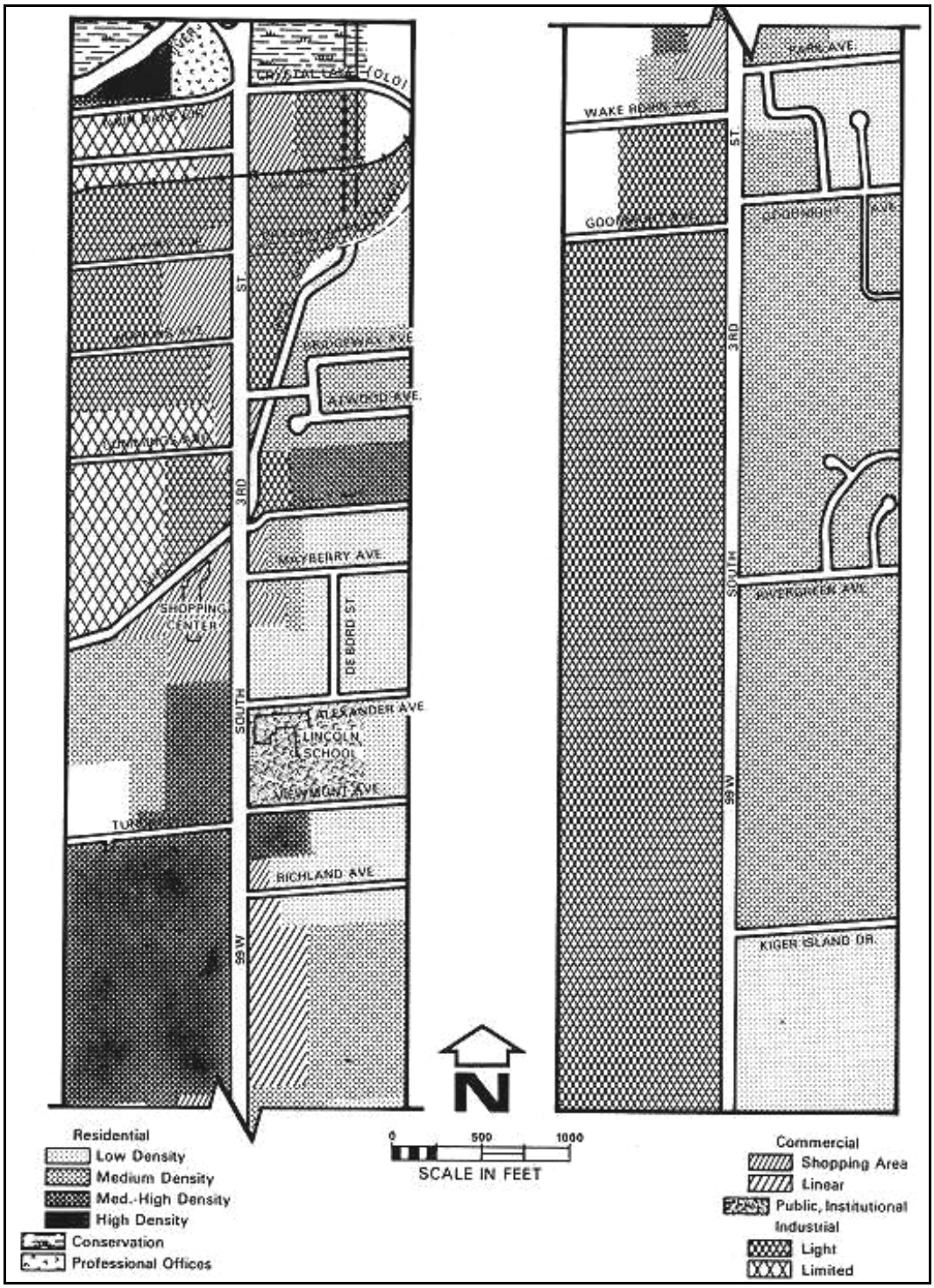


Figure 2.4: Land Use Designations, South Third Street, 1985

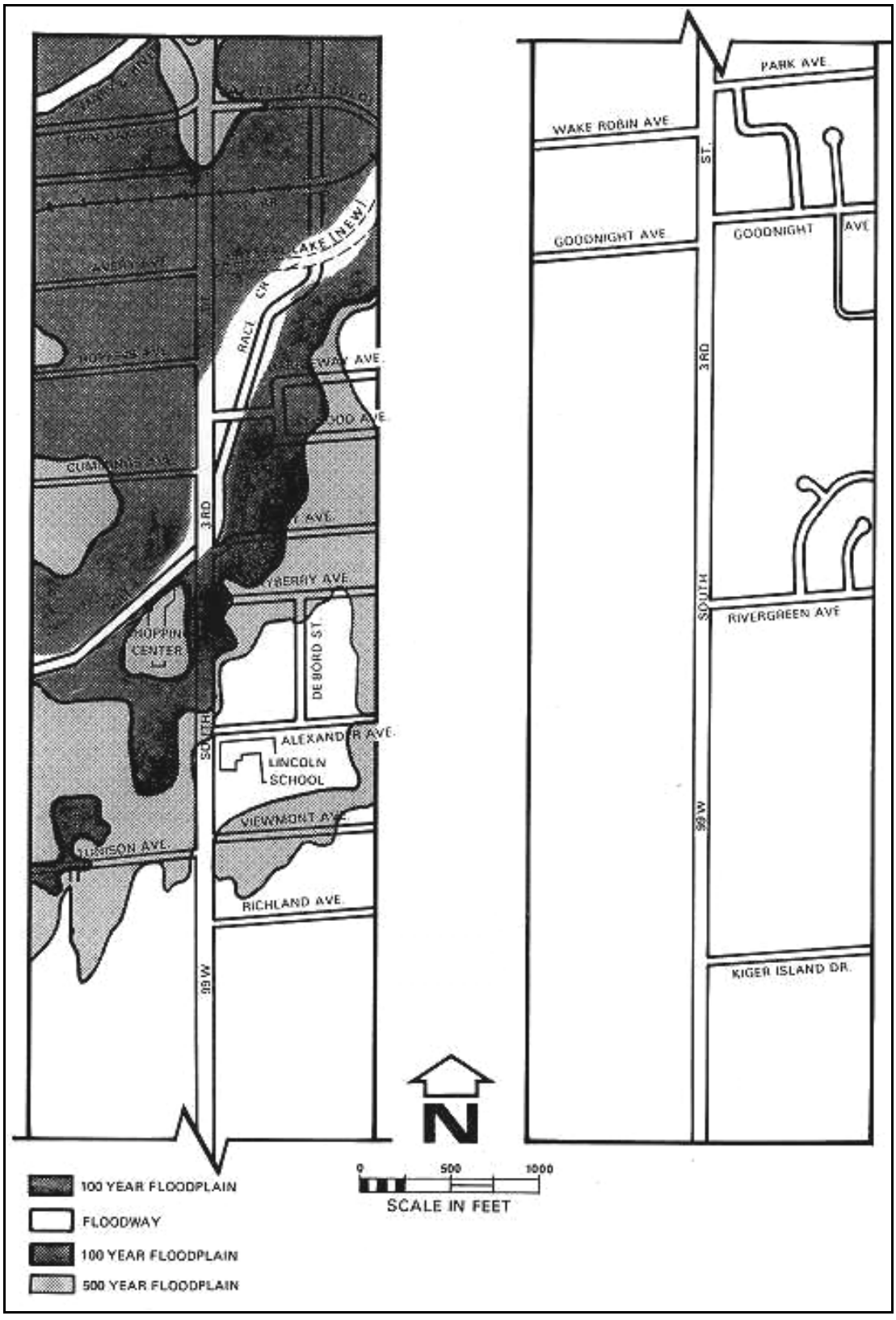


Figure 2.5: South Corvallis Area 100-Year Floodplain 1985

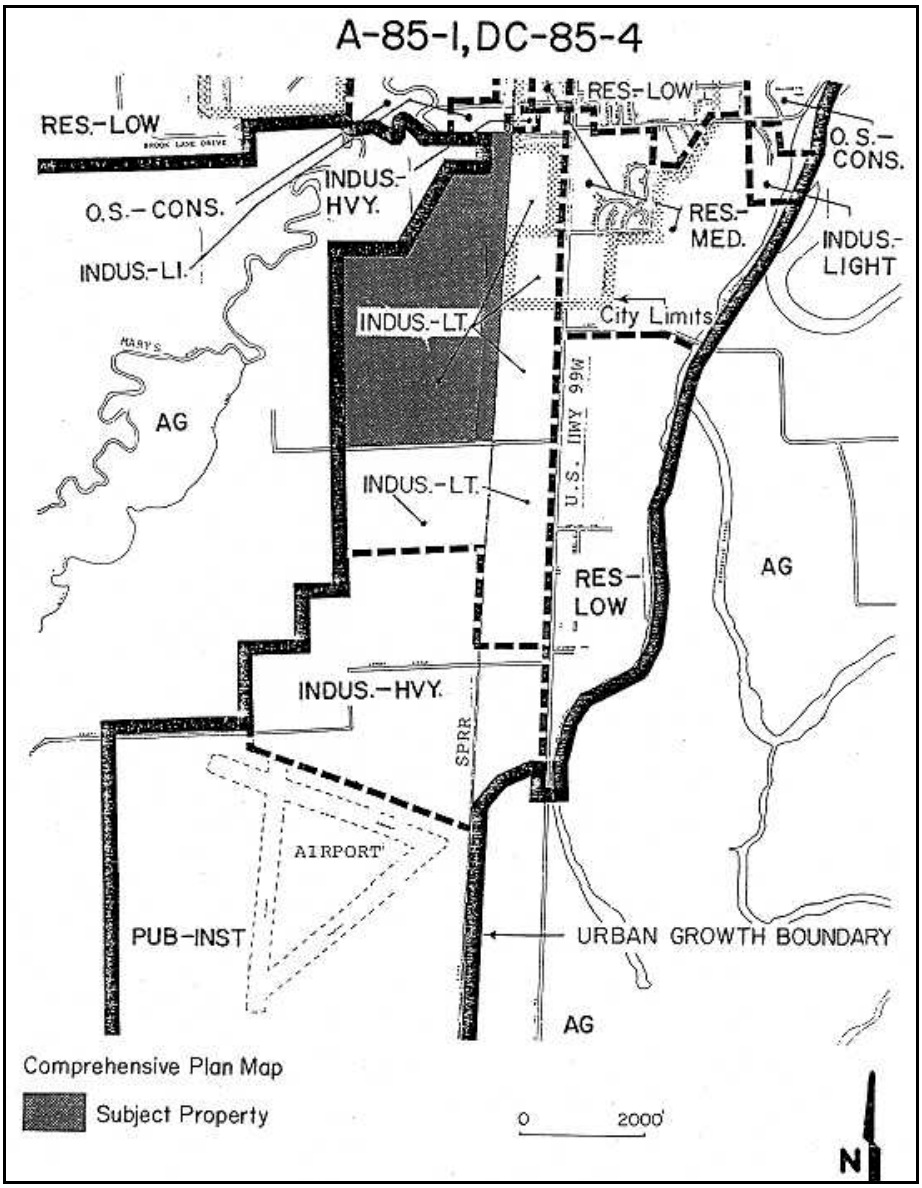


Figure 2.6: Property Proposed for Annexation, South Corvallis, 1985

2.3 TRANSPORTATION SYSTEM CHARACTERISTICS

Highway 99W was a major north-south route. To the north, it provided access to the Salem. To the south, it led to the towns of Monroe and Junction City and the Eugene-Springfield metropolitan area. The South Third Street section of Highway 99W also served a land service function for adjacent properties within the Corvallis Urban Growth Boundary.

Figure 2.7 shows traffic volumes along the project corridor in 1983 (actual levels) and 2000 (projected). The EA stated that as the study area developed, traffic volume was expected to increase 50% by the year 2000. Since South Third Street is the only arterial serving the South Corvallis area and is a major north-south highway, the EA assumed that the projected traffic levels were the same for the build and the no-build alternatives. As shown in Table 2.4, with this

volume of traffic, the No-Build Alternative might be operating at a "D" level of service or worse at the three intersections recommended by the EA to receive signals (intersections of South Third Street with Avery, Alexander, and Tunison Avenues). LOS D indicates congested conditions with slow-moving traffic. With the improvements, the EA expected traffic to be operating at a "C" level of service. The recommended signal systems would include pedestrian walkways.

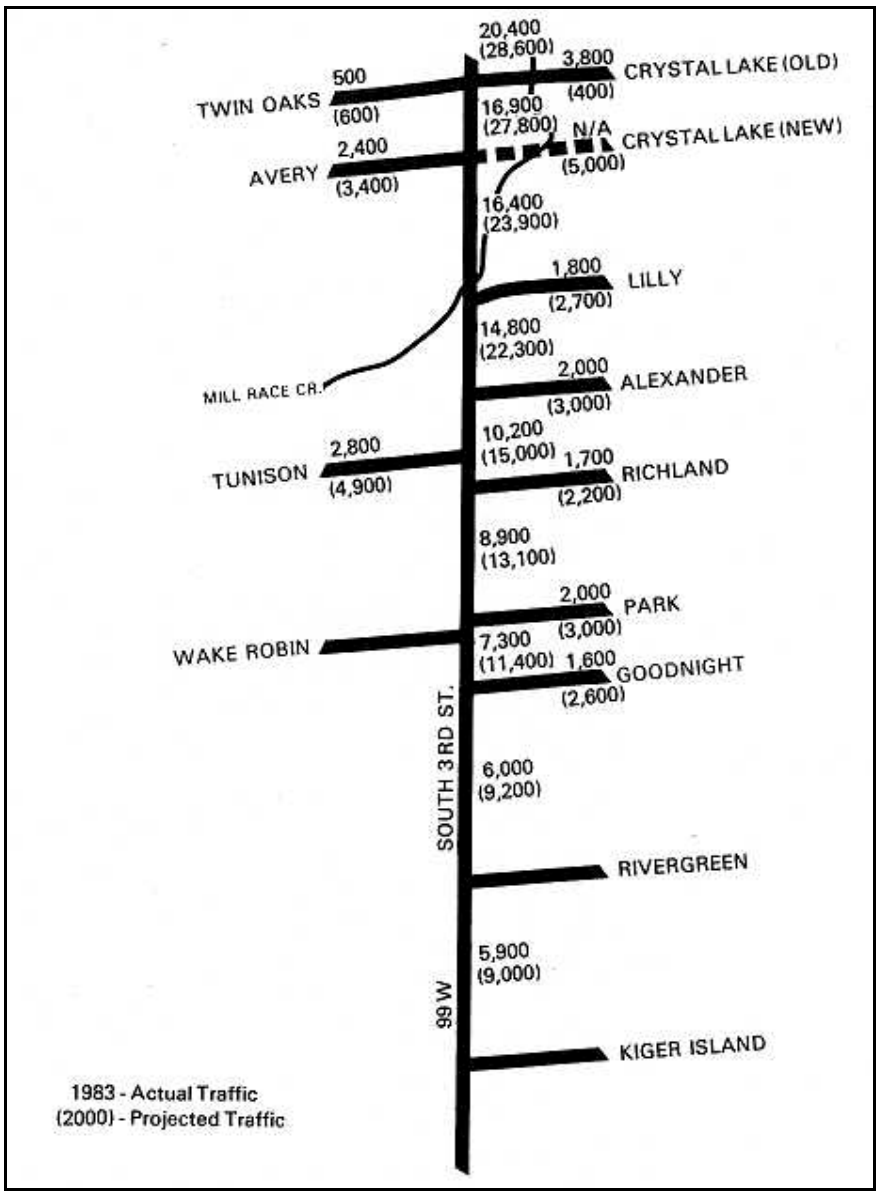


Figure 2-7. Average Daily Traffic, South Third Street, Actual 1983 and Projected 2000

According to the EA, 142 accidents occurred in the project corridor from 1979 to 1983. None resulted in fatalities. One accident involved a pedestrian. Rear-end and turning collisions accounted for almost 75% of the accidents. Eighty-seven accidents occurred at intersections, and

55 accidents occurred away from intersections. The accident rates were generally higher when compared to the average rate for a primary, non-freeway system.

Table 2.4: Projected Levels of Service (LOS) at Planned Signalized Intersections, Year 2000

Intersection	No build LOS	Build LOS
Hwy 99W at Avery	C-D	C
Hwy 99W at Alexander	C-D	C
Hwy 99W at Tunison	E	C

Source: EA, Mary's River to Kiger Island Drive, Oregon 99W-Pacific Highway West, 1985.

The focus group participants stated that the widening project originally included a median, but business owners along the highway opposed it because they felt that it would hurt their business by restricting access. Thus, a median was not constructed. They thought that if the project were being built today, more emphasis would have been put on access management.

The EA identified several other transportation projects that were associated with the South Corvallis area. The Corvallis Bypass, scheduled to begin in 1987, provided a new and alternative eastern route around the Corvallis central business district. This road extended from Highway 34 on the eastern side of the Willamette River and connected with Oregon 99W just south of the Mary's River Bridges.

In 1984-85, the City of Corvallis began the realignment of Crystal Lake Drive with Avery Avenue at South Third Street. Avery Avenue extends around Avery Park to connect with Highways 34/20 and was improved in 1984. Paving bricks and speed bumps were installed to discourage use of this road as a shortcut to the coast highway. A full-phase signal at the Avery Avenue/Relocated Crystal Lake Drive intersection with a left turn refuge was planned for construction in 1986.

2.4 PUBLIC SERVICES

According to the EA and conversations with City staff, the City provided water and sewer service along the entire length of the project alignment in 1978 to serve city property outside the city limits and the airport. The water main and trunk sewer line were oversized in anticipation of heavy development and were located along the railroad north of Kiger Island Drive and along the highway south of Kiger Island Drive. Private companies owned the other utilities (such as electricity, natural gas, and telephone) along the highway. The state built a storm sewer between the Mill Race and southeast Viewmont Avenue, and another storm sewer was located near the Mary's River.

According to the EA, the Corvallis Capital Improvement Program (CIP) recommended extension of city water and sewer along South Third Street to the Corvallis airport which had a building moratorium because of inadequate services. The funding for that project was not available at the time of the EA.

The Corvallis Transit System South Corvallis loop route ran between downtown Corvallis and Goodnight Avenue daily except on Sundays and holidays.

2.5 PUBLIC POLICY

The City of Corvallis and Benton County Comprehensive Plans were both acknowledged by LCDC in 1984. According to the EA, the city and county planning departments reviewed the project proposal and found it to be consistent with their comprehensive plans. The city also found the project to be consistent with the Corvallis Capital Investment Plan.

To address flooding concerns (see Figure 2.5 showing the 100-year floodplain in South Corvallis), the EA stated that flood insurance, flood-proofing, and land use planning were recommended as non-structural strategies. In 1984, the Federal Emergency Management Agency (FEMA) completed a flood insurance study for Corvallis. According to the EA, the Drainage Master Plan for Corvallis recommended that the Fisher Mill Race (cutting across the northwest corner of the study area) be preserved as a natural drainage system.

3.0 CHANGES AFTER THE EA WAS COMPLETED

This chapter discusses changes in land use, and in the factors that influence those changes, in the period following issuance of the EA in 1985. The improvements to South Third Street began in 1990 and were completed in 1992. Organization of this chapter is identical to that of Chapter 2: it begins with a discussion of socioeconomic conditions, then discusses land use patterns, transportation systems, capital improvements, and changes in public policy.

3.1 SOCIOECONOMIC CONDITIONS

Actual changes in socioeconomic conditions in the City of Corvallis were somewhat different than those described by the EA. Based on a forecast by the Center for Population Research and Census, the EA expected the population of Corvallis to increase by 90% between 1980 and 2000 to 78,000. The EA also reported that the city had revised its forecast downward to 60,000 people in 2000 because of the slowing economy. As of 1997, the Corvallis population had only increased 25% to 51,145 (see Table 3.1). The statewide recession of the early 1980s contributed to the slowed growth. Likewise, the anticipated increase in Benton County population of 24% to 84,300 by year 2000 was more than the actual increase of 12% to 76,700 by 1997.

Table 3.1: Population Trends in Corvallis and Benton County

	Population	
Year	**Corvallis**	**Benton County**
1980	40,960	68,211
1990	44,757	70,811
1997	51,145	76,700
% Change (1980-97)	25%	12%
Average Annual Growth Rate	1.3%	0.7%

Source: U.S. Census and Center for Population Research and Census, Portland State University,

According to the OECDD (2000), the number of housing units in Corvallis in 1990 was 17,307, an increase of 15% since 1980 (the Corvallis population increased 9% during this time period). The housing vacancy rate is 3.3%. The housing by type (in 1996) and tenure (in 1990) are shown compared to the levels in 1980 in Table 3.2. OECDD listed the five largest “manufacturers” in Corvallis as Hewlett-Packard with 5,800 employees, Good Samaritan Hospital with 980 employees, Corvallis Clinic (health care) with 548 employees, CH2M Hill (consulting) with 350 employees, and the Environmental Protection Agency with 300 employees. Oregon State University employs 8,473 people. The commercial property vacancy rate is 2%.

Table 3.2: Housing by Type and Tenure in 1980, 1980, and 1996, Corvallis

Housing	1980	1990	1996
Type			
Single family	51%	-	53%
Multiple family	46%	-	43%
Mobile homes	3%	-	4%
Tenure			
Owner occupied	45%	43%	-
Renter occupied	55%	57%	-

Source: Oregon Economic and Community Development Department and Corvallis Comprehensive Plan (1998).

The South Corvallis Area Refinement Plan (1997) gave the land area of South Corvallis (the study area is defined by the same boundaries) as 4,109 acres and a South Corvallis population of 5,700 residents. Over half of this area is outside the city limits (but within the UGB). The Refinement Plan listed the major employers of South Corvallis. (see Table 3-). The Plan identified several key public facilities: Lincoln Elementary School, Tunison Community Center/Fire Station, Corvallis Water Treatment Facility, Willamette Park, and Corvallis Airport.

Table 3.3: Major Employers, South Corvallis, 1997

Company	Employees	Company	Employees
Evanite Fiber Corporation	244	Overall Laundry	30
Western Pulp	96	Software Support Services	28
Kalatel Engineering	70	Avia Flight Services	23
Federal Express	45	Bertea Aviation Incorporated	18
First Alternative Co-op	38	Oregon Rubber Mills	16
Plastech Incorporated	38	Spec Pipe Industries	12
S-Tech Design & Manufacturing	35	Aim Kiln Manufacturing	12
Tripod Data Systems	30	EP & T	11
Ramsay-Gerding Construction	30	Swartz Moving & Storage	10

Source: South Corvallis Area Refinement Plan: A New Direction, Otak, 1997,

3.2 LAND USE PATTERNS

One of the key objectives of this analysis is to document land use changes in the study area (and more broadly, the City of Corvallis) during two periods: between issuance of the EA and completion of the project (1985-1992), and after the project was completed (1993-present). To determine changes in land use, we looked at a number of indicators including (1) UGB expansions and annexations, (2) zone and plan designation changes, (3) residential development project approvals, and (4) location of new development.

- UGB expansions and annexations. When the EA was issued in 1985, the Corvallis UGB encompassed the entire project corridor. Since 1985, only one UGB expansion occurred in the Corvallis urban area. It involved a small tract of land in the southwestern region of the City (not in the study area) and was state-mandated because of sewer needs.

  City Charter Amendment #88, passed in 1976, requires that any annexation to the City, unless mandated by state law, be approved by the majority vote of the electorate. Table 3.4 lists the annexations occurring by time period citywide and in the study area. In 1985, 370 acres were annexed to create the Riverpark South planned development (west of Hwy 99W,

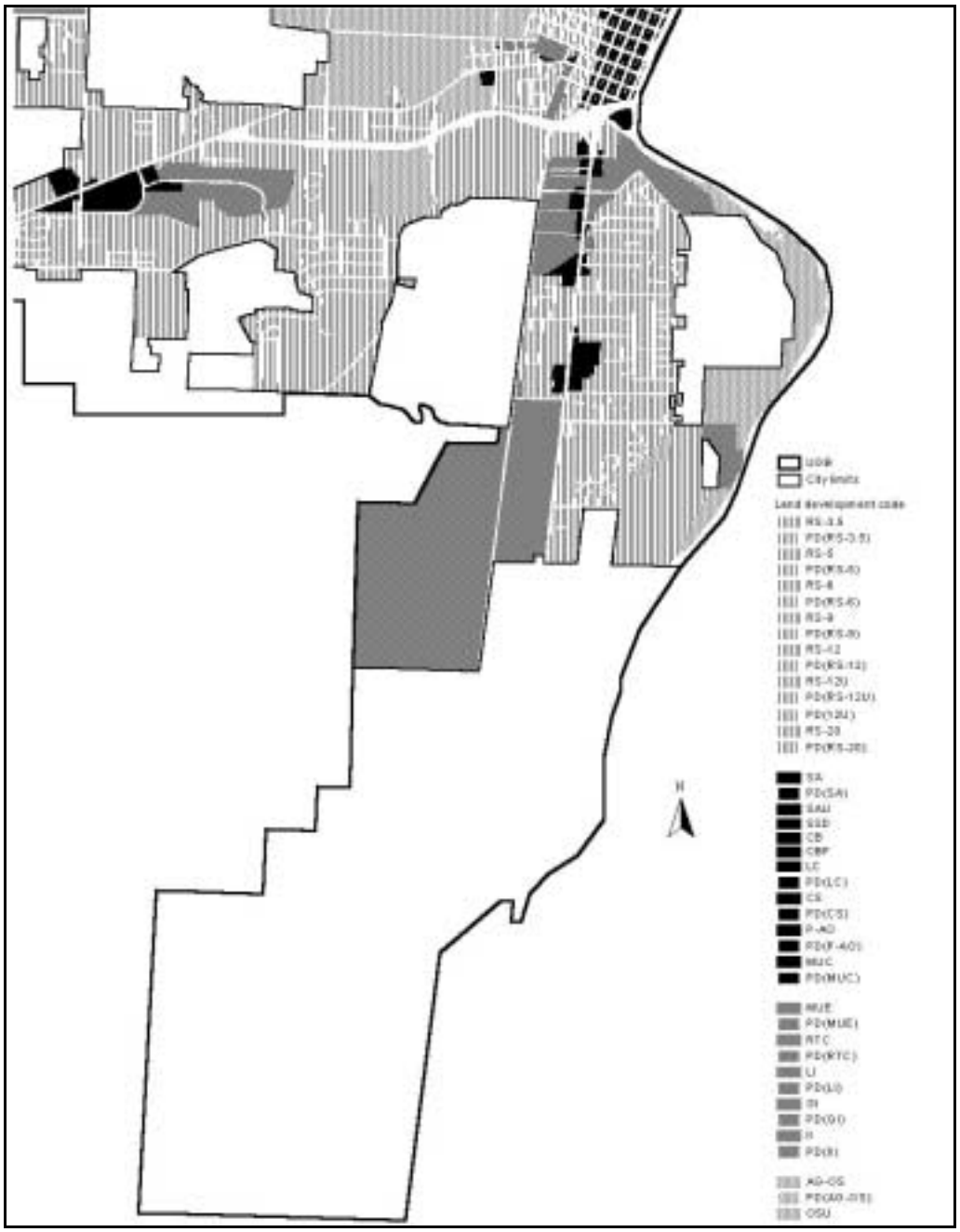
north of Herbert Avenue) for general industrial use. In 1986, Corvallis voters adopted the extension of city water and sewer services to this site and to the Corvallis Airport. The tracts (totaling approximately 400 acres) annexed in 1992-94 were located along the Willamette River and adjacent to the Riverpark South tract. According to the focus group, many other tracts were not approved for annexation during this time because they were more visible to the community (such as on hillsides).

Table 3-4: Annexations by Time Period, Corvallis and Study Area

	Annexed land (acres)		
Time period	**Citywide**	**Study area**	**% in study area**
Before EA (1980-1985)	1,550	370	24%
Between EA and project completion (1986-1992)	638	Approx. 400 from 1992 to 1994	43%
After project completion (1993-1998)	297		

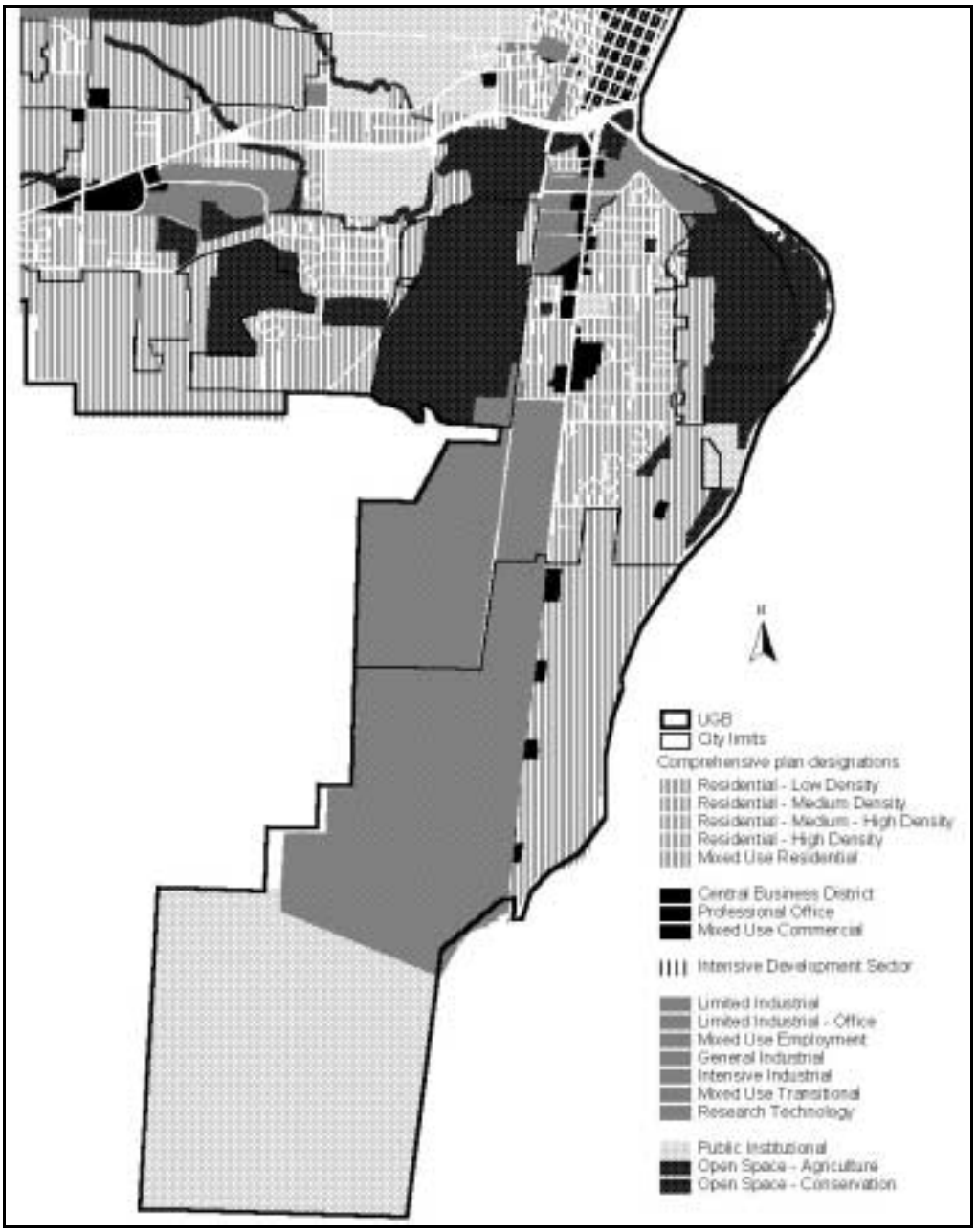
Source: 1998 Land Development Information Report, City of Corvallis, 1999,

- Zone and plan designation changes. According to City staff, Corvallis has not made any major changes in zoning or plan designations in the study area since 1985. The South Corvallis Area Refinement Plan was completed in December 1997 and served to update and refine comprehensive plan policies and map designations for South Corvallis. These Refinement Plan recommendations were incorporated into the 1998 update of the Corvallis Comprehensive Plan. The City is currently revising its Land Development Code (zoning regulations) to reflect the new Comprehensive Plan. The Refinement Plan recommendations are discussed in more detail in the Policy section of this chapter. Figures 3.1 and 3.2 show the current zoning and plan designations in the study area, respectively.



Source: City of Corvallis, 2000.

Figure 3.1: Zoning in the Study Area, 2000



Source: City of Corvallis, 2000.

Figure 3.2: Comprehensive Plan Designations in the Study Area, 2000

- *Residential development.* Table 3.5 lists the number of subdivisions approved by the City by time period citywide and in the study area. The table includes the number and acreage of the vacant lots within the approved subdivisions. The Rivergreen Estates, 4th Addition (south of Goodnight Avenue), approved in 1997, accounted for 34 vacant units and five vacant acres in the study area. These figures do not include an associated 23 acres for a manufactured home park for 126 homes. In 1998, the Rivergreen Estates, 5th Addition, created 356 apartment units called Mountain View Apartments at Rivergreen (included in Table 3.5). The Crystal Lake apartment complex, built in 1999, provided more multifamily housing in the study area. (source: 1998 Land Development Information Report, Corvallis, 1999, and City staff.)

Table 3.5: Residential Subdivisions by Time Period, Corvallis and Study Area

	Citywide			Study area		
Time period	Sub-divisions	Vacant lots	Vacant acres	Sub-divisions	Vacant lots	Vacant acres
1980-1985	3	61	8	0	0	0
1986-1992	6	14	5	0	0	0
1993-1997	18	252	78	7	59	10
1998[a]	5	415	>24	5	415	>24
1999	3	-	-	0	0	0

[a]For 1998, the figures represent total lots and acreage in approved subdivisions (not vacant only). The data did not contain the acres for one approved subdivision (Rivergreen Estates, 6th Addition, 27 lots), therefore the total number of acres could not be calculated.

Year-built from building permit records. The City has a computerized database of citywide building permits since 1991 and the Benton County Assessor keeps records on the year improvements are recorded on tax lots. This data is not entirely reliable, but provides one indicator of the timing and location of residential uses. Year-built data combined with building permits provides a relatively accurate assessment of development trends. Tables 3.6 through 3.9 show the number of single family, manufactured housing, duplex, and multi-family residential permits issued by year built in Corvallis and the study area. Table 3.6 includes the median value of the construction. (City of Corvallis Building Permits, 2000).

Table 3.6: Number of Single-Family Dwelling Units (du) and Median Value by Year Built

Year	Citywide		Study area		% du in study area
	# du	Median value	# du	Median value	
1991	119	$123,000	15	$70,000	13%
1992 (project completed)	172	$120,000	5	$99,000	3%
1993	176	$128,000	4	$115,000	2%
1994	164	$144,000	4	$130,000	2%
1995	166	$134,000	8	$113,000	5%
1996	200	$141,000	33	$116,000	17%
1997	129	$154,000	9	$129,000	7%
1998	118	$150,000	16	$145,000	14%
1999	139	$174,000	8	$134,000	6%

Table 3-7: Number of Manufactured Housing Units by Year Built, Corvallis and Study Area[a]

Year	Citywide	Study area	% in study area
1991	3	1	33%
1992 (project completed)	7	1	14%
1993	6	2	33%
1994	35	0	0%
1995	37	2	5%
1996	20	6	30%
1997	9	1	11%
1998	22	4	18%
1999	15	8	53%

[a] This data does not include new manufactured housing that replaced existing dwelling unit.

According to the 1998 Land Development Information Report for Corvallis, the amount of unplatted and unimproved vacant land in residential development districts was 1,104 acres in 1998, with the largest tracts located on the City's northwest side. The study area (city portion)

had 90 vacant acres in the Rivergreen development south of Goodnight Avenue and nine other vacant tracts totaling 40 acres. Thus, the study area accounted for 12% of the citywide vacant unplatted residential land. Figure 3.3 shows the vacant residential land in the portion of the study area within the city limits.

Table 3.8: Number of Duplex Dwelling Units by Year Built, Corvallis and Study Area

Year	Citywide	Study area	% in study area
1991	2	2	100%
1992 (project completed)	16	0	0%
1993	2	2	100%
1994	10	0	0%
1995	22	0	0%
1996	10	0	0%
1997	10	6	60%
1998	10	0	0%
1999	6	0	0%

Table 3.9: Number of Multi-Family Dwelling Units by Year, Corvallis and Study Area

Year	Citywide	Study area	% in study area
1991	0	0	
1992 (project completed)	191	0	0%
1993	49	24	50%
1994	204	16	8%
1995	375	0	0%
1996	361	7	2%
1997	57	10	18%
1998	351	230	66%
1999	48	0	0%

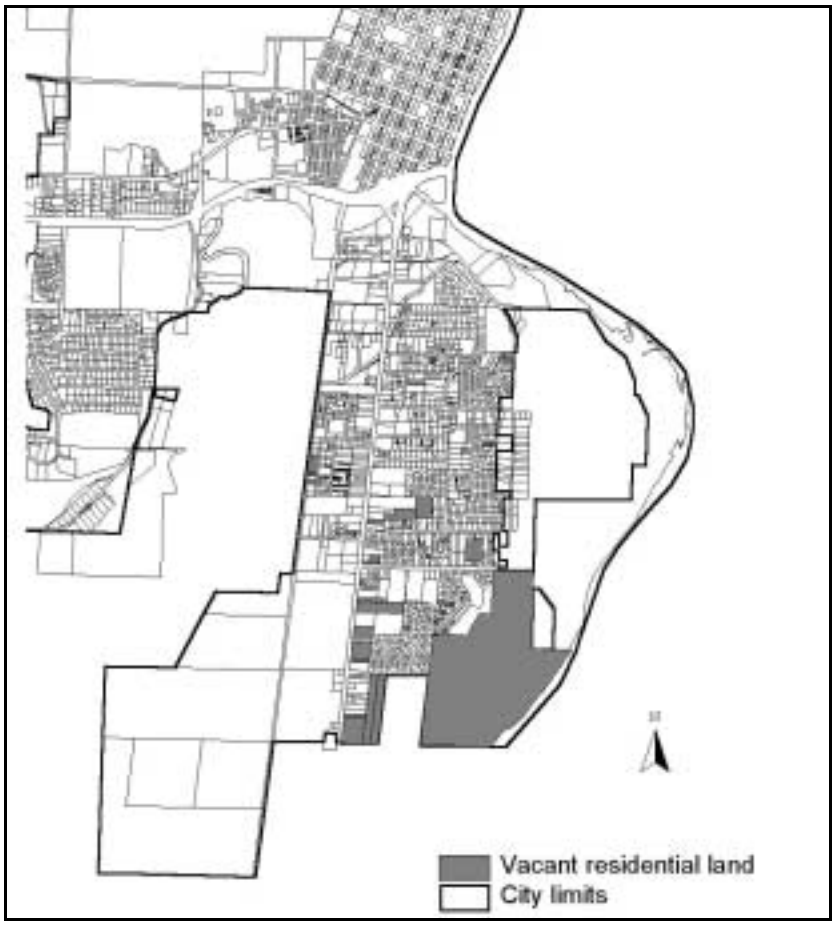


Figure 3.3: Vacant Residential Land, Study Area Within the City Limits

The Land Development Report also examines development within the urban fringe areas. Figure 3.4 shows these areas and designates the region within the study area within the UBG but outside the city limits (labeled "South Corvallis"). Table 3.10 lists the number of minor land partitions (for residential purposes) occurring by time period within each of the urban fringe areas (except the Fairplay area which did not have any minor land partitions). Table 3.11 lists the number of residential building permits within each of the urban fringe areas by time period (except Fairplay which did not have any residential building permits).

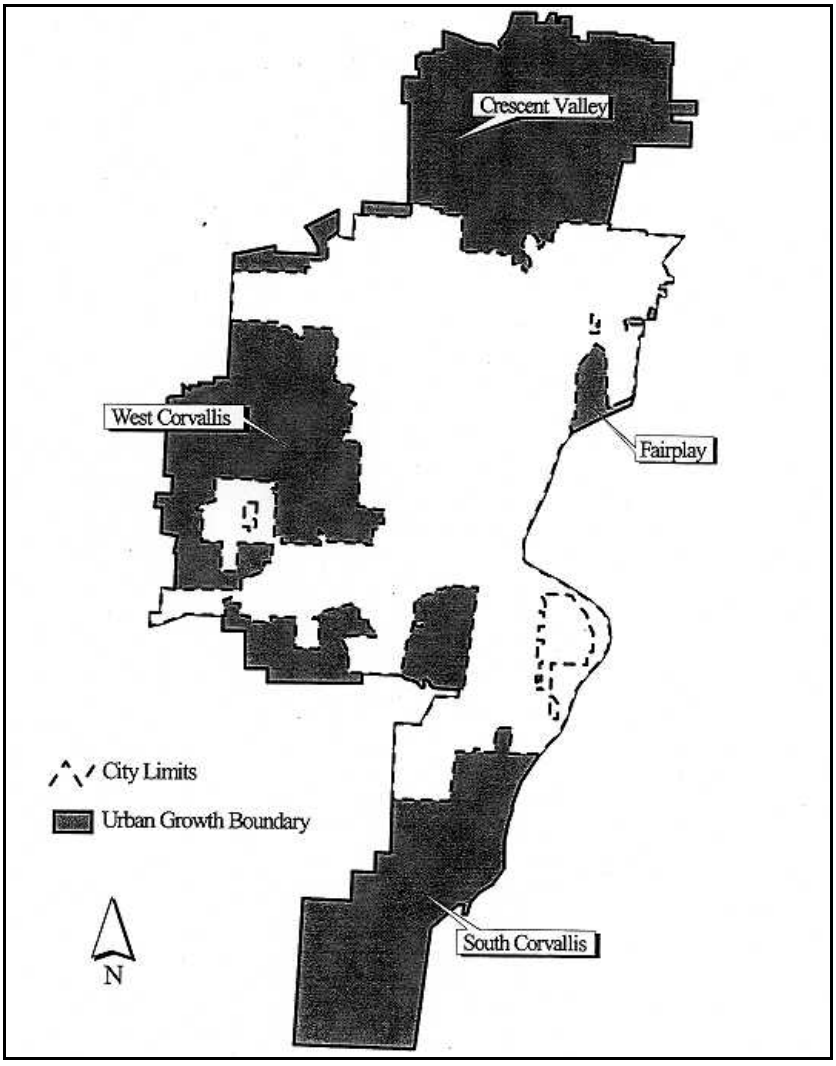


Figure 3.4: Corvallis Urban Fringe Areas, 1998

Table 3.10: Minor Land Partitions by Time Period, Corvallis Urban Fringe Areas, 1981-1998

Time period	Crescent Valley	West Corvallis	South Corvallis	% in South Corvallis
Before EA (1981-1985)	22	21	6	12%
Between EA and project completion (1986-1992)	9	4	1	7%
After project completion (1993-1998)	7	0	0	0%

Table 3-11: Residential Building Permits by Time Period, Corvallis Urban Fringe Areas, 1981-1998[a]

Time period	Crescent Valley	West Corvallis	South Corvallis	% in South Corvallis
Before EA (1981-1985)	20	25	2	4%
Between EA and project completion (1986-1992)	55	10	7	10%
After project completion (1993-1998)	22	10	2	6%

[a] The data source did not list the number of dwelling units associated with the building permits.

The focus group participants said that a few property owners control residential development in South Corvallis, but that, in their opinion, real estate speculation does not occur very often in Corvallis. They said that development in South Corvallis is more dependent on whether available parcels are serviced and zoned properly. One South Corvallis property owner who is developing his land for residential use stated that the lack of road access to his property (for subdivision purposes) restricted his ability to develop his land.

- *Commercial, industrial and institutional development.* In 1998, the Willamette Business Park subdivision was approved creating 11 lots at southwest intersection of South Third Street and Goodnight Avenue. It is currently vacant. Also in 1998, the Corvallis Industrial Park subdivision was approved along South Third Street across from the intersection with Rivergreen Avenue. The Corvallis Industrial Park currently has three light industrial developments (Willamette Greystone, Familian NCO, and PMIC) and one institutional development (DMV office).

  The Corvallis Airport Industrial Park has a variety of businesses with most located on the northern side of Airport Avenue. These businesses include Federal Express, Bikee, Western Pulp Products, Plastech, Ecological Planning & Toxicology, Ramsay-Gerding Construction, Electroglas Inspection Products, Overall Laundry Services, Advantage Energy Software, and Oregon Rubber Mills.

  Table 3.12 shows the number of commercial building permits issued and median value by year in Corvallis and the study area. In 1997, the Electroglas facility (value $1.3 million) was approved for construction near the airport. Neither of the two industrial building permits issued between 1991 and 1996 were in the study area. (Corvallis Building Permits, 2000)

Table 3.12: Number of Commercial Building Permits Issued and Median Value Issued by Year

	Citywide		Study area		
Year	**# permits**	**Median value**	**# permits**	**Median value**	**% permits in study area**
1991	17	$15,000	1	$27,000	6%
1992 (project completed)	25	$22,000	2	$117,000	8%
1993	15	$88,000	2	$53,000	13%
1994	26	$117,000	3	$115,000	12%
1995	18	$210,000	3	$85,000	17%
1996	20	$117,000	5	$250,000	25%
1997	18	$282,000	5	$420,000	28%
1998	27	$271,000	8	$57,000	30%
1999	28	$359,000	11	$500,000	40%

The focus group said that businesses existing before the widening have been fairly stable and there hasn't been much redevelopment. They said that much of the development in South Corvallis has been infill. According to the focus group, the pace of development picked up after the widening project in the early 1990s, but that this had more to do with the rebound of the economy after a recession. According to the focus group, access to a major transportation system (I-5) is a very important factor for businesses considering locating in the area. The South Corvallis industrial properties' access to the five-lane South Third Street followed by the four-lane highway to I-5 is seen as a strong positive. According to focus group participants ,without the widening of South Third Street, some businesses may not have located in South Corvallis (both at the industrial park and the infill).

The focus group described the development in South Corvallis as very diverse, but remarked that very little commercial retail development has occurred although there is probably a market for it. They believed that for commercial retail development to occur, it has to have a champion to push such a project through the process, coordinate multiple property owners, and ensure its feasibility (by addressing issues such as visibility, parking, and access). About 15 acres (the auction yard) are zoned mixed use commercial for this type of development. The focus group said that although Corvallis has not produced anything like this type of mixed use development before, South Corvallis has a good conceptual plan (the South Corvallis Area Refinement Plan).

According to the 1998 Land Development Information Report for Corvallis, the amount of vacant nonresidential land in the City was 640 acres in 1998. Eighty percent of this land is intended for industrial development, and 70% of the vacant industrial land was in the 370-acre Riverpark South planned development (annexed in 1985). The study area (within the City) had eight other vacant industrial tracts totaling 113 acres. In 1998, the study area contained 2 acres of vacant commercial land (out of 45 acres in the city). Figure 3.5 shows the vacant non-residential land in the portion of the study area within the city limits.

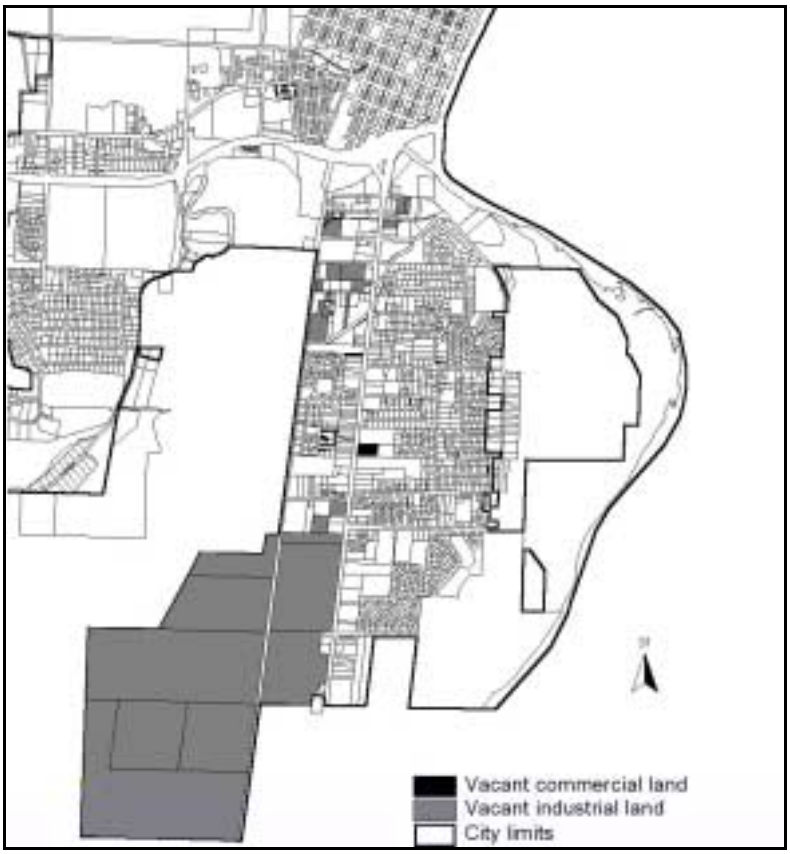
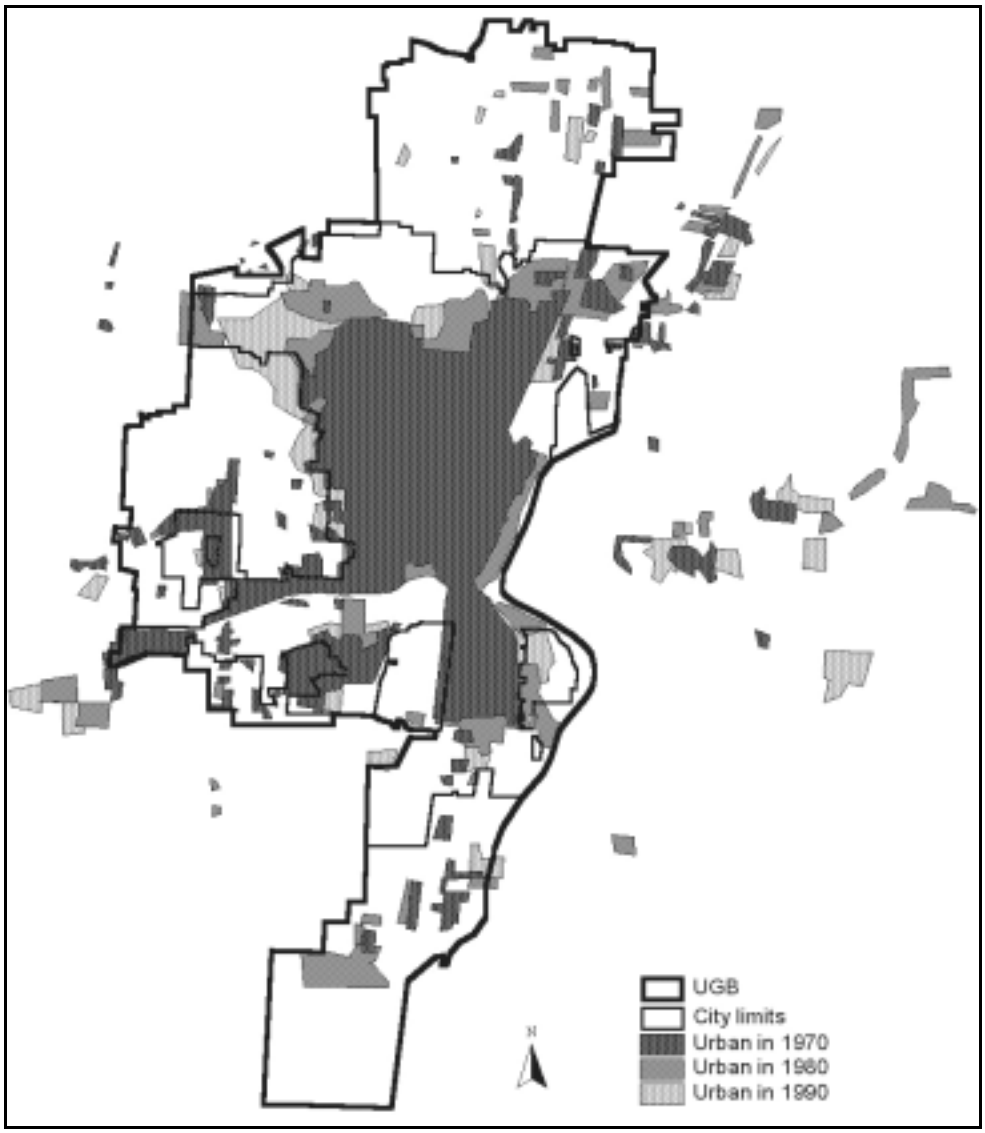


Figure 3.5: Vacant Non-Residential Land, Portion of The Study Area Within the City Limits

The 1998 Land Development Report stated that on urban fringe (outside city limits but within the UGB) land designated as "industrial" in the Benton County Comprehensive Plan, limited industrial development can occur prior to annexation by the City provided the development meets all water and sewer disposal requirements. The study area contained 464 acres of vacant industrial land (out of 758 acres within the Corvallis urban fringe). These tracts were "South Third Street, South of Corvallis" with 238 acres, "Airport Industrial Park" with 99 acres, and "South of Herbert Avenue, West of Highway 99W" with 127 acres.

- *Aerial photo analysis of development patterns.* Figure 3.6 shows development patterns in Corvallis for various periods based on photo interpretation. The aerial photos show that development occurred in many areas of the city – not just the study area – before and after the project was completed. The northern region of the City experienced the most development from 1970 to 1990.



Source: PSU.

Figure 3.6: Aerial Photo Analysis of Corvallis Urban Area

3.3 TRANSPORTATION SYSTEM CHARACTERISTICS

Planned improvements to the local transportation system can affect land use patterns. Statewide planning goal 12 requires all communities with populations over 2,500 to complete a transportation systems plan (TSP).[5] A TSP identifies key transportation issues and transportation improvements to address those issues. The Corvallis Transportation Plan (the city's TSP) was adopted in 1996. Prior to this, the Corvallis Transportation Plan's last major update was in 1983 and was in effect at the time of the Mary's River to Kiger Island Drive Project EA. The 1983 Transportation Plan was referenced in the Corvallis Comprehensive Plan.

[5] The Transportation Planning Rule (OAR 660-12) to implement Goal 12 was adopted by the Department of Land Conservation and Development in 1991.

Major local road improvements. The Mary's River to Kiger Island Drive widening project was completed in 1992. The Corvallis Bypass joining South Third Street to Highway 34 to the east was also completed in 1992. According to the Corvallis Transportation Plan, the traffic volume on the Third/Fourth Street couplet in downtown Corvallis decreased by 20% after the construction of the Bypass. The realignment of Crystal Lake Drive to intersect with Avery Avenue was completed in 1986.

The Corvallis Transportation Plan designated South Third Street as one of five "primary and important entryways or gateways into Corvallis" and should thus receive special attention to ensure that it "reflect and contribute to a positive and desirable image of the community." As such, the city may establish standards to ensure adequate landscaping, setbacks, and limited access along these city gateways.

Recognizing that development within the Urban Growth Boundary but outside the city limits is more likely to cause community concern, the Corvallis Transportation Plan identified two projects for study under the Existing Route Corridor Planning process. These were chosen in part because of development pressures along each corridor. One of these projects is Crystal Lake Drive in South Corvallis. Crystal Lake Drive (with future extensions) is considered by the Transportation Plan to be an appropriate location to provide for north/south movement of local neighborhood traffic east of South Third Street.

Except for access on South Third Street, the South Corvallis area is effectively isolated from the rest of the community. According to the Corvallis Comprehensive Plan (1998), this inhibits growth in this area, promotes separation from the rest of the community, and results in congestion on South Third Street. During the flooding that occurred in 1996, South Corvallis was isolated from the rest of Corvallis by the inundation of South Third Street.

Table 3.13 shows average daily traffic volumes on South Third Street in 1983, 1993 and 1998. The data show a change in traffic volume higher than that forecasted by the EA along South Third Street between Avery Avenue/Crystal Lake Drive and Rivergreen Avenue. The South Corvallis Area Refinement Plan (1997) found the level of service on the most constrained section of South Third Street to be operating at the C/D level of service. According to the focus group participants, the accident rate on South Third Street has decreased, but side collisions sometimes occur where the five lanes merge into two lanes at Kiger Island Drive.

The focus group stated that the project created some drainage problems along the road because the project's storm drainage system was sized to handle only the water running off the road and cannot handle the additional runoff from the adjacent properties.

Table 3.13: Average Daily Traffic, South Third Street (Highway 99W)

Location	1983	1993	1998	% change 1983 to 1998	2000 forecasted by EA
North of Avery and Crystal Lake (new)	16,900	20,000	22,800	35%	27,800
South of Avery and Crystal Lake (new)	16,400	24,000	27,500	68%	23,900
North of Alexander	14,800	23,000	26,200	77%	22,300
South of Alexander	10,200	15,000	17,100	68%	15,000
South of Goodnight	6,000	9,000	10,300	72%	9,200
North of Kiger Island	5,900	6,000	7,600	29%	9,000
South of Kiger Island	-	6,700	7,500	-	-
South of Airport Ave.	-	5,500	6,100	-	-

Sources: EA Mary's River to Kiger Island Drive, Oregon 99W-Pacific Highway West, 1985.; Oregon Highway 99W Corridor Refinement Plan, McMinnville South Third Street Section, 1996; and Traffic Volume Tables, Transportation Data Section, ODOT.

The focus group participants thought that the highway should have been widened all the way south to the airport/industrial parks. They stated that the airport and industrial parks are generating more traffic and the Airport Avenue intersection performs poorly – it is at the transition in traffic speeds, narrow, and unlighted. This intersection is about one mile south of the Kiger Island Drive intersection and represents the beginning of the South Corvallis area development. The focus group said that the City may be considering a deceleration lane at the airport/industrial park intersection.

According to the focus group, Mary's River and Avery Park have prevented the construction of an interchange between Hwy 34 to the west (coming from Philomath) to South Third Street. The focus group said that the county transportation plan proposes a loop at the Third and Fourth Street couplet to address this need.

3.4 PUBLIC SERVICES

The focus group stated that water and sewer line capacities are still sufficient although some sections, especially by the airport, are being upgraded.

According to the focus group, the industrial park with utility serviced parcels is a relatively recent development (parcel services installed three years ago). They said that many companies did not settle in the area (Corvallis or Benton County) because serviced land was not available like there is now. In the past, it would take 18 to 36 months to go through the planning process to allow a business to locate on a property and thus provide utilities to the land. Many businesses would not want to wait this long.

According to the Corvallis Comprehensive Plan (1998), the water and sewer systems were adequate for current uses and initial development, but full development of the airport industrial property and other industrial lands within the sewer basin would require additional sewer construction and pumping capacity.

3.5 PUBLIC POLICY

Changes in public policy can have a significant impact on the timing and location of development. The following are some key changes in state and local policy that occurred between 1985 and 2000.

The current Corvallis Comprehensive Plan (adopted by the City in 1998 and currently under review by DLCD) presents policies to address Oregon's Statewide Planning Goals. The first Corvallis Comprehensive Plan was written during the late 1970s and emphasized energy conservation and the creation of industrial parks. The 1990 revisions emphasized policies to preserve community livability and the natural environment. The 1990s brought concerns over housing affordability, annexations, and development within the Urban Growth Boundary and were reflected in the 1998 update of the Corvallis Comprehensive Plan. The City is currently updating its zoning regulations in the Land Development Code so that they will be consistent with the new Comprehensive Plan. The Comprehensive Plan designated the South Corvallis area as warranting special attention and consideration.

The City staff stated that there have not been any significant zoning changes in South Corvallis since 1985 with the following exception: the South Corvallis Area Refinement Plan changed the zoning on the west side of South Third Street from general to light industrial. The South Corvallis Area Refinement Plan is discussed in more detail later in this section.

According to the Corvallis Comprehensive Plan (1998), the City's available designated industrial lands were almost entirely concentrated in South Corvallis. The Buildable Land Inventory and Land Need Analysis for Corvallis (1998) indicated a need for Research-Technology Center and Limited Industrial land, however the Comprehensive Plan Map Amendments of 1998 addressed this shortage. Approximately 950 acres of vacant industrial land are located in South Corvallis (within the UGB) This area was identified for industrial use because it has large, flat parcels with railroad access, and its compatibility with airport uses. The Comprehensive Plan expressed a need to distribute industrial parcels throughout the City to provide employment centers near additional residential areas and to avoid concentrating the industrial impacts in South Corvallis.

The Comprehensive Plan stated that Planned Development overlays were placed on many industrial sites at the time of their original zoning in an effort to address concerns such as drainage problems, City gateway appearance, and compatibility with neighboring residential properties.

For industrial lands on the western side of South Third Street between Goodnight Avenue and Weltzin Avenue, the policy stated in the Comprehensive Plan prohibits land division and no industrial or commercial development until annexation to the City of Corvallis. Upon annexation, the minimum lot size shall be 50 acres unless an industrial park designation is approved through the Planned Development process.

The Comprehensive Plan stated that prior to the adoption of the South Corvallis Drainage Master Plan in 1996, a major barrier to the development of the Riverpark South industrial land was the obligation of the initial development to plan a drainage system for the entire sub-basin. The Drainage Master Plan provided solutions for drainage problems associated with urbanization. Wetland delineations were prepared for the City's industrial lands near the airport, and several

large industrial landowners prepared wetland delineations for their properties. According to the focus group, there are no wetland issues currently impeding development in South Corvallis.

The Corvallis Transportation Plan (1996) stated that the primary need for South Corvallis was additional access. The Transportation Plan recommended a circumferential route to connect South Corvallis and west Corvallis to "provide for better circulation to industrial and future employment centers, truck routing, and coordination of emergency services." To serve the future needs of South Corvallis, the Transportation Plan recommended eight major improvements including providing an east bound Highway 20/34 to south bound Highway 99W ramp, an extension of Crystal Lake Drive to Highway 99W at Airport Avenue, and an extension from Kiger Island Drive to 53rd Street south of West Philomath Boulevard in west Corvallis. The Kiger Island Drive to 53rd Street alignment crosses flood plains and potential wetlands and is located outside the Corvallis UGB. It is not expected to be constructed until Corvallis nears build-out of the UGB 20 to 50 years from now.

The South Corvallis Area Refinement Plan was completed in December 1997 with funding from the Transportation and Growth Management Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development, and the City of Corvallis. The purpose of the refinement plan was to update and refine comprehensive plan policies and map designations for South Corvallis. The recommendations in the plan were directed at "enhancing the livability of South Corvallis, responding to issues identified by the community, and integrating land use and transportation policy."

The refinement plan focused on enhancing pedestrian and bicycle travel, street connectivity, transit service, mixed use development, parks/open space, sense of community, diversity of housing, visual and gateway character, and traffic flow. The plan also sought to reduce negative impacts from existing or future industrial development. It made a series of land use and transportation system recommendations. The land use recommendations are described below.

The plan largely retained the existing residential comprehensive plan designations north of Goodnight Avenue and promoted housing variety. It suggested that undeveloped lands on the east side of South Third Street south of Rivergreen Avenue presented a "unique opportunity to plan livable, walkable neighborhoods" and four new neighborhoods were proposed.

The Refinement Plan stated that the Comprehensive Plan has long envisioned the auction yard area as a site for retail development. The need for additional shopping stores in South Corvallis was identified in the visioning stages of the refinement plan. Toward this end, the plan suggested that a mixed use "Town Center" be developed at the auction yard location. To promote additional mixed-use opportunities, the plan recommended that the existing Linear Commercial and Shopping Area plan designations be replaced with a district called Mixed Use Commercial. In addition, new nodes of Mixed Use Commercial zoning were recommended to be placed at the east side of the intersections of South Third Street at Kiger Island Drive, Herbert Avenue, Weltzin Avenue, and Airport Avenue.

The refinement plan stated that the intensive and general industrial use at the Evanite Fiber Corporation/Open Door properties at the north end of the South Corvallis area has been "a controversial issue in Corvallis for many years." The plan recommended that a Mixed Use Riverfront designation be placed on the Evanite/Open Door properties to permit limited industrial, office, residential, commercial, and park/open space uses.

To reduce adverse impacts from General Industrial uses, provide opportunities for mixed use, and provide an alternative to the industrial zoning in areas that currently have a mix of uses and relatively small parcel sizes, the refinement plan proposed a Mixed Use Employment zoning. The largest portion of land suggested to receive this zoning was in the northwest portion of South Corvallis (near Avery Park).

The plan recommended a new industrial district called Limited Industrial-Office for the west side of South Third Street generally from Goodnight Avenue South. The area was designated for General Industrial use. This new district would provide a buffer between general industrial use to the west and residential uses on the east side of South Third Street, create a more desirable visual impact along South Third Street, and provide additional opportunities for office uses in South Corvallis. The plan proposed a redesignation of much of the Intensive Industrial land to General Industrial in the vicinity of the Corvallis Airport. This redesignation was intended to reduce the potential for heavy industry while providing for the continued use and expansion of the companies that selected the airport for its Intensive Industrial zoning.

Transportation recommendations in the plan provide the infrastructure to support the proposed land uses. The refinement plan emphasized smaller, local streets designed for connectivity, but also proposed two north-south collector streets in the southwest industrial area and a major east-west connection as an extension of Kiger Island Drive. The Kiger Island Drive extension was envisioned to connect to Philomath Boulevard (Highway 34) at 53rd Street. Medians were recommended for several sections of South Third Street to reduce accident rates, improve capacity, increase pedestrian safety at crossings, and beautify the corridor.

Based on expected growth in through-traffic on Highway 99W and planned growth and development in the Corvallis area, the refinement plan predicted that in 2005, the most constrained section of South Third Street will exceed the D level of service threshold. It was qualitatively estimated that immediate implementation of the plan could forestall the need for capacity-related improvements for 2 to 5 years. Since no capital projects were deemed acceptable and contraction of the UGB was not desired, a land use – transportation strategy was described that incorporates transportation demand and system management and land use strategies.

The land use and policy changes recommended by the South Corvallis Area Refinement Plan were incorporated into the 1998 update to the Corvallis Comprehensive Plan (now under review by DLCD).

The focus group participants thought that one of the greatest challenges facing South Corvallis was fostering development to provide resident and employee services (such as a grocery store). The focus group said that there are proponents of mixed use zoning and overlays in South Corvallis to address these service needs. They thought that redevelopment is the likely trend for the future of South Corvallis, especially to provide commercial services to the increasing number of residents and employees of the area.

4.0 CONCLUSIONS

Chapter 2 describes the socioeconomic conditions, land use, transportation, other public facilities, and public policy at and before the time the EA was issued in 1985. Chapter 3 describes the changes that occurred since the EA was issued. Chapter 1 notes, however, that the fact that changes occurred in the project corridor does not mean that the improvement of South Third Street caused or even contributed much to those changes. This chapter addresses that question: what role did expansion of South Third Street play in the land use changes that occurred in the project's corridor?

4.1 CHANGES SINCE THE EA WAS ISSUED IN 1985

- *Land use.* The City did not expand its UGB in the study area during this time. In 1985, the City annexed a 370-acre tract in the mid-western portion of the study area for industrial uses. The City annexed approximately 400 acres in the study area near the Willamette River from 1992 to 1994. Some of this land was annexed for residential purposes.

  From 1993 to 1996, twelve subdivisions were approved in the study area (out of 23 citywide) thus creating 415 lots or units (including 356 apartment units in one complex). From 1993 to 1999, single-family residential development in the study area increased by 82 houses (out of 1,092 citywide), The value of developed residential lots in the study area was consistently lower than the citywide median value. From 1993 to 1999, multi-family residential development in the study area increased by 287 units (out of 1,445 citywide),

  In 1998, the Willamette Business Park and the Corvallis Industrial Park were approved in the study area. From 1993 to 1999, 37 commercial building permits were issued (out of 152 citywide), Businesses existing before the widening have been fairly stable and there hasn't been much redevelopment. Much of the nonresidential development in the study area has been infill and light industrial operations in the industrial parks (Corvallis and Corvallis Airport). Very little commercial retail development has occurred. In 1998, 74% the vacant industrial land within the Corvallis UGB was in the study area.

- *Transportation.* Construction of the project began in 1990 and was completed in 1992. The Corvallis Bypass joining South Third Street to Highway 34 to the east was also completed in 1992. From 1983 to 1998, traffic volume along South Third Street at the most traveled point (south of Avery Avenue and Crystal Lake Drive) increased by 68% to 27,500 average daily trips. In 1997, the level of service on the most constrained section of South Third Street was operating at level of service C/D.

  The Corvallis Transportation Plan (1996) designated South Third Street as one of five "primary and important entryways or gateways into Corvallis." The Transportation Plan also designated Crystal Lake Drive for study under the Existing Route Corridor Planning process in part because of development pressures along the corridor.

- *Public services.* In 1997, utility services were provided to lots in the industrial parks near the airport.

- *Public policy.* The South Corvallis Drainage Master Plan (1996) resolved a major barrier to the development of the Riverpark South industrial land – the obligation of the initial development to plan a drainage system for the entire sub-basin.

  In 1997, the South Corvallis Refinement Plan was developed to update and refine comprehensive plan policies and map designations for South Corvallis. The Refinement Plan objectives focused on enhancing pedestrian and bicycle travel, street connectivity, transit service, mixed use development, parks/open space, sense of community, diversity of housing, visual and gateway character, and traffic flow. The Refinement Plan also sought to reduce negative impacts from existing or future industrial development.

  The 1998 update to the Corvallis Comprehensive Plan designated the South Corvallis area as warranting special attention and consideration. The South Corvallis Area Refinement Plan recommendations (land use and transportation) were incorporated into the 1998 Corvallis Comprehensive Plan. The City is currently revising its Land Development Code (zoning regulations) to reflect the new Comprehensive Plan goals.

4.2 SUMMARY OF EVENTS

Table 4.1 provides a timeline of important events in the history of the project and related changes in land use and public policy.

Table 4.1: Summary of Events

Event	Year
Corvallis and Benton County Comprehensive Plans acknowledged by LCDC	1984
Environmental Assessment, Mary's River to Kiger Island Drive, Highway 99W, issued	1985
Riverpark South vacant industrial tract (370 acres) annexed	1985
Realignment of Crystal Lake Drive	1986
Widening of South Third Street began	1990
Widening of South Third Street completed	1992
Corvallis Bypass completed	1992
Land near Willamette River (approx. 400 acres) annexed	1992-94
Corvallis Transportation Plan adopted	1996
Master Drainage Plan adopted	1996
South Corvallis area isolated by flooding	1996
South Corvallis Area Refinement Plan issued	1997
Water and sewer provided to industrial parks (near airport)	1997
Electroglas facility approved for construction (near airport, value $1.3 MM)	1997
Willamette Business Park (50 acres) approved	1998
Corvallis Industrial Park approved	1998
Corvallis Comprehensive Plan updated	1998
Mountain View Apartments at Rivergreen (356 units) built	1998
Crystal Lake Apartments built	1999

4.3 INTERPRETATION

The Corvallis case study represents an analysis of one project and its impacts. The narrow focus of the analysis, and the methods used to conduct the analysis, imply inherent limitations in the conclusions. The conclusions that we draw from this analysis are unique to Corvallis and the Mary's River to Kiger Island Drive, Highway 99W project, and should not be construed as universal – analysis of other highway projects in other communities might lead to a different set of conclusions. Thus, the following conclusions should not be generalized to other projects.

Although South Third Street may indirectly serve commuting traffic originating south of Corvallis (e.g., from Monroe, Alpine or Bellfountain), the information gathered for this report did not address any connection between the improvement and the pace or location of development outside the Corvallis UGB.

ODOT's expansion of South Third Street has not caused substantial land use changes in the study area or Corvallis. Prior to the highway widening, the study area was located within the City's UGB and contained a mix of residential, commercial, industrial, institutional, and agricultural activities and designations. The pre-existing development has been very stable with little business turnover or redevelopment. Residential development in the study area since 1985 has occurred in the areas originally designated to receive housing and has had assessed values consistently lower than the citywide median. Non-residential development in the study area since 1985 consisted of infill and some light industrial operations near the airport on land that has been designated for these uses since 1985. The South Corvallis Area Refinement Plan (1997) made minor adjustments to the land use designations in the study area by creating new classifications to be more restrictive with the type of nonresidential development desired and to allow mixed use development.

Although the study area has not seen substantial changes in land use type or designation since the EA was issued, it has seen a rise in the rate of both residential and nonresidential development, especially since the project was completed in 1992. Some of the residential development involved annexations. Some of the nonresidential development has occurred on industrial land that received utility service extensions in 1997 and some on land that received industrial park subdivision approval in 1998.

Without the project, it is likely that the study area would have more traffic congestion and higher accident rates, would be slightly less developed, especially with regard to light industrial development, and might not have received the same recommendations in the South Corvallis Area Refinement Plan.

The research found several reasons for the development patterns that were observed:

- Since 1984, planning and public policy have consistently supported the development patterns and type of development that occurred in the study area. These patterns were largely fixed by 1984 by the geographic nature of the study area (bound by two rivers and flat) and the pre-existing development that included mixed development in the northern portion of the study area, a rail line to the west, and the airport to the south. Parks, open space areas, and wetlands have restricted development in, and transportation access to, the study area. The location of the airport over one mile south of the city limits in 1984 and the inclusion of the airport in the Corvallis UGB created a large amount of vacant land within the South Corvallis urban fringe.

This land included the majority (74% in 1998) of the Corvallis urban area's vacant industrial land. The Willamette River provided a natural eastern boundary for the UGB and thus land to allow extensions of existing residential neighborhoods.

- Compatibility issues between different land uses (such as between industries or the airport and residential) have strongly influenced City land use policies, and thus development in South Corvallis. As the study area developed, compatibility issues became more relevant and were addressed by the South Corvallis Area Refinement Plan (1997). The focus group participants believed that voters approved the annexations in the study area because the character, isolation, and geography (flat) of South Corvallis made the annexations less contentious. The nature of the study area as a major entrance to the City has contributed to the City paying special attention to planning and public policy in the area.

  Corvallis currently has a shortage of affordable housing, especially with regard to single-family homes. Persons employed in Corvallis often look for housing in nearby communities for affordability reasons. The South Corvallis area's housing stock has been historically priced below the citywide average. Thus, the established neighborhoods and level sites of South Corvallis were compatible with the construction of additional housing including lower-priced single-family homes, manufactured homes, and apartment units. This is the type of residential development that has occurred in the study area.

- Current planning trends emphasize mixed use, multimodal development. Thus, the South Corvallis Area Refinement Plan (1997), funded by agencies supporting this philosophy, emphasized these design elements and led to zoning modifications in the study area.

- The Corvallis area economy went through a cycle with a recession in the early 1980s and growth in the 1990s, resulting in an increase in the rate of population growth and all types of development in the 1990s. According to the focus group participants, this economic expansion had a large influence over the rate of development (especially the light industrial) within the study area.

- A few property owners control the pace of large-scale development in South Corvallis. Thus, the rate of development of these properties depends, in part, on the property owners' personal interests and finances. The best example of this is the Rivergreen Estates residential developments from 1993 to 1998 by a single property owner whose land has been in the family for at least two generations. This property owner is currently trying to negotiate city payment for construction of road access into some land he wishes to subdivide.

- The widening of South Third Street and the construction of the Corvallis Bypass were generally seen as a positive by businesses and residents for reasons of access, capacity, safety, and appearance. The project did not create new access. The improvements created a better transportation facility connecting the study area with the Corvallis central business district and Highway 34 which leads to Albany and Interstate 5 eleven miles to the east. Although the improvements addressed the most congested portion of South Third Street, a mile of Highway 99W between Kiger Island Drive and Airport Avenue remains a two-lane road. The focus group participants said that some businesses might not have located in the study area if these transportation improvements had not occurred, but that this effect was minor and one of many factors affecting development.

Thus, the observed patterns of development within the study area, as well as the City overall, were the result of complex interactions between many factors. The transportation improvement in this case was more likely the result of anticipated growth of South Corvallis rather than the cause of it, although it probably provided some impetus for increased rates of development. This case study illustrates the interactive, iterative, and incremental nature of urban development.

The project's Environmental Assessment (1985) had a sense of these influencing factors and the uncertainties inherent to predicting the impacts, thus the EA's analysis of future conditions in the study area, although not very specific, were not far off from what actually happened.