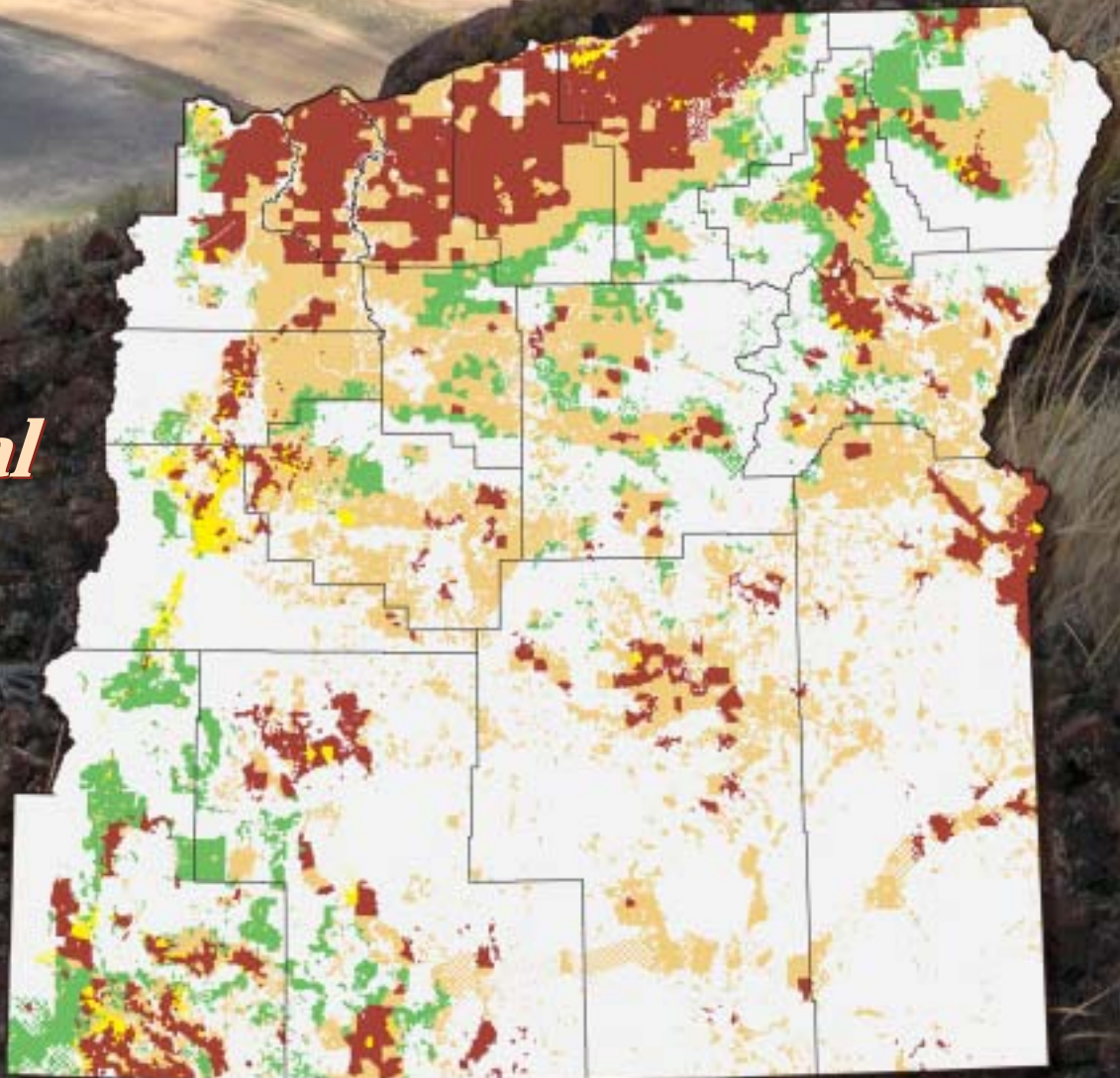


# *Forests, Farms & People*

*Land Use  
Change on  
Non-Federal  
Land in  
Eastern  
Oregon*

*1975-2001*

*August 2004*



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# LAND USE CHANGE ON NON-FEDERAL LAND IN EASTERN OREGON, 1975-2001



**August 2004**

*Prepared with support from the USDA Forest Service Forest Inventory and Analysis Program,  
Pacific Northwest Research Station, and the Oregon Department of Forestry.*

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## SUMMARY: TRENDS, CHANGES, AND POINTS TO PONDER

**F**orestry, grazing, and agriculture have traditionally been important parts of eastern Oregon's economy. It is therefore important to monitor and maintain the land base that supports those industries. As of 2001, 97 percent of the non-Federal land in eastern Oregon remained in forest, range, and agricultural uses.

However, between 1975 and 2001, there were shifts in dominant land uses toward more developed categories: both low-density residential and urban dominant uses increased. Most of the shifts in land use were from range, agriculture, or wildland forests to low-density residential or urban areas; range land continues to be converted to more developed uses at a higher rate than forest or farm land. From 1975 to 2001, wildland forest decreased by 1 percent and wildland range decreased by 2 percent. The amount of land used for intensive agriculture increased by 1 percent during the same time period.

Annualized rates of change in conversion of forest, range, and farm lands to residential and urban uses declined from the 1975-1986 period to the 1986-2001 period. Comprehensive land use planning in the latter period may have slowed the conversion, as the slowdown in the second period coincided with full implementation of land use

plans and with increases in the *rates* at which population and personal income grew.

In the 1986-2001 period, a much larger percentage of lands zoned in comprehensive plans as *developable* than zoned as *resource* changed to urban and low-density residential uses. However, this pattern of development was already apparent for these same lands in the 1975-1986 period, before comprehensive land use plans were adopted. Both before and after land use planning, how fast forest or agricultural lands shifted to more developed uses was related to their proximity to more developed areas. The most significant shifts occurred on private land in Deschutes and Klamath Counties, particularly in areas close to the city of Bend.

The highest rates of change in dominant land use over the entire study period occurred in the Bend area and the lowest rates of change occurred in eastern Oregon outside the Bend area and outside of Klamath County. Approximately 65 percent of the land shift from less developed uses of forest, range, and agriculture to low-density residential or urban occurred in Deschutes and Klamath Counties. In the vicinity of Bend, the area of low-density residential uses increased by 86 percent and the urban area by 137 percent over the 26-year study period.



*A large majority of eastern Oregon's private resource land remains free of population and development effects.*



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During the 26-year study period, on land inside urban growth boundaries, urban dominant land uses increased from 32 to 45 percent, while range lands declined from 15 to 9 percent. Forest, range, and agricultural lands remaining within developable zones comprise just 1 percent of non-Federal wildland forest, 1 percent of wildland range land, and 2 percent of intensive agricultural land in eastern Oregon.

A large majority (93 percent) of eastern Oregon's private land zoned for forest uses is still free of the effects that population or development might have on forest management. Increases in building density on land zoned for forest use declined after land use laws were fully implemented. The slowdown in development occurred mostly in low-density residential, not urban areas.

Oregon's land use program appears to have been successful in reducing the overall rate of conversion of forest, range, and farm lands to more developed uses and has been demonstrably successful at containing urban expansion within areas zoned for more developed uses. Despite this, dwelling density continued to increase within forest, agriculture, and mixed forest/range/agriculture dominant uses.

Forest industry, Native American, and State forests provide many of the ecological and economic benefits enjoyed by residents of eastern Oregon and visitors alike. Industrial owners produce the bulk of eastern Oregon's timber supply. Thus if forest industry is to continue to contribute to the economic well-being of eastern Oregon's rural communities, timberland managed by industrial owners must remain in forest use.

The amount and uses of eastern Oregon's non-Federal forest remained relatively stable in the 1986-2001 period, but the possibility remains that development pressures near forest industry and State forest lands could begin to reduce future economic and ecological benefits produced from these lands.



*Significant changes in forest industry ownership in central Oregon may affect economic, social, and environmental values.*

A recent trend has been the rapid change in forest ownership patterns in central Oregon. The forest industry presence in central Oregon is rapidly declining. Since 1990 as much as 60 percent of industrial timberlands in north/central Deschutes and western Jefferson Counties has been sold or exchanged to non-industrial landowners (Dewey 2004). This change in forest ownership could affect the ability of non-Federal forests in eastern Oregon to provide the economic, social, and environmental values that Oregonians have come to expect from eastern Oregon's non-Federal forests.



## INTRODUCTION

Eastern Oregon's forest, range, and agricultural lands are remarkable for their diversity and contributions to the economies and lifestyles of the state; timber, agriculture, and tourism are three of the top four industries. For other industries, quality of life perceptions — partially based on the region's scenic beauty and wide-open spaces



*Polls show the majority of Oregonians are concerned about losing resource lands to development.*

— provide competitive advantages for attracting new businesses and the best employees. Forest, range, and farm lands support traditional commodity production and could be a basis for economic diversity through growth in recreation and tourism industries.

For those residing in our burgeoning metropolitan areas, as well as for visitors, land use policies in rural parts of the state will increasingly affect the ability of these areas to meet the growing demand for recreation, solitude, and other values not available in urban settings. In spite of their amenity values and long history in farming, logging, and other natural resource-based industries, changing markets have caused the more rural areas in eastern Oregon to fall behind the larger metropolitan areas of Bend and western Oregon, in economic terms. Clearly, maintaining and enhancing the contributions of forest, farm, and range lands is vital to the well-being of all Oregonians.

A study in 2001, polling Oregonians on their current concerns and priorities, found that 75 percent of the respondents were very or

somewhat concerned about “losing forest land to development and other uses” (Davis 2001). While this applies most directly to this report, other findings from the Davis study also support the need for clearer understanding of actual on-the-ground developments in our state. The list of issues about which over 70 percent of respondents were very or somewhat concerned included water quality (81 percent), the relationship between the forest industry and environmental groups (76 percent), fish and wildlife habitat protection (76 percent), and wildfire danger (71 percent). All of these issues, of course, relate directly and indirectly to land use planning and effects of land use changes.

Future debates about land use issues require a clear, factual understanding of recent land use history. The purpose of this report is to provide the public and policymakers with a summary of land use changes on eastern Oregon's non-Federal forests, range lands, and farms since 1975. The report assesses land use change both before and after comprehensive land use planning was fully activated, and refers to the “first period” (1975-1986, before land use planning was fully implemented) and the “second period” (1986-2001). For those interested in more in-depth statistics, the Appendix provides detailed eastern Oregon tabular information, which has been summarized for this analysis.

This report complements a 2002 publication, *Forests, Farms and People: Land Use Change on Non-Federal Land in Western Oregon, 1973-2000* (Lettman, et al. 2002). The 2002 report on land use change showed that the annualized rates of change in conversion of forest and farm lands to residential and urban uses in western Oregon declined dramatically from 1973-2000. However, the slowdown between 1982-1994, coinciding with implementation of the Oregon land use laws, also coincided with declines in the rates at which population and personal income grew. From 1994-2000, however, in spite of higher population and economic growth, conversion to more developed uses slowed even further. The 2002 western Oregon report was used in preparation for the Oregon Board of Forestry's 2003 *Forestry Program for Oregon* (Oregon Board of Forestry 2003), and in other Oregon land use planning and policy work.



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## CONTEMPORARY LAND USE POLICY IN EASTERN OREGON

An enduring policy concern has been the conversion of Oregon's productive forests, farms, and range land to more developed uses. In response to these concerns, the Oregon Legislative Assembly passed the Land Conservation and Development Act in 1973 to limit the further loss of the most productive of these lands. The Act required all cities and counties to prepare comprehensive land use plans in accordance with statewide land use goals. Statewide goals, Goals 3 and 4, sought to preserve forest, farm, and range lands while designating limited areas for urban expansion and low-density residential, commercial, and industrial uses.

By the early 1980s, most comprehensive plans were completed. Each plan identified lands that were already built on and committed to residential uses. These areas were zoned for continued development while residential expansion into other areas was prohibited, except where this development was consistent with farm and forest goals.

With rapid economic and population growth over the last several decades, demands on forest, farm, and range lands have greatly increased. However, in spite of the importance of land use issues to Oregonians, increasing demands on a limited land base, and the ferocity of the debates over land use change, no spatially detailed comprehensive study has looked at how eastern



*Comprehensive land use planning was designed to protect agricultural and forest resource lands for future generations.*

Oregon landscapes have changed since land use plans have been in effect.

A more recent development has been the rapid change in forest ownership patterns in central Oregon. The forest industry presence in central Oregon is rapidly declining. Since 1990 as much as 60 percent of industrial timberlands in north/central Deschutes and western Jefferson Counties have been sold or exchanged to non-industrial landowners who may have little or no background in forest management. Unlike land

purchased for timber management, standing timber on these parcels may add little to their value because purchasers of these properties appear to value seclusion and it may make little difference in selling price whether these parcels have mature timber, cut over timber, or just bare ground. The public values provided by these parcels may be different from those in the past. This change in forest ownership could affect the ability of non-Federal forests in eastern Oregon to provide the economic, social, and environmental values that Oregonians have come to expect from them.



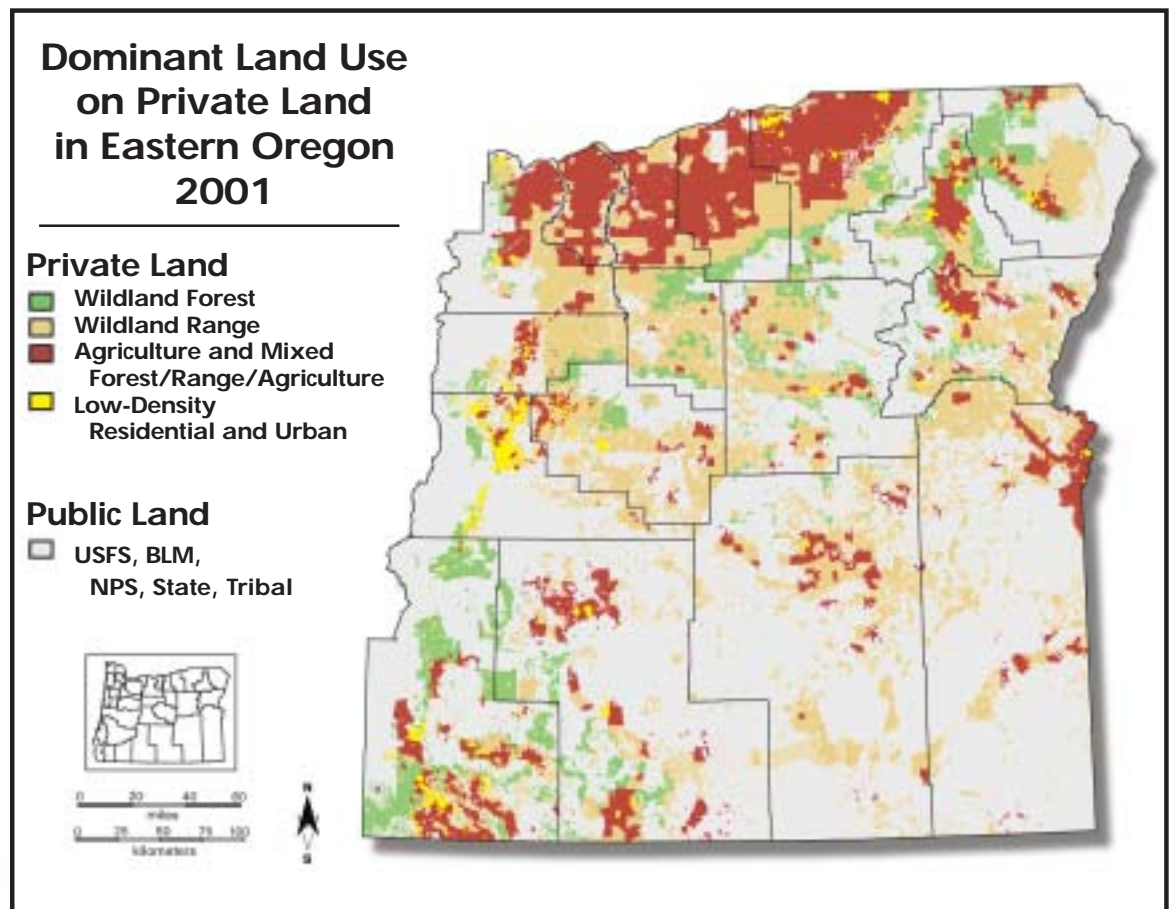
*Rapid development of some areas to urban uses has, for the most part, been contained by comprehensive land use planning.*

## APPROACH

This report addresses only non-Federal lands within eastern Oregon, focusing on three key land use issues: 1) changes in dominant land uses over time; 2) current development patterns; and 3) recent changes in forest land ownership patterns. Land use zoning was obtained from maps of county comprehensive land use plans. Figure 1 shows private land broken down into four generalized land uses: wildland forest, wildland range, agriculture and mixed agriculture (with either forest or range), and low-density residential and urban. Figure 2 illustrates the dominant land use classes used in this report.

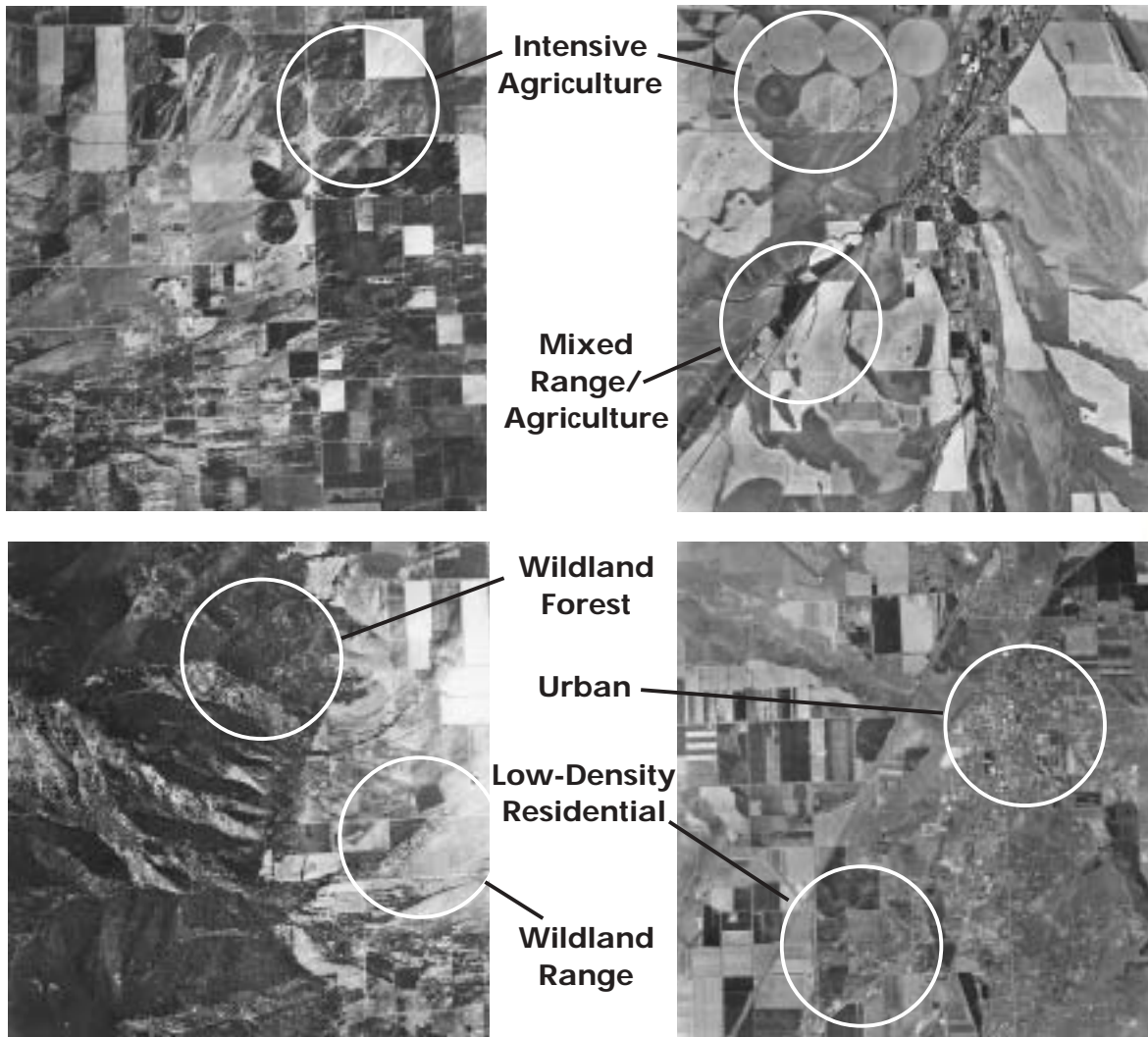
Using aerial photographs taken on average in 1975, 1986, and 2001, we interpreted a sample of 13,103 points on non-Federal land in eastern Oregon for dominant land use, number of structures, and nearest distance to other dominant land use classes for this report. By comparing this information at these selected time intervals, we analyzed changes in development patterns and land uses. Additional information about recent trends in private forest land ownership patterns was derived from county property tax records and other sources.

Figure 1





**Figure 2**



*Sample points were evaluated from aerial photography and assigned into one of six development zones. These zones were defined by general land use, size, and the degree of development.*

*Dominant land uses* were determined by assigning land uses to interpreted plots based on size of the area, number and type of developments, road patterns, and whether the area is forest, agriculture, range, or residential. Dominant land uses categorized in this report include:

**Wildland Forest:** Large contiguous tracts of at least one square mile of forest land with fewer than five developments per square mile generally scattered across the area. This designation may include both timberland and other forest land. Timberland is forest land not withdrawn from timber utilization and capable of growing industrial wood at a rate of 20 cubic feet or more per acre per year.





Most sparsely populated lower productivity forest land, such as that stocked with western juniper, was classified as wildland range.

**Wildland Range:** Large contiguous tracts of non-forest/non-agricultural land of at least one square mile with fewer than five developments per square mile generally scattered across the area. Typically the land does not receive enough precipitation or lacks the soil quality for plant growth of any significant size or density. This designation may include grasslands, old lava flows, non-irrigated grazing or haying fields, marshes, or sagebrush land. Western juniper and other lower-productivity forest areas are mapped with wildland range because grazing is often the dominant use for these forested areas.

**Intensive Agriculture:** Large contiguous tracts of agricultural land with fewer than nine developments per square mile generally scattered across the area.

**Mixed Agriculture:** Intermixed agricultural, forest, and/or range land with fewer than nine developments per square mile. There are two types of mixed agricultural land: mixed forest/agriculture, where forest land consists of more than 50 percent of the

non-agricultural area, and mixed range/agriculture, where range dominates the non-agricultural area.

**Low-Density Residential:** Non-urban land with nine or more developments per square mile within an area of any size. Rural sub-developments not attached to a town or city and large numbers of structures mixed in with forests or agricultural lands are examples of low-density residential.

**Urban:** Commercial, residential, and non-resource industrial areas greater than 40 acres with a discernible street grid. Structures are evenly distributed and lot size tends to be small. City centers, industrial areas, patterned residential housing, and subdivisions attached to a city are urban areas.

*Development patterns* were interpreted in non-urban areas by recording the density of structures and proximity to other land uses. Urban areas are the culmination of development patterns, making structure counts in urban dominant uses unnecessary for the purposes of this analysis. For this report, density of development was determined by counting the number of structures within 80- and 640-acre circles centered on interpreted points.



*Intensive and mixed agriculture remain key players in eastern Oregon's economic picture.*

Figure 3



*Proximity to other land uses* was interpreted by recording the nearest distance from each point to the boundaries of different dominant land uses.

*Ownership* classification for the 13,103 points interpreted in this study was derived from information developed from a 1986 inventory of non-Federal land in eastern Oregon. The ownership information used is appropriate for the middle period of the study, 1986; ownership information specific to the earlier and later periods, 1975 and 2001, was not determined.

Based on demographic, ecological, and economic characteristics, we partitioned eastern Oregon into two geographic areas for this analysis (Figure 3): the fast growing Bend area and the remainder of eastern Oregon. Areas were delineated by county boundaries and

points were attributed with county land use zones to facilitate comparisons with county land use planning efforts.

To show how actual land uses and land use changes related to county comprehensive plans, we divided non-Federal land into two broad categories: developable, which includes zones such as rural residential or urban, and non-developable or resource areas, which includes zones for forest or farm use, based upon the zoning in county comprehensive plans. We then compared areas of dominant land use (e.g. wildland forest, intensive agriculture, etc.) and changes in dominant land use with the generalized zones defined in the county comprehensive plans (e.g. farm, forest, rural residential, etc.).



## CHANGES IN DOMINANT LAND USES: TYPE, TIMING, AND MAGNITUDE

As of 2001, 97 percent of non-Federal land in eastern Oregon was in forest, range, and agricultural dominant land uses. However, there was a shift toward more developed uses between 1975 and 2001 (Tables 1 and 2). Fifty-two percent of land use changes in this period were shifts from forest, range, and agricultural uses to low-density residential use. Most of the remaining change, 36 percent, came from wildland range shifting to agricultural uses. The largest

acreage decline resulted in a 2 percent loss of wildland range; the largest percentage gains were a 62 percent increase in low-density residential and a 54 percent increase in urban uses. The highest rates of change occurred on private land in or near the city of Bend and in areas in southern Klamath County. Figure 4 shows the distribution of dominant land uses across private land in eastern Oregon and changes in those dominant uses between 1975 and 2001.

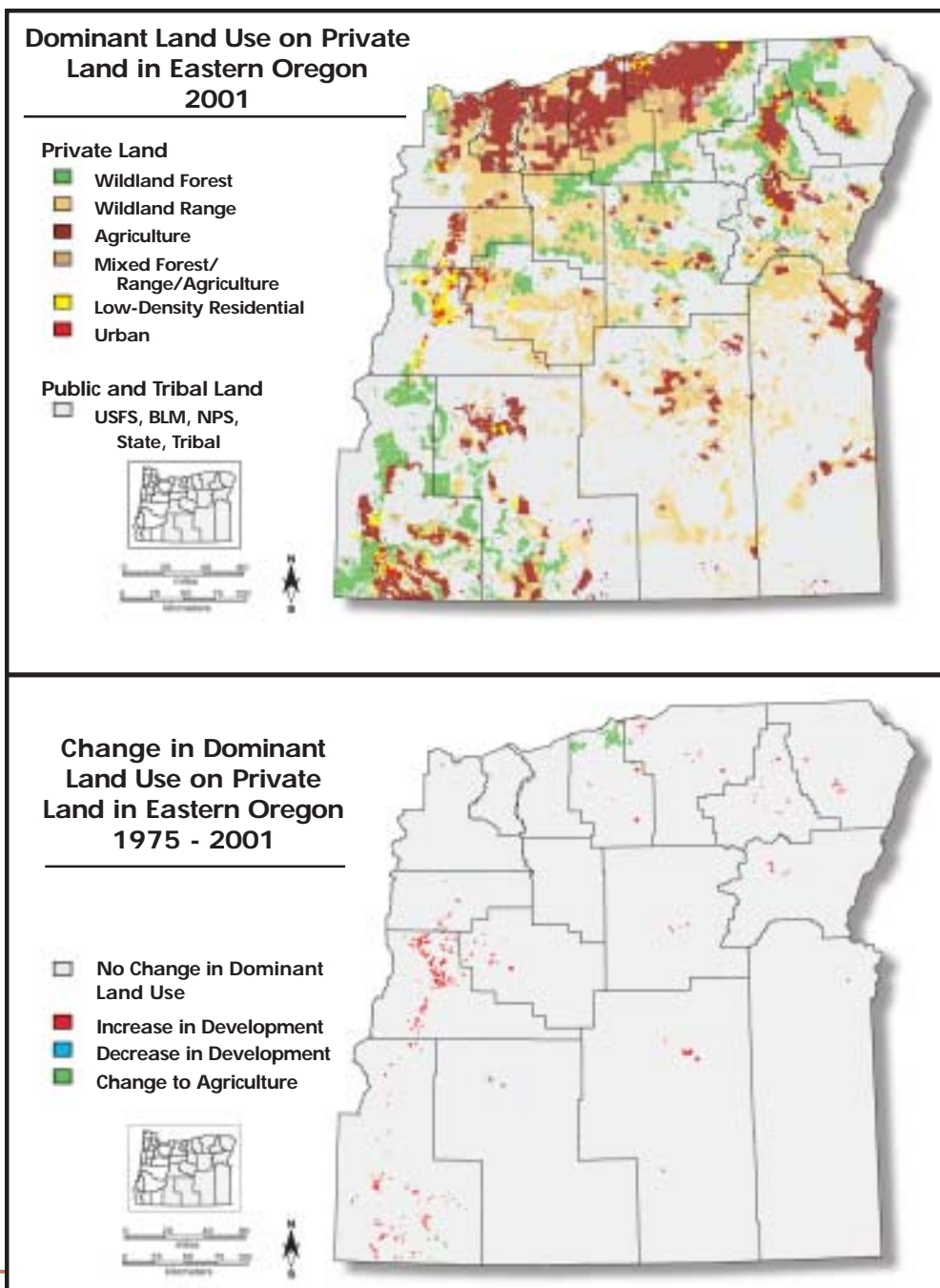


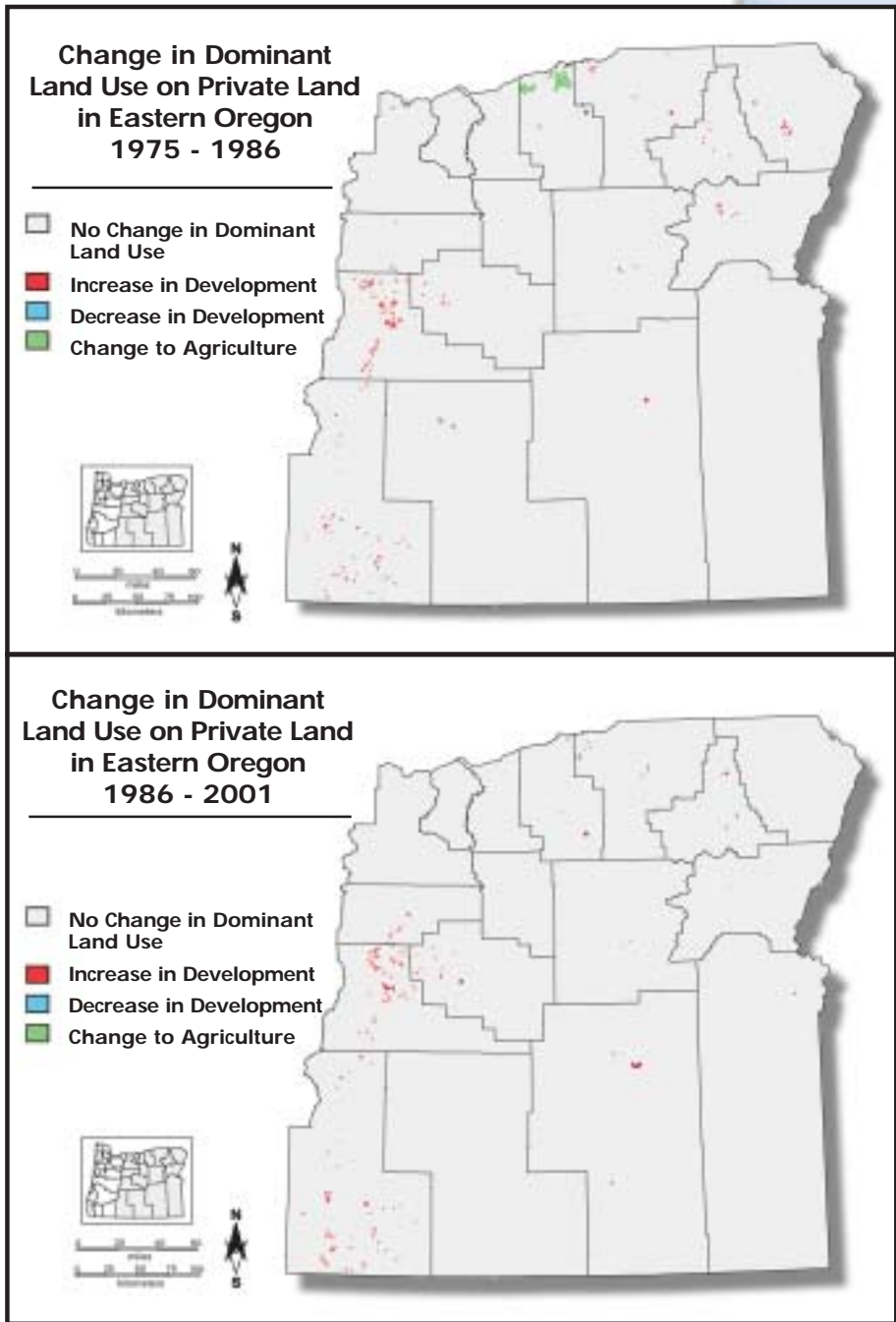
Figure 4



**Figure 5**

Figure 5 illustrates the distribution of changes in dominant land uses in eastern Oregon for the 1975-1986 and 1986-2001 periods.

Annual rates of change in dominant land uses declined from the 1975-1986 period compared to the 1986-2001 period, as shown in Table 2. Annual changes from wildland forest to more developed uses were relatively low in the 1975-1986 period and decreased further in the 1986-2001 period. Rates of development of agricultural land were negligible in both periods. Figure 6 also illustrates the decline in growth of urban and low-density residential uses between the 1975-1986 and 1986-2001 periods. Notably, despite increased rates of population and personal income growth during the second period, rates of development of forest, range, and agricultural lands remained well below levels seen prior to 1986. However, strongly influenced by rapid development in the Bend area, percentage increases in low-density residential and urban dominant land uses remain well above those of western Oregon.



**Table 1 - Percentage of Non-Federal Land in Dominant Land Uses, 1975, 1986, and 2001**

Dominant Land Use	1975	1986	2001
Wildland Forest	19.0%	18.9%	18.8%
Wildland Range	53.1%	52.4%	51.9%
Mixed Forest/Agriculture	0.8%	0.8%	0.7%
Mixed Range/Agriculture	4.0%	4.1%	4.1%
Intensive Agriculture	21.2%	21.5%	21.5%
Low-Density Residential	1.5%	2.0%	2.4%
Urban	0.3%	0.4%	0.5%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

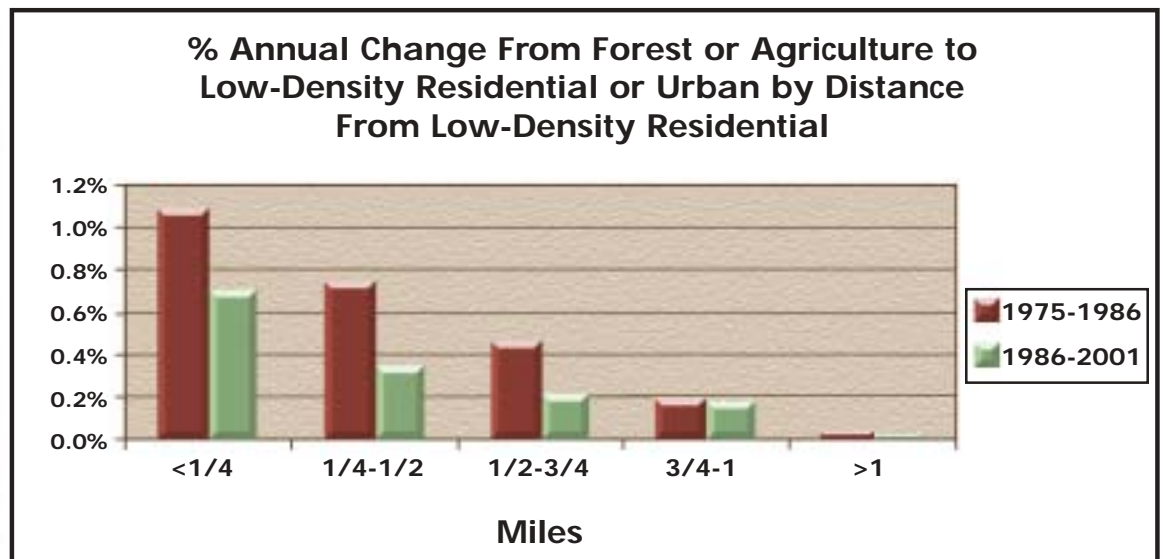
**Table 2 – Area and Changes in Dominant Land Use, 1975-2001**

Dominant Land Use	Thousand Acres			% Annual Change	% Annual Change	Total % Change
	1975	1986	2001	1975-1986	1986-2001	1975-2001
Wildland Forest	3,349	3,329	3,307	-0.06%	-0.04%	-1%
Wildland Range	9,362	9,228	9,153	-0.15%	-0.05%	-2%
Mixed Forest/Agriculture	146	138	131	-0.61%	-0.27%	-10%
Mixed Range/Agriculture	708	715	729	0.07%	0.14%	3%
Intensive Agriculture	3,743	3,798	3,796	0.12%	0.01%	1%
Low-Density Residential	262	348	423	2.87%	1.26%	62%
Urban	57	72	88	2.34%	1.36%	54%
<b>Totals</b>	<b>17,628</b>	<b>17,628</b>	<b>17,628</b>			

How fast forest or agricultural lands shifted to more developed uses was related to the proximity of the lands to urban or low-density residential areas. Low-density residential uses often surround urban core areas and, as shown in Table 2, expanded by 62 percent between 1975 and 2001. However, expansion of low-density residential uses has slowed since 1986.

The closer forest and agricultural land is to urban or low-density residential areas, the more likely it is to be developed. For example, as distance from low-density residential areas increases, rates of development drop, as shown in Figure 6. Forest and agricultural areas less than one-quarter mile from low-density residential areas were almost fifty times more likely to be developed than areas further than one mile from low-density residential areas.

**Figure 6**

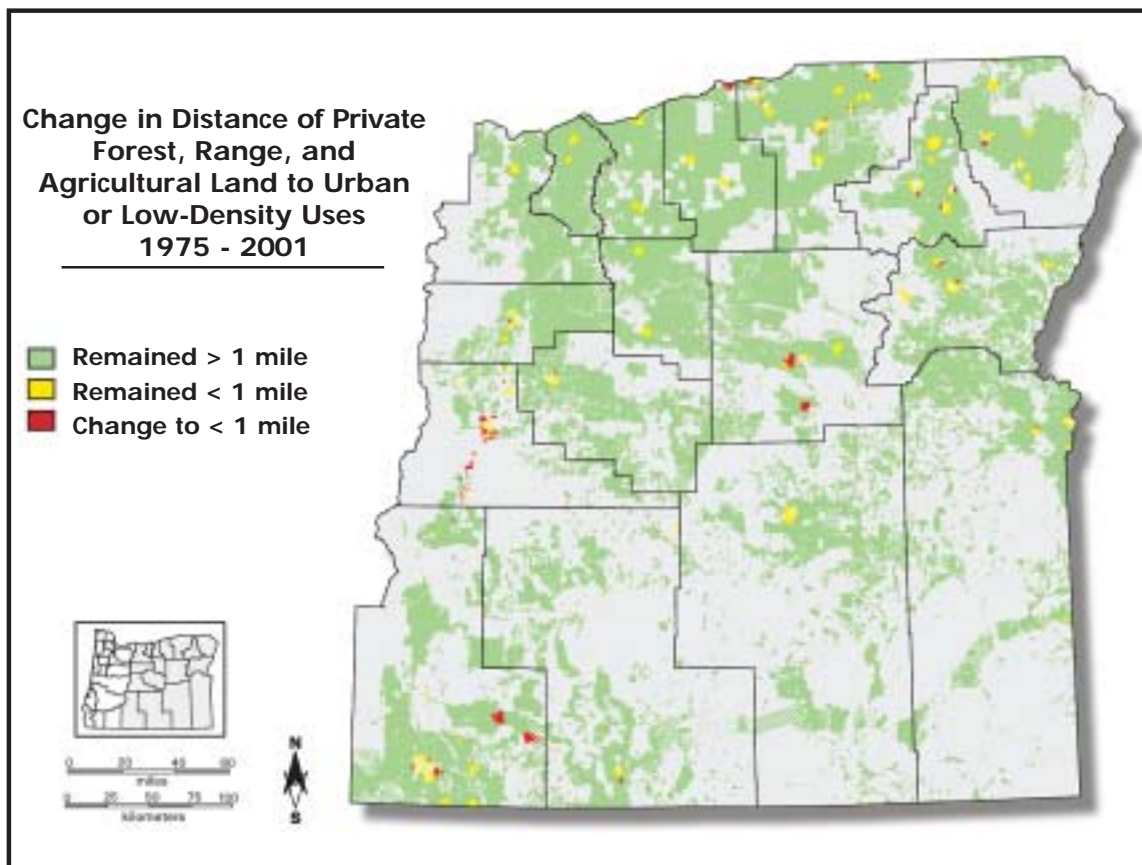


More lower-productivity wildland range than wildland forest continues to be converted to urban and low-density residential uses. There is more development pressure on these lands since more of this juniper/sage land is available close to the rapidly growing Bend area's urban and low-density residential areas. It is thus more likely to be within or near urban growth boundaries or other areas targeted for development.

Significant acreages of forest, range, and agricultural resource lands, about 8 percent of total non-Federal lands in eastern Oregon, are within one mile of developed areas. In 2001,

167,000 acres of wildland forest, 455,000 acres of wildland range, 624,000 acres of intensive agricultural land, and 79,000 acres of mixed forest/agriculture or mixed range/agricultural lands were within one mile of the low-density residential or urban areas. In 1975, approximately 6 percent of total non-Federal lands in eastern Oregon were within one mile of developed areas. Figure 7 shows areas of private forest, range, and agricultural land that shifted from more than one mile to less than one mile from urban or low-density residential uses between 1975 and 2001.

**Figure 7**



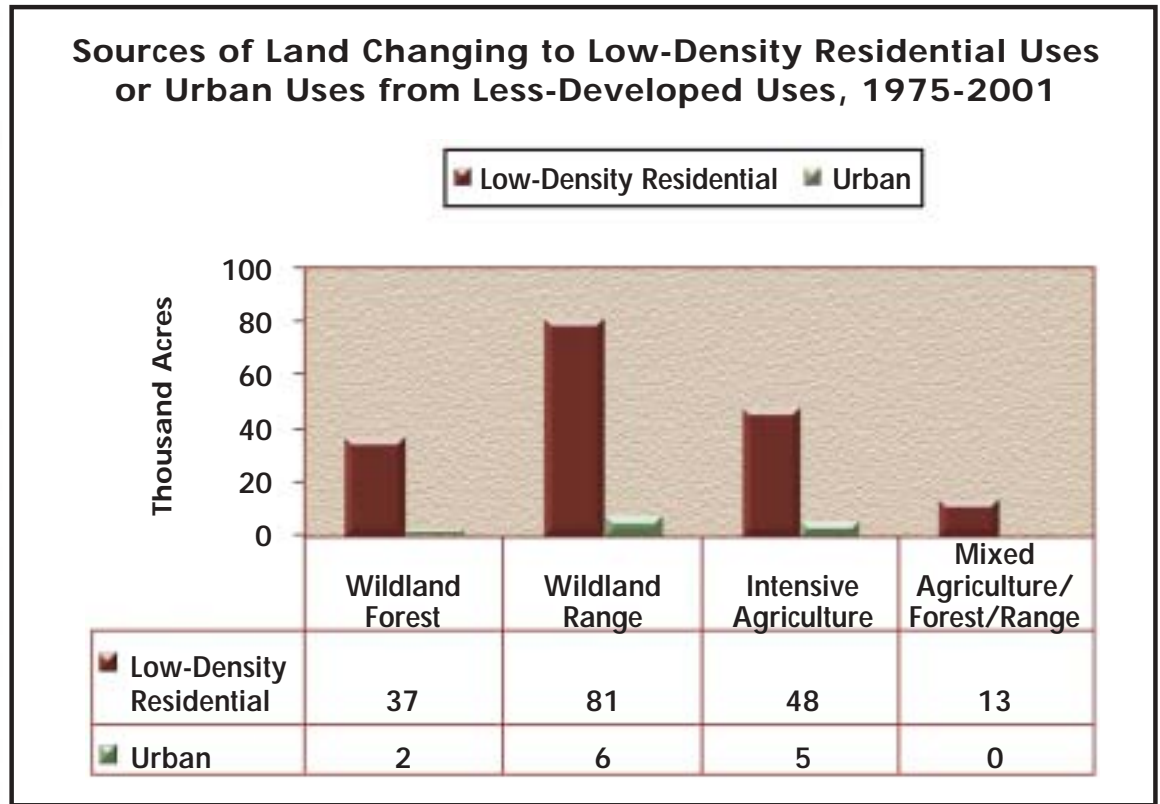


## CHANGES IN DOMINANT LAND USES: SOURCES OF CHANGE

In both the 1975-1986 and 1986-2001 periods, almost all changes in dominant use went from less developed to more developed uses (Figures 4 and 5). Figure 8 shows the growth of urban and low-density residential dominant uses by source: wildland forest, wildland range, intensive agriculture, and mixed forest/agriculture and mixed range/agriculture. Other notable changes in land

Also revealed in Table 3 is a change in end uses resulting from conversion of forest-, range-, and agriculture-related land uses. The largest change observed was an 81,000-acre shift from wildland range to agriculture in the 1975-1986 period. This shift continued in the second period, but at a much slower rate. Although development slowed, in both the 1986-2001 and earlier period, the

Figure 8



use over the 26-year period are a 123,000-acre change from range to agricultural uses, and a 17,000-acre change from low-density residential to urban dominant use.

Table 3 shows total and annual acreages shifting from forest, range, and farm dominant uses over the 1975-1986 and the 1986-2001 periods, and the uses, by percent of acreage change, to which these areas shifted. As previously shown, rates of change slowed from the earlier to the later period. The slowdown in development rates of forest, range, and agricultural lands were all large.

percentages of the total shift to urban and low-density residential use that came from forest, range, and agricultural land remained the same. The slowdown in development rates was constant across forest, range, and agricultural uses.

Along with the decline in development in the 1986-2001 period came urbanization of some low-density residential areas. This supports our assumptions that Oregon's land use program would encourage intensified development in areas that already have some urban influences, while limiting development of the more rural primary forest and agricultural areas.

**Table 3 – Changes in Dominant Land Use from Wildland Forest, Agriculture, Wildland Range, and Mixed Forest/Range/Agriculture to Other Dominant Uses, 1975-1986 and 1986-2001**

	1975-1986	1986-2001
<b>Wildland Forest</b>		
Total Change in Acres to Other Uses	19,000 Acres	22,000 Acres
Annual Acreage Change/Year	2,000 Acres	1,000 Acres
% Change to:		
Intensive Agriculture	<1%	9%
Wildland Range	<1%	<1%
Mixed Forest/Range/Agriculture	<1%	<1%
Low-Density Residential	100%	82%
Urban	<1%	9%
<b>Total</b>	<b>100%</b>	<b>100%</b>
<b>Intensive Agriculture</b>		
Total Change in Acres to Other Uses	34,000 Acres	19,000 Acres
Annual Acreage Change/Year	3,000 Acres	1,000 Acres
% Change to:		
Wildland Forest	<1%	<1%
Wildland Range	<1%	<1%
Mixed Forest/Range/Agriculture	<1%	<1%
Low-Density Residential	91%	89%
Urban	9%	11%
<b>Total</b>	<b>100%</b>	<b>100%</b>
<b>Wildland Range</b>		
Total Change in Acres to Other Uses	135,000 Acres	78,000 Acres
Annual Acreage Change/Year	14,000 Acres	5,000 Acres
% Change to:		
Wildland Forest	<1%	<1%
Intensive Agriculture	60%	18%
Mixed Forest/Range/Agriculture	10%	19%
Low-Density Residential	27%	59%
Urban	3%	4%
<b>Total</b>	<b>100%</b>	<b>100%</b>
<b>Mixed Forest/Range/Agriculture</b>		
Total Change in Acres to Other Uses	16,000 Acres	6,000 Acres
Annual Acreage Change/Year	1,000 Acres	500 Acres
% Change to:		
Wildland Forest	<1%	<1%
Intensive Agriculture	50%	<1%
Wildland Range	<1%	17%
Low-Density Residential	50%	83%
Urban	<1%	<1%
<b>Total</b>	<b>100%</b>	<b>100%</b>



## CHANGES IN DOMINANT LAND USES: A REGIONAL PERSPECTIVE

The highest rates of change in dominant land use over the entire study period occurred in the Bend area and the lowest rates of change occurred outside the Bend area and outside of Klamath County, shown in Table 4. (Figure 3 shows the location of counties in eastern Oregon and the Bend analysis area.) Approximately 65 percent of the land shift from less developed uses of forest, range, and agriculture to low-density residential or urban uses occurred in Deschutes and Klamath Counties. In the vicinity of Bend, the area of low-density residential uses increased by 86 percent and the urban area by 137 percent over

the 26-year study period. By contrast, over the whole eastern Oregon area from 1975 to 2001, low-density residential increased by 62 percent and urban increased by 54 percent. Consistent with the increase in more developed uses, forest, range, and agricultural uses declined substantially in the Bend area, by 11 percent over the full study period. These uses declined relatively little in other areas in eastern Oregon.

In Klamath County outside of the Bend area, the rate of growth was also high; urban land uses increased by 36 percent and low-density residential areas increased by 246 percent. Unlike in the Bend

**Table 4 – Percent Change in Dominant Land Uses**

ANALYSIS AREA	Wildland Forest	Wildland Range	Mixed Forest/ Agriculture	Mixed Range/ Agriculture	Intensive Agriculture	Low-Density Residential	Urban
<b>Percent Change in Dominant Land Uses 1975-1986</b>							
Bend Area	-4%	-6%	-23%	0%	-4%	48%	43%
Klamath, not in Bend Area	-1%	-5%	0%	0%	1%	97%	23%
Not in Bend Area or Klamath	0%	-1%	0%	1%	2%	16%	20%
All Eastern Oregon	-1%	-1%	-6%	1%	1%	33%	26%
ANALYSIS AREA	Wildland Forest	Wildland Range	Mixed Forest/ Agriculture	Mixed Range/ Agriculture	Intensive Agriculture	Low-Density Residential	Urban
<b>Percent Change in Dominant Land Uses 1986-2001</b>							
Bend Area	-3%	-7%	-21%	0%	-4%	26%	65%
Klamath, not in Bend Area	-2%	-5%	0%	0%	0%	75%	11%
Not in Bend Area or Klamath	0%	0%	0%	2%	0%	7%	5%
All Eastern Oregon	-1%	-1%	-4%	2%	0%	22%	23%
ANALYSIS AREA	Wildland Forest	Wildland Range	Mixed Forest/ Agriculture	Mixed Range/ Agriculture	Intensive Agriculture	Low-Density Residential	Urban
<b>Percent Change in Dominant Land Uses 1975-2001</b>							
Bend Area	-7%	-13%	-40%	0%	-8%	86%	137%
Klamath, not in Bend Area	-3%	-10%	0%	0%	1%	246%	36%
Not in Bend Area or Klamath	0%	-1%	0%	3%	2%	24%	25%
All Eastern Oregon	-1%	-2%	-10%	3%	1%	62%	54%



area, the rate of conversion to low-density residential during the 1986-2001 period remained high rather than declining dramatically like in Bend and the rest of eastern Oregon. During this period, conversion of wildland forest to more developed uses increased. The rapid percent increase in developed areas in Klamath County is somewhat misleading because total low-density residential and urban land counted for less than 1 percent of the county's land area in 1975. This means that even a small increase in acres of low-density residential or urban land creates a relatively large percent increase in the land areas of these uses. The proportion of developed area in Klamath County remains relatively low at about 2 percent.

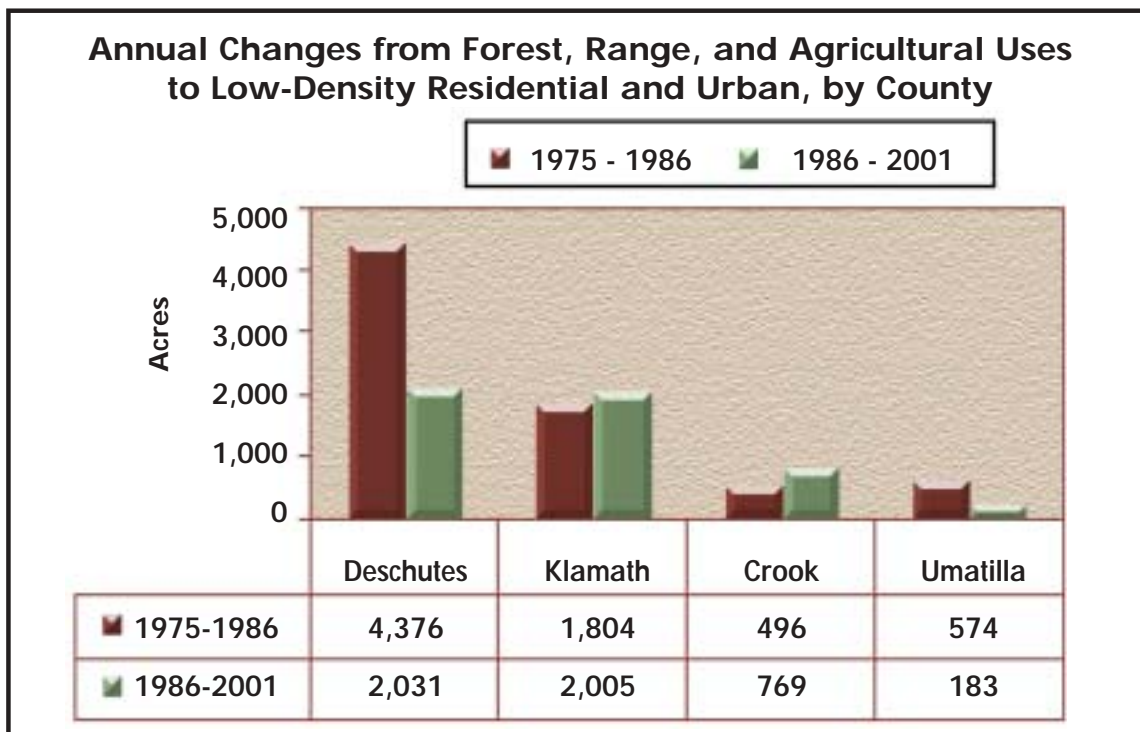
Between the 1975-1986 and the 1986-2001 periods, conversion of forest, range, and agricultural lands to more developed uses slowed with a couple of anomalies: 1) In the second period, the area of urban use increased in the Bend area (see Figure 3 for a map of the Bend area); and 2) in Klamath County, outside of the Bend area, conversion to more developed uses slowed but continued at rates higher than in other parts of eastern Oregon. In Klamath County outside of Bend, the rate of expansion of low-density residential areas continued faster than even in the Bend area, increasing by 75 percent between 1986 and

2001, about 37 percent coming from wildland forest, about 58 percent coming from wildland range, and the remaining 5 percent coming from agricultural lands.

Another large change in land use was in Morrow County where 68,000 acres were converted from wildland range to intensive agriculture, all in the 1975-1986 period. Because little agricultural land outside of the Bend area is being developed, the large increase in agricultural land in Morrow County translates into an increase in agricultural area of 1 percent over the study period.

Deschutes, Klamath, Crook, and Umatilla have been the most rapidly developing counties in eastern Oregon over the study period. As shown in Figure 9, growth of less developed to more developed low-density residential and urban uses slowed in Deschutes and Umatilla Counties but increased slightly in Klamath and Crook Counties between the two study periods. Interestingly, Klamath County started with a relatively small base of development in 1975, then grew rapidly over the next 11 years. In the second study period, even though the percentage change in development slowed because it was being compared with a significantly larger base of development (Table 4), the actual number of acres being developed increased.

**Figure 9**



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## MORE PEOPLE IN FORESTS, ON RANGE LANDS, AND ON FARMS

While economic and population growth can cause the conversion of forest, range, and agricultural lands to more developed land uses, they can also cause increased development on the resource lands themselves. Population and income have been increasing in areas containing eastern Oregon's non-Federal forests, albeit slowly in some of the most sparsely settled areas.

Although areas may remain in forest or farm dominant land uses, it is possible for average levels of development and population to increase within these areas. To analyze changing development patterns within dominant land use categories, we recorded the density of structures within 80- and 640-acre circles surrounding the plots used in this analysis. We were then able to track changes in structure counts for lands remaining in a constant dominant land use during the 1975-2001 study period.

Using the structure counts in the 80-acre circles we found that the average number of structures increased for all non-urban dominant land uses over the study period. Similar to changes in dominant land use, increases in structure count continued through both the 1975-1986 period and the 1986-2001 period, but at a lower rate in the second period. Structure counts continued to increase for all non-urban dominant land uses in the 1986-2001 period. As shown in Table 5, the largest percentage change in structure counts was in wildland

forest, where structures almost doubled in number during the 1975-1986 period. For eastern Oregon's non-Federal lands, percentage increases in structure counts declined in the second period for all uses, except mixed forest/agriculture and mixed range/agriculture. In these areas, percentage increases in dwelling counts remained relatively constant. Mixed uses, however, are minor components of eastern Oregon's non-Federal landscape and combine to be less than 5 percent of non-Federal land area.

Also shown in Table 5 is the difference in changes in structure counts on non-urban lands in the Bend area and in the rest of eastern Oregon. In the Bend area, the *rate* of adding structures in wildland forest decreased dramatically in the second period, while in the rest of eastern Oregon the rates stayed constant. By contrast, the rate of adding structures in wildland range and mixed range/agriculture *increased* in the Bend area over the whole study period, while in the rest of eastern Oregon these rates declined. Finally, the rate of adding structures in mixed forest/agriculture declined in the Bend area, while increasing elsewhere.

Similar to the patterns of shifting land from forest, range, and agriculture to more developed uses, in Klamath County outside the Bend area, rates of increases in structures in forest, range, and agricultural uses were greater than both the Bend area itself, and than other areas of eastern Oregon.



*Lands remaining in forest, range, and agriculture will also experience some increased development as population increases.*

**Table 5 – Structure Counts per Square Mile by Dominant Land Use and Area, 1975-2001**

Dominant Land Use	Structure Count/ Square Mile			% Annual Change		% Total Change
	1975	1986	2001	1975- 1986	1986- 2001	1975- 2001
<b>All Eastern Oregon</b>						
Wildland Forest	0.3	0.5	0.9	4.6%	3.6%	185%
Wildland Range	0.6	0.7	1.1	2.7%	2.4%	87%
Mixed Forest/Agriculture	4.2	5.6	8.8	2.8%	2.9%	107%
Mixed Range/Agriculture	1.3	1.5	1.9	1.4%	1.7%	54%
Intensive Agriculture	5.4	6.7	8.0	1.7%	1.3%	48%
Low-Density Residential	54.6	75.3	102.5	3.2%	2.0%	88%
<b>Bend Area</b>						
Wildland Forest	0.5	1.4	2.7	10.4%	4.4%	476%
Wildland Range	1.7	2.3	4.5	3.7%	4.3%	159%
Mixed Forest/Agriculture	9.1	13.7	23.8	5.0%	3.7%	161%
Mixed Range/Agriculture	10.9	17.5	56.7	4.4%	8.2%	420%
Intensive Agriculture	12.9	14.9	18.1	2.1%	1.3%	40%
Low-Density Residential	55.9	76.0	118.1	3.5%	2.9%	111%
<b>Outside Bend Area</b>						
Wildland Forest	0.3	0.5	0.8	3.5%	3.4%	147%
Wildland Range	0.5	0.7	0.9	2.6%	2.1%	76%
Mixed Forest/Agriculture	3.2	3.9	5.6	1.9%	2.4%	76%
Mixed Range/Agriculture	1.2	1.4	1.5	1.3%	0.7%	29%
Intensive Agriculture	5.1	6.4	7.6	1.7%	1.3%	49%
Low-Density Residential	54.0	75.0	93.9	3.1%	1.5%	74%

*Note: Includes structure counts for land remaining in the same dominant land use between 1975 and 2001.*





## MORE PEOPLE IN FORESTS

How the increasing population in non-urban areas relates to land use has been an issue of contention among policymakers and uncertainty among researchers. Forestry policymakers in particular are concerned about the impact of housing development on forestry in rural areas. Specifically, they want to know whether housing developments will break up existing forest land into ever-greater numbers of smaller and smaller parcels. For example, Barlow (1998) found that several measures of a higher population led to a decrease in timber harvest-

ing. The measures include proximity to urban land uses, higher population densities, and proximity to urban centers. Population has indeed been increasing in eastern Oregon's non-Federal forests. Figure 10 shows population densities and changes in population densities from 1975 to 2001 on private forest land in eastern Oregon. The figure suggests that some parts of eastern Oregon, although currently relatively small in percentage, are seeing population increases that in other regions have tended to reduce the probability of active management.

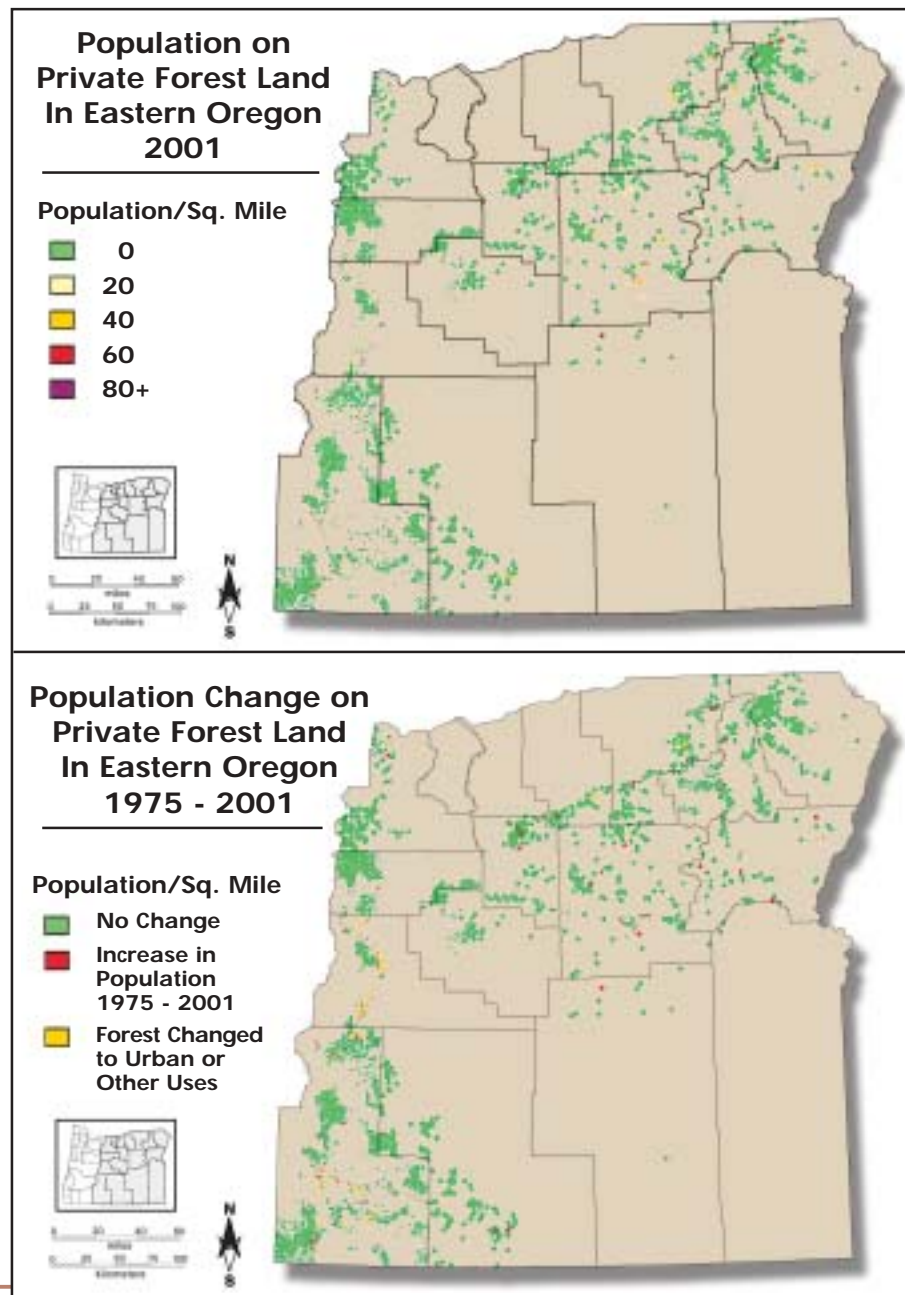


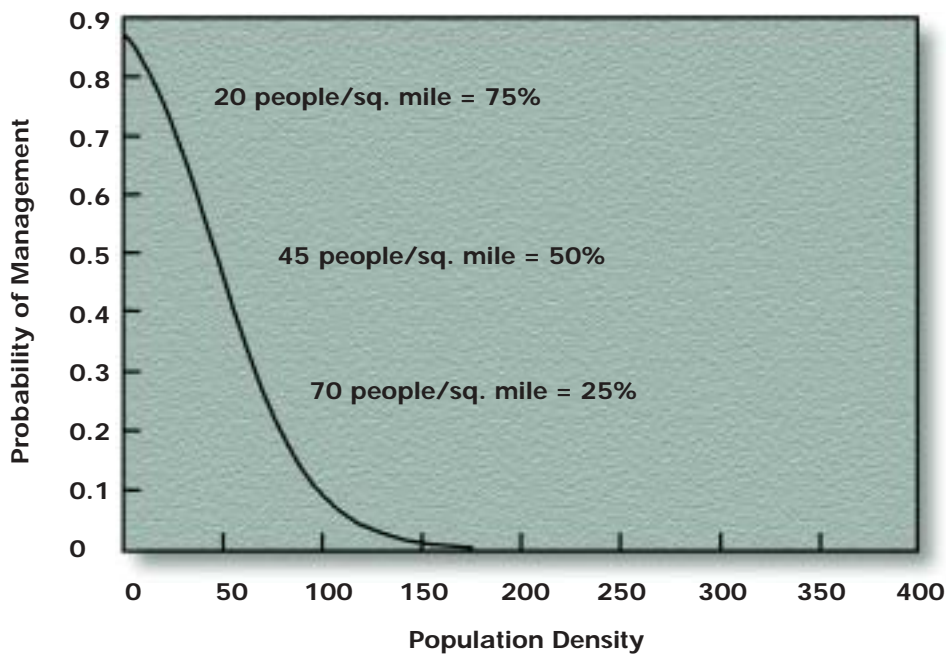
Figure 10

Adding parcels and dwellings can also reduce the commercial productivity of the forest. Wear et. al. (1999) established a relationship between population density and the probability of forests in Virginia being managed for commercial timber production. Figure 11 shows that as population increases the probability of management decreases.

20 psm there is a 75 percent chance. The implication is that a transition between rural and urban use of forests occurs between 20 and 70 psm.”

This relationship was used to create population density classes illustrated in Table 6 (Vaidya 1999), which we used to examine the change in the amount of forest land affected by low-density population levels. In Density Class 1 we would expect most of the land to be used for

**Figure 11 – Relationship of Population Density to the Probability of Commercial Forest Management (From Wear 1999)**



Wear found that, “...the probability of forest management approaches zero at about 150 people per square mile (psm). At 70 psm there is a 25 percent chance of commercial forestry. At about 45 psm the odds are 50:50 that commercial forestry will be practiced and at

commercial timber production, the land in Density Class 2 is probably in transition between commercial timber uses and non-commercial uses, and in Density Class 3 we would expect mostly non-commercial uses, such as owner recreation and aesthetics.

**Table 6 - Density Classes Based on Estimated Population Density**

Density Class	Structure Count Per Sq. Mile	Estimated Average Population Per Sq. Mile
1 - Low	<8	<20
2 - Transition	8 – 24	20 – 70
3 - High	24+	70+



In 2001, a large majority (93 percent) of eastern Oregon's private forest land zoned for forest uses had few enough structures so that we would expect most of the forest land to be managed for wood production. However, the amount of land in the higher density classes

grew in area slowed in the period from 1986 to 2001, although the rate at which lands moved to the highest density class 3 increased.

The implicit policy on forest land contained in the law is to fill in areas that are already dominated by small, part-time uses, rather than

**Table 7 - Percentage of Private Land Zoned for Forest Uses by Density Class**

Year	Density Class		
	1	2	3
1975	96.4%	3.0%	0.6%
1986	94.5%	4.7%	0.8%
2001	92.9%	5.5%	1.6%

(defined in Table 6) has been increasing over time (Table 7), and about 7 percent of the private lands in eastern Oregon zoned for commercial forestry have a current population density above 20 people per square mile. This statistic is up from less than 4 percent in 1975, then 5.5 percent in 1986, and may indicate a slow reduction in the amount of forest land that is available for commercial forest management in eastern Oregon.

Table 8 shows that areas with population densities above 20 people per square mile, where 25 percent or greater reductions in forest management were found by Wear et. al. (1999), increased by almost 128,000 acres during the period between 1975 and 2001. About 40,000 acres zoned for commercial forestry were added to the highest density class between 1975 and 2001. However, the rate at which the two higher density

putting new dwellings into areas without them. In accord with planning aims, where new structures were added, most were added in more developed areas. Sixty-six percent of the dwellings sited in forest zones between 1986 and 2001 were located in density classes 2 and 3, areas that already contained higher dwelling densities, even though land in these density classes constituted only about 5 percent of private land zoned forest. By contrast, new structures added in the remainder of private land zoned for forest uses have been happening only slowly.

Since the economy was robust and demand for rural dwellings was high during the second period, we may be able to attribute the overall decline in forest lands shifting to higher density population classes to the effects of the comprehensive land use program.

**Table 8 - Change in Area of Private Land Zoned for Forest Uses by Density Class, Thousand Acres**

Period	Density Class		
	1	2	3
1975-1986	-71	62	8
1986-2001	-59	27	31



## PEOPLE ON FARMS

Population is increasing in agricultural areas as well, but at a slower rate than for wildland forest. However, there is more agricultural land than wildland forest in eastern Oregon, and there are more people living on farms than in forests per square mile. The result is that even with lower percentage growth rates, almost four times as many structures per square mile are being built on agricultural land than on forest land. Figure 12 shows population densities and change in population densities from 1975 to 2001 on intensive agricultural land in eastern Oregon.

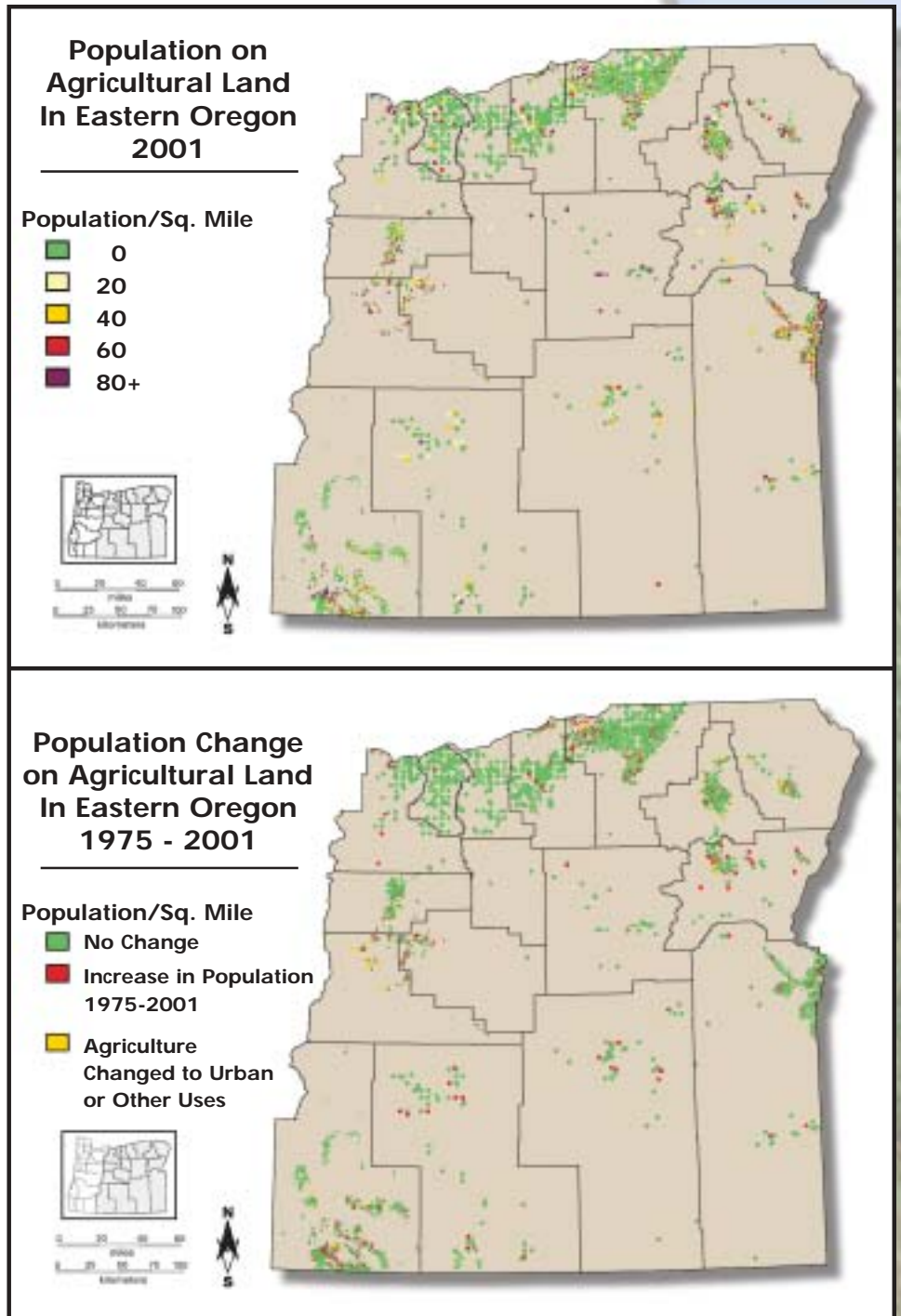
In the Bend area, mixed forest/agricultural areas are developing rapidly, at a pace more similar to development of wildland forest than to development in agricultural areas. This is consistent with the more rapid development of forested areas in general, as well as the more rapid development in areas closer to Bend.

Much additional research is needed into the impact of housing and other structures on agricultural uses in rural areas. Key information needed includes whether or not housing, roads, and businesses will break up existing farm land into smaller parcels and whether this will diminish the economic viability of farm uses. Also, unlike with commercial forestry, a number of alternative crops can be produced on the same farm land. For example, some farm crops, such as ornamental plants grown in nurseries, can produce large values in low-density rural residential areas. It is unknown how the value of farm production changes with increasing population on and adjacent to farm lands in Oregon.

Studying farms across the country, Hoppe and Korb (2001) found that “. . .there tends to be a relationship between long-term survival and specialization in high-value enterprises for farms in more urbanized counties.” This suggests that agricultural land surrounding metropolitan areas tends to follow one of two paths, either focusing on producing high-value crops or being developed. We do not

have Oregon-specific information similar to that used in the Hoppe and Korb national farm study or for agriculture similar to work by Wear (1999) or Jeffrey Kline (Lettman 2002) that relate changes in population density to forest management practices.

**Figure 12**



## DIRECTING GROWTH: COMPREHENSIVE LAND USE PLANNING AND LAND USE CHANGE

One explanation for the slowdown in loss of farm and forest land shown in this report is that, in general, the land use program has slowed the conversion of farm and forest land to residential and urban uses.

Comprehensive planning normally took into account existing dominant land uses and sought to encourage and direct development to designated “developable” areas, while slowing development in areas outside identified urban growth and exception area boundaries, designated “non-developable” areas. Under comprehensive planning, land was zoned as *developable*, which included urban growth boundaries, rural residential, commercial, and industrial uses; or as *resource* (non-developable), which included commercial farm, forest, and mixed agriculture/forest uses. Across the eastern Oregon region, wildland forest accounted for a little less

resource land than did agricultural land. More than twice as much wildland range than wildland forest was zoned as *developable*. Under the *resource* designation, the area of wildland range was almost triple the area of wildland forest.

Table 9 shows the areas in 1986 and 2001 of non-Federal land by dominant land use and whether the land is zoned in comprehensive plans as developable or as resource land (i.e., zoned for commercial farm or forest use). In areas zoned for development, 215,000 acres — 45 percent of the land — was still used for agriculture, range, or forestry in 2001. More than 16 percent of the developable land went from forest, range, or agriculture to more developed uses over the 15-year period. Urban uses in developable zones increased by 25 percent, mostly from rural residential zones becoming urbanized.

**Table 9 – Area of Dominant Land Use in Developable and Resource Zones, 1986 and 2001, Thousand Acres**

Dominant Land Use	Developable Zones		Resource Zones	
	1986	2001	1986	2001
Wildland Forest	46	35	3,283	3,272
Wildland Range	117	97	9,104	9,049
Mixed Forest/Agriculture	6	6	131	126
Mixed Range/Agriculture	1	1	714	728
Intensive Agriculture	84	78	3,714	3,718
Low-Density Residential	160	184	188	240
Urban	65	81	6	7
<b>Total</b>	<b>480</b>	<b>480</b>	<b>17,139</b>	<b>17,139</b>

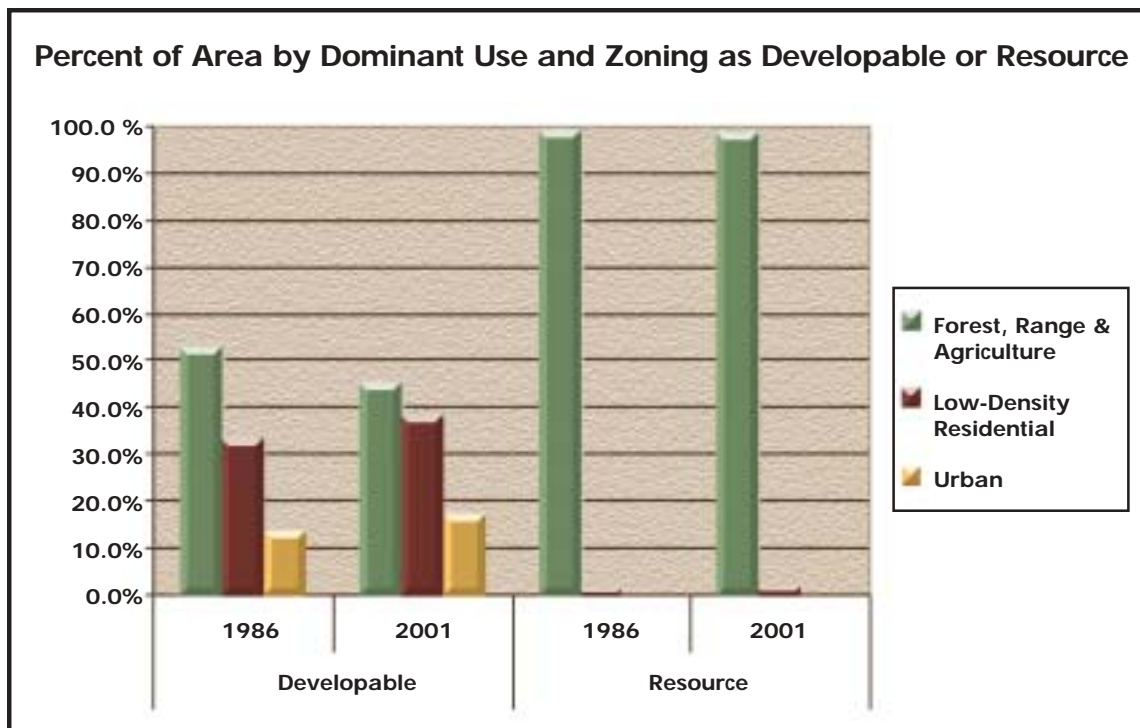
*Note: Totals are different from other tables in this report because 8,500 acres did not have county land use designations available in the GIS data layer.*

On lands zoned for resource use, wildland range was the dominant land use on 53 percent of the non-Federal land in eastern Oregon in both 1986 and 2001. Wildland forest and intensive agriculture accounted for approximately 20 percent each of the total with mixed forest/agriculture and mixed range/agriculture accounting for less than 5 percent of the total area. About 1 percent of the land zoned for resource uses was occupied by low-density residential and urban land uses. Low-density residential uses in resource zones increased by 28 percent, reflecting continued development in or near these areas; some development near already developed areas is allowed by land use planning laws and zoning.

into a single category. Table 9 shows that a small percentage of forest, range, and agricultural land is zoned for urban, industrial, and low-density residential uses. Figure 13 shows that, when looked at as a percent of area, development is occurring in areas where local governments have planned for it, and made a determination that it will have the least impact on resource uses. Between 1986 and 2001, forest, range, and farm land inside developable zones declined from about 53 to 45 percent of the area. However, the data show that there is still a large amount of undeveloped rural land (approximately 162,000 acres) available for development in rural residential zones and inside urban growth boundaries.

Notably, urban and low-density residential development, both before and after comprehensive

**Figure 13**



Development adjacent to less developed uses may result in the less developed areas moving out of wildland forest or range/agriculture classifications, even though they themselves are not developed. These factors and minor inaccuracies in the GIS layers could explain the small increase of urban uses in the areas zoned as resource land shown in Table 9.

Figure 13 combines all the resource land use classes (i.e., forest, range, agriculture) in Table 9

land use planning was instituted, occurred predominantly within lands zoned for development. Only 0.3 of 1 percent of resource-zoned lands changed to more developed land uses while 8.3 percent of lands zoned for development changed to more developed land uses (more than 27 times as much) over the 26-year study period. Table 10 shows the annual rates of change in dominant uses for lands zoned in comprehensive plans as developable or as resource lands.







*Urban growth has been dramatic in some parts of eastern Oregon, but has, for the most part, been constrained as intended by comprehensive land use planning.*

During the 1975-1986 period, the area of low-density residential land use, in areas later zoned for resource use, increased by about 4 percent per year, and urban land uses increased by about 9 percent per year. During the 1986-2001 period, after the land use plans had taken effect, the annual increases in low-density residential or urban uses in resource zones declined to 2 percent for low-density and 1 percent for urban.

Although development slowed dramatically between the two periods and the number of acres is relatively small, not shown in Table 10 is that, during the 1986-2001 period, even with the slowdown of development in resource zones, most of the land converted to more developed uses occurred on range land not zoned for development in comprehensive plans. There could be several reasons for this: 1) there is almost 100 times as much resource wildland range as there is developable wildland range, 2) it is possible that structures built in wildland range zoned for development, but adjacent to resource lands, caused enough of an increase in the number of structures near plots to change the wildland range classification nearby to low-density residential or urban, even if the plot centers themselves were not developed, 3) area classification error.

In addition, the number of structures on resource lands continues to increase. This could be the result of additional structures being built in developable areas adjacent to resource lands or the result of structures being built which are allowed for forest or farm management under land use laws. More research is needed to determine how much resource land is changing to low-density residential or urban dominant uses based on the increasing number of structures in adjacent developable areas.

**Table 10 – Percent Annual Change in Dominant Land Uses Within Developable and Resource Zones, 1975-1986 and 1986-2001**

Dominant Land Use	1975-1986		1986-2001	
	Developable	Resource	Developable	Resource
Wildland Forest	-2%	0%	-1%	0%
Wildland Range	-2%	0%	-1%	0%
Mixed Forest/Agriculture	-2%	0%	0%	0%
Mixed Range/Agriculture	0%	0%	0%	0%
Intensive Agriculture	-1%	0%	-1%	0%
Low-Density Residential	3%	4%	1%	2%
Urban	2%	9%	2%	1%

*Note: Does not include 8,500 acres that did not have county land use designations.*

## FORESTS: CHANGES IN OWNER CLASS AND USE

Oregonians are increasingly dependent on non-Federal forest landowners to provide most of the commodity resources produced from Oregon's forests. In this report we focus primarily on changes in dominant land use (e.g. wildland forest), but it is also important to track changes in forest use and ownership patterns based on the potential of the land to produce desired forest commodities. We can better understand changes in the productivity of forest land by following changes in timberland area. The timberland designation excludes the least productive forest land, commonly called non-commercial forest land, so it gives us another measure of changes in forest productivity caused by forest land development. Also, we are better able to track changes in ownership for timberland than for other dominant uses.

The majority of eastern Oregon's non-Federal forests are owned and managed by industrial forest owners, as shown in Table 11. Non-industrial owners manage almost one-third of eastern Oregon's non-Federal timberland, with an additional 14 percent being managed by non-Federal public owners, such as Native Americans and the State.

Forest industry and State forests provide many of the forest-related benefits enjoyed by residents of eastern Oregon as well as visitors.



*Private and State forests increasingly provide the bulk of forest resource commodities produced in Oregon.*

Industrial owners produce far more of Oregon's timber supply than do non-industrial private owners in eastern Oregon. For example, in 2002 forest industry provided 59 percent of eastern Oregon's timber harvest from just 16 percent of the total Federal and non-Federal timberland; non-industrial private owners produced 12 percent of the timber harvest from 8 percent of the timberland. State and Native American forests, comprising most of the

**Table 11 – Percentage of Non-Federal Timberland and Wildland Forest by Owner Class**

	Forest Industry	Non-Industrial Private	Other Public	Total Non-Federal
Timberland, 1999	57%	29%	14%	100%
Wildland Forest, 2001	53%	34%	13%	100%
Changes in Wildland Forest, 1975-2001	0%	-3%	0%	-1%
Changes in Timberland, 1977-1999	2%	-11%	1%	-2%

*Note: While highly correlated, timberland and wildland forest acreages are different. Timberland is forest land capable of growing 20 cubic feet or more per acre per year of industrial wood and not withdrawn from timber utilization. Wildland forest is based on dominant use of the land and does not depend on productivity or availability for growing and harvesting timber. Forest land which is of lower productivity or which is withdrawn from timber production may also be wildland forest.*





*Wildland forest area declined very little in eastern Oregon during the study period.*

remaining non-Federal public timberland in eastern Oregon, are currently being managed to provide structural diversity and other habitat characteristics necessary for fish and wildlife species along with timber. Although comprising only 4 percent of eastern Oregon's total Federal and non-Federal forest land, State and Native American forests will continue to provide benefits not available from other non-Federal lands. These data make clear the fact that development or conversion of eastern Oregon's forest industry and State forests could seriously reduce future economic and ecological benefits produced from non-Federal lands.

Industrial, non-industrial, and non-Federal public timberland and wildland forest areas are compared over the study period in Table 11.

This table shows the large shift from non-industrial to industrial ownership of timberland in eastern Oregon from 1977 to 1999. Although we were able to detect increases and decreases in amounts of wildland forest by ownership, we were unable to detect general trends in ownership pattern changes in wildland forest over time because wildland forest ownership data were available for only one year, 1986. However, as noted in the next section of this report, information from county assessor offices show that the shift from non-industrial to industrial timberland ownership may be reversing.

Highly correlated with timberland, wildland forest area (see Table 11) showed relatively small declines in total forested area occurring over the study period, with development rates slowing after 1986. Less than 100 acres total per year of combined industrial land and other public land shifted from wildland forest to other uses in the 1986-2001 period. There was a very small "uptick" in rates of development on industrial land in the second period. Most of the declines in forested area occurred on the non-industrial private ownership, with the most rapid rates of development occurring in the 1975-86 period, but even on the non-industrial private ownership, annual losses of wildland forest were relatively small, dropping from 1,800 acres per year during the 1975-1986 period to approximately 1,300 acres per year during the 1986-2001 period.

Unlike the data for forest lands, meaningful ownership class distinction data for agricultural and range lands were not available for this report. Therefore, we were unable to correlate ownership classes with changes in agricultural and range land use and production.



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## FORESTS: WHAT DO RECENT TRENDS SUGGEST?

Although our analysis uses aerial photos through 2001, the data only partially illustrate the most recent trends in land use change and development in eastern Oregon. Our data and information from other sources point to a fundamental change in development patterns on eastern Oregon private forest land. The area of timberland in eastern Oregon has remained relatively constant over the last several decades, with a small shift from non-industrial private to forest industry owners as timber companies have purchased parcels with standing timber to supply company mills. However, data from county assessor offices show that forest industry lands are beginning to be sold to non-industrial owners in significant acreages. Because of this, the forest industry presence in eastern Oregon may begin to decline rapidly.

As an example, since 1990 up to 60 percent of industrial timberlands in north/central Deschutes and western Jefferson Counties have been sold or exchanged to non-industrial landowners (Dewey 2004). Since under current land use regulations a dwelling may be approved on forestry-zoned parcels of 240 acres or more, cutover parcels of forest land of 240 acres or greater may be affordable to those wanting to build in forested settings. Many purchasers of these properties appear to value seclusion and it may make little difference in selling price whether these parcels have mature timber, cut over timber, or just bare ground. Therefore, unlike land purchased for timber management, standing timber on these parcels may add little to their value.

With changes in ownership class could come change in management intentions and this could have large effects on eastern Oregon and local community economies for several reasons. National Forests have 71 percent of the timberland in eastern Oregon. National Forest timber harvest in eastern Oregon has dropped dramatically from historic levels of 1 to 1.5 billion board feet, down to about 100 million board feet per year (Oregon Department of Forestry 2003). The forest industry is the second largest ownership group with 16 percent of timberland ownership. Changing market conditions and

the decline in federal timber supply have caused industrial owners to harvest heavily on their own lands, resulting in forest industry land having a high proportion of young stands of trees. Regardless of ownership changes, in the short-term timber supply is likely to decrease further.

The reduction in timber supply combined with mill modernization has caused an equally rapid decline in the number of mills in the region. The total number of mills has declined from 65 in 1968 to 15 in 2004, and another five mills are forecasted to close by 2013 (Latta 2004). The critical mass of timber supply and processing facilities needed to support a viable forest industry is rapidly diminishing. This will make it much harder to accomplish other public goals such as thinning overstocked, fire-prone forests to reduce the danger of catastrophic wildfires.



*Significant acreages of forest industry lands have been sold to non-industrial owners, potentially changing the forest industry presence in eastern Oregon.*

The current trend of selling industrial forest lands may have significant environmental, economic, and social effects on forest resources and timber-dependent communities through a decrease in forest management and from declines in timber availability for local mills.

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We may be seeing the beginning of this shift of land from industrial to non-industrial ownership expanding to the rest of eastern Oregon with the increase of structures in forest and range land and of area in low-density residential land uses.

In light of these developments, the recent sales of timberland in Deschutes and Jefferson Counties are more easily seen as the potential start of a major pattern of breaking larger industrial tracts managed for timber into smaller non-industrial parcels managed for other values. Forest industry is selling large tracts of land to individuals and corporations that may have little or no background in forest management and

may be less likely to invest in the land for timber production. Much of this land could be divided into large lots (240 acre) and be sold for home sites, and still be consistent with land use planning laws. The impacts of this trend are uncertain, but they could affect a broad array of forest values and cause the movement of forest lands to other uses, including non-forest development. Even without development, as land changes from industrial to non-industrial ownership, there may be a decrease in the silvicultural investments required to produce timber, as well as increased restrictions on the public use of other values such as recreation.



*Larger tracts of industrial forest managed for timber in eastern Oregon have been sold to buyers less likely to invest in timber production.*



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## CONCLUSIONS

As found in western Oregon, the Oregon land use program appears to be slowing the rate of conversion of resource lands to more developed uses in recent years in eastern Oregon.

Statewide, from the 1950s to the present, Oregon has converted more than 20 percent of its privately owned forest land to non-forest uses (Donnegan, 2001). But in the period between 1986 and 2001, only 22,000 acres of private wildland forest in eastern Oregon — less than 1 percent — were converted to more developed uses. The rate of range land conversion has also slowed between 1986 and 2001 — about 78,000 acres of wildland range was converted to other uses, which is less than 1 percent — and farm land area remains stable. From 1986 to 2001 there was almost no change in the area of private agricultural land in eastern Oregon. Rates of development of eastern Oregon forest, range, and agricultural lands all declined compared with the period before comprehensive land use plans were fully developed.

The rate of conversion of forest, range, and farm lands in eastern Oregon to more developed uses has declined simultaneously with full implementation of comprehensive land use plans. In addition, it appears to have been successful at containing urban expansion within areas where planners with local knowledge have judged it will have the lowest impact on farm, forestry, and other non-urban uses. However, dwelling density continues to increase within forest, range, agriculture, and mixed forest/range/agriculture dominant uses.

With land use change numbers through the year 2001, we are now able to provide more of the information about land use in eastern Oregon that was previously missing. For example, we estimate that:

■ There are about 222,000 acres of land designated as rural residential in land use plans in eastern Oregon. The percentage will vary in each county, but in total about 40 percent of the land area zoned as rural residential has yet to be developed from forest, farm, or range to rural residential, the same percentage that we found in western Oregon.


■ Only 464 acres of the 4 million acres zoned as forest in land use plans in eastern Oregon are in urban land uses; 1 percent (47,000 acres) of the 4 million acres is in low-density residential uses.

Additional research is needed to determine likely development patterns in eastern Oregon and the impact of such development on the manner in which forest, range, and farm lands are managed. Lacking is Oregon-specific information about the impacts of development on farm and range. Also needed is a more precise assessment of the impact of land use planning on patterns and rates of development. There are many factors affecting forest, farm, and range lands, most notably changing ownership and development patterns, and land use laws that channel development to particular locations. It is increasingly important to evaluate what these changes mean for the future productivity of eastern Oregon's forests, farms, and range lands, as well as the economic, environmental, and social values Oregonians attach to them.



*Forest, range, and agricultural lands in eastern Oregon all experienced reduced rates of development under comprehensive land use planning.*





The Oregon land use laws relating to forests provide for a mix of land uses. The policy question has always been, “How much of each type of use should be provided and where should it be located?” In the past, the Oregon Legislature had limited information estimating the amount of land in different uses and projecting the changes that different policy options would make to the size of the land base and its productivity. In 2001 we provided this much needed information for western Oregon; we now provide part of the vital information for eastern Oregon, but additional research is still needed.

We must better understand how the effects of transportation patterns, population and economic growth rates, and other important variables interact with historical development patterns and land use planning. This will allow us to better forecast development in eastern Oregon under alternative economic and policy scenarios. The additional information generated for this report will allow us to complete statewide analyses integrating field plot data with information about land use and land use change. This would finally give us a much-needed statewide look at how land use may change in the future and what this might mean for land management activities and forest resources.

Overall, there are many encouraging signs about land use on eastern Oregon’s forests, farms, and range lands.

- Land use change seems for the most part to be occurring where it has been anticipated and planned for.
- Ninety-seven percent of non-Federal land in eastern Oregon remains in forest, range, and agricultural uses.

- Despite increased population and income growth over the last fifteen years, development in resource lands has remained at a very low level.

- Only 1 percent of the wildland forest, 1 percent of wildland range, and 2 percent of intensive agricultural land is classed as developable based on comprehensive land use plans.

- A large majority (93 percent) of eastern Oregon’s private land zoned for forest uses is still free of the effects that population or development might have on forest management.

Since 1990 there may have been the beginning of the reversal of the trend in forest land ownership from non-industrial to industrial ownerships. Industrial timberlands in north/central Deschutes and western Jefferson Counties have been sold or exchanged to non-industrial landowners (Dewey 2004). The current trend of selling industrial forest lands may have long-term destabilizing environmental, economic, and social effects on forest resources and timber-dependent communities through a decrease in forest management and from declines in timber availability for local mills. We may be seeing the beginning of this trend expanding to the rest of eastern Oregon with the increase of structures in forest and range land and of area in low-density residential land uses. Additional research is needed to determine how extensive the trend is and how it might affect forest management and conditions on non-Federal forest land in eastern Oregon.

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## APPENDIX — DETAILED INFORMATION

**Table A1** Changes in the area of non-Federal lands in eastern Oregon, by dominant land use class, date of photography, and analysis area, 1975 to 1986 and 1986 to 2001

**Table A2** Total non-Federal land area in eastern Oregon by owner class and dominant land use, 1975, 1986, and 2001

**Table A3** Average structures per square mile on non-Federal lands in eastern Oregon by owner class, dominant land use, and date of photography for land remaining in the same land use classification between 1975 and 2001

**Table A4** Average structures per square mile on non-Federal lands in eastern Oregon, by dominant land use class, date of photography, and analysis area for land remaining in the same dominant land use classification between 1975 and 2001

**Table A5** Total non-Federal land area in eastern Oregon by owner and structure count classes, 1975, 1986, and 2001



Table A1 – Changes in the area of non-Federal lands in eastern Oregon, by dominant land use class, date of photography, and analysis area, 1975 to 1986 and 1986 to 2001<sup>ab</sup>

Dominant Land Use	1975 Acres to 1986 Dominant Uses						1986 Acres to 2001 Dominant Uses																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	1975 Acres	Wildland Forest	Wildland Range	Mixed Forest	Mixed Range	Intensive Agriculture	Low-Density Residential	Urban	1986 Acres	Wildland Forest	Wildland Range	Mixed Forest	Mixed Range	Intensive Agriculture	Low-Density Residential	Urban	2001 Acres																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Outside Bend																		Wildland Forest	3,060	3,052	--	--	--	--	9	--	3,052	3,039	--	--	--	1	12	--	3,039	Wildland Range	8,913	--	8,805	--	14	81	12	--	8,805	--	8,759	--	15	14	17	--	8,759	Mixed Forest/Agriculture	109	--	--	109	--	--	--	--	109	--	--	--	--	--	--	--	109	Mixed Range/Agriculture	703	--	--	--	695	8	--	--	710	--	--	709	--	--	--	--	724	Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>
Wildland Forest	3,060	3,052	--	--	--	--	9	--	3,052	3,039	--	--	--	1	12	--	3,039	Wildland Range	8,913	--	8,805	--	14	81	12	--	8,805	--	8,759	--	15	14	17	--	8,759	Mixed Forest/Agriculture	109	--	--	109	--	--	--	--	109	--	--	--	--	--	--	--	109	Mixed Range/Agriculture	703	--	--	--	695	8	--	--	710	--	--	709	--	--	--	--	724	Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																		
Wildland Range	8,913	--	8,805	--	14	81	12	--	8,805	--	8,759	--	15	14	17	--	8,759	Mixed Forest/Agriculture	109	--	--	109	--	--	--	--	109	--	--	--	--	--	--	--	109	Mixed Range/Agriculture	703	--	--	--	695	8	--	--	710	--	--	709	--	--	--	--	724	Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																				
Mixed Forest/Agriculture	109	--	--	109	--	--	--	--	109	--	--	--	--	--	--	--	109	Mixed Range/Agriculture	703	--	--	--	695	8	--	--	710	--	--	709	--	--	--	--	724	Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																						
Mixed Range/Agriculture	703	--	--	--	695	8	--	--	710	--	--	709	--	--	--	--	724	Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																								
Intensive Agriculture	3,600	--	--	--	--	3,573	25	--	3,662	--	--	--	--	3,650	11	1	3,664	Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																										
Low-Density Residential	165	--	--	--	--	--	160	--	206	--	--	--	--	--	203	2	244	Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																												
Urban	43	--	--	--	--	--	--	43	52	--	--	--	--	--	52	55	55	<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																														
<b>Total Area</b>	<b>16,594</b>	<b>3,052</b>	<b>8,805</b>	<b>109</b>	<b>710</b>	<b>3,662</b>	<b>206</b>	<b>52</b>	<b>16,594</b>	<b>3,039</b>	<b>8,759</b>	<b>109</b>	<b>724</b>	<b>3,664</b>	<b>244</b>	<b>55</b>	<b>16,594</b>	Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																
Bend Area																		Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																		
Wildland Forest	288	277	--	--	--	--	11	--	277	268	--	--	--	1	6	2	268	Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																				
Wildland Range	449	--	423	--	--	--	24	3	423	--	392	--	--	--	29	2	393	Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																						
Mixed Forest/Agriculture	38	--	--	29	--	--	8	--	29	--	1	23	--	--	4	--	23	Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																								
Mixed Range/Agriculture	5	--	--	--	5	--	--	--	5	--	--	--	5	--	--	--	5	Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																										
Intensive Agriculture	143	--	--	--	--	137	6	--	137	--	--	--	--	130	6	1	132	Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																												
Low-Density Residential	97	--	--	--	--	--	94	2	142	--	--	--	--	--	134	8	180	Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																														
Urban	14	--	--	--	--	--	--	14	20	--	--	--	--	--	--	20	33	<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																
<b>Total Area</b>	<b>1,034</b>	<b>277</b>	<b>423</b>	<b>29</b>	<b>5</b>	<b>137</b>	<b>142</b>	<b>20</b>	<b>1,034</b>	<b>268</b>	<b>393</b>	<b>23</b>	<b>5</b>	<b>132</b>	<b>180</b>	<b>33</b>	<b>1,034</b>	All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																		
All Eastern Oregon																		Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																				
Wildland Forest	3,349	3,329	--	--	--	--	19	--	3,329	3,307	--	--	--	2	18	2	3,307	Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																						
Wildland Range	9,362	--	9,228	--	14	81	36	4	9,228	--	9,151	--	15	14	46	3	9,153	Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																								
Mixed Forest/Agriculture	146	--	--	138	--	--	8	--	138	--	1	131	--	--	4	--	131	Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																										
Mixed Range/Agriculture	708	--	--	--	700	8	--	--	715	--	--	--	714	--	--	--	729	Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																																												
Intensive Agriculture	3,743	--	--	--	--	3,710	31	3	3,798	--	--	--	--	3,780	17	2	3,796	Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																																																														
Low-Density Residential	262	--	--	--	--	--	254	8	348	--	--	--	--	--	338	10	423	Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																
Urban	57	--	--	--	--	--	--	57	72	--	--	--	--	--	--	72	88	<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<b>Total Area</b>	<b>17,628</b>	<b>3,329</b>	<b>9,228</b>	<b>138</b>	<b>715</b>	<b>3,798</b>	<b>348</b>	<b>72</b>	<b>17,628</b>	<b>3,307</b>	<b>9,153</b>	<b>131</b>	<b>729</b>	<b>3,796</b>	<b>423</b>	<b>88</b>	<b>17,627</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

-- = less than 500 acres or none found.  
<sup>a</sup>Totals may be off because of rounding.  
<sup>b</sup>Does not include land that shifted to or from non-Federal ownership between 1975 and 2001.

**Table A2 – Total non-Federal land area in eastern Oregon by owner class and dominant land use, 1975, 1986, and 2001<sup>abc</sup>**

Dominant Land Use Class	Forest Industry			Non-Industrial Private			Native American & Non-Federal Public			All Owners		
	1975	1986	2001	1975	1986	2001	1975	1986	2001	1975	1986	2001
<i>Thousand Acres</i>												
Wildland Forest	1,757	1,757	1,755	1,177	1,158	1,138	415	415	414	3,349	3,329	3,307
Wildland Range	336	313	312	7,992	7,916	7,844	1,035	999	997	9,362	9,228	9,153
Mixed Forest/Agriculture	1	1	1	133	125	119	13	11	11	146	138	131
Mixed Range/Agriculture	2	--	--	682	683	698	24	31	31	708	715	729
Intensive Agriculture	14	38	39	3,592	3,597	3,596	137	164	161	3,743	3,798	3,796
Low-Density Residential	2	4	5	234	317	388	25	28	30	262	348	423
Urban	--	--	--	49	63	78	7	8	10	57	72	88
<b>Total Area</b>	<b>2,113</b>	<b>2,113</b>	<b>2,113</b>	<b>13,859</b>	<b>13,859</b>	<b>13,859</b>	<b>1,656</b>	<b>1,656</b>	<b>1,656</b>	<b>17,628</b>	<b>17,628</b>	<b>17,628</b>

--= less than 500 acres or none found.

<sup>a</sup>Totals may be off because of rounding.

<sup>b</sup>Owner class is from the 1986 inventory of non-Federal forest land in eastern Oregon; owner class for 1975 and 2001 was not determined.

<sup>c</sup>Does not include land that shifted to or from non-Federal ownership between 1975 and 2001.





**Table A3 – Average structures per square mile on non-Federal land area in eastern Oregon by owner class, dominant land use, and date of photography for land remaining in the same land use classification between 1975 and 2001<sup>abc</sup>**

Dominant Land Use Class	Forest Industry			Non-Industrial Private			Native American & Non-Federal Public			All Owners		
	1975	1986	2001	1975	1986	2001	1975	1986	2001	1975	1986	2001
Wildland Forest	0.10	0.20	0.40	0.70	1.11	1.98	0.32	0.37	0.42	0.33	0.53	0.94
Wildland Range	0.02	0.04	0.06	0.66	0.85	1.22	0.10	0.18	0.35	0.58	0.75	1.08
Mixed Forest/Agriculture	--	0.00	0.00	4.45	5.95	9.47	2.41	2.41	2.41	4.24	5.60	8.79
Mixed Range/Agriculture	--	0.00	0.00	1.30	1.56	2.00	--	0.15	0.31	1.26	1.51	1.94
Intensive Agriculture	4.40	5.43	6.99	5.39	6.68	7.93	5.72	7.32	9.79	5.40	6.70	7.99
Low-Density Residential	22.40	46.40	81.60	52.07	70.81	96.61	80.85	118.73	157.19	54.65	75.34	102.48

*Thousand Acres*

--= None found.

<sup>a</sup>Owner class is from the 1986 inventory of non-Federal forest land in eastern Oregon; owner class for 1975 and 2001 was not determined.

<sup>b</sup>Does not include land that shifted to or from non-Federal ownership between 1975 and 2001.

<sup>c</sup>Does not include areas of urban dominant uses.

**Table A4 – Average structures per square mile on non-Federal lands in eastern Oregon, by dominant land use class, date of photography, and analysis area for land remaining in the same land use classification between 1975 and 2001<sup>abc</sup>**

Analysis Area	Date of Photography	Dominant Land Use Class					Low-Density Residential
		Wildland Forest	Wildland Range	Mixed Forest/Agriculture	Mixed Range/Agriculture	Intensive Agriculture	
		<i>Structures Per Square Mile</i>					
Bend Area	1975	0.5	1.7	9.1	10.9	12.9	55.9
	1986	1.4	2.3	13.7	17.5	14.9	76.0
	2001	2.7	4.5	23.8	56.7	18.1	118.1
Outside Bend Area	1975	0.3	0.5	3.2	1.2	5.1	54.0
	1986	0.5	0.7	3.9	1.4	6.4	75.0
	2001	0.8	0.9	5.6	1.5	7.6	93.9
Eastern Oregon	1975	0.3	0.6	4.2	1.2	5.4	54.6
	1986	0.5	0.7	5.6	1.5	6.7	75.3
	2001	0.9	1.1	8.8	1.9	8.0	102.5

<sup>a</sup>Structure counts were not taken on points classified as urban.

<sup>b</sup>Structure counts were determined by counting the number of structures within 80-acre circles surrounding each plot.

<sup>c</sup>Does not include land that shifted to or from non-Federal ownership between 1975 and 2001.



**Table A5 – Total non-Federal land area in eastern Oregon by owner and structure count classes, 1975, 1986, and 2001<sup>abc</sup>**

Structure Count Class	Forest Industry		Non-Industrial Private		Native American & Non-Federal Public		All Owners					
	1975	1986	1975	1986	1975	1986	1975	1986	2001			
	<i>Thousand Acres</i>											
0-4	2,092	2,081	2,063	12,285	12,020	11,710	1,568	1,545	1,523	15,945	15,645	15,296
5-8	9	15	24	565	626	669	22	38	45	597	678	738
9-16	8	11	16	328	351	409	19	21	24	355	383	449
17-32	1	1	5	358	407	475	19	22	23	378	430	503
33-64	1	2	2	153	214	271	6	6	10	160	222	283
65-96	0	0	0	63	84	102	3	6	6	67	89	108
97+	0	1	3	58	96	146	11	11	14	69	107	164

<sup>a</sup>Owner class is from the 1986 inventory of non-Federal forest land in eastern Oregon; owner class for 1975 and 2001 was not determined.

<sup>b</sup>Does not include land that shifted to or from non-Federal ownership between 1975 and 2001.

<sup>c</sup>Does not include areas of urban dominant uses.





