

**ALBANY CASE STUDY:  
INDIRECT LAND USE AND  
GROWTH IMPACTS**

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by

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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 four in-depth case studies of development prior to, during, and after construction of a highway capacity improvement.  Additional case studies are currently underway. The primary product of this research will be guidance for completing an assessment of the indirect impacts on land use and growth of a highway improvement. This assessment is required by environmental regulations, but tools and data for developing general land use forecasts is limited. The guidebook will include examples from the case studies, data types and possible sources, and guidance on using GIS tools for comparing alternative scenarios.  Interim reports are available via the Research Internet web site. Additional case studies and a final report are scheduled to be published in the fall of 2000.					
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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 (EISs), which in turn require an assessment of the improvements on land use. The case study cities are Bend, Albany, McMinnville, Florence, and Grants Pass.

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 five Oregon cities to try to explain the reasons for the observed change in land use and highways. The case study cities are Bend, Albany, McMinnville, Florence, and Grants Pass.

This report is the case study analysis for the City of Albany 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 Albany case study evaluates the land use impacts of improvements to a section of Oregon Highway 99E (the Albany–Junction City Highway) from Queen Avenue on the north to Oregon Highway 34 (at Tangent) to the south. The project improved a 5.5 mile section from two to four lanes, with a continuous left-turn median. Other improvements included a six-foot shoulder and six-foot sidewalk and curbs from Queen Avenue to 37<sup>th</sup> Avenue, and an eight-foot shoulder from 37<sup>th</sup> Avenue to Tangent Drive. Figure 1.1 shows location of the project.

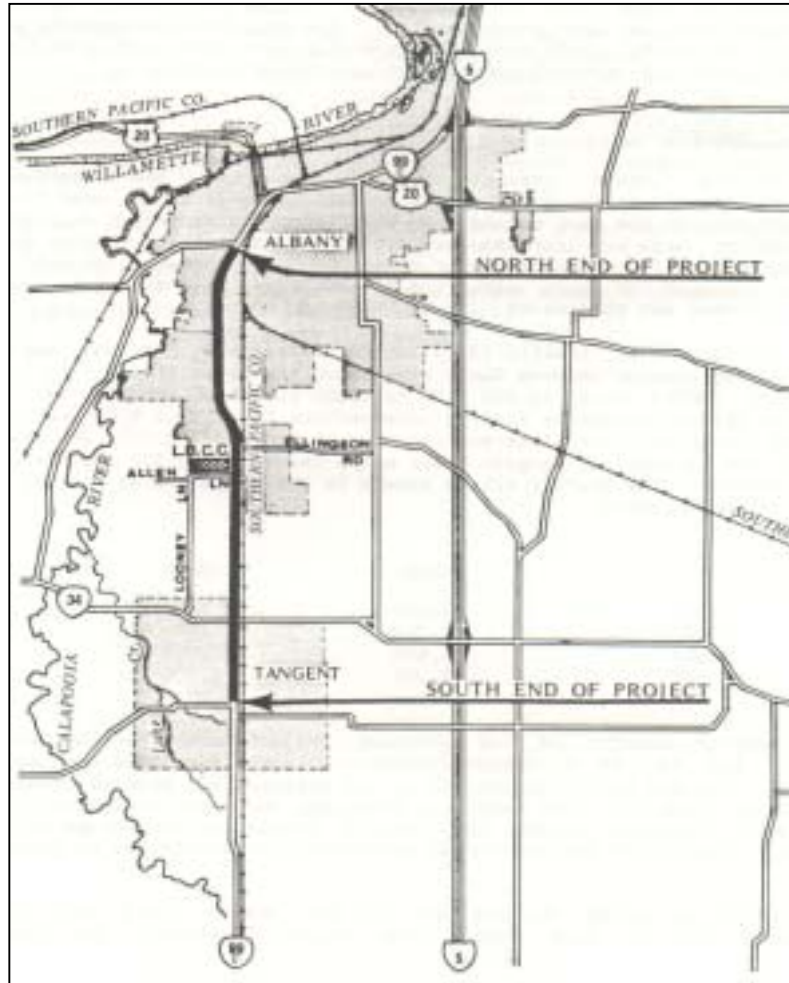


Figure 1.1: Project Location

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

The Draft Environmental Impact Statement (DEIS) was completed in 1983, and the Final EIS in 1985. The project was built in two phases. Phase I, completed in 1988, included improvements from Queen Avenue to Linn-Benton Community College (LBCC). The City contributed \$500,000 of urban renewal funds towards completion of Phase I. Phase II was completed in 1994 and included improvements south of LBCC to the Highway 99E/34 interchange.

Three other highway projects influence land use in the area but are not the objects of this case study. They are likely, however, to affect development either directly or by increasing access to the case study-case area. The Highway 99E/34 interchange improvements were also completed in 1994; improvements to Highway 34 between Interstate (I-5) and Corvallis were completed in 1995, improvements to the I-5 interchange at Highway 34 were completed in 1997. This case study discusses their potential influence, but does not evaluate them with the kind of detailed data collected for the study area.

According to the Draft Environmental Impact Statement, the purpose of the project was to accommodate increases in traffic and provide greater highway safety. The DEIS explains that the need for the project resulted from commercial and residential development, as well as rapid



growth of Linn-Benton Community College (LBCC). The DEIS states that traffic volumes had increased as much as 175% at the Elm Street counter between 1970 and 1980, and averaged 50% to 80% increases at other recording points. Table 1.1 shows low and high average daily traffic between 1970 and 1980 in the project area.

**Table 1.1: Average Daily Traffic in the Project Area, 1970-1980**

Year	Average Daily Traffic	
	Low	High
1970	2,200	8,200
1973	2,350	10,000
1976	2,600	13,600
1980	3,300	15,600

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

The DEIS also expected positive economic benefits of the proposed project by improving access to existing and planned industrial areas in the project corridor. It states:

“It is expected that this [the improvement to Highway 99E] will stimulate economic development in the project area. Improved access and reduced delays will encourage existing businesses in the area to expand and new industries and commercial businesses to locate in the area.” (DEIS, pg. 2)

The DEIS states that land use changes in the project area created the need for a continuous left turn lane. The continued expansion of LBCC created the need for sidewalks and bike lanes from Queen Avenue to 37<sup>th</sup> Avenue. The project was not intended to provide improved access control.

In sum, the project was deemed desirable because (1) past growth in traffic implied future growth and congestion; (2) it would allow and perhaps stimulate economic development; and (3) land use changes in the area created a need for certain types of enhancements. Note that this project was not justified primarily on the basis of *existing* traffic problems, but on the basis of future problems that would occur at greater volumes.

### 1.3 METHODS

The analysis in this report is both quantitative and qualitative. To conduct the baseline analysis, we reviewed EIS documents, land use plans, and capital improvement programs. Those sources are the basis for our description of existing conditions before the case study highway improvements.

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 99E 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" (1988) and the "Actual World" (1998).

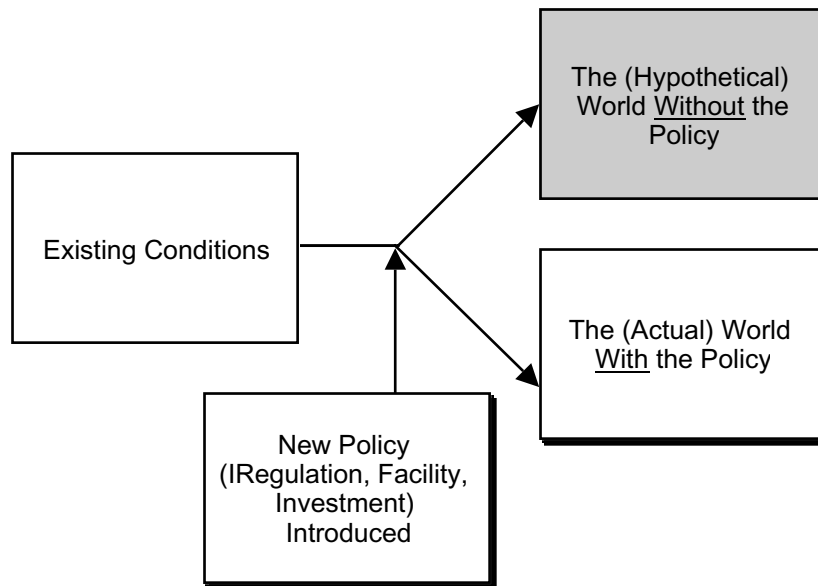


Figure 1-2: Case Study Method, in Concept

As originally scoped, this case study was about Albany: The bulk of the improvement was inside the Albany Urban Growth Boundary (UGB); the research was to describe what happened inside and outside the Albany UGB after the highway improvement. As Figure 1 shows, however, the improvement extended all the far south to Highway 34, which is inside the UGB of the City of Tangent. Thus, the researches had to consider whether to expand the analysis to include Tangent.

The decision was to keep the focus on Albany. Data are available by jurisdiction, not by road segment: expanding to include Tangent would have meant data collection, coordination, and analysis beyond the research budget for a single case study. Nonetheless, the close proximity of the Tangent UGB to the Albany UGB should have an effect on the pattern of development outside the Albany UGB. Thus, throughout the rest of this report, while the tables exclusively report data for Albany, comments on Tangent are included in the text whenever the (e.g., County assessment records) allows.

The study area is generally bounded by Highway 34 on the south, the Calapooya River on the west, 10th Avenue on the north, and Marion Street on the east. While the focus of the case study is on the Highway 99E corridor, citywide data was also evaluated to provide a broader picture of where development occurred and when.

Without that larger context, it would be difficult to make judgments about whether the highway improvement caused changes in development patterns. Figure 1.3 shows the study area boundaries.

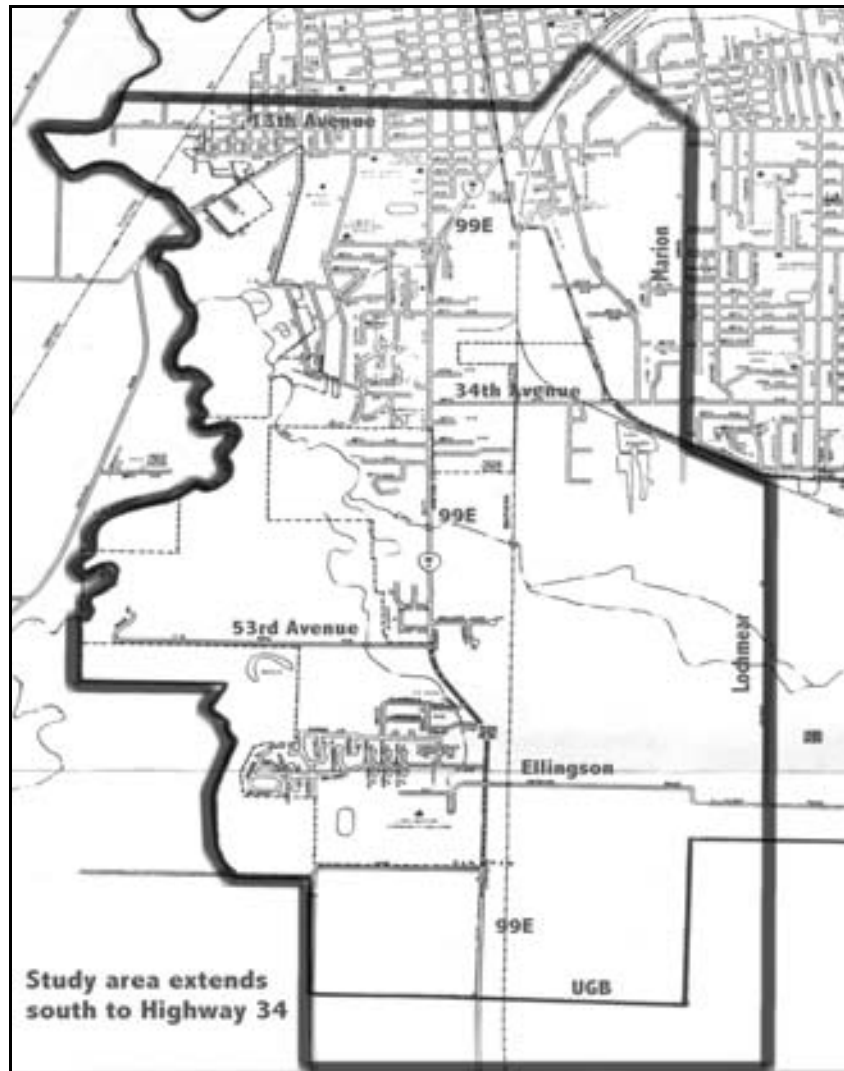


Figure 1.3: Study Area Boundaries

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

- Aerial photographs from 1980, 1990, and 1994.
- County property tax assessment data that allowed Albany Geographic Information Systems (GIS) staff to plot development by year.
- Capital improvement programs that identify the location and timing of water and sewer infrastructure.
- GIS maps that show the location and timing of infrastructure improvements.
- GIS maps that show floodways and wetlands that potentially constrain development.

A preliminary description of development patterns provided data for consideration by a focus group. The group consisted of Albany staff, ODOT staff, and others with knowledge of development patterns in the Albany area. 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 Before the Highway Project.  
Describes socioeconomic, land use, and transportation patterns in Albany prior to completion of the highway project.
- Chapter 3: Changes between 1980 and 1998.  
Describes land use, infrastructure, and transportation changes in the Highway 99E corridor and other areas of Albany.
- 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(1980 TO 1988)**

This chapter describes existing conditions in the case study area during the period between 1980-1988. The description of existing conditions primarily relies on data in the EIS documents. Secondary sources include 1980 Census data, the Albany Comprehensive Plan and Capital Improvement Plan.

### **2.1 SOCIOECONOMIC CONDITIONS**

Table 2.1 shows historic and forecast population and employment in Albany between 1960 and 2000. At the time the DEIS was completed, Albany had experienced the fastest population growth rates of any city in Oregon since World War II. Between 1940 and 1970, population increased 220%. Population growth slowed somewhat between 1970 and 1980, but still grew at an average annual rate of 3.9%.

When the DEIS was completed in the early 1980s, Linn County had already begun to experience declining growth rates in the manufacturing sector and substantial increases in non-manufacturing employment. Between 1970 and 1980, manufacturing employment in Linn County increased only 4%, while non-manufacturing employment increased by nearly 60%.

The historical high rate of population growth is reflected in the population and employment projections presented in the DEIS. The projections, completed by the District 4 Council of Governments, placed Albany's population at more than 60,000 persons in the year 2000. These forecasts substantially overestimated the amount of population and employment growth that would occur in Albany. Between 1980 and 1990, Albany's population grew by only 2,919 people. According to the Center for Population Research and Census (CPRC) at Portland State University, Albany's population was 37,830 in 1997, a 2.1% annual growth rate for the period between 1980 and 1997. While 1997 employment figures for Albany are unavailable, employment trends in Linn County indicate employment increased at a average annual rate of 2.3% between 1980 and 1997.

In addition to developing population and employment forecasts, the DEIS discussed other socioeconomic impacts including accessibility, economic development, right-of-way, and fiscal impacts.

The DEIS concluded that the project would improve accessibility to businesses and residences along the project corridor. The DEIS linked improved access to economic development stating "the proposed project would improve the transportation access which is essential for economic development" (*DEIS, pg. 46*). Other impacts include less congestion around Linn-Benton Community College, greater ease of movement for goods and labor, and stimulation of business growth and sales to businesses located in the project area. No negative access or economic development impacts were identified.

**Table 2.1: Historic and Forecast Population and Employment in Albany, DEIS**

<b>Year</b>	<b>Population</b>	<b>Employment</b>
Historic		
1960	12,926	n/a
1970	18,181	n/a
1980	26,540	16,001
Change 1950-80	105.3%	n/a
AAGR 1950-80	3.7%	n/a
Projected		
1990	41,530	24,002
2000	61,060	28,380
Change 1980-2000	130.1%	77.4%
AAGR 1980-2000	4.3%	2.9%

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

Table 2.2 shows right-of-way impacts and costs. As is typical of highway improvement projects, right-of-way acquisition displaced some residences and businesses. The project required 26.2 acres for right-of-way acquisition which cost an estimated \$1.28 million. The DEIS estimated the assessed value of land removed from the property tax rolls at \$2 million which resulted in an estimated annual loss in property taxes of \$33,000.

**Table 2.2: Right-of-Way Structure Requirements and Total Costs**

	<b>Impact</b>
Acres to be acquired	26.2
Number of affected structures	
Entire structure	
Residential	9
Commercial	1
Portion of structure	
Residential	0
Commercial	3
Estimated right-of-way cost	\$1,277,000

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

## **2.2 LAND USE PATTERNS AND PLANS**

### **2.2.1 Land Use Patterns**

The majority of the project was within the Albany UGB. All of the first phase (1988) was in the Albany UGB. The second phase (1994) was within the Tangent UGB, and a short segment was within unincorporated Linn County. It is notable that the Tangent Comprehensive Plan was not acknowledged at the time the DEIS was completed. The City adopted the plan in 1980, and submitted it to DLCD who denied acknowledgement at that time. Tangent had no sewer system at the time.

Land use along the highway corridor in 1980 was a mixture of commercial, industrial, farming, and residential uses. Strip development was predominant along much of the corridor. Commercial uses were concentrated north of 37<sup>th</sup> Avenue. Industrial uses (mobile home and forest products manufacturing, food processing) were concentrated north of 34<sup>th</sup> Avenue and south of Beta Drive. Open areas south of 37<sup>th</sup> Avenue were primarily in agricultural uses (see Figure 1.3 for street locations).

Single family residences were scattered along the length of the project. The primary concentration of homes was west of Oregon Highway 99E in Albany beyond the strip commercial development and north of 37th Avenue.

### **2.2.2 Land Use Designations**

The primary land use designations within the project corridor at the time of the DEIS were industrial and residential (see Figure 2.1). The City of Albany had more than 250 acres east of the project corridor designated for heavy industrial use, and an additional 553 acres designated for light industrial use. More than 290 acres along Ellingson Road was designated for use as a high-tech industrial park. Zoning designations were generally consistent with plan designations.

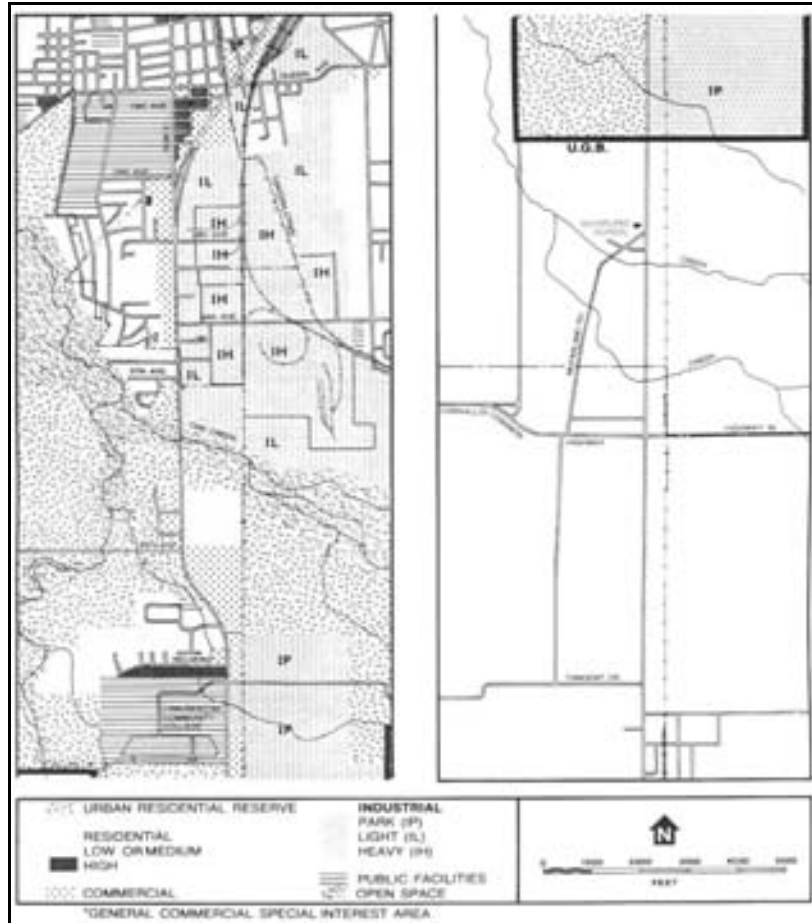


Figure 2.1: Comprehensive Plan Designations in Albany, 1983.  
 Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

The DEIS identified right-of-way acquisition as the primary land impact of the project. According to the DEIS, Design Option 2 (the alternative that was built) required acquisition of 26.2 acres for the expanded highway right-of-way.

More germane to this analysis, however, is the analysis of secondary land-use impacts: land use impacts that result from the increased capacity and access provided by the highway improvement. The DEIS stated that the primary purpose of the proposed project was to accommodate traffic increases that were resulting from commercial, industrial, and residential development, as well as expansion of Linn-Benton Community College (*DEIS, pg. 36*). It concluded that the preferred alternative would improve accessibility to existing and planned industrial areas. The DEIS concluded: “an increase in the rate of growth and in pressure for increased and more concentrated industrial use can be expected.” It made similar conclusions for commercial and residential uses, but also stated that land uses must be consistent with local comprehensive plans. Finally, it stated that the project was consistent with local comprehensive plans in 1983, which envisioned increased and more intensive development along the project corridor.



Statewide planning Goal 3 addresses conservation of agricultural land. The DEIS indicated that much of the soil in the project area is of prime farmland quality, while recognizing that land within UGBs is considered committed to urban uses and not in the prime farmland classification. The DEIS concluded that the project would impact 1.3 acres of prime farmland, most of it in the Albany UGB.

## 2.3 TRANSPORTATION SYSTEM CHARACTERISTICS

Table 2.3 shows historical average daily traffic for selected locations in the project area. In the 7-year period between 1975 and 1981, the ADT volume on Highway 99E between Queen Avenue and Highway 34 increased between 28% and 73% at specific locations. These increases equate to annual growth rates of between 4.2% and 9.5%. The largest increase was on the north side of the Hwy 99/Hwy 34 interchange.

**Table 2.3: Historical Average Daily Traffic, DEIS**

Location	1975	1976	1977	1978	1979	1980	1981	AAGR
Queen Avenue	12,100	13,600	14,000	15,000	15,000	15,000	15,600	4.3%
34th Avenue	7,000	10,400	10,700	11,400	11,400	10,700	10,700	7.3%
Ellison Road	3,600	5,000	5,300	5,600	5,600	4,600	4,600	4.2%
ORE 34 - 0.01 mile north	3,300	4,500	4,800	5,100	5,100	5,700	5,700	9.5%
ORE 34 - 0.91 mile south	2,400	2,800	3,000	3,200	3,200	3,700	3,700	7.5%

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983. AAGR--Average Annual Growth Rate

Table 2.4 shows historic and forecast average daily traffic volumes for selected locations in the corridor from the DEIS. The DEIS anticipated significant increases in ADT within the project corridor between 1983 and 2000--increases between 3% and 4% annually for the 17-year period. While the forecast annual increase in ADT was substantial, it was considerably lower than increases recorded between 1975 and 1981.

**Table 2.4: Historic and Forecast Average Daily Traffic, DEIS**

Location	Average Daily Traffic			
	1983	1986	2000	AAGR
Queen Avenue	17,200	20,000	28,600	3.0%
24 <sup>th</sup> Avenue	15,500	18,500	27,400	3.4%
29 <sup>th</sup> Avenue	16,500	19,600	28,900	3.4%
53 <sup>rd</sup> Avenue	12,000	14,400	21,900	3.6%
1 mile north of Hwy 34	9,600	11,500	17,200	3.5%

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983. AAGR--Average annual growth rate

Table 2.5 shows existing level of service (LOS) of the project at selected locations. Level of service measures the quality of traffic flow on a specific link of highway. LOS is classified from

A—free-flowing traffic, to F—where excessive delays and backups occur. LOS C is the desired design level which permits a stable flow. In 1983, the existing LOS ranged from A at the Queens Avenue intersection, to C at Allen Lane.

**Table 2.5: Level of Service at Selected Locations in the Project Area, 1983**

Location	LOS	
	1983	2000 (build alt)
Queen Avenue	A	D
29 <sup>th</sup> Avenue	B	C
34 <sup>th</sup> Avenue	B	D
Allen Lane	C	B
Highway 34	A	B-C

Source: Queen Avenue to Tangent Drive Section, DEIS, ODOT, 1983.

The DEIS forecasted that LOS would deteriorate due to increases in traffic (see Table 2.2). Average daily traffic in the corridor was forecast to increase 66% to 89% between 1983 and 2000. The no-build alternative, however, resulted in LOS forecasts of D or F at all intersections in the year 2000.

## 2.4 PUBLIC SERVICES

In 1983, when the DEIS was completed, the extent of Albany’s public services into the project area was considerable. According to data provided by the City of Albany, sewer service extended to Linn-Benton Community College, just north of Allen Lane in 1983. Water service, however, extended only to Ellingson Road and primarily serviced the existing residential development off of Belmont Avenue. Figure 2.2 shows existing and proposed water lines in 1988.

The DEIS identified no impacts to existing or potential public services. It did not address explicitly the relationship between secondary land use impacts and public facilities.

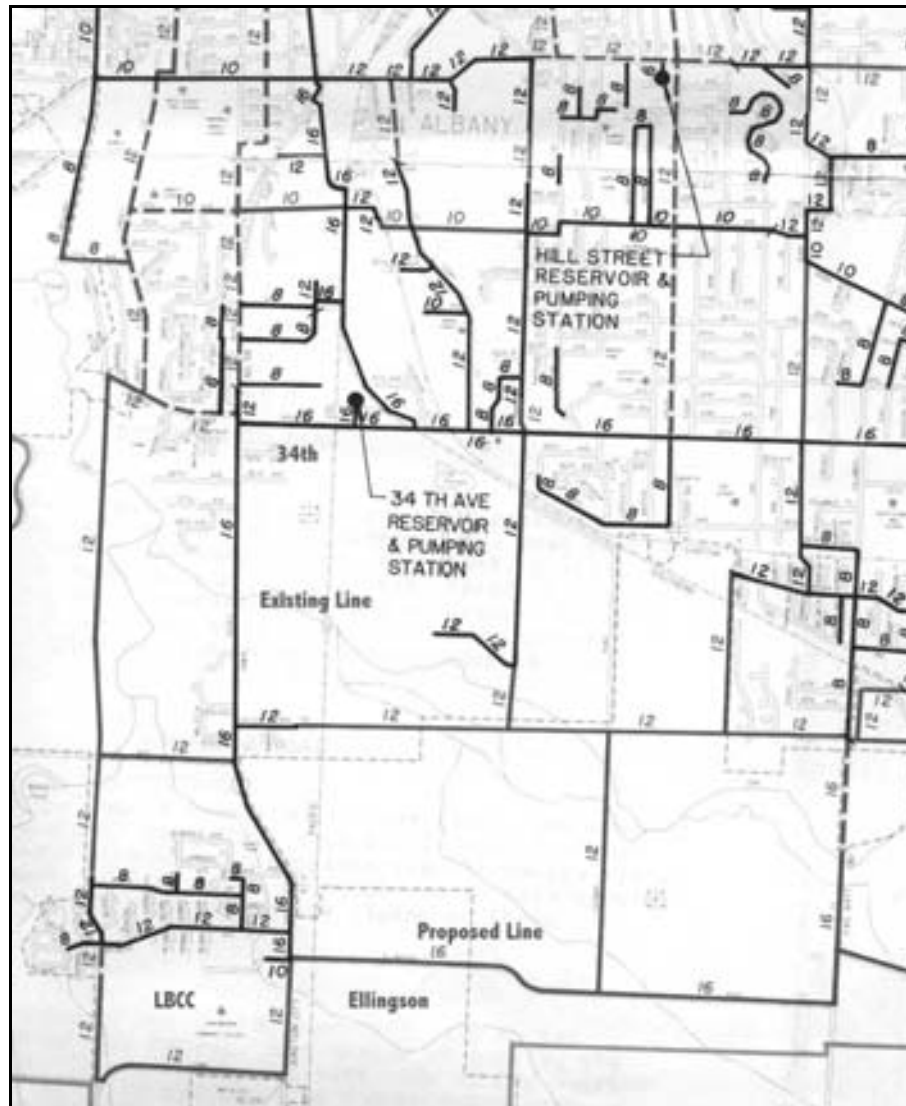


Figure 2.2: Existing and Proposed Water Lines, 1988  
 Source: Albany Water System Facility Plan, 1988.

## 2.5 PUBLIC POLICY

The DEIS stated that the project was consistent with local comprehensive plans in 1983. While consistency with local comprehensive plans is important in justifying highway projects, it does not provide much information about desired future land use patterns in the affected area.

## **2.6 ALBANY**

Land use designations are a primary determinant of the type and intensity of development communities want to occur in an area. A significant portion of the project area adjacent to Highway 99E was designated for industrial use (more than 1,100 acres). Commercial designations were the other major planned land use adjacent to the Highway. Residential uses were generally further removed from the corridor, but still contain a substantial amount of land in south Albany.

Development in the Pacific Boulevard/Santiam Highway Corridor was specifically addressed in the first Albany Comprehensive Plan (1971). The plan included goal statements discouraging strip commercial development. Moreover, the 1971 plan recognized the potential for industrial development in the corridor. The 1971 plan recommended the existing industrial designations south to Highway 34 be retained and specifically stated that development should only be allowed southwest from the current city limits if the City's sanitary sewers were extended to the area.

According to focus group participants, Albany had envisioned that industrial lands in the Highway 99E corridor would represent the City's high-tech corridor. They hoped the proximity to LBCC, good access, and other factors would attract high-tech industries to the area.

Capital improvement plans (CIPs) are also commonly used to guide development. Statewide planning Goal 11 requires communities to plan for public facilities. Albany was able to provide a copy of their 1988 water plan, but did not have a historic sewer system plan.

The City's 1998 Water System Facility Plan indicates that some improvements were planned for the corridor at that time. Recommended improvements included new 16-inch mains extended eastward along Ellingson Road that ringed the existing development at that time and eventually connected to a 24-inch main east of Interstate 5. Additional improvements included a 12-inch main ringed the LBCC campus. No water system improvements were proposed that extended south of Allen Lane at that time (see Figure 2.2). Thus, the evidence from public facilities is that the City intended the area to develop and was providing key public services to that end.

## **2.7 TANGENT**

Some development existed in the south end of the project area. Much of the area between Highway 99 and the railroad tracks south of the Tangent UGB and north of the Highway 99E/34 Interchange was developed at the time the EIS was completed.

Little development existed at the Highway 99E/34 Interchange before 1988. According to focus group participants, the lack of sewer systems and the condition of the interchange were limiting factors.

At the time the EIS was completed, Tangent did not have an acknowledged comprehensive plan, nor did it have water or sewer service north of Highway 34. The City's comprehensive plan was acknowledged in 1985. The plan designated areas north of Highway 34 for industrial uses.

The City extended sewer service north of the highway in 1988. According to Tangent officials, the City experienced little growth north of Highway 34 until the sewer system was completed. The City does not have water services inside the City. The city has no plans to develop a water system at this time.

## **2.8 LINN COUNTY**

Most of the land in unincorporated portions of the study area was designated for farm use. Areas between Highway 99 and the railroad tracks were designated for commercial or industrial use. Most of the parcels outside the Tangent and Albany UGBs were developed before the project was proposed. The lands that weren't developed were generally zoned for agricultural uses. According to county representatives, the combination of state and county policies regulating farm lands were intended to limit land uses in areas zoned for agricultural uses.



### 3.0 CHANGES AFTER THE PROJECT (1988 TO 1998)

This chapter discusses changes in land use, and in the variables that influence those changes. Its organization 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 were considerably different than those described in the DEIS. The DEIS expected Albany's population to increase by more than 140% between 1980 and 2000; as of 1997, Albany's population had only increased 43%. Based on Linn County data, employment increased about 46% during the same period.

The data on population growth in Albany in the 1980s is misleading. The annexation of North Albany in 1991 added 3,860 residents to the City: that population was later added to the City's official Census population for 1990. Netting out persons added by the North Albany annexation, the City lost over 900 people between 1980 and 1990.

**Table 3.1: Population Trends in Albany**

Year	Population
1980	26,540
1990 <sup>1</sup>	29,463
1997	37,830
% Change	42.5%
Average Annual Growth Rate	2.1%

Source: U.S. Census, CPRC

The annexation of North Albany in 1990 added 3,860 people to the City.

#### 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 Albany) since the project was completed in 1988. To determine changes in land use, we looked at a number of indicators including (1) annexations and UGB expansions, (2) zone and plan designation changes, (3) subdivision approvals, and (4) location of new development. Key conclusions are:

- *Annexations and UGB expansions.* Albany has not had any UGB expansions, but approved 36 annexations between 1990 and 1997. These annexations added about 2,780 acres to the city.
- The majority—2,437 acres—were added with the 1991 North Albany annexation. Annexations occurred in every area of the city during this period.

The North Albany annexation distorts both the annexation and population data for the period between 1990 and 1998. Without the North Albany annexation, the City added about 342 acres between 1990 and 1998.

Figures 3.1 and 3.2 show annexations that occurred in the study area between 1990 and 1997. Five of the approved annexations occurred in the study area, adding 48 acres to the city. This represents 2% of the total area annexed between 1990 and 1998; 14% if the North Albany annexation is not included.

- *Zone and plan designation changes.* A review of plan designation maps since 1989 showed that the City has not made any major changes in plan designations in the study area since 1989. According to City of Albany staff, few zone changes have occurred in the project area since 1988. Moreover, little pressure has existed to up-zone residential land in the corridor. Focus group participants identified one parcel located on the west side of the highway at 37th that was down-zoned from commercial to multifamily.

*Subdivision approvals.* The City has received 50 subdivision applications since 1989. Eleven of the subdivision applications were either withdrawn or have expired. The 39 subdivisions that were approved created a total of 635 new lots on about 264 acres. The location of new subdivisions has been dispersed throughout the City (see Figure 3.3).

Figure 3.3 shows three key areas in Albany that are experiencing residential development as indicated by subdivision approvals. Two of these are outside the project area: North Albany, and East Albany. In other words, the City has planned for and is accommodating residential development in several areas.

The subdivision data show that only four of the 39 subdivisions approved between 1989 and 1997 occurred in the project area. Moreover, while all of these subdivisions have been approved and platted, review of aerial photos and field visits indicate that not all of them are developed at this time.

- *Year-built from assessment records.* The Linn County Assessor keeps records on the year improvements are recorded on tax lots. Our experience is that this data is not entirely reliable for all land uses, but is relatively reliable for residential uses. Year-built data combined with building permits provides a relatively accurate assessment of development trends.

Figure 3.4 shows the number of single-family dwelling units built in Albany and the project area by decade.<sup>1</sup> The data indicate that the project area accounted for approximately 15% of

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<sup>1</sup> Single family units were identified by property classification codes. A property classification code of 101 signifies residential land with improvements.



all single-family residences in Albany in 1997. Moreover, the assessment data indicate that development in the study area has typically accounted for between 10% and 20% of total single-family development in Albany each decade. Development between 1990 and 1997, however, accounted for 25% of all single-family residential development in Albany. The study area has about 20% of the residential land area in Albany; these figures roughly correspond with that ratio.<sup>2</sup> Further analysis of vacant land based on property classifications indicates that the study area contained about 9% of vacant residential land in Albany in 1998.

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<sup>2</sup> The Linn County Assessment data does not include plan designation or zoning information for areas within the Albany City Limit. Thus, we were unable to calculate more detailed ratios of land in the study area by designation.

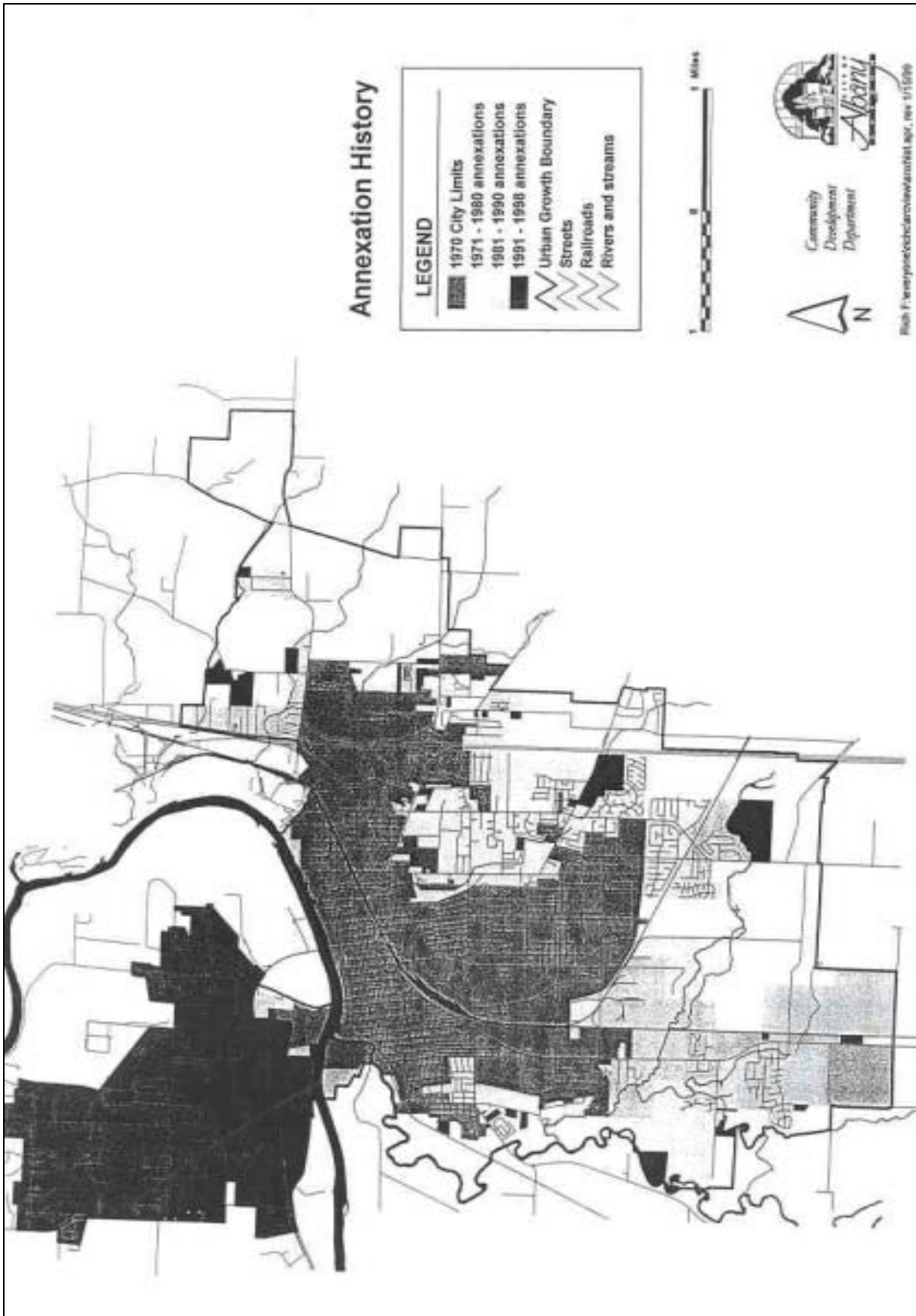


Figure 3.1: Annexations In Albany and the Study Area, 1971-1998





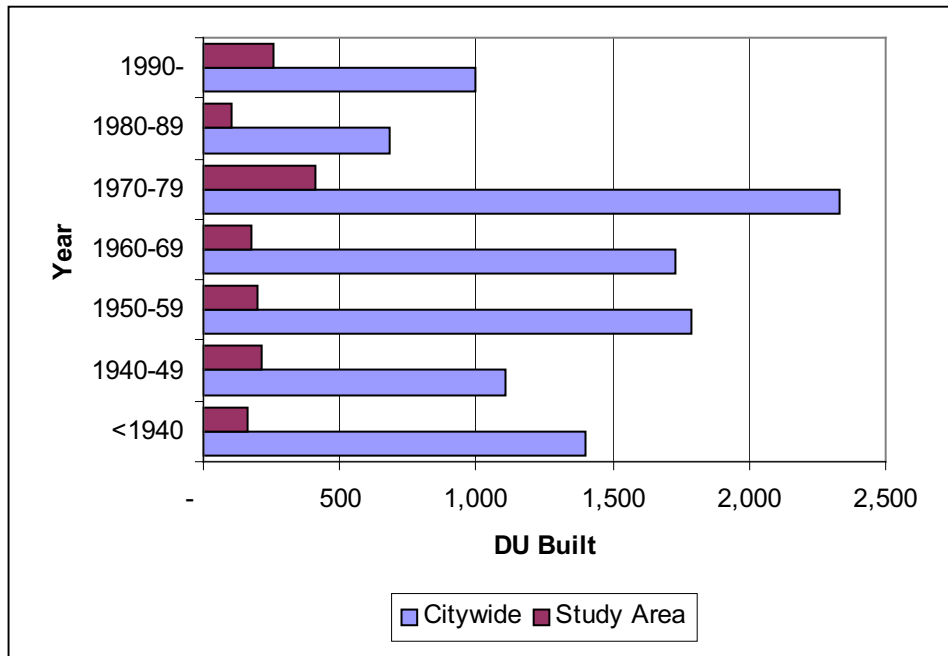


Figure 3.4: Single-Family Dwelling Units by Year Built, Albany and Corridor Study Area  
 Source: Linn County Assessment Data, 1998

Table 3.2 shows development by year and use for Albany and the project study area. While the ratios varied somewhat by year, development in the study area generally reflected citywide trends. The data show that 25% of single-family residential development in Albany between 1990 and 1997 occurred in the study area. About 18% of commercial tax lots were developed in the study area between 1990 and 1997, while about 43% of industrial tax lots were developed in the study area. In 1998, the study area contained about 15% of vacant commercial land in Albany and about 43% of vacant industrial land. Thus, these figures are generally consistent with the ratio of vacant land located in the study area relative to total land in the City.

**Table 3.2: Number of Developed Tax Lots, by Year Built, by Use Albany, 1988-1997**

Year	Residential		Commercial		Industrial	
	Citywide	Study Area	Citywide	Study Area	Citywide	Study Area
Before 1988	7,851	1,345	479	69	259	130
1988	20	5	13	2	5	3
1989	40	4	9	-	3	2
1990	85	26	9	-	5	1
1991	88	22	5	1	4	1
1992	86	20	4	1	2	2
1993	180	39	5	4	4	2
1994	148	45	5	-	6	3
1995	115	24	9	4	4	2
1996	108	47	5	1	8	1
1997	147	26	9	-	10	5
Total 1988-97	1,017	258	73	13	51	22
Total	8,868	1,603	552	82	310	152

Source: Linn County Assessment Data, 1998

Note: Land uses were determined by Assessor's property classification codes.

We recognize the limitations of using year-built data to track commercial and industrial development. Year built only indicates the number of tax lots that were developed and lacks data about the area developed, floor area, and type of use. Table 3.3 shows acres developed by type of land use in Albany between 1990 and 1997. The acreage data tell a different story for commercial and industrial use than the number of tax lots developed. While the number of tax lots developed in the study area accounted for about 18% of all commercial tax lots developed in Albany between 1990 and 1997, they accounted for only 6% of the land area. The trend is opposite for industrial tax lots; about 43% of all industrial tax lots developed between 1990 and 1997 were in the study area, these tax lots accounted for about two-thirds of all industrial land developed in Albany between 1990 and 1997.

**Table 3.3: Acres Developed by Type of Land Use, 1990-1997**

Land Use	Citywide		Study area		Ratio of Study area to city	
	Number of Tax Lots	Acres	Number of Tax Lots	Acres	Number of Tax Lots	Acres
Single Family Residential	1,076	207.3	259	48.2	24.1%	23.3%
Commercial	73	145.2	13	8.4	17.8%	5.8%
Industrial	51	87.2	22	57.9	43.1%	66.3%

Source: Linn County Assessment Data, 1998

Note: Land uses were determined by Assessor's property classification codes and acreage's do not account for partially developed tax lots.

The Linn County Assessor also records information on floor area. Table 3.4 shows the floor area of commercial and industrial development by year built. Similar to trends in residential development, commercial and industrial development peaked in the 1970s.

According to assessment data, Albany has about 4.6 million square feet of commercial floor space. About 380,000 square feet, or 8% of all commercial floor space in Albany is located within the study area. Commercial development in the project area between 1990 and 1998 accounted for about 10% of all commercial floor space added in Albany during that period. These figures are generally consistent with plan designations in the area.

More than 50% of the industrial floor space in Albany is located in the project area. This is generally consistent with industrial land designations in the city.

**Table 3.4: Commercial and Industrial Floor Area by Year Built**

Decade	Citywide		Study Area		Percent of Acres in Study Area	Percent of Floor Area in Study Area
	Tax Lots	Floor Area (sq ft)	Tax Lots	Floor Area (sq ft)		
<b>Commercial</b>						
Before 1940	103	190,172	10	3,228	9.7%	1.7%
1940-49	18	88,811	3	7,791	16.7%	8.8%
1950-59	71	320,772	12	33,075	16.9%	10.3%
1960-69	92	949,027	15	111,488	16.3%	11.7%
1970-79	140	1,449,719	19	121,027	13.6%	8.3%
1980-89	78	1,066,717	8	38,976	10.3%	3.7%
1990-98	51	552,322	11	62,542	21.6%	11.3%
Total	553	4,617,540	78	378,127	14.1%	8.2%
<b>Industrial</b>						
Before 1940	101	53	50	0	49.5%	0.6%
1940-49	7	87,264	3	35,297	42.9%	40.4%
1950-59	19	199,412	12	173,838	63.2%	87.2%
1960-69	26	181,597	9	49,459	34.6%	27.2%
1970-79	75	1,091,052	38	656,026	50.7%	60.1%
1980-89	39	486,261	19	224,874	48.7%	46.2%
1990-98	43	588,531	17	253,447	39.5%	43.1%
Total	310	2,634,170	148	1,392,941	47.7%	52.9%

Source: Linn County Assessment Data, 1998

Note: Land uses were determined by Assessor's property classification codes.

The data presented in the previous tables and figures indicate that no single type of development has concentrated in the study area since the highway improvement was completed in 1988, and, more importantly, the study area has not been the dominant sub-area of Albany for development.

The proximity of the railroad to industrial sites east of Highway 99 is an issue, particularly for sites south of Ellingson Road. The distance between the railroad tracks and Highway 99 does not provide sufficient vehicle stacking distance for many industries. Focus group members believed that any large-scale development on the substantial vacant land south of Oak Creek and east of Highway 99E would probably require and underpass of the railroad.

While the case study focuses on Albany, the area south of the UGB to Highway 34 is relevant to this analysis. To supplement Albany data, we included representatives from Tangent and Linn County for their opinions about highway, land use, and development issues at a focus group meeting.



The Tangent representative indicated that substantial development had occurred between 1988 and 1998 near Highway 34 inside the Tangent UGB. Tangent provided a list of building permits issued in the area between 1988 and 1998 that showed about 44 permits were issued during this period adding more than 700,000 square feet of building area. Most of the permits issued were for new construction; about 80% of the floor area added was from new development.

Conversations with Linn County representatives indicated that very little development occurred in the unincorporated portion of the study area (along Highway 99E between the Tangent and Albany UGBs). This is largely due to strict policies the County has adopted on development in the area. According to County representatives, developers have displayed limited interest in areas adjacent to Highway 99 that are under the County’s jurisdiction. Rather, most of the interest for lands in the County has been in the Highway 34 corridor, particularly near the Hwy 34/I-5 Interchange.

- *Value of land and improvements.* Table 3.5 shows the value of residential sales and land for Albany and the study area between 1990 and 1998.<sup>3</sup> The data show that the number of residential sales varies by year and that average sales prices increased significantly. It is notable that average sales prices in the study area were lower than the citywide average in 1990, but had increased to levels significantly higher than the city average by 1998.

**Table 3-5: Land Value of Developed Residential Lots, 1990-98**

Year	City Totals			Study Area		
	Number of Sales	Avg. Price	Land Value (\$/sq ft)	Number of Sales	Avg. Price	Land Value (\$/sq ft)
1990	10	\$50,187	\$4.25	2	\$44,133	\$4.93
1991	310	\$53,532	\$7.43	65	\$68,904	\$5.62
1992	392	\$63,460	\$8.59	59	\$67,759	\$6.03
1993	496	\$82,968	\$5.34	95	\$110,972	\$5.74
1994	523	\$92,376	\$5.45	79	\$100,767	\$5.45
1995	468	\$98,175	\$5.46	84	\$108,552	\$5.45
1996	608	\$104,548	\$5.45	106	\$122,758	\$5.68
1997	643	\$107,761	\$5.57	116	\$126,216	\$6.04
1998	398	\$116,931	\$5.71	57	\$130,765	\$6.00

Source: Linn County Assessment Data, 1998

Note: Land uses were determined by Assessor’s property classification codes.

<sup>3</sup> The data in Table 3.5 represent developed residential parcels. Analysis of assessment data identified only 16 vacant residential tax lots sold between 1990 and 1998.

- *Aerial photo analysis of development patterns.* Figure 3.5 shows development patterns for various periods in Albany based on aerial 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.

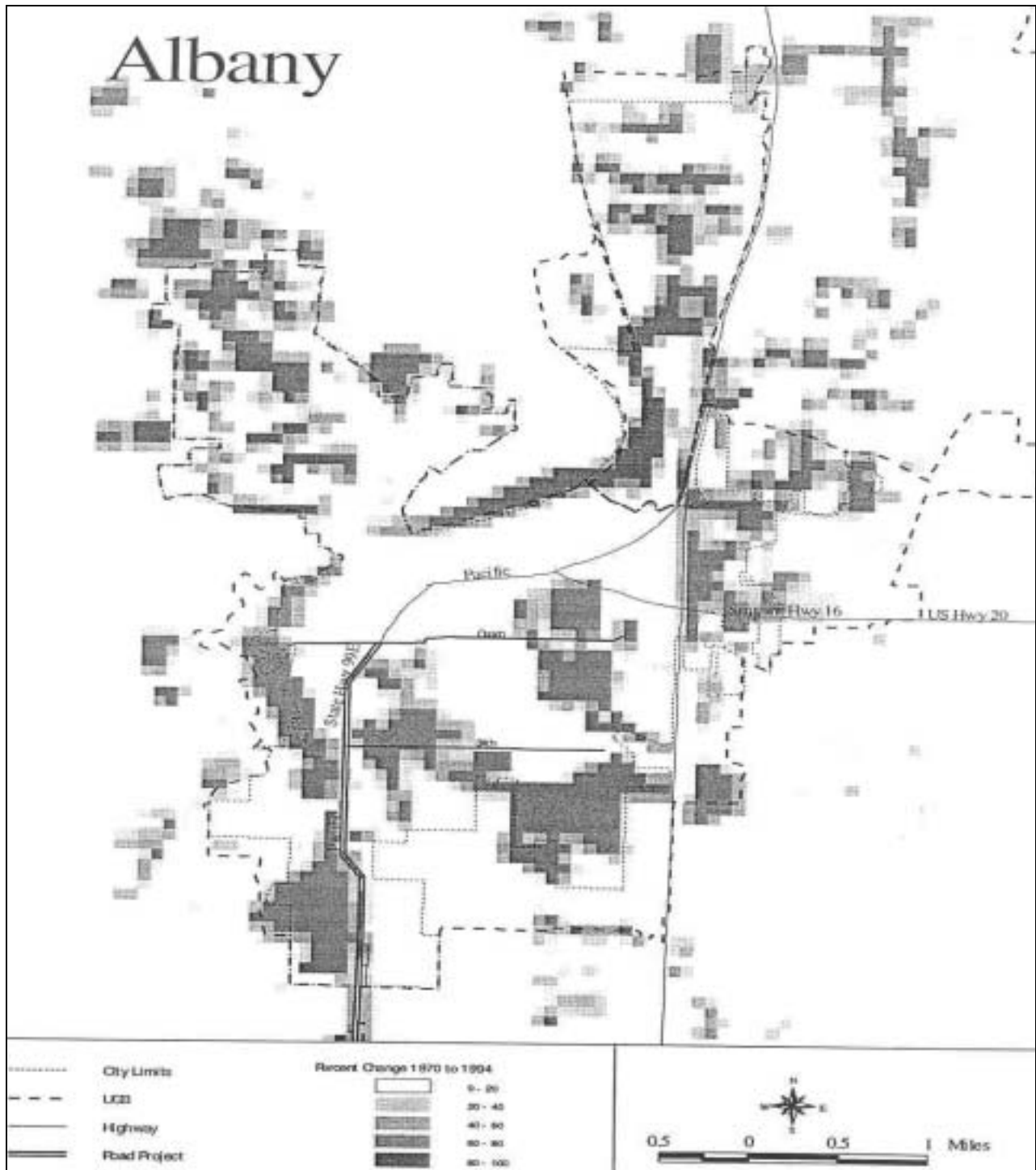


Figure 3.5: Development Patterns in Albany

### 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). A TSP identifies key transportation issues and transportation improvements to address those issues.

Table 3.6 shows average daily traffic volumes on Oregon Highway 99E between 1983 and 1997. The data show increases ranging from 116% to 225%, or average annual growth rates of between 6% and 8%. These increases are consistent with findings presented in the EIS documents, although the change was not influenced by population and employment growth to the extent the EIS anticipated. Data from ODOT indicate that VMT in Linn County increased nearly 22% between 1992 and 1997—more than double the rate of population growth.

Focus group participants indicated that traffic congestion in the study area north of LBCC improved after Phase I was built. The widening, combined with signalization of key intersections, allowed easier access to roads off of Highway 99E. The one exception to this was the Queen Avenue/Highway 99E intersection. According to focus group participants, Safeway intends to close its store at that intersection and to move another location in Albany. Store representatives cite poor access and traffic impacts due to the highway improvements as a key factor in their decision to seek another location.

**Table 3.6: Historical Average Daily Traffic, Oregon Highway 99E**

Location	1983	1988	1990	1992	1994	1996	1997	AAGR
Queen Avenue	12,100	16,600	16,500	18,000	18,500	25,600	26,100	5.6%
29 <sup>th</sup> Avenue	n/a	16,200	19,700	18,000	18,500	21,900	22,300	n/a
34 <sup>th</sup> Avenue	7,000	11,400	15,500	15,000	15,500	18,600	19,000	7.4%
Allen Lane	3,600	6,300	7,100	8,000	8,500	11,400	11,700	8.8%
ORE 34 - 0.01 mile north	3,300	5,800	6,800	7,500	7,800	8,600	8,900	7.3%
ORE 34 - 0.91 mile south	2,400	3,800	3,700	4,200	5,200	6,800	7,000	7.9%

Source: Traffic Volume Tables, Transportation Data Section, Oregon Department of Transportation, 1983-1997.

- *Major local road improvements.* The need for local highway improvements can also be affected by a major highway project. Discussions with city representatives indicate that the Highway 99E project did not create the need for additional improvements to city streets beyond those already identified in local planning documents.
- *Other improvements:* The Highway 99E improvements were followed by several other improvements including Highway 34 to Corvallis, the Interstate 5 interchange, and the Highway 34 improvements to Lebanon that were under construction at the time of this report. According to focus group participants, these improvements contributed, at least in part, to development at the Highway 99E/34 interchange and to Target’s decision to locate in south Albany.

### **3.4 PUBLIC SERVICES**

Little has changed with public services in the Albany UGB since 1988. In 1988, both water and sewer service were available along Highway 99E to LBCC. The key change that occurred was extension of city services to the Target regional warehouse just south of LBCC.

According to focus group participants, the cost of upgrading services has had a substantial impact the desirability of the area for development. This is particularly true for industrial sites. Albany has policies that require developers pay for extension of public services. Any major development south of Oak Creek would probably require expansion of the sewer pump station at Oak Creek and looping of the water lines.

In 1998, Tangent completed extension of sewer service to areas north of the Highway 99E/34 interchange. That extension was a planned service expansion. The city does not provide water service, and does not presently have plans to develop water services.

### **3.5 PUBLIC POLICY**

Changes in public policy can have a significant impact on the timing and location of development. Following are some key changes in state and local policy that occurred between 1988 and 1998:

- State policy changed since the project: Cities must have transportation systems plans (TSPs). While Albany has always had a transportation element in its comprehensive plan, the state requirements for TSPs—and Albany’s response to those requirements are more sophisticated than previous transportation policies in Albany.
- According to City staff, land use policy in the study area has not changed substantially since 1988. No major changes in plan designations have occurred; only a few zone changes have been approved.

## **4.0 CONCLUSIONS**

Chapter 2 describes the land use, transportation, other public facilities, and public policy conditions at and before the time the first stage of the Highway 99E improvement was completed. Chapter 3 describes the changes that occurred since the project was completed. Chapter 1 notes, however, that the fact that changes occurred in the Highway 99E corridor does not mean that the ODOT improvements in Highway 99E caused or even contributed much to those changes. This chapter addresses that question: what role did the ODOT improvements to Highway 99E play in the land use changes that occurred in the Highway 99E corridor?

### **4.1 CONDITIONS: 1980 TO 1988**

- At the time the project was first considered in the early 1980s, public policy in Albany was aimed at accommodating continued high rates of growth in population and employment. Most of the land along the corridor was within the Albany or Tangent UGB, and was planned and zoned for industrial, commercial, and residential use.
- The highway project was intended to improve access and address safety concerns along the Highway 99E corridor. The project was, in part, intended to serve the type of uses envisioned in Albany's comprehensive plan at the time, and to accommodate an amount of growth that was forecasted based on high levels of historic growth. In that sense the project was prospective: it was not needed to address an acute and immediate problem, but was justified as something necessary to accommodate expected growth and to avoid the traffic problems on Highway 99E such growth would probably cause.
- Albany policy has always envisioned extending other key public facilities south along Highway 99E. Because of prior extensions to accommodate LBCC, much of the project corridor already had water and sewer service when the highway project was completed in 1988. The capacity of those services, however, was inadequate to handle much growth.
- Based on historically high population growth rates for Albany, the DEIS forecast substantial growth in population and travel demand in Albany.

### **4.2 CHANGES: 1988 TO PRESENT**

- Albany approved 36 annexations between 1990 and 1997. These annexations added about 2,780 acres to the city. The majority—2,437 acres—were added with the 1991 North Albany annexation. Annexations occurred in every area of the city during this period. Five of the approved annexations occurred in the study area, adding 288 acres to the city. This represents 10% of the total area annexed between 1990 and 1998; 84% if the North Albany annexation is not included.

- A review of plan designation maps since 1989 showed that the City has not made any major changes in plan designations in the study area since 1989. According to City of Albany staff few zone changes have occurred in the project area since 1988. Moreover, little pressure has existed to upzone residential land in the corridor. Focus group participants identified one parcel located on the west side of the highway at 37<sup>th</sup> that was downzoned from commercial to multifamily.
- Subdivision data indicate that less than 15% of new subdivisions approved between 1989 and 1997 occurred in the project area.
- Single family residential development in the study area accounts for about 15% of all single family residential development in Albany. Development in the study area has typically accounted for between 10% and 20% of total single family development in Albany each decade. Between 1990 and 1997, however, development in the study area accounted for 25% of all single family residential development in Albany.
- The number of tax lots developed in the study area accounted for about 18% of all commercial tax lots developed in Albany between 1990 and 1997, but only 6% of the land area. The trend is opposite for industrial tax lots; about 43% of all industrial tax lots developed between 1990 and 1997 were in the study area, these tax lots accounted for about two-thirds of all industrial land developed in Albany between 1990 and 1997.
- According to assessment data, Albany has about 4.6 million square feet of commercial space. About 380,000 square feet, or 8% of all commercial floor space in Albany, is located within the study area. Commercial development in the project area between 1990 and 1998 accounted for about 10% of all commercial space added in Albany during that period. These figures are generally consistent with plan designations in the area.
- More than 50% of the 2.6 million square feet of industrial space in Albany is located in the project area. This is generally consistent with industrial land designations in the city. About half of the industrial development in Albany between 1990 and 1998 occurred in the study area.
- ADT volumes increased between from 116% to 225% between 1983 and 1997. These increases equate to average annual growth rates of between 6% and 8%.
- In summary, Albany planned to have substantial residential growth in at least four areas: southwest Albany (the case study area), southeast Albany (on both sides of Waverly/Columbus), east Albany (east of I-5), and north Albany (north of the downtown and the Willamette River). The development data show that growth occurred in all those areas.

### **4.3 INTERPRETATION**

The Albany 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 Albany and the Highway 99E project, and should in no manner be construed as universal—analysis of other

highway projects in other communities would probably lead to a different set of conclusions. Thus, the following conclusions should not be generalized to other projects.

Another limitation of this analysis is that it doesn't directly address how the total amount of development in Albany might have been different in the absence of the project. Developing such conclusions would require a much broader regional study, and would benefit from primary data on why households made decisions to locate in Albany instead of other communities. While one might argue that the Highway 99E project led to greater total growth in Albany than would have occurred without the project, this is largely speculative. Moreover, the story does not support this conclusion: little happened in the corridor, the corridor is only one of four that Albany residents use to get to other communities (primarily Corvallis), and, according to the focus group, the major development that occurred in the corridor was only in part due to the highway improvement.

The evidence is clear that the ODOT's improvement of Highway 99E did not cause substantial land use changes in Albany. Since 1988, growth in Albany has been distributed throughout the City; it has not concentrated along Highway 99.

Our research found several reasons for the development patterns we observed:

- Planning and public policy encouraged growth not only in the study area, but in other parts of Albany as well. On that basis alone, one should expect land use changes in the study area even in the absence of an ODOT improvement.
- The improvement to Highway 99 did not create new access: it improved safety, convenience, and travel by alternative modes, and kept congestion from increasing as quickly as it would have otherwise. Its impacts on travel times were probably small.
- Economic conditions had a profound impact on the area. The recession in the 1980s resulted in a substantial inventory of vacant commercial and industrial space. The reabsorption of that space during the 1990s had a depressing effect on new construction.
- Land must be available for development to occur. Focus group participants pointed out several key sites they felt would have developed had the owners made them available.
- The availability and cost of infrastructure has been a limiting factor for sites south of Oak Creek. Oak Creek presents a formidable physical barrier to development. Large scale development south of Oak Creek would probably require expansion of the sewer pump station capacity. City policies would require looping of the water system for any major development south of Oak Creek. It is difficult for any one development to absorb the costs of extending services across the Oak Creek flood plain.
- The proximity of the railroad to industrial sites east of Highway 99 was an issue, particularly for sites south of Ellingson Road. The distance between the railroad tracks and Highway 99 does not provide sufficient vehicle stacking distance for many industries. Focus group members believed that any large-scale development on the substantial vacant land south of Oak Creek and east of Highway 99E would probably require an underpass of the railroad.

- Development in Tangent occurred for several reasons, only one of which (and probably not the most important one) is the widening of Highway 99E. According to focus group participants, a series of improvements that all came on-line at approximately the same time, combined with excellent proximity to Interstate 5 resulted in more than 700,000 square feet of floor area in Tangent at the Highway 99E/34 interchange. In addition to the Highway 99E improvements, the Highway 99E/34 interchange was upgraded, and Tangent extended sewer service to the area.

These general conclusions can be expanded by breaking the study area into four segments: (1) Queen Avenue Oak Creek; (2) Oak Creek to LBCC; (3) LBCC to the Albany UGB; and (4) the Albany UGB to the Highway 99E/34 interchange.

#### **4.4 QUEEN AVENUE OAK CREEK**

A considerable amount of activity occurred in this segment between 1988 and 1998. Little of that activity, however, was new development.

Focus group participants discussed the transition of uses that has occurred in this segment over the past 10 years. The Stone Forest Company plywood mill closed with a loss of 250-350 jobs. Golden West Homes moved into the Stone Forest site and are presently finishing 10-12 manufactured housing units per day. Fisher Implements (John Deere) moved to a site in Tangent closer to 34 and their market. The downtown Ford dealership moved to the old Fisher Building.

One of the key negative impacts identified by focus group participants was the proposed Safeway move from its site on 99 at Queens Avenue. Focus group participants indicated that the decision was a result of impacts from the highway project. The widening limited access to the site and made it difficult to make a left turn off of Queen to get to the store during rush hour. The site is also constrained by a canal, Queen Avenue and Highway 99E. Safeway can't build a desired 50,000 square foot store on that site.

#### **4.5 OAK CREEK TO LBCC**

Development that has occurred in this segment has been primarily residential development. A commercial development is under way just north of the LBCC entrance. Focus group participants cited a number of reasons why more development hasn't occurred in this area including availability of land and infrastructure issues.

#### **4.6 LBCC TO ALBANY UGB**

This segment contained the largest vacant industrial sites in 1988. According to focus group participants, the city desired to make this into Albany's "high-tech" corridor. While some development has occurred in this segment, the segment still contains more than 300 acres of vacant industrial land.



The biggest development that occurred in this section was construction of the Target regional warehouse facility—a facility that is highly dependent on the access provided by Highway 99. According to focus group participants, many factors affected Target’s decision to locate in Albany. The consensus of the focus group was that Target needed the interchange at Highway 34 (which is not part of the project evaluated in this report) and a signalized entrance to Highway 99.

Several other factors played a key role in attracting Target. First, the 115-acre site became available through an estate planning process. According to focus group participants, land availability has been an ongoing issue for some attractive sites within the UGB. The city also provided Target with an attractive incentive package. The site is located in an enterprise zone. Target received a 5-year property tax abatement, and ODOT provided money from its Immediate Opportunity Fund for the signal on the site. Finally, Target required water and sewer service, both of which were readily available at the site. Thus, the general improvements to Highway 99 probably played a minor role in Target’s decision relative to other factors.

The City has also actively marketed the 300-acre site east of Highway 99 at Ellingson Road. Focus group participants discussed the reasons that no industrial development occurred on this site despite considerable marketing efforts. The site is impacted by the rail line and proposals for high speed rail. (According to focus group participants, the presence of the rail line also negatively impacts other sites in the area). Vibration from the railroad is also a negative for high tech firms. Prospective businesses also mentioned the rail crossing signals, and the lack of adequate stacking distances that occurs at the intersection at Ellingson. According to city officials, Ellingson would also need to be widened and water and sewer provided. The looping of the water system and the need for additional pump station capacity for the sewer system are further limiting factors.

#### **4.7 ALBANY UGB TO HIGHWAY 99E/34 INTERCHANGE**

While the case study focuses on Albany, the area south of the UGB to Highway 34 is relevant to this analysis. To supplement Albany data, representatives from Tangent and Linn County participated in the focus group meeting.

The Tangent representative indicated that substantial development had occurred between 1988 and 1998 near of Highway 34 inside the Tangent UGB. Tangent provided a list of building permits issued in the area between 1988 and 1998. A review of building permit data indicate that about 44 permits were issued during this period, adding more than 700,000 square feet of building area. Most of the permits issued were for new construction; about 80% of the floor area added was from new development.

#### **4.8 IMPLICATIONS FOR ESTIMATING THE IMPACTS OF OTHER ODOT HIGHWAY IMPROVEMENTS**

Good access is a necessary but not sufficient condition for local development. The majority of Albany's residential and commercial development occurred outside the study area. At a

minimum, that finding suggests that the improvement to Highway 99E was not such a stimulus to land development that all of Albany's growth occurred around it to take advantage of the access it provided. Other important factors affecting the type, rate, and location of development include:

- The regional and local economy. Growth decreased substantially in area over the study period.
- The marginal impact of the improvement on accessibility and travel time.
- The availability of other key public facilities (especially water and sewer) at a reasonable cost (which implies clarity on how such facilities will be funded and who will pay for them)
- Local land use plans and regulations, and other policies that affect the speed and cost of development.
- The characteristics of sites along the improvement relative to competing sites in other locations. This point covers a multitude of issues. Already mentioned was accessibility: how do travel times from sites along the improvement to places households and businesses want to get to compare travel times from other locations? It is almost certain that a major improvement will improve travel times to some extent, but if the improvements are small, other sites may still offer better access. The large amount of industrial development inside the Tangent UGB relative to that along Highway 99 in the Albany UGB illustrates the point