BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Adopting Legislative )
Findings, the Comprehensive Land Use )
Plan Within the Bend Urban Growth )
Boundary, an Exceptions Statement )
for the Bend Urban Growth Boundary, )
and the Bend Area General Plan Map; )
Repealing Ordinance No. PL-10; )
Declaring an Emergency; and Providing )
an Effective Date.

ORDINANCE NO. 80-216  F I L E D

WHEREAS, the Board of County Commissioners of Deschutes County, Oregon, and the Bend City Commission have held hearings on the Comprehensive Plan within the Bend Urban Growth Boundary; and

WHEREAS, the Board of County Commissioners has considered amendments to said Plan; and

WHEREAS, certain findings entitled, "Urban Growth Boundary," and "Economics and Population Bend Area General Plan," have been considered as the findings of the Board of County Commissioners in support of the General Plan Map and Exceptions Statement adopted by this Ordinance; now, therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. The Board of County Commissioners makes legislative findings in support of this Ordinance entitled, "Urban Growth Boundary," marked Exhibit A, a copy of which is attached hereto and by this reference incorporated herein, and entitled, "Economics and Population Bend Area General Plan," marked Exhibit B, a copy of which is attached hereto and by this reference incorporated herein.

Section 2. That the General Plan, marked Exhibit C, attached hereto and by this reference incorporated herein; Exceptions Statement, marked Exhibit D, attached hereto and by this reference incorporated herein; and the Bend Area General Plan Map, marked Exhibit E, attached hereto and by this reference incorporated herein, are hereby adopted.

Section 3. Ordinance No. PL-10, the Bend Area General Plan, and all amendments thereto, are hereby repealed.
Section 4. This Ordinance being necessary for the immediate preservation of public peace, health and safety, an emergency is declared to exist, and this Ordinance takes effect on January 1, 1981.

DATED this 18th day of Dec., 1980.

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

ALBERT A. YOUNG, Chairman
CLAY C. SHEPARD, Commissioner
ROBERT C. PAULSON, JR., Commissioner

ATTEST:

TAMMY J. RICHARDSON
Recording Secretary
History -

The City of Bend and Deschutes County adopted an urban growth boundary in 1972, and revised this boundary in 1974, 1976 and 1978. This boundary was submitted to LCDC in the fall of 1979 with the City's request for acknowledgment. LCDC ruled that the boundary was too large, and the city and county accepted a 120-day continuance to revise the boundary. The alternatives available are: (1) justify the existing boundary; (2) justify a dual boundary - a boundary inside the existing boundary; (3) justify a new boundary.

After review of the seven factors upon which a boundary is evaluated, the development of a dual boundary was selected as the most appropriate. The dual boundary concept would maintain the existing urban growth boundary and draw a new Initial Urban Growth Boundary. The new boundary would encompass needed and committed lands. This concept would also say that if additional lands were needed in the future, the area contained between the two boundaries would be placed in an urban reserve designation.

Boundary Description -

The plan map includes both the IUGB and the UGB. The IUGB includes lands that are within the city limits; lands that are committed due to the existing development; lands that are committed due to monies paid to the city for construction of sewer lines, and paid to the county for construction of major roads; and lands that are committed due to approvals given by the city and county based on the old plan.

The IUGB contains / 32.25 square miles. Table 1 shows the buildable lands by plan designation and zoning category for the IUGB.

The economic and population forecasts indicate the need for an additional 8,000 acres of land. Table 1 gives the residential land needed by the year 2000. Comparing land needs to buildable lands by category, it can be seen that adequate land is contained within the IUGB. Therefore, the IUGB is based upon factors that demonstrate a commitment to urbanization. The IUGB is described by portions below.

Approximately 6858 acres were excluded from the UGB, resulting in 20642.47 acres being contained within the IUGB. This is a 24.94 percent reduction in the urbanizable land. A review of the vacant lands by parcel size, by ownerships, and by slope shows the following: (1) within the city, 52 percent of the vacant land is owned by Brooks Resources; 40 percent of the ground has slopes in excess of 10 percent, and of the parcels greater than 20 acres in size, Brooks Resources owns 80 percent; (2) within the IUGB, five owners have 42 percent of the vacant land, and 60 percent of the parcels are over 20 acres in size. The majority of the vacant land is buildable.

These facts reveal that, while considerable land is vacant within the IUGB, larger parcels are scarce, and the majority is owned by existing development concerns. Reliance on these concerns to provide housing and/or lots should be closely monitored in order to avoid any adverse price influences.
The community completely updated its land use inventory and analyzed the vacant lands for building suitability. While very little of this area is subject to natural hazards, the slopes do and will increase housing costs. Our analysis revealed that there are adequate amounts of land available for all types of housing. The area's biggest problem is the lack of sewers. Very little land is now serviced with sewers. However, the city's system is expected to be activated in 1981. This will allow much of the land to be serviced during the next 20 years. Additionally, in the south, the Juniper Utility Company sewer system is planned to serve the rest of Ward's development land.

The following specific findings are the basis of the rational for the IUGB:

**Boundary Findings**

1. The IUGB contains 17,954 acres of land, and these acres are buildable.
2. The population is expected to increase from 33,000 now to 84,000 in 2000.
3. The land needed for commercial, industrial, residential, and other uses is 8,000 acres. There is enough buildable land and lots within the IUGB.
4. The existing pattern of development is the single biggest factor in the location of the IUGB. This pattern began in the early 1960's, and has been built upon since.
5. The IUGB excludes approximately 10.72 square miles from the urbanizable area contained in the 1979 boundary previously submitted to LCDC.
6. Areas excluded are designated Urban Reserve and will be zoned as Urban Reserve-10.
7. There is buildable land in the various land use categories to meet the needs through 2000 within the IUGB.
8. Energy will be conserved by the IUGB by encouraging the infilling within the pattern of existing development, and by increasing the density of development.
9. The provision of public facilities and services will be more efficient with the IUGB because a smaller area will be served.
10. The IUGB reflects commitments the city and county have made in terms of sewer service, road construction requirements, and development approval during the past four years.
11. The IUGB provides compatibility with forest and agricultural lands by designating intervening lands within the UBG as urban reserve.
12. The urbanization policies will promote infilling and an efficient urban development pattern.
13. The IUGB is site specific and takes into account existing development, existing and planned services, major public land ownerships, and development approvals.
14. The city and county management agreement provides for coordination, communication, and review of land use actions within the UGB.

15. The area within the UGB is committed to urban development by the existing pattern of land use, the existing city limits, existing and proposed sewer services.

The following pages describe the boundary by section and show the vacant and buildable areas.
A. **EAST SIDE**

This area is characterized by a mixture of land uses including Pilot Butte State Park and parcels ranging up to 80 acres in size. Map 1 depicts the existing development pattern. The City's Phase II sewer and water service areas cover all but the existing Reed Market and Daly Estates subdivisions. This area will provide the source of higher density commercial and residential development on the east side of the community; the majority of the larger parcels have received the commitment to urbanization.

**Acreage:** 1859.61

**Land Use:** Mixed, mainly residential and commercial

**Comprehensive Plan Designation:** Commercial, standard, medium, and high density residential.

**Soil Classification:** Majority is Sb scabland Class VII

**Zoning:** RS Standard Residential, RM Medium Density Residential, RH High Density Residential, CL Limited Commercial, CH Highway Commercial, and CG General Commercial

**Sewer:** Reasonably available

**Water:** Reasonably available

Other lands on the east side were excluded from the IUGB due to the lack of or planning for sewer and water service, their location adjacent to areas zoned EPU-20, and the generally larger parcel sizes. This amounts to approximately 268 acres. The 268 acres will be placed in a UAR zone until needed for urbanization.
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<td><strong>Total Acres</strong></td>
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**TOTAL AREA:** 268.64 Acres
### Deschutes County: Eastside - Inside IUGB

**Existing Zoning and Land Use Summary**

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**Exhibit 22**

Page 8 of 180
## DESCHUTES COUNTY: EASTSIDE - INSIDE IUGB
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B. NORTH SIDE

The north side contains approximately 2,370 acres of land. The area either side of Highway 97 is planned for commercial, and existing uses are scattered along this route. The area east of the railroad and south of Nels Anderson Road is planned for industrial development. The majority of the land is within the Phase II sewer and water service areas. Those areas outside of the Phase II area are existing urban subdivisions and mobile home developments. The area between Highway 20 and Highway 97 is planned for commercial and industrial development. West of Highway 20, the area contains existing urban subdivisions and small parcels from 1/4 acre up to 15 acres in size. This area contains the two malls and the majority of light industrial development that has occurred in the last five years. The following data describes this area.

Acreage: 2,370.23

Land Use: Mixed commercial, industrial, and residential

Comprehensive Plan Designation: Commercial, industrial, standard, and medium density residential

Soil Classifications: Majority is SB Class VII, with minor areas of Dc Class III-VI

Zoning: RS Standard Residential, CH Highway Commercial, IL Light Industrial, IG General Industrial, IP Industrial Park, RL Urban Low Density Residential

Other lands have been excluded due to the lack of or planning for sewer or water service. The parcels range in size from 2-1/2 acres up to 500+ acres. The IUGB excludes properties that abut EFU-20 zoning, lands that have farm deferrals, and areas where parcel sizes have not created an urban condition. There are 3605 acres excluded by the new IUGB on the northside.
### Existing Zoning and Land Use Summary

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<th>Percent</th>
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**TOTAL AREA:** 3605.00 Acres
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TOTAL AREA: 2370.23 Acres
### DESCHUTES COUNTY: NORTHSIDE - INSIDE UGB

**VACANT LANDS INVENTORY**

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D. SOUTH SIDE

The UGB on the south side includes a variety of activities from Diamond International mill to urban subdivisions like Timber Ridge, Romaine Village, and Homestead at the outer edges of the boundary. The pattern of existing urban developments goes south to the U.S. Forest Service land near Lava Butte. However, most of these areas were excluded since inclusion would have resulted in two to three times as much land as currently in the UGB. Approximately 1/3 of the area is within the City's sewer and water service areas. Several private utilities supply water in this area, and one, Juniper Utility Co., supplies water and sewer to land owned by owners of the utility company. The County has required China Hat Road to be improved by developers in the south part of the UGB.

Development approvals exist throughout this area in widely scattered locations. These approvals together with the existing developments, the required street improvements commit this land to urbanization.

Acreage: 5099.73

Land Use: Heavy industrial, light industrial, highway commercial, apartments, mobile home parks, and urban subdivisions.

Comprehensive Plan Designation: Industrial; commercial; low, standard, and medium residential; area of special interest

Soil Classification: Majority is SB scabland Class VII

Zoning: RL Low Density, RS Standard Density, RM Medium Density Residential; CH Highway Commercial; IG General Industrial; IL Light Industrial

Sewer: City system can be extended within Phase II service area; Juniper Utility Company provides service to Ward's land

Water: Reasonably available

Other lands have been excluded from the UGB, comprising approximately 497 acres of land. These areas are generally outside of the existing utility systems and next to areas that have agriculture uses outside the UGB.
| Type                          | Acres | Percent | UAR-10 | SR-2 1/2 | RL | RS | RM | RH | CL | CH | IL | IG | SM |
|-------------------------------|-------|---------|--------|----------|----|----|----|----|----|----|----|----|----|----|
| Range, Open and Vacant        | 33.36 | 100.00  |        |          | 437.12 |    |    |    |    |    |    |    |    |    |
| Residential and Trailer Parks |       |         | 24.16  |          | 5.21 |    |    |    |    |    |    |    |    |    |
| Commercial and Parking        |       |         |        |          |      |    |    |    |    |    |    |    |    |    |
| Industrial and Utility        |       |         | 2.00   |          | 0.43 |    |    |    |    |    |    |    |    |    |
| Institutional                 |       |         |        |          |      |    |    |    |    |    |    |    |    |    |
| Public                        |       |         |        |          |      |    |    |    |    |    |    |    |    |    |
| Schools                       |       |         |        |          |      |    |    |    |    |    |    |    |    |    |
| Parks                         | 33.36 | 100.00  | 463.28 |          |    |    |    |    |    |    |    |    |    |    |
| Total Acres                   | 496.64|         |        |          |    |    |    |    |    |    |    |    |    |

**TOTAL AREA:** 496.64 Acres
### Existing Zoning and Land Use Summary

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**Total Area:** 5099.73 Acres
## Vacant Lands Inventory

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</table>
C. WEST SIDE

The west side IUGB line follows the existing City limits and property lines of ownerships that contributed to the construction of the City’s Newport sewer interceptor. The area includes properties that are committed to urbanization by existing development, such as Entrada Lodge, Sunrise Village, First on the Hill, and the present Cascade Junior High School. The following information describes the lands within the IUGB.

Acreage: 2038.61
Land Use: Commercial, destination resort, surface mining, demolition landfill
Comprehensive Plan Designation: Residential, industrial, and commercial
Soil Classifications: No detailed classification. General soils map indicates poor agricultural potential, but some potential for forest uses
Zoning: RS Standard Residential, IP Industrial Park, IG General Industrial, CL Limited Commercial, RM Medium Density Residential, and RH High Density Residential
Sewer: Reasonably available
Water: Reasonably available

Lands have been excluded that are outside the sewer boundary and not approved for development, that are underlain by sand and gravel deposits, or that abut the Tumalo Deer Winter Range. A total of 260.25 acres were excluded; this area is zoned SM Surface Mining and UAR as appropriate.
### Deschutes County: Westside - Outside IUGB
#### Existing Zoning and Land Use Summary

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**Total Area:** 2260.25 Acres
## Existing Zoning and Land Use Summary

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**TOTAL AREA:** 2038.61 Acres
### Vacant Lands Inventory

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<th>RS</th>
<th>RM</th>
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<th>CL</th>
<th>CH</th>
<th>IL</th>
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# VACANT LANDS BY LARGE LAND OWNERS

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<tr>
<td>North Side</td>
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<tr>
<td>South Side</td>
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<tr>
<td>West Side</td>
<td>1644.70 acres</td>
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## Property Owners:

- **City**
  - Brooks Resources: 2129.78 acres (56.72%)
  - Clyde Purcell: 190.04 acres (5.06%)

- **North Side**
  - Clyde Purcell: 88.37 acres (8.27%)

- **South Side**
  - Jan Ward: 868.61 acres (30.70%)

- **West Side**
  - Bill Miller: 551.86 acres (33.55%)
  - Bill Lundgren: 481.52 acres (29.28%)
## CITY OF BEND
### LAND USE AND ZONING SUMMARY

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<tr>
<th>Category</th>
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## Table 1

### IU&G Land Use and Zoning Summary

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<th>Area 3</th>
<th>Area 4</th>
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### Dwellings/Acre

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### COMPARISON

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<td>Acres Needed</td>
<td>277 Dwellings</td>
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22,174 Dwellings
75% SF
16630 Dwellings
25% MF
5,543 Dwellings

\[ \div 3.5 \text{ D/A} = 4,751 \text{ Acres} \]

\[ \div 20 \text{ D/A} = 277 \text{ Acres} \]
<table>
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<th>Land Use Category</th>
<th>Acres</th>
<th>Percent</th>
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<td>Range, Open and Vacant</td>
<td>233.50</td>
<td>100.00%</td>
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<td>362.26%</td>
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**Total Area:** 6585.68 Acres
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## URBAN GROWTH BOUNDARY

**PLAN DESIGNATIONS AND LAND USE SUMMARY**

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<tr>
<th>Vol</th>
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<th>20,000 sq. st.</th>
<th>6,000 sq. ft.</th>
<th>2,000 sq. ft.</th>
<th>1,000 sq. ft.</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Surface Mining</th>
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<th>979.92</th>
<th>1982.61</th>
<th>649.09</th>
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<tr>
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<th>1268.91</th>
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<th>157.89</th>
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<tbody>
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<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
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<thead>
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<th>20.28</th>
<th>185.39</th>
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<td></td>
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<td>10.09%</td>
<td>6.38%</td>
<td>4.84%</td>
<td>4.96%</td>
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TOTAL AREA: 24,683.89 Acres
### OUTER URBAN GROWTH BOUNDARY
### PLAN DESIGNATIONS AND LAND USE SUMMARY

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<th>Industrial</th>
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<td>Industrial and Utility</td>
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<td>Percent of Total Area</td>
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TOTAL AREA: 6630.54 Acres
## Inner Urban Growth Boundary
### Plan Designations and Land Use Summary

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<td>1008.87</td>
<td>142.36</td>
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<td>979.92</td>
<td>1982.61</td>
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<tr>
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<td>16.28</td>
<td>17.24</td>
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<td>5.68</td>
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<td>631.78</td>
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<td>185.39</td>
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<tr>
<td>Percent of Total Area</td>
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<td>6.38</td>
<td>4.84</td>
<td>4.96</td>
<td>1.60</td>
<td>9.85</td>
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</table>

*TOTAL AREA: 18,053.35 Acres*
ECONOMICS AND POPULATION
BEND AREA GENERAL PLAN

EXHIBIT B

PART II
INTRODUCTION

In 1973 Deschutes County and the City of Bend jointly commissioned the preparation of the Bend Area General Plan. The initial work on the economic element was done by the consulting firms of Patterson, Langford and Stewart and Al Keisker, Inc. Since that time the Bend area has gone through one recession and a period of very rapid growth.

The areas of growth closely parallel the forecasts of the 1974 Part II report. It is now time to update this report and begin looking at the City and Urban Area potential, beyond 1985 to the year 2000. This is necessary to comply with the State-wide Goals to maintain and update the City's comprehensive plan, and due to the rapid changes that have occurred in the past five years.

These changes have resulted in community concerns about the adequacy of land for commercial, industrial, and high density lands; and about the community's ability to keep up with the demand placed on its water, sewer, and street systems. Recent reports for School District No. 1 forecast needs for new facilities through 2000 at an estimated cost of over 100 million in 1979 dollars.

This update then is intended to answer the basic needs outlined above and to provide the community a sense of scale of the changes that are likely to occur, and some estimate of the facility needs that the City and County are likely to have to fund during the next 20 years. The first chapter considers the economic situation, trends and projections. The second deals with population changes and projections; the third chapter makes an analysis of residential patterns and land needs. The fourth and fifth chapters deal with commercial and industrial land needs; and the sixth chapter deals with the capital improvement budget needs of the City, based on the expected employment, population, and land use changes.
Chapter 1
ECONOMIC GROWTH, ANALYSIS AND PROJECTIONS

In 1979, the Bend Area had an estimated population of 33,000 people. The area and the region have experienced a sustained ten year period of rapid expansion in economic activity and employment. Recent reports forecast continued expansion of job opportunities within Central Oregon, Deschutes County, and the Bend Area. As employment opportunity grows, so too will population. The most recent forecasts, in 1979, indicate that population in the Bend Urban Area is likely to more than double by the end of the century.

Future growth is likely to be in response to economic development in the area. This chapter focuses on the local economy. Later chapters assess the population, housing and land requirements, and public facility infrastructure needs that will support the expected economic growth.

The Bend Area has historically accounted for 64 percent of the County's population, and a corresponding share of employment. The majority of the population growth has been a direct result of economic growth. A small portion, 10 percent or less, can be attributed to retirement to the Bend Area. Economic growth has stimulated the recent period of rapid population growth. Growth in basic employment has led the way for all other employment growth and the development of the community's economic base. Consider the definition of the economic base which will provide focus to the analysis which follows:

"The economic base of any area, whether it be a region, a community or some other geographic or political unit, is composed of certain "basic" activities which essentially export products and/or services to points outside the local area, or find markets for their products and/or services amount persons or groups who came from outside the area's economic boundaries.

These activities may take many forms. The growing of food, the processing of food products, and related agricultural pursuits are typically economic base functions, as are activities which tap natural resources such as forestry, mining, oil and gas extraction, and commercial fishing. Finally tourism provides the most common example of an economic base function resulting from services rendered to persons or groups coming into the local economy."
In the Bend economy, growth in the "basic" sectors has been particularly strong. Besides growth in manufacturing, tourism and recreation, the Bend Area's emergence as a regional trade center have contributed to "basic" employment and subsequent development of the area's economic base. Table 1 presents 1970-78 employment statistics, by industrial sector, which illustrates these trends. Although for the entire county, they are representative, proportionately, of the changes occurring within the Bend economy.

Both the labor force and the total number employed approximately doubled, 98.8 and 101.6 percent increases, respectively. Manufacturing growth, leading "basic" employment sectors, posted a 71.8 percent increase. The greatest gains in the number of new jobs occurred in the lumber and wood products industry. Strong gains in other manufacturing industries however are indicative of the diversification occurring within the Bend Area economy.

The growth in the non-manufacturing sectors has been even more dramatic. This impact has had a two-fold effect. First, greater diversification has occurred throughout the entire County economy, fostered by increases in "basic" employment. This is true for manufacturing as well as tourism and recreation and regional trade. Second, a large share of the County's "non-basic" employment growth has been in the Bend Area, coincidental with its emergence as a regional trade center. The data in Table 2 compare the distribution of employment for the County, by employment category. These data illustrate the pattern of diversification occurring within the area's economy, particularly in the non-manufacturing categories.

Future growth in the Bend Area economy will be affected by and depend upon several factors. However, recent forecasts envision continued growth in manufacturing, regional service, and destination tourism. The announcement by Tektronix to locate in Redmond is considered a precursor to other "foot loose" and support industries moving to the area to take advantage of the quality of life and untapped labor pool. These recent studies parallel those of the 1974 forecasts, but carry through to

-3-
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<td>21,680</td>
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<td>9.1</td>
<td>11.0</td>
<td>9.6</td>
<td>7.5</td>
<td>6.9</td>
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<td>15,660</td>
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<td>16,880</td>
<td>17,359</td>
<td>18,900</td>
<td>21,900</td>
<td>24,820</td>
<td>101.6</td>
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</table>

**Deschutes County, Oregon, Resident Agricultural Employment, Annual Averages, 1970-77**

| Agricultural employment | 510 | 510 | 540 | 530 | 510 | 500 | 460 | 470 | N/A |

**Deschutes County, Oregon, Nonagricultural Wage and Salary Employment, by Place of Work, Annual Averages, 1970-78**

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<td>2,340</td>
<td>2,710</td>
<td>2,970</td>
<td>3,060</td>
<td>2,960</td>
<td>2,960</td>
<td>3,420</td>
<td>3,840</td>
<td>4,020</td>
<td>71.8</td>
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<td>Durable goods</td>
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<td>2,470</td>
<td>2,720</td>
<td>2,770</td>
<td>2,650</td>
<td>2,650</td>
<td>3,080</td>
<td>3,450</td>
<td>3,560</td>
<td>68.7</td>
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<td>Lumber and wood products</td>
<td>1,620</td>
<td>1,860</td>
<td>2,140</td>
<td>2,210</td>
<td>2,100</td>
<td>2,150</td>
<td>2,510</td>
<td>2,690</td>
<td>2,810</td>
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<td>Other durable goods</td>
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<td>570</td>
<td>560</td>
<td>550</td>
<td>500</td>
<td>570</td>
<td>760</td>
<td>750</td>
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<td>Nondurable goods</td>
<td>230</td>
<td>260</td>
<td>250</td>
<td>290</td>
<td>310</td>
<td>310</td>
<td>340</td>
<td>390</td>
<td>460</td>
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<tr>
<td>Food and kindred products</td>
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<td>110</td>
<td>110</td>
<td>120</td>
<td>100</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>100</td>
<td>(9.1)</td>
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<td>Other nondurable goods</td>
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<td>290</td>
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<tr>
<td>Total manufacturing</td>
<td>7,560</td>
<td>8,220</td>
<td>9,260</td>
<td>10,390</td>
<td>10,860</td>
<td>11,370</td>
<td>12,560</td>
<td>14,240</td>
<td>16,500</td>
<td>128.9</td>
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<td>480</td>
<td>610</td>
<td>840</td>
<td>1,260</td>
<td>1,060</td>
<td>850</td>
<td>850</td>
<td>850</td>
<td>850</td>
<td>239.6</td>
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<td>Transp., communications, and utilities</td>
<td>570</td>
<td>650</td>
<td>670</td>
<td>760</td>
<td>850</td>
<td>850</td>
<td>850</td>
<td>850</td>
<td>850</td>
<td>96.5</td>
</tr>
<tr>
<td>Trade</td>
<td>2,230</td>
<td>2,420</td>
<td>2,730</td>
<td>2,950</td>
<td>3,130</td>
<td>3,230</td>
<td>3,580</td>
<td>4,090</td>
<td>4,710</td>
<td>111.2</td>
</tr>
<tr>
<td>Finance, insurance and real estate</td>
<td>710</td>
<td>770</td>
<td>990</td>
<td>1,040</td>
<td>1,060</td>
<td>1,150</td>
<td>1,290</td>
<td>1,480</td>
<td>1,800</td>
<td>153.5</td>
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<tr>
<td>Services and miscellaneous</td>
<td>1,510</td>
<td>1,630</td>
<td>1,580</td>
<td>1,880</td>
<td>2,030</td>
<td>2,280</td>
<td>2,550</td>
<td>2,920</td>
<td>3,500</td>
<td>131.7</td>
</tr>
<tr>
<td>Government</td>
<td>2,060</td>
<td>2,140</td>
<td>2,450</td>
<td>2,700</td>
<td>2,940</td>
<td>3,180</td>
<td>3,380</td>
<td>3,490</td>
<td>3,790</td>
<td>84.0</td>
</tr>
</tbody>
</table>

| Workers in labor-management disputes | 40 | 0 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

1/ Data include employed and unemployed individuals 16 years and older by place of residence. Data are adjusted for multiple job-holding and commuting. Include nonagriculture wage and salary, self-employed, unpaid family workers, domestics, agriculture, and labor disputants. Prior to 1970, data were compiled by place of work and are not comparable to 1970 to present data.

2/ Data series reflects 1970 census benchmark and includes workers aged 16 years and over. Annual averages are estimates only, not actual head counts. Data include private sector employment in forestry, fisheries, hunting, and trapping. Data are based on extrapolations from the 1970 census.

3/ 1970 and 1971 data are based on the 1967 Standard Industrial Classification (SIC code structure. 1972 to present data are based on the 1972 SIC code structure. Data are by place of work, and persons working multiple jobs are counted more than once. Workers involved in labor-management disputes are excluded from the wage and salary employment totals.

Source: Research and Statistics Section, Oregon Employment Division.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Employment</td>
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<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
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<tr>
<td>Agriculture</td>
<td>11.3</td>
<td>8.5</td>
<td>6.8</td>
<td>5.9</td>
<td>4.9</td>
<td>N.A.</td>
</tr>
<tr>
<td>Manufacturing (Total)</td>
<td>20.3</td>
<td>21.8</td>
<td>21.5</td>
<td>19.2</td>
<td>21.0</td>
<td>19.5</td>
</tr>
<tr>
<td>Lumber &amp; Wood Products</td>
<td>15.5</td>
<td>16.8</td>
<td>15.9</td>
<td>13.3</td>
<td>13.8</td>
<td>17.3</td>
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<tr>
<td>Food Products</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
<td>0.9</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>3.7</td>
<td>3.9</td>
<td>4.5</td>
<td>5.0</td>
<td>6.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Contract Construction</td>
<td>2.7</td>
<td>4.6</td>
<td>3.5</td>
<td>4.0</td>
<td>5.5</td>
<td>7.9</td>
</tr>
<tr>
<td>Transp.-Comm.-Utilities</td>
<td>5.9</td>
<td>5.0</td>
<td>4.9</td>
<td>4.7</td>
<td>4.5</td>
<td>5.4</td>
</tr>
<tr>
<td>Wholesale-Retail Trade</td>
<td>17.3</td>
<td>18.4</td>
<td>19.3</td>
<td>18.4</td>
<td>18.3</td>
<td>22.9</td>
</tr>
<tr>
<td>Finance, Insur. &amp; Real Estate</td>
<td>3.3</td>
<td>3.8</td>
<td>3.7</td>
<td>5.8</td>
<td>6.4</td>
<td>8.8</td>
</tr>
<tr>
<td>Service &amp; Miscellaneous</td>
<td>9.2</td>
<td>9.8</td>
<td>11.1</td>
<td>12.4</td>
<td>11.7</td>
<td>17.0</td>
</tr>
<tr>
<td>Government</td>
<td>16.0</td>
<td>14.8</td>
<td>16.4</td>
<td>17.0</td>
<td>15.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Self Employed, Unpaid &amp; Domestics</td>
<td>14.0</td>
<td>13.3</td>
<td>12.8</td>
<td>12.6</td>
<td>12.3</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Source: State of Oregon, Employment Division, Dept. of Human Resources
the year 2000. Lumber and wood products are expected to remain strong throughout the next twenty years. The region's timber supply appears adequate to support existing production levels as well as to accommodate opportunities for new product development in the soft pine market.

During recent months, the nation has gone through another gasoline shortage and major price increases. Many citizens have expressed concern about the effect increased shortages or higher prices will have on the County and area employment in the future. Studies conducted for Administrative School District No. 1 (the Bend School District) analyze the tri-county economy and the Bend Area, with respect to the impact of gasoline shortages. These reports are generally optimistic about the area's role as a tourist destination. While longer range automobile tourism might be affected, the area's strength lies in its skiing, hunting, fishing, and resorts as destinations. The tremendous growth in the area's non-manufacturing employment from 1970-78 (118.9 percent) represents a "catching-up" period. Prior to the mid-1970's the area was under-represented in many of the non-manufacturing categories. This reflects a trade drain from central Oregon to the Willamette Valley. Bend is now capturing the local trade and beginning to emerge as a trade and service center. Several recent developments support this contention:

(1) The addition in 1979-80 of over 400,000 square feet of new retail space, most of which is located in two integrated mall developments.

(2) The emergence of the St. Charles Medical Center as a major regional facility, boasting a staff of more than 90 physicians in the 182-bed facility.

(3) The number of firms in the services sector in Deschutes County increased nearly 50 percent between 1973 and 1977 (Leland and Hobson); most of this growth occurred in the Bend Urban Area.

(4) Full and part-time credit enrollment at Central Oregon Community College is nearing 2,000 students, an enrollment threshold which produces scale economics in operation sufficient to support broadening of the curriculum offerings.

(5) The planned expansion of facilities at the Mt. Bachelor Ski Area from the existing capacity of approximately 8,000 skiers per day to a level of approximately 12,000 by 1985, and to 20,000 skiers per day by the end of the century.
Detailed analysis indicates that retail trade, finance, insurance, and real estate services consistently show a concentration in the Bend Area greater than necessary to support the local population. At the present time it appears that between 1,400 and 1,500 jobs within a total employment of 18,000 can be directly associated with non-manufacturing activities supported from outside the area. The available data do not allow segregation of this share of employment into its components. Its basic elements are assumed to be (1) regional demand for trade and services and (2) the demand for recreational activities. Recreational demand most likely dominates at present. However, the current rapid growth in the commercial sector, particularly retail trade in Bend, supports the contention that while recreational demand will continue to grow and be important, it will soon be outstripped by regional demand. This suggests two conclusions: (1) recreational demand will continue to be an important source of jobs and income for the Bend economy, and (2) Bend is beginning to establish itself as a full-scale regional center for Central Oregon. As this continues, Bend will capture a greater share of the regional trade market and benefit from the resulting diversification.

Several forecasts of future employment in Deschutes County are available. This plan uses projections derived from a recent study of the Bend Area economy (1) because they appear to more accurately reflect conditions specific to the County economy.

These forecasts of future employment, 1980-2000, are presented in Table 3. They are derived from County projections and assume that the Bend Urban Area's share of total County employment will increase gradually during the planning period from 65 percent in 1980 to 75 percent in 2000. This assumption is consistent with the County Comprehensive Plan objectives of limiting future development outside of the urbanized areas in Deschutes County. The recent business and attitude surveys by Dr. Fredrick Obermiller found that most people in the County, and particularly Bend, felt that Redmond would be the growth center in the coming years. This is the reverse of what has been happening.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilian Labor Force</td>
<td>18,630</td>
<td>22,920</td>
<td>28,180</td>
<td>35,420</td>
<td>43,130</td>
</tr>
<tr>
<td>Total Wage and Salary</td>
<td>14,160</td>
<td>17,620</td>
<td>21,740</td>
<td>27,310</td>
<td>33,430</td>
</tr>
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<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durable</td>
<td>3,070</td>
<td>3,380</td>
<td>3,990</td>
<td>4,940</td>
<td>5,850</td>
</tr>
<tr>
<td>Non-durable</td>
<td>330</td>
<td>390</td>
<td>430</td>
<td>440</td>
<td>450</td>
</tr>
<tr>
<td>Non-Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade</td>
<td>3,190</td>
<td>4,160</td>
<td>5,210</td>
<td>6,410</td>
<td>7,690</td>
</tr>
<tr>
<td>Services</td>
<td>2,220</td>
<td>3,250</td>
<td>4,190</td>
<td>5,200</td>
<td>6,410</td>
</tr>
<tr>
<td>Government</td>
<td>2,630</td>
<td>3,290</td>
<td>3,910</td>
<td>4,910</td>
<td>6,020</td>
</tr>
<tr>
<td>Other</td>
<td>3,050</td>
<td>3,540</td>
<td>4,490</td>
<td>5,850</td>
<td>7,460</td>
</tr>
</tbody>
</table>

Source: Derived from "An Analysis of the Bend Area Economy." Pacific Economica, Table 3, Page 9, September, 1979
Assuming that the historical average of rate unemployment persists, these data imply that between 1980 and 2000 an estimated 22,700 new jobs will develop within the Bend area economy. The bulk of these will occur in wage and salary employment, numbering nearly 19,300. The remainder will occur in agricultural and self-employed occupations.

Several conclusions can be drawn from these data:

* Growth in manufacturing employment will average approximately 90 new jobs yearly in the first decade of the planning period, but at double that annual rate during the second decade of the period. This implies that industrial land requirements may become increasingly important as manufacturing employment expands in the last half of the planning period.

* The strong growth in non-manufacturing employment, nearly 16,500 during the 20 year period, reflects the area's function as a regional trade center as well as a major recreation/tourist destination.

* Wholesale and retail trades employment will increase at an annual average rate of 4.7 percent. This strong growth will result from the area's continuing development as a regional trade center.

* Dramatic growth in the services sector reflects both the continuing effect on Bend's role as a regional center as well as the expected expansion of recreational and destination resort/tourist facilities in the area.

* Much of the area's future "basic" employment opportunities will occur within the non-manufacturing sectors.

Clearly, this level of continued growth will present any number of challenges to viable planning for the area's future; e.g., such impacts as regional trade malls on the City's outskirts against maintaining the competitive integrity of the downtown area is already an issue which will require careful scrutiny and monitoring. The siting of facilities associated with recreational opportunities, especially winter sports, must be carefully evaluated and coordinated with the long-term development of adequate public facilities. The provision of adequate land resources to support the expected growth in employment is essential.

Most importantly, however, is not whether growth will occur in the Bend area, but how growth will be managed. Recognizing early the potential effects of changes in the area's economy discussed in this chapter will, at least, improve the likelihood that the City and County can establish a responsive management policy.
The management strategy must deal with the constraints and opportunities of the forecasted development. The following section concludes with a brief inventory of the apparent opportunities and constraints affecting future economic development in the Bend area. These are listed below:

ADVANTAGES

* The area's natural resources and recreational amenities will support and foster continued diversification and growth in the economic base of the community.
* A large employable labor force of skilled workers will continue to attract new industries to the area particularly those characterized as "foot loose" and able to locate where they wish.
* Adequate land is available on the fringe of the urban area to accommodate industrial development without adversely impacting forestry or agricultural activities.
* The area's role as a regional trade and services center has begun to be firmly established and can be expected to continue to develop in the future.

DISADVANTAGES

* The fundamental constraints to effecting future economic development revolve around the community's ability and desire to finance and develop the necessary public facilities to support the expected growth. Among the most prominent factors likely to restrict future development are:

  Availability of variety of sites with full services and adequate access.

  Continued congestion on Highway 97 without the construction of alternatives and major arterials to access new industrial and commercial areas.

  Fiscal budget limitations that inhibit the City and County from providing necessary infrastructure.
Assessing the willingness of the community to meet these challenges is a necessary ingredient of change which is beyond the scope of this plan. However, if the community is able to resolve or mitigate the adverse impacts likely to accompany the dynamic growth expected for the area, the economic future of the Bend area economy appears to be bright and healthy.
CHAPTER 2

POPULATION ANALYSIS AND PROJECTIONS

The City, Urban Area, and County have experienced substantial growth in the last eight years. Table 8 gives the history of population growth for the recent past. This growth is the result of immigration. The characteristic of the immigrants vary with location in the County. A recent review of people moving to the Bend Area found that the average household size was 2.87 persons, with an average of one child under the age of 17 per family. (2)

This household size is generally higher than the 2.7 persons/household found during a sample survey conducted by Portland State Center for Population and Research in 1977. Future population size is dependent on household size as well as employment opportunities. If the household size does not decline as rapidly as forecast by B.P.A. or Pacific Northwest Bell, the result could be less demand for housing or a larger population in the year 2000.

The survey also indicated that retirees composed 8 percent of the inmigrants, which is close to the state average for older (60+) age groups. Perhaps taking this survey into consideration with such other data as income tax returns, school enrollments, electrical connections, it is reasonable to say that our current population is larger than that estimated by Portland State, as shown in Table 4.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Population Growth</th>
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<tr>
<td>City of Bend</td>
<td>11,409</td>
</tr>
<tr>
<td>Bend Urban Area</td>
<td>19,150</td>
</tr>
<tr>
<td>Deschutes County</td>
<td>21,812</td>
</tr>
</tbody>
</table>

* Estimates by Portland State and City (July)
** Estimates by City
Table 5 gives the rates of growth for the Urban Area, City and County. As can be seen, the unincorporated Urban Area has shown the largest percentage of growth, and the highest rate; 57.6% of the County's growth has occurred in the Bend Area. Several factors in the future will change this trend in the Urban Growth Boundary. Annexations by the City and the installation of the City's regional sewerage system will cause population growth to accelerate within the City. The rate of growth within the Urban Area may decrease, however, the overall growth may increase as the County adopts controls that encourage urban development and discourage scattered rural subdivision.

**TABLE 5**

City, Urban, Unincorporated
Portion of UGB and County
1970-1979

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent</th>
<th>Compound Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>4,202</td>
<td>30.60%</td>
<td>3.02%</td>
</tr>
<tr>
<td>Urban</td>
<td>13,850</td>
<td>51.30%</td>
<td>6.25%</td>
</tr>
<tr>
<td>Unincorporated</td>
<td>9,648</td>
<td>77.35%</td>
<td>12.00%</td>
</tr>
<tr>
<td>County</td>
<td>24,048</td>
<td>79.03%</td>
<td>6.60%</td>
</tr>
</tbody>
</table>

Based on the expected employment growth, the populations forecast for the City, County, and Urban Area are shown in Table 6.

**TABLE 6**

Population Forecast
1978-2000

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Bend</td>
<td>19,000</td>
<td>23,000</td>
<td>28,000</td>
<td>118.95%</td>
<td>4.00%</td>
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<tr>
<td>Urban Area</td>
<td>36,000</td>
<td>48,000</td>
<td>58,400</td>
<td>131.39%</td>
<td>4.28%</td>
</tr>
<tr>
<td>County</td>
<td>55,000</td>
<td>73,602</td>
<td>93,900</td>
<td>133.09%</td>
<td>4.50%</td>
</tr>
<tr>
<td>Bend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Previously no attempt was made to forecast the City of Bend's population, since
several factors, such as the annexation policy, sewerage design area, and water system
capacities were unknown.

The City has adopted a policy that encourages the annexation of undeveloped
residential areas, the sewerage master plan and service area are known, and the water
system planning encomposes the sewer area. As can be seen, the City's population is
expected to grow at approximately four percent annually, while the county and Urban
Area are expected to grow at a greater rate through 1995, then the rate of growth is
expected to decline.

This forecast closely parallels the forecast done for the school district and by
the County Economic Committee for the County's Comprehensive Plan. These forecasts
all envision much more rapid growth than has been forecast by Pacific Northwest Bell,
Bonneville Power Administration, or various state agencies. These institutional fore-
casts have been historically low for the Bend Area. The forecasts above are based on
local experience, a careful analysis of the local economy, and the expectation for
growth within the economy.

The City and Urban Area have experienced a substantial period of growth in the
70's. The forecast for the 80's and 90's is for continued growth. This forecast
gives the community a tool to measure how much capital expenditures will probably be
needed for sewer, water, streets, etc., to accommodate these changes. The forecasts
also provide a basis to determine land needs for commercial, industrial, residential,
and public purposes.
CHAPTER 3
LAND DEMAND AND ABSORPTION RATES
ANALYSIS AND PROJECTIONS

Population and economic projections give us a sense of scale for public facilities and for different land uses. Using these projections as a base, the comprehensive plan can allocate land within the Urban Area for the principal uses: public, residential, commercial, and industrial.

Housing and Residential Land Use

In October 1979, the Bend Area contained a total housing inventory of 12,869 dwelling units. This count was based on the 1974 land use survey, updated by survey and building records. In 1974, 68.5 percent of the housing inventory was within the City of Bend. Today, 55.8 percent of the total inventory is within the City.

The majority of the inventory is single family dwellings. Table 7 gives the breakdown of the inventory for the City, Urban Area, and planning area, and the changes from 1974 to 1979. The majority of the multiple family units have been within the City, and the majority of the mobile homes have located in the County.

In 1974, 13.2 percent of the total housing in the Urban Area was mobile homes. In 1979, 15.2 percent are mobile homes. The value of the housing has risen since 1974. The Multiple Listing Bureau reports that the average price of homes sold in 1979 was $53,524; this was up 29% from 1978. Rental rates have also gone up within the community, reflecting inflation, the rapid period of growth, and a tight housing situation.

Against this background, the population forecasts provide a basis for future residential land needs calculations. The following assumptions are used in the calculations.

The projections indicate a strong demand for housing, and will result in a substantial expansion of the total housing inventory.
### TABLE 7

**Housing Inventory**  
February 1974 - October 1979

<table>
<thead>
<tr>
<th></th>
<th>1974</th>
<th></th>
<th>1979</th>
<th></th>
<th>Percent of Change</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
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<td>1,196</td>
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<tr>
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<td>177</td>
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<td>11.9%</td>
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<td>1,962</td>
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<td>12,861</td>
<td>100.0%</td>
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Since much of the existing City housing is older, a demand for replacement housing will exist. This demand will create an increasing dimension for the community in the next 20 years.

Housing construction will respond to these opportunities; however, the local supply-demand relationship is expected to remain tight as long as current economic conditions relating to high costs, high interest, and tight money continue.

Expansion of the size of local housing inventory will continue to produce substantial outward expansion of the highly urbanized portions of Bend. This will occur in the form of subdivision development. The location of future residential construction will be determined primarily by local decisions relating to water, sewer, other utility, and street services. The sewer service area jointly adopted by the City and County is expected to receive substantial development in the future.

The City's use of Community Development Block Grant funds will aid in the conservation of existing houses, preserving some of the lower cost inventory.

Tables 8 and 9 give the building permit history for the City, and the subdivision activity within the Urban Growth Boundary, respectively. The City has been experiencing about 45 percent of its housing being built as multiple family units. Within the UGB multiple family units represented only 18 percent of the new stock. Multiple family units increased their share from 15.39 percent in 1974 to 16.22 percent in 1979.

The subdivision activity indicates that the majority of the single family lots created in the Urban Area have been 20,000 square feet or larger. In fact, only 19 of the 137 subdivisions in the planning area had densities with three lots per acre. This is due to the predominate use of septic tanks and drainfields, and the necessity for larger lots to provide adequate areas for the initial, plus replacement, area for drainfields. Lots are also bigger due to lave rock outcroppings, and most importantly, the desire for more space or livability. A review of the preliminary plats that are approved reveals that some 3,000± lots have received approval during the last five years that have not been recorded. The vast majority of these lots are in the 1/2 acre parcel size.

-17-
### TABLE 8

#### ADDITIONS - HOUSING SUPPLY

**CITY OF BEND**

1970-1979

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<td>138</td>
<td>368</td>
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## TABLE 9
Subdivision History
1974 to Present

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<th>1975 Acres</th>
<th>1976 Acres</th>
<th>Lots</th>
<th>Lots/Acre</th>
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<td>39.03</td>
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<td>.58</td>
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Subdivision History
1974 to Present

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| Reed Market East 2nd      | 13.12 | 22   | 1.67      |
| Suntree                   | 20    | 30   | 1.50      |
| Vintage Faire             | 28    | 45   | 1.60      |
| Vista Del Sol *           | 60.27 | 24   | .39       |
| Woodside Ranch III *      | 96.2  | 38   | .39       |
| Woodside Ranch IV *       | 56.35 | 22   | .39       |
| Woodside Ranch V *        | 112   | 63   | .56       |
| **Subtotal**              | 779.1 | 954  | 1.22      |

Exhibit 22
Page 50 of 180
Subdivision History
1974 to Present

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### Subdivision History
1974 to Present

**1978 - Continued**

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<tr>
<td>American West</td>
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</tr>
<tr>
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<td>13.2</td>
<td>22</td>
<td>1.66</td>
</tr>
<tr>
<td>West Ridge</td>
<td>40.88</td>
<td>45</td>
<td>1.10</td>
</tr>
<tr>
<td>East Bluff</td>
<td>11.6</td>
<td>18</td>
<td>1.55</td>
</tr>
<tr>
<td>Warrington Add.</td>
<td>4.77</td>
<td>6</td>
<td>1.25</td>
</tr>
<tr>
<td>Boyd Shopping Center 1</td>
<td>20.09</td>
<td>10</td>
<td>0.50</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>978.0</td>
<td>1401</td>
<td>1.43</td>
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</tbody>
</table>

**1979**

<table>
<thead>
<tr>
<th>Subdivision</th>
<th>Acres</th>
<th>Lots</th>
<th>Lots/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladera</td>
<td>14.1</td>
<td>23</td>
<td>1.63</td>
</tr>
<tr>
<td>Thomson Estates</td>
<td>3.39</td>
<td>6</td>
<td>1.76</td>
</tr>
<tr>
<td>Marc Estates</td>
<td>10.18</td>
<td>18</td>
<td>1.76</td>
</tr>
<tr>
<td>Edgewood South</td>
<td>20.74</td>
<td>35</td>
<td>1.68</td>
</tr>
<tr>
<td>Valley View</td>
<td></td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Duncan Heights</td>
<td>6.38</td>
<td>12</td>
<td>1.88</td>
</tr>
<tr>
<td>Duncan Heights 1st</td>
<td>4.68</td>
<td>9</td>
<td>1.92</td>
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<tr>
<td>Chuckanut Estates Phase I</td>
<td>7.05</td>
<td>15</td>
<td>2.12</td>
</tr>
<tr>
<td>Desert Woods IV</td>
<td>31.01</td>
<td>106</td>
<td>3.41</td>
</tr>
<tr>
<td>Hawthorne Townhouses 2</td>
<td>.25</td>
<td>4</td>
<td>16.00</td>
</tr>
<tr>
<td>Tara View 1st</td>
<td>15.1</td>
<td>22</td>
<td>1.45</td>
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<tr>
<td>River Bluff</td>
<td>29.75</td>
<td>51</td>
<td>1.71</td>
</tr>
<tr>
<td>BID IV 1</td>
<td>21.10</td>
<td>22</td>
<td>1.04</td>
</tr>
<tr>
<td>Brinson Industrial II 1</td>
<td>9.26</td>
<td>5</td>
<td>0.53</td>
</tr>
<tr>
<td>Gemstone</td>
<td>4.53</td>
<td>10</td>
<td>2.21</td>
</tr>
<tr>
<td>Reed Industrial Area 1</td>
<td>40.00</td>
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<td>0.52</td>
</tr>
<tr>
<td>Quail Hollow 2</td>
<td>6.7</td>
<td>80</td>
<td>11.87</td>
</tr>
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</table>

---

Exhibit 22
Page 52 of 180
### Subdivision History
1974 to Present

<table>
<thead>
<tr>
<th>1979 - Continued</th>
<th>Acres</th>
<th>Lots</th>
<th>Lots/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valhalla Heights Phase III</td>
<td>16.96</td>
<td>41</td>
<td>2.41</td>
</tr>
<tr>
<td>Medical Center 1</td>
<td>14.15</td>
<td>12</td>
<td>0.84</td>
</tr>
<tr>
<td>Rolling Hills</td>
<td>8.51</td>
<td>41</td>
<td>4.81</td>
</tr>
<tr>
<td>Mt. Vista</td>
<td>16</td>
<td>25</td>
<td>1.56</td>
</tr>
<tr>
<td>Star Bright Estates</td>
<td>3.68</td>
<td>18</td>
<td>4.89</td>
</tr>
<tr>
<td>Juniper Creek</td>
<td>9.75</td>
<td>45</td>
<td>4.61</td>
</tr>
<tr>
<td>Brinson Industrial Park 1</td>
<td>6.5</td>
<td>4</td>
<td>0.61</td>
</tr>
<tr>
<td>Stevenson Ranch *</td>
<td>160</td>
<td>5</td>
<td>0.03</td>
</tr>
<tr>
<td>Renwick Acres</td>
<td>6.35</td>
<td>30</td>
<td>5.83</td>
</tr>
<tr>
<td>Chukar Ridge</td>
<td>3.09</td>
<td>17</td>
<td>5.50</td>
</tr>
<tr>
<td>Homestead 5th</td>
<td>35.5</td>
<td>59</td>
<td>1.66</td>
</tr>
<tr>
<td>Ranch Village</td>
<td>35.5</td>
<td>48</td>
<td>1.35</td>
</tr>
<tr>
<td>Tanglewood</td>
<td>19.59</td>
<td>76</td>
<td>3.88</td>
</tr>
<tr>
<td>East Knoll</td>
<td>39.61</td>
<td>39</td>
<td>0.98</td>
</tr>
<tr>
<td>Section of Sunrise Village</td>
<td>11.87</td>
<td>16</td>
<td>1.34</td>
</tr>
<tr>
<td>Morningstar</td>
<td>140.64</td>
<td>11</td>
<td>0.07</td>
</tr>
<tr>
<td>The Farm *</td>
<td>2.07</td>
<td>4</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Subtotal: ___ 946  ___

<table>
<thead>
<tr>
<th>1980 - through February 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead 6th Phase</td>
</tr>
<tr>
<td>Ranch Village 1st Addition</td>
</tr>
<tr>
<td>Kings Forest 3rd Addition</td>
</tr>
</tbody>
</table>

Subtotal: 53.70 80 1.48

| 1974  | 250.29  | 347   | 1.38      |
| 1975  | 78.69   | 42    | 0.53      |
| 1976  | 326.66  | 470   | 1.43      |
| 1977  | 849.1   | 975   | 1.14      |
| 1978  | 984.74  | 1,121 | 1.44      |
| 1979  | ___     | 946   | ___       |
| 1980 - Feb. 14  | 53.70  | 80    | 1.48      |

Totals: ___ 4,281 (1,428 lots in City)

* Within 1974 Planning area, outside UGB and IUGB
1 Industrial and commercial developments
2 Multiple family development

---

Exhibit 22
Page 53 of 180
Since February, 1974 the housing distribution has changed as shown below:

<table>
<thead>
<tr>
<th></th>
<th>1974</th>
<th>Percent</th>
<th>1979</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>5,936</td>
<td>71.8</td>
<td>7,184</td>
<td>59.4</td>
</tr>
<tr>
<td>Unincorporated</td>
<td>2,335</td>
<td>28.2</td>
<td>4,913</td>
<td>40.6</td>
</tr>
<tr>
<td>Urban Growth Boundary</td>
<td>8,271</td>
<td>100.0</td>
<td>12,097</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Only 1,428 of the 4,281 new lots created in the Urban area were inside the City. In 1978 the City began construction of its regional sewerage system. Annexation, sewer, and water policies have been altered, resulting in increased subdivision activity within the City. Based on these trends, it is expected that the average density for single family development will approach 3.5 units per acre. Multiple family development is expected to approach 20 units per acre by the year 2000.

The density of housing types, together with household size, are used to compute future housing units needed to house the forecasted population. In most recent studies of household size the present trend towards smaller size is forecast to continue. The County's forecast is for overall household size to drop to 2.32 persons/household by 2000. In the economic studies conducted for the school district, it was found, from a survey of recent immigrants, that the average household size was 2.87 persons/household.

Since the area's population forecast is based on expansion of basic jobs, it seems possible that the Bend Area will not experience quite as sharp a drop in persons/household as the County as a whole. Sisters and LaPine retirement areas reduce the overall figures. Therefore, for a basis of future housing needs calculations, we will assume that the average household size will be 2.5 persons/household in 2000.

Using the household size and density factors above, the following table gives the housing needs by five year intervals through the year 2000.
Whether the configuration of the "commercial" workplace, as it relates to employee densities can or should be changed is a subjective issue. Change can be induced by the attraction of selected types of commercial activities. For example, a regional or headquarters office complex or large health care facilities will typically boost employee per acre ratios. Expansive shopping mall complexes or land-extensive lodging facilities will tend to reduce these ratios. Both of these types of changes have occurred and are likely to occur again in the Bend economy. As a consequence, selection of a final ratio is a mix of estimating the type of employment likely to occur and, by controlling the amount of land available, making adjustments to the existing ratio of employees per acre. At present, the employment density for commercial activities, that is activities which would require land designated commercial, is approximately 20 employees per acre.*

Although this ratio will likely increase for some types of development during the planning period, it appears highly likely that other sources of growth will offset changes in the density ratio. For example, a significant portion of the employment growth in trade and services is likely to occur in a physical setting with densities of 23-35 employees per acre. In contrast, however, the strong growth expected in recreation/tourist related activities, particularly lodging, is expected to be land-extensive and have a very low employment ratio. As noted earlier, the major expansion of Mt. Bachelor will have a profound impact on Bend as a tourist destination. For these reasons, the land allocations presented below assume that, on the average, the employment density throughout the planning period will remain at 20 employees per acre for land in commercial use.

Existing land use data are presented in Table 15. These data identify the type of land use for each designated zoning classification. Approximately 954 acres are presently designated for commercial use. Of this amount, the pattern of use is:

399 acres currently used for commercial;
64 acres are in public, institutional, or industrial uses, and;
167 acres are in residential use.

* This ratio is based on a study of site specific employment patterns done by the City Planning Department staff in 1979.
### TABLE 11

Housing Needs

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>p/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>33,000</td>
<td>12,097</td>
</tr>
<tr>
<td>1985</td>
<td>48,000</td>
<td>19,200</td>
</tr>
<tr>
<td>1990</td>
<td>58,400</td>
<td>23,360</td>
</tr>
<tr>
<td>1995</td>
<td>71,000</td>
<td>28,400</td>
</tr>
<tr>
<td>2000</td>
<td>84,000</td>
<td>36,520</td>
</tr>
</tbody>
</table>

**Housing Mix:** During the past five years, multi family units grew at 3.6 percent per year. If this rate increased to 6.3 percent per year, there would be 6,825 units in the year 2000; this would represent 19.7 percent of the total housing stock. For the purposes of this study, the 25 percent figure appears to be reasonable for the following reasons:

1. The share of multiple family units would increase substantially at nearly 7.5 percent annually, to approximately 8,330 units.
2. The desire for single family homes will continue to be strong.
3. The state and federal assistance programs will continue to aid single family buyers.
4. Home ownership has increased rapidly throughout the nation during the 70's.
5. During the past five years multiple family units represented only 14.86 percent of the new units constructed. (689 MFU's compared with 3,947 SFU's.)

### TABLE 12

Housing Mix

<table>
<thead>
<tr>
<th>Year</th>
<th>MFD's</th>
<th>SFD's</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>16.5%</td>
<td>83.5%</td>
</tr>
<tr>
<td>1985</td>
<td>19.0%</td>
<td>81.0%</td>
</tr>
<tr>
<td>1990</td>
<td>21.0%</td>
<td>79.0%</td>
</tr>
<tr>
<td>1995</td>
<td>23.0%</td>
<td>77.0%</td>
</tr>
<tr>
<td>2000</td>
<td>25.0%</td>
<td>75.0%</td>
</tr>
</tbody>
</table>
It appears that the density of housing types will approach the maximum allowable within the City by the year 2000. For this analysis, the average figure for MFD's of 20 DU/acre and SPD's of 3.5 DU/acre will be used. This will take into account the existing pattern of lot sizes and approved lots in single family development averaging slightly larger than one half acre per lot and the development of high density apartment projects in areas designated for 40 units/acre. Table 13 summarizes the land needed for residential uses for the year 2000.

**TABLE 13**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>4,245</td>
</tr>
<tr>
<td>Multi Family</td>
<td>318</td>
</tr>
<tr>
<td>Total</td>
<td>4,562</td>
</tr>
</tbody>
</table>

Part of the single family housing growth will occur as mobile homes. In 1974, mobile homes represented 15.4 percent of the total housing stock, and in 1979 this had increased to 16.2 percent. During the five year period, 19.4 percent of the new housing took the form of mobile homes. It appears that mobile homes will continue to represent 20 percent of the new additions of the housing stock. These could take the form of mobile home subdivisions, mobile home parks, or planned unit developments.

During the next 20 years, the pattern of residential growth is likely to shift from predominate growth in the south and southeast to more balanced growth throughout the Urban Area. The pattern will be shaped to a great extent by the availability of the City's sewer system.

A large area of new development occurring in the Bend Area is aimed at the second home/destination resort market. Currently Riverhouse II, Mt. Bachelor Village, and Sunrise Village, comprising some 300 acres, are being built for this purpose. In part this is basic employment related activity, however these developments utilize residential areas. There also exists a demand within the community for second homes, "ski shacks". The County has estimated that 10 percent of the housing is used in this manner. This will cause a need for an additional area for these activities; at least another 425 acres of residential land.
COMMERCIAL LANDS ANALYSIS

The projected land requirements for commercial activities are based upon the increase in employment presented in preceding sections of this plan. Two basic questions must be considered:

(1) What is the expected level of employment, and

(2) Is the configuration, i.e., employment density measured in employees per acre, likely to change from the characteristics observed at present?

Although employment gains will occur incrementally, the allocation of land must occur now, at least in designations that will protect specialized needs for future use and allow development in a timely manner. Issues of compatibility with surrounding uses, efficiency in the provision of public services, scale economies of development and acceptability in the marketplace are all important factors affecting the choice of which and how much land in the Bend Urban Area will be used for what purposes.

The initial step used in this plan to allocate commercial land has been to determine a likely employment base (see Table 3). These data are used to calculate the additional workers employed in the community during the planning period. The results of these calculations are presented in Table 14.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade</td>
<td>970</td>
</tr>
<tr>
<td>Services</td>
<td>1,030</td>
</tr>
<tr>
<td>Government *</td>
<td>400</td>
</tr>
<tr>
<td>Other</td>
<td>490</td>
</tr>
</tbody>
</table>

* Government excludes employment in public education categories. The ratio used to allocate employment to education is 39.4 percent of total government employment, based on historical patterns in the county and the state.

Source: Derived from Table 3
### TABLE 15

**COMMERCIAL LANDS SUMMARY**

**Existing Land Use by Zone Designations**

<table>
<thead>
<tr>
<th>How Used</th>
<th>CN</th>
<th>CC</th>
<th>CL</th>
<th>CG</th>
<th>CH</th>
<th>CB</th>
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</thead>
<tbody>
<tr>
<td>Vacant</td>
<td>--</td>
<td>14.30</td>
<td>114.24</td>
<td>16.73</td>
<td>163.80</td>
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<tr>
<td>Residential</td>
<td>0.22</td>
<td>9.27</td>
<td>52.94</td>
<td>20.76</td>
<td>83.55</td>
<td>0.71</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.75</td>
<td>20.99</td>
<td>172.28</td>
<td>12.82</td>
<td>171.16</td>
<td>20.97</td>
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<tr>
<td>Industrial</td>
<td>--</td>
<td>0.16</td>
<td>18.64</td>
<td>4.32</td>
<td>19.28</td>
<td>1.75</td>
</tr>
<tr>
<td>Other</td>
<td>--</td>
<td>0.90</td>
<td>11.26</td>
<td>2.60</td>
<td>1.70</td>
<td>2.89</td>
</tr>
<tr>
<td>TOTALS</td>
<td>0.97</td>
<td>45.62</td>
<td>369.36</td>
<td>57.23</td>
<td>455.01</td>
<td>26.32</td>
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</tbody>
</table>
Within these land use categories, the lands used for commercial and public, institutional, and industrial will not likely change during the planning period. These two categories account for approximately 463 acres of the existing inventory. Half of the 167 acres in residential use will likely be removed from the inventory or converted to commercial uses. In total, approximately 547 acres of the existing inventory have already been used; therefore, approximately 393 acres of land within the present inventory is available to meet future needs.

Using the employment estimates from Table 14, sufficient commercial land must be allocated to accommodate an expected workforce of 15,400. In total, this will require an additional 770 acres of commercial land for the 20 year planning period. Final requirements are determined by deducting from this amount the acreage available in the existing inventory 393.07 acres. Therefore, during the planning period, it will be necessary to provide an additional 377 acres of land for commercial uses. These requirements are reflected in the calculations and data in the following Table.

TABLE 16

Commercial Land Requirements
In Acres, 1980-2000

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Land Requirement - 20 employees/acre</td>
<td>145</td>
<td>175</td>
<td>210</td>
<td>240</td>
<td>770</td>
</tr>
<tr>
<td>Less Land in Inventory</td>
<td>393.07</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>393.07</td>
</tr>
<tr>
<td>Additional (net) Land Required</td>
<td>-0-</td>
<td>175</td>
<td>210</td>
<td>240</td>
<td>376.93</td>
</tr>
</tbody>
</table>

Combining existing and future requirements, the Bend Urban Area will require approximately 1233 acres of commercially designated land by the end of the planning period. The additional land has been designated on the plan map.
CHAPTER 5

INDUSTRIAL LANDS ANALYSIS

The data presented in Table 3 indicate an expected increase in manufacturing employment of approximately 2,800 workers during the planning period. This represents the minimum workforce for which industrial land must be allocated.

A review of industrial activity in the Bend Urban Area at present indicates a relatively low employment density ratio of approximately 7 employees per acre. Forecasts of future manufacturing employment opportunities for the area indicate that the first decade of the planning period will conform with the existing patterns. However, an expected increase in employment in "foot loose" and high technology industries during the second half of the planning period will likely increase the ratio to the range of 15 to 20 employees per acre, averaged for all types of industrial employment. Thus, the allocation presented in Table 17 uses an employee/acre ratio of 7 between 1980 and 1990, and a ratio of 17.5 thereafter.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Land Base in Acres</td>
<td>45</td>
<td>90</td>
<td>55</td>
<td>55</td>
<td>245</td>
</tr>
</tbody>
</table>

The existing industrial land base, designated for industrial uses, is approximately 1542 acres. The configuration of use, in approximate acreages is:

- 614 acres are in use for industrial purposes;
- 218 acres are in non-industrial uses, and;
- 710 acres are vacant, open, or range

* This ratio excludes the impact of Brooks Scanlon Inc. If included, the ratio falls to approximately 6 employees per acre. The Brooks Scanlon data are omitted because the magnitude of its impact tends to distort the analysis.
There is little likelihood that the 165 acres currently in non-industrial use will convert to industrial usage during the planning period. This is due to the fact that the majority of this land is being used by City, County, and State for shops and storage. In addition, approximately 200 acres of the land vacant is not suitable for industrial use, due to rock or steep slopes. Much of the undeveloped land that has recently been developed has been used by heavier commercial/warehousing activities. One is being developed on a land lease basis, which does not provide opportunities for industries desiring to own their own sites. The available industrial areas are generally held by three owners, limiting the market. The major deficiency of most sites is the lack of full services and, most importantly, adequate arterial street access. Currently there are no campus type industrial areas developed; however, the recently approved west side site may fulfill this option. The 1979 advisory committee study on industrial lands identified larger sites as the greatest long range need, particularly since the majority of sites within the area are five acres or less in area.

Because the site requirements for industrial development are typically far more stringent than for commercial uses, calculation of gross land requirements for industrial uses must recognize the limited number of ownerships and the lack of larger sites. Therefore, additional acres have been designated to meet current needs. The justification for this is the absence of large parcels of industrial land protected by preclusive zoning. Development patterns will often limit designation of lands for industrial in the future if not protected now. The urban area's existing inventory is insufficient to meet these needs. As a consequence, 245 acres additional land is being designated for industrial purposes.

The City and County recognize that most of the analysis used to derive land base requirements, carefully constructed as it is, is nonetheless based on estimates and forecasts of future behavior. Modifications to these data and allocations will undoubtedly be necessary in the long-term course of the planning process. However, as presented above, these allocations represent the best professional judgments of planners and economists familiar with both the City's planning goals and the processes of economic development.
## Outer Urban Growth Boundary
### Proposed Zoning and Land Use Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>UAR-10 Acres</th>
<th>SR-2f Acres</th>
<th>RL</th>
<th>RS</th>
<th>RM</th>
<th>RN</th>
<th>CN</th>
<th>CC</th>
<th>CL</th>
<th>CG</th>
<th>CH</th>
<th>CB</th>
<th>IL</th>
<th>IG</th>
<th>IP</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range, Open and Vacant Acres</td>
<td>4342.98</td>
<td>429.29</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>952.02</td>
</tr>
<tr>
<td>Residential and Trailer Parks</td>
<td>84.25</td>
<td>61.26</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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**TOTAL AREA:** 6630.14 Acres
### INNER URBAN GROWTH BOUNDARY

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**Total Area:** 17954.05 Acres
## URBAN GROWTH BOUNDARY
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**TOTAL AREA:** 24505.59 Acres
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**TOTAL AREA: 6630.54 Acres**
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**TOTAL AREA:** 24584.59 Acres
THE GENERAL PLAN

INTRODUCTION

In the broadest sense, planning seeks to guide future development of an area within a framework of goals and objectives which are consistent with the physical characteristics, attitudes, and resources of the community. The basic aim of the general plan is to organize and coordinate complex interrelationships between people, land, resources, and facilities in such a way as to protect the future health, safety, welfare and convenience of the citizens. The strength of such a plan lies in its comprehensive approach to the problems of urban growth. It deals with the many public and private uses of land, setting forth relationships and recommendations in graphic and descriptive form as a document to serve as a guide for future growth and change.

The general plan provides a basic for coordinated action by enabling various public and private interests to undertake specific projects with a consistent understanding of community goals and objectives. The plan functions as a working frame of reference for government officials and administrators by establishing community policies and by specifying methods and standards for implementation of these policies. Public facilities, such as schools, parks, streets, civic areas, libraries, and fire stations, can be planned, and a program for land acquisition and construction can be prepared in advance of need so that the services will be available when and where they are needed.

These same community policies serve individual property owners and private interest groups as a means of evaluating their individual decisions in light of community objectives. They are able to determine how their individual interests can best be served in a manner which is consistent with the plan. They are assured by the plan that once they commit their investment to the land, there will be a reasonable continuity of land policies which will protect their interests.

The plan also provides a guide to the various public and private utilities charged with the responsibility of providing services to the community. Future service demands can be anticipated and facilities planned so that development can take place in the most economical and timely manner.

In any area, each individual and organization participates in some way in the planning process. The community planning process is the continuing effort to coordinate short-range and long-range private and public actions towards the fulfillment of generally accepted overall community goals. The general plan provides the foundation for the planning process by establishing long-range goals and objectives and by providing, through its various elements, an integrated view of future public and private development patterns in the community. It is not the last word, nor is it the first. Rather, it is an important tool to help the community identify problems and to take steps necessary to solve them before the cost of desirable solutions is beyond the community's economic capabilities to achieve.

The planning process is in itself a means of constantly evaluating the general plan. It is essential that the plan be adaptable but this must not be interpreted to permit piecemeal amendments that disregard the basic relationships established by the original effort. Proposed changes must be carefully considered in terms of possible overall effects on the entire community. Accommodation of a proposed development which appears very desirable on the surface may, under a thorough investigation with reference to the plan, prove costly to both the future public interests and to committed private investments. Adherence to the policies developed in the plan provides a means of protecting existing public and private investments and values.
The general plan is not a zoning plan. However, zoning is one of the important legislative tools available to help implement the plan. Any changes in zoning which occur are subject to a public hearing and a specific decision by the governing body. The greatest single problem between the plan and zoning activity is timing. Some areas suggested in the plan for different kinds of land uses can only be justified at some time in the future when sufficient population growth has occurred to warrant the development, or when public facilities are available to support that development. All zone changes shall be considered in relation to the comprehensive plan, and this serves as one of the continuing means of evaluating the plan. If zone changes are contemplated which are contrary to the plan, the community should first amend the policies and concepts in the plan before a change of zone is made. This process insures that each petition for rezoning is considered in light of the best interests of the entire community.

The plan recommends appropriate uses for various areas and attempts to provide a maximum range of choice in the planning area within the limits of community living. If there is to be a choice, various areas must be guarded against intrusion of other uses which will limit or destroy the privacy of homes or the proper economic functioning of areas of commerce or other special values. If there is to be choice which justifies a long-term investment in homes or businesses, areas must be set aside for different types of uses. If all uses are intermixed, there is, in fact, no safe choice for any individual kind of use.

The plan must be implemented if it is to be of value to the community. The difference between the plan as an empty gesture of community concern and the plan as a vital instrument of civic betterment hinges upon the involvement of both public and private sectors of the community in its realization. It involves extensive daily contact with public groups and individual citizens, the administration of appropriate codes and ordinances which influence development, capital improvement programming for the expenditure of local governmental funds, and the continuing refinement of the plan in special circumstances such as the central business district, park and recreation, or community appearance. The efforts applied in the continuing planning process extend the plan from the present to the future accomplishment of its goals and objectives. The general plan provides basic guidelines with which the community can chart a course for change with some assurance that the result will be progress. The benefits of community living that we enjoy today are the result of what was done yesterday, and the benefits for future generations will result from what we do today.

GENERAL GOALS AND OBJECTIVES

The purpose of this plan is to attempt to describe a pathway into the future. It is more apparent now than ever before that the future will be as different from today as today is from yesterday. Change is with us constantly and occurs at a rapidly increasing rate. Our choice is not whether change should occur, but rather how and where it should happen. In our society, communities are created over a period of time as the combined result of thousands of apparently unrelated individual decisions. Lacking some overall frame of reference or goals, the results most often have been disorder, confusion, pollution, waste, congestion, and ugliness. There are exceptions to this rule, but, unfortunately, they are few.

The goals and objectives set forth in this plan are directed toward establishing a means of recapturing the character and the quality of the Bend Area. It is hoped that they represent a means of retaining the character of Bend as future growth occurs. Although rapid growth in the Bend Area has created many problems, it need not destroy the quality and livability of the area. However, action must be taken immediately if the Bend Area is to preserve the unique qualities which have made it one of the most livable communities in the state.
The several goals and objectives that served as a framework in the preparation of this plan are set forth below. All of the policies and recommendations made in this plan were weighted against those interrelated concepts for the future. The goals and objectives are:

1. To retain and enhance the character and quality of the Bend Area as growth occurs.

2. To provide a sound basis for urbanization by establishing proper relationships between residential, commercial, industrial, and open land uses.

3. To encourage city and county cooperation in the provision of urban services in order to bring about a more orderly development pattern and thereby avoid unnecessary tax burdens and excessive utility costs usually associated with scattered, unrelated development.

4. To recognize and respect the unusual natural beauty and character of the area so that the feeling of Central Oregon can be retained within the community as growth occurs.

5. To significantly improve the appearance of the community, particularly along Highway 97, as one means of recapturing the individual and distinct identity of the Bend Area.

6. To provide a safe and coordinated transportation and circulation system to bring about the best relationships between places where people live, work, shop, and play.

7. To bring about a general increase in population density throughout the community in order to facilitate future public transportation systems as energy supplies diminish.

8. To retain and enhance desirable existing areas and to revitalize, rehabilitate or redevelop less desirable existing areas.

9. To continually strive for excellence in all private developments and public services within the constraints of economic reality. Economic reality should not be interpreted as maximum profit for minimum investment or as maximum local budgets for maximum services.

10. To encourage and promote innovations in development techniques in order to obtain maximum livability and excellence in planning and design for all new developments.

11. To continually explore, within the limits of the public health, safety, and general welfare, innovations in development or regulations in order to promote maximum livability for the people of the community.

This plan is based on goals and objectives which will not be easily attained. They will demand a continuing search for excellence in public and private activities and will require the cooperation and support of the people in the community as well as a willingness to work together on the part of all agencies of local government. The preparation of this plan as a joint county-city effort indicates that the commitment necessary to realize these goals is possible. This plan can become a means of directing community efforts toward sound future growth, better understanding between private and public efforts, and a more beautiful and livable community to the benefit of the people of the area both individually and collectively.
INTERPRETATION

As used in this plan, the word "shall" is mandatory and the word "should" is directory, unless the context requires otherwise. However, in all cases, the plan shall be interpreted in accordance with the requirements of law and rules of statutory construction. The word "should" is not intended to bind the city or county governing bodies to a course of action, but provide a basis for such action when it is determined that it is in the public interest to carry out a particular action.

TIMING FOR GROWTH

The Bend Area General Plan designates most areas for Urban Development. The timing for urban growth shall always be related to the availability of adequate, necessary community services, and have some continuity with other existing developments.

GENERAL POLICIES AND RECOMMENDATIONS

The following major policies and recommendations relate to the goals and objectives of the plan. In the body of the report these basic policies are further refined for each of the various elements of the plan.

1. Urban development shall be encouraged in areas where urban services can be provided and in a manner which will minimize tax costs related to necessary urban services such as schools, parks, highways, police, garbage disposal, fire protection, libraries, and other facilities and services.

2. Standards for development within the urban growth boundary shall be prepared jointly by the city and county.

3. Future development and local development standards shall recognize and respect the character of existing areas. Maximum flexibility in development should be encouraged in undeveloped areas.

4. Residential developments should be located so that they are convenient to places of employment and shopping facilities, and they should be developed in ways which are consistent with the character of the topography and soils on the site.

5. Residential areas should offer a wide variety of housing types in locations best suited to each, and shall be developed in a way which will not create healthy or erosion hazards. Densities recommended on the plan shall be recognized in order to maintain proper relationships between proposed public facilities and services and population distribution.

6. Commercial facilities should be allocated in a reasonable amount and in a planned relationship to the people they will serve. Efforts shall be made to separate commercial and noncommercial uses through the use of walls, fences, or landscaping, and open space.

7. Strip commercial uses should be directed to those areas where a commercial development pattern of this kind already exists. Any future expansion of commercial strips, if any, shall be very carefully considered so that they do not cause unnecessary traffic congestion and do not detract from the appearance of the community.
9. **Industrial areas** of the community shall be located where necessary services can be provided and with good access to transportation facilities. Continuing efforts shall be made to upgrade the quality of existing and future industrial developments as the area grows.

10. **Schools and parks** shall be located to best serve the anticipated population and provide maximum service for the greatest economy in terms of expenditure of tax dollars for both present and future residents. Sites should be acquired in advance of need so that the best are available for these vital public facilities.

11. **Off-street parking** shall be provided in adequate amounts so that traffic lanes of streets will not be unnecessarily congested by parked vehicles during peak hours. Parking lots shall be surfaced and landscaped to make them attractive to use rather than their being simply open, barren expanses of asphalt.

12. **Mass transit, bicycle, and pedestrian transportation and circulation systems** shall be recognized as legitimate and desirable future alternatives or supplements to complete dependence upon the automobile.

13. **Community appearance** shall continue to be a major concern and the subject of a major effort in the area. Street-tree planting and landscaping, sign regulations, and building improvements will all contribute to an improved environment, particularly along Highway 97. Major natural features, such as rock outcrops or stands of trees, should be preserved as a community asset as the area develops. This can be accomplished in subdivisions through careful siting of houses and streets.

**THE GENERAL PLAN**

Throughout most of its history, the Bend Area has been a quiet community in Central Oregon. However, since about 1965, the community has experienced an extremely rapid growth rate which has significantly altered the character and quality of the Bend Area. Traffic congestion and strip development along 97 have provided obvious examples to everyone that growth can create very real problems. In fact, the apparent character of the community has changed radically since Wall Street was the entrance to downtown and the most obvious asset in the community was Drake Park. It is partially in response to these changes that the community chose to prepare a comprehensive plan. This same general concern has led to the formulation of the basic objective of this general plan which is to retain and enhance the character and quality of the Bend Area as growth occurs.

In order to plan for the future of any community, it is necessary to evaluate the existing factors and influences and to make carefully considered assumptions of what the future may hold in terms of quality and quantity of growth. The more important factors and influences affecting planning considerations in the area are the natural features and existing development pattern, and the role of Bend as an urban center in Central Oregon. Another very important factor is the availability of services within the Bend urban area. The influence of natural features and the character and quality of the existing development patterns are discussed in length in Part I of this plan, Existing Conditions.
The availability of community services is usually a strong determinant in the location and intensity of urban land uses. Water and sewer service customarily combine to make development possible at urban densities. However, in the Bend Area, water service and unusual geology have made urban development possible. Lack of easily accessible surface water and a very deep ground watertable lying beneath layers of rock have encouraged development of community water systems.

The fact that the entire area is underlain with rock has discouraged installation of sewers. The nature of the underlying geology has led to the extensive use of drill holes as a means of sewage disposal. This method appeared to be quite satisfactory for many, many years. However, recent rapid growth in the community has raised serious questions regarding future pollution of the regional water table. The State Department of Environmental Quality has directed the City of Bend to provide a sewer system. In county areas outside of the city, drill holes are no longer permitted. This change in sewage disposal methods presents the community with the difficult and costly problems which will greatly influence future development in the Bend Area.

The General Plan for the Bend Area is a comprehensive plan. It includes approximately 43 square miles of land and is a single plan which relates proposed land uses to each other, both inside and outside of the city. In addition, it ties both the city and the urbanizing area of this part of Deschutes County together with an integrated network of major streets and roads. A map showing the General Plan is included with this report.

There are many land uses in the plan ranging from open, rural areas of the county to the many urban uses in the City of Bend. The plan recommends appropriate uses of various areas and attempts to provide a maximum range of choice in the planning area within the limits of community living. If there is to be a range of choice, various areas must be guarded against the intrusion of other uses which would limit or destroy the privacy of homes or the proper and economic functioning of areas of commerce or industry. If there is to be a choice which justifies a long-term investment in homes or businesses, areas must be set aside for different types of uses. If all uses are intermixed without proper standards or consideration for their surroundings, there is, in fact, no safe choice for any individual kind of use.

Land Use

The kind, location, and distribution of land uses is a basic element of any comprehensive plan. Although the public facilities and circulation elements are important and should be developed in concert with land use, their numbers and characteristics are directly related to future residential, commercial, and industrial areas. The land-use element of the plan should reflect to some degree the population and economic forecasts made for the planning area. However, it is not possible or reasonable to show on the plan the exact amount of land needed to accommodate anticipated residential, commercial, or industrial growth. If this were done, the plan would indicate only land in the area that could be used for any given purpose and would create a land monopoly for designated properties. In addition, most population and economic forecasts made for periods of ten to twenty years in the future are made to provide a "sense of scale" or "level of expectation", rather than to serve as a definitive statement concerning future growth.
Most comprehensive plans are prepared for a time when the area is fully developed or "saturated", and for a specific time in the future, usually twenty years, and both methods have advantages and disadvantages. In the case of both the saturation and forecast period plans, it is recommended that the plans be reviewed and revised every two years. In this way, the total requirements for schools, parks, and other public facilities can be estimated and the sites acquired well in advance of need. However, the time span between the present and full development is most often so great that the plan may be largely meaningless as it relates to the more immediate future, and thereby loses its validity as a useful guide for community action. Further, in an era of accelerating change such as ours, a plan which attempts to project present development methods and social conditions 25 to 50 years into the future may well be foredoomed at its conception.

General plans based on forecasts for a specific time in the future usually cover a much shorter period than do saturation plans. This eliminates some of the problems of potential change in technology and gives some sense of scale of the magnitude of problems which the community will face. Such plans also imply, if not state, a rate of growth which can be translated into probable priorities for community action relating to various major elements of the plan. However, many forecasts are made for a period of 20 years or longer, and history has proved very few to be accurate. Influences which are impossible to foresee such as an individual management decision on the part of one major employer to enter or leave an area can significantly alter growth patterns in smaller urban centers. In addition, plans based on a forecast for a specific future year usually do not look beyond that year, and if the growth rate exceeds the forecast, the plan is no longer a useful community guide.

The Bend Area General Plan is not a saturation plan nor was it prepared for a specific future year. The population and economic forecasts included in Part II of the plan were made for 2000 and do provide a sense of scale for future growth. These forecasts were used as a point of beginning in the allocation of land uses and public facilities. However, past zoning and planning decisions made by the county and city, the availability of community services and the existing development pattern greatly influenced the recommendations contained in the plan. For example, residential uses and subdivisions have been scattered over the planning area and have committed various sections to residential use. The plan recognizes this commitment but the resulting area exceeds the anticipated population growth. In most cases, the need for public facilities has been related to the population forecasts rather than to the holding capacity so that, in some areas, the number of schools or parks does not seem appropriate to accommodate the amount of residential development shown on the plan. Development pressures and future needs for public facilities will not be the same throughout the area, and an attempt has been made to recognize these variations in the general plan.

In addition to variations in anticipated growth pressures, there are also significant differences in the characteristics of the existing development patterns in various parts of the planning area. These differences should be recognized and should be one of the factors considered relating to the character of future development. If, in any area, development has been sufficient to have established a particular character, this character, if desirable, should be protected. Any new growth in an established area should recognize and respect its particular character and should not be so at variance with surrounding developments as to cause the nature of the local environment to materially depreciate in character, appearance, value, or residential privacy. This consideration should include residential, commercial, and industrial districts, or even an entire acknowledged, identifiable community or neighborhood within the planning area.
Local codes and ordinances should include standards similar to those in force at present for established areas as a means of protecting the character of these areas. Local regulations should not discourage variety in design in established areas so long as it is compatible with existing development patterns. The present use of planned unit developments with public hearing procedures is a useful and effective means of permitting variety and, at the same time, of recognizing the need for capability. However, in order to encourage variety in undeveloped areas, procedures should be simplified if possible so that no unnecessary steps are involved that will excessively extend the time required for review and approval as compared to that needed for a more standard development concept.

In keeping with the foregoing discussion of general land use considerations in the planning area, the following policies were used to guide the preparation of the land use element of the plan:

1. All new developments should recognize and respect the particular character of established areas in which they locate.

2. Innovations in concepts and flexibility in design will be encouraged in new developments in those more undeveloped sections of the planning area where no particular urban character has been established.

Open Lands -

The open land section of the plan deals with three basic types, forests, urban area reserve, and areas of special interests - private and public open space.

Areas of Special Interest - Private and Public Open Space

1. The banks and canyon of the Deschutes River shall be retained as public or private open space throughout its entire length within the planning area except in the intensively developed central part of the community.

2. Major rock outcrops, stands of trees or other prominent natural features shall be preserved as a means of retaining the visual character and quality of the community.

Outside the Urban Growth Boundary the policies and requirements of the Deschutes County Year 2000 Comprehensive Plan shall apply. Decisions along the boundary that may impact natural resource lands outside the boundary will be coordinated with the County, and preference will be given to the protection of such adjacent resources through the development review process. Areas of special interest identify lands along the banks of the Deschutes River. These areas are also basic habitat. The following policies and goals shall also apply.

Fish and Game

The primary goals for the protection of the fish and wildlife habitat within the urban area are:

1. To conserve the existing riparian zone along the Deschutes River.

2. To provide for public access to this scenic and attractive resource.

3. To provide more park and trails along the river.
4. To allow the community flexibility in reviewing development proposals within the areas of special interest that would award superior design; that grant public access and dedication of land to the public; that grant scenic or development easements to a public body or recognized conservation organization; and still maintains the scenic resources and protects or enhances the wildlife habitat or that can be judged to be a reasonable trade-off in values for the public.

Strategies and Policies:

1. The city and county shall preserve areas of the banks and canyons of the Deschutes River in public or private open space throughout its entire length within the Urban Growth Boundary, except in the intensively developed central part of the city. Areas so preserved will allow residential densities to be higher in the developable portion of the parcel affected.

2. The city and county shall review development proposals that include land in areas designated as areas of special interest for the public benefits that can be gained under preservation or development. The City and County may allow those developments that are not subject to natural hazards; that would not inflict irreversible harm to the riparian zone; that would enhance public open space, parks, and access; that have excellence of design, provide via easement or fee title access for the public to the river, either as park or trails; and carry out the intent of the plan to enhance the variety and livability of the Bend Urban Area.

3. Any development within 100 feet of the water’s edge shall be subject to a conditional use and design review procedure, taking into account the goals for the areas of special interest and the protection of fish and wildlife habitat.

4. The county and city shall apply the requirements of the deer winter range overlay zone to any development in the urban reserve area adjacent to or within one mile of the WA designation on the county plan or zoning maps.

The Deschutes River represents a significant sensitive area within the Urban Growth Boundary, and the upmost care shall be taken in any development that occurs so that the public is benefitted by any changes that may occur in the existing character of the river or riparian zone.

Located within the extreme southwest corner of the Bend Area General Plan and Urban Growth Boundary is a 322 acre parcel of land under single ownership. This property may be generally described as the south one-half of Section 13, Township 18 South, Range 11 East, Willamette Meridian. The property was originally planned as a development alternative area allowing development to half acre densities, but at the request of the owner was zoned in 1979 to UAR-10.

The owner of the property wishes to preserve and manage the westerly 177 acres of the property as a natural wildlife habitat. This portion of the property includes approximately one mile of the Deschutes River and is inhabited by a multitude of wildlife species indigenous to the area. (See Exhibit "A"). Preservation and management of the area in its present unspoiled condition would be a unique benefit to the Bend Area because of its proximity. It would further constitute direct fulfillment of Goal 5 requiring local jurisdictions to conserve open space and protect natural and scenic resources.
Neither Deschutes County nor the City of Bend has the funds necessary to purchase the property and manage it as a wildlife preserve. The current owner of the property is willing to perform this valuable service.

To enable the preservation and management of the westerly 177 acres of the property, proper development of the easterly portion consisting of approximately 145 acres must occur. This area may be generally identified as the southeast quarter of Section 13, Township 18 South, Range 11 East of the Willamette Meridian.

At the present time the area is bordered on the east by three separate single family residence subdivisions at half acre densities. It is anticipated that as occupancy increases within these subdivisions, the frequency of intrusions into the wildlife area will be increased.

Experience indicates that an intensively managed open space area is an effective hindrance to intrusions from domestic pets and persons that can adversely affect wildlife habitat.

Portions of the southwest quarter of Section 13 are ideally suited for development as a golf course. Development of these portions of the property for such use would provide the managed open space necessary to effectively buffer the westerly 177 acres.

To encourage development of this area in this manner and to provide funds needed for the preservation and management of the wildlife preserve, further residential development shall be permitted on the easterly borders of the southwest quarter of Section 13. Such development shall occur under a planned development concept providing for open space (golf course, etc.) necessary to properly buffer the wildlife preserve. Densities within the planned development shall be consistent with suburban residential development, but shall be computed based upon the easterly acreage (145 acres) contained in the present ownership.

Although no specific present need for the new housing units may be demonstrated, the public interest in protecting and preserving the westerly 177 acres of the property as a wildlife preserve without the necessity of expending public funds warrants the planned development. Planning of an area in this fashion will effectively prohibit its parcelization into parcels of ten acres, which would occur if the property were to be designated as an urban reserve area or were to be placed outside the urban growth boundary.

To carry out the purposes and intent of the plan, the westerly 177 acres shall be designated as an area of special interest and no further parcelization shall be permitted therein. The uses permitted shall be those existing and wildlife management. The easterly 145 acres shall be designated suburban residential subject to the restrictions imposed by the intents and purposes of this plan.

Areas of special interest represent potential private or public open space. These areas have special characteristics and should be preserved as growth occurs. The main area is a strip along the Deschutes River which is intended to include the canyon of the river. The scattered areas are mostly rock outcrops or ridges common on the east side of the Bend Area. These high points break the line sight so that the area retains a feeling of undeveloped open space. The intent is to retain this character as the community grows. These open areas could be retained in private ownership as part of a development and included in housing density estimates so that developers are not penalized for preserving them. They could also be dedicated to the public as undeveloped parks or open space sites. The largest single area in this classification is the Bend Country Club, and this facility should remain during the period included in this program.
Forest areas are shown on the plan in three different locations. The area in the southwest is owned by Deschutes National Forest and will be managed as a multiple use area with very little timber cutting. It serves as a buffer to the urban area, provides scenic views enroute to the Cascades to the west, and is used for recreation by residents and visitors to Central Oregon. The other two areas symbolized as forest are the silviculture research laboratory north of Portland Avenue and the nursery north of Butler Market Road. Both are expected to remain in use for the period covered by this general plan.

A review of the best information available (U.S. Forest Service soils maps), and photo interpretation resulted in the identification of Class 5 and 6 forest sites east of the river and south of Powers Road, and west of the river up to Shevlin Park Road. The area east of the river is substantially developed now, or is contained in the area designated as special interest. The area on the west is underlain by pumice and aggregate materials in many areas. Much of this western area is within the city's sewer service area, and property owners have paid the city to enlarge the interceptors throughout the City to provide service to their land. Many areas of the west side have been mined and no longer have any forest potential.

Policies:

1. The city and county shall retain forest site classes in larger lots in order to be compatible with adjoining U. S. Forest Service lands, and deer winter range needs until these areas are needed for urbanization.

2. Those areas underlain by commercial deposits of sand, gravel, or other materials can be used for mineral extraction provided a reclamation program is part of the mining process.

Urban Area Reserve lands cover extensive areas along the western side of the Urban Growth Boundary, along the north, and small amounts along the east and southeast edges of the UGB. This classification is intended to serve as a holding category and to provide opportunity for tax differentials as urban growth takes place elsewhere in the planning area. Most of the area has little or no agricultural value. However, some of it does have deeper soil than found elsewhere in the planning area and does have good future potential for urban development.

The area also has some potential for destination resorts and recreational development. The Bend Area and Central Oregon are desirable recreation places and developments such as Sunriver and Black Butte Ranch have become valuable assets to the area. Open lands west of Bend have potential for similar or smaller recreational developments and related activities which can be developed in concert with the general goals and objectives of this plan.

Research laboratories or other similar activities not including manufacturing or fabrication may desire a site not in traditional industrial areas. Their location in an undeveloped area is possible with appropriate review to assure compatible relationships with adjoining properties, streets, utilities, and the expected character of the area. Such facilities would need to meet the highest standards of design, appearance, and control over environmental impacts. They would need to be reasonable in time and location with respect to the goals and policies of this plan.
The western side of the Urban Growth Boundary has been a source of pumice, dirt, and some sand and gravel. The inventory in Exhibit "b" covers these resources. Areas actively mined are zoned SM. The classification will help isolate these resource extraction operations from incompatible urban uses. Other areas included in this category are located at the extreme north and south ends of the planning area. The northern site is owned by the Bureau of Land Management, and it is designated as a location for future industrial area. The county shall actively seek an exchange of land with the BLM to bring this land into an available status. The southern area, like the western section, may have some potential for development beyond the time considered in this program.

Urbanization

The city and county are expecting rapid growth during the next 20 years. This growth will bring more dramatic changes to the community than have occurred since settlement began approximately 80 years ago. Some 51,000 new people are expected to reside in the area, several new schools will be needed, any miles of streets, sewer, water, and electrical lines will have to be installed. Much of what is now open space will become housing, commercial, industrial, or other urban uses. These changes offer both opportunities for community improvement and for degredation of the area.

The basic elements of this plan dealing with urbanization are intended to take advantage of the opportunities and create a better place to live in the future. Some of this growth will create a base for wider cultural activities, more employment, and better economic conditions. It may also lead to greater traffic congestion, deterioration of air and water quality, more noise, less open areas, and higher crime rates. To some extent, there will be trade-offs as growth occurs. How well the community manages this process will depend on the desire of the community to fund necessary capital improvements. Obviously, the larger the urban growth boundary the community has to deal with, the greater the area the limited funds will have to be spread over.

The purposes of the urbanization policy and urban growth boundary are to promote efficiency in the future growth and development, and to conserve resources by infilling the existing urban area, increasing densities which will allow alternative transportation systems to become viable.

The city and county prepared an urban growth boundary in 1973 which was amended in 1974, 1976, and 1978. This boundary contains 42.3 square miles. A review of the statewide Goal 14, which requires each city to adopt jointly with its surrounding county an urban growth boundary to separate urban from rural lands, has revealed that the existing boundary does not comply with the seven factors for establishing an urban growth boundary. Therefore, the community has decided to establish an initial urban growth boundary, "IUGB". The IUGB is located within the existing urban growth boundary.

The IUGB was established after reviewing factors (1) and (2) of Goal 14 for demonstrated need for land to urbanize through the year 2000, and a comparison with the buildable lands available within the UGB. After it was determined that sufficient buildable lands were available, then factors (3) through (7) were applied to the UGB to determine which lands were most suitable to be within the IUGB. The existing developed, committed, and approved areas were mapped; the forest site classes, irrigated, farm deferred lands, and agricultural soil classes were identified; and the city limits and Phase II sewer service area were mapped. Using this information, and information gained through public input processes, the IUGB was established.
The IUGB contains approximately 20,433 acres of land. The boundary is mainly established on the last five factors of Goal 14, the concepts of public facilities contained in Goals 11 and 12, and the buildable land needs of Goal 10. For a major portion of the boundary, existing urban development, committed lands, or approvals for development by the city and county were used to establish the boundary. The community removed areas from the IUGB that were last added to the UGB, that were vacant in large ownerships, that were being used for surface mining, and areas that were irrigated and/or were acreage homesteads with a generally established lot size that didn't appear likely to be useful for redivision in the next 20 years.

Within the IUGB, the following policies will apply to the conversion of urbanizable land to urban land.

**Assumptions:**

1. New development should bear the burden of paying for costs of the development.
2. New development should locate in areas where facilities are available or can be provided at least cost.
3. New development can occur anywhere in the IUGB, provided that it pays for necessary facilities.
4. Developments must pay the full cost of urban services if they occur on developable lands prior to the city’s or county’s planned capital improvements.

**Timing:**

1. Within the IUGB, vacant lands passed over by development shall be encouraged to develop prior to other lands within the boundary.
2. Growth in the Bend Area shall be managed through the cooperative efforts of the City of Bend and Deschutes County, and shall be in accordance with the plans, timing, phasing, and financing of public facilities and services.
3. Future urban development shall be contained within the geographic limits of the IUGB.
4. All parties shall work toward the most efficient and economical method for providing specific urban services to the area within the IUGB. In the long run, the city is the logical provider of such services.
5. The plan shall encourage the development of vacant lands that have urban services before the extension of services beyond presently served areas.
6. New service districts shall be created within the IUGB to provide sewer or water service without the concurrence of the city and county.

It is the intent of the city and county to consider land between the UGB and the UGB first for inclusion within the IUGB if development occurs faster than expected, uses more land than expected, can be demonstrated as needed, and can be furnished urban services. The IUGB will be evaluated on a periodic basis to determine if more land is needed, and where it would be appropriate to include such land. Factors one through seven of Goal 14 and the exception process of Goal 2 shall be followed in any IUGB or UGB boundary change.
Residential Areas

The residential section of the general plan is based on the following general policies:

1. All new residential developments shall comply with housing densities shown on the plan, regardless of type, site size, or timing as related to other developments.

2. Appropriate areas shall be designed for various residential densities to provide a maximum range of choice with properly related amenities and facilities.

3. All residential areas shall be provided with services and facilities necessary for safe, healthful, convenient urban living consistent with the density of development.

4. Residential development shall be coordinated with other land use elements and community facilities which are consistent with projected housing densities.

5. Variety in types of residential uses consistent with the housing density and character of the area will be encouraged.

6. Various kinds of residential uses shall be protected from the intrusion of incompatible uses in order to preserve and stabilize values and the character of the area.

7. High density residential developments (1,000 square feet per dwelling unit) should be permitted only in areas with community water and sewer services and their locations should have good access to major streets and be near commercial services and/or public open space.

8. Rehabilitation or redevelopment of older residential areas should be encouraged.

9. Efforts shall be made to provide safe, sanitary housing for low and moderate income families and the elderly.

10. Outlying residential developments shall be consistent with the physical characteristics of the terrain and soil on which they are located and thereby avoid the creation of health hazards, excessive erosion and blight.

A major objective of this general plan is to establish residential areas that are safe, convenient, healthful, and attractive places to live which will provide a maximum range of residential choice for the people in the planning area. The plan also recommends a moderate increase in the overall housing density within the planning area. This increase in density is intended to recognize the unusually high cost of providing community services and to encourage slightly greater concentrations of population in order to reduce travel distances and conserve energy in the future. The development of desirable residential areas applies to maintaining or improving existing districts as much as to proper development of new sections. The term density describes the quantity or area of land per dwelling unit regardless of housing type. A 10 acre tract of land may contain ten separate single-family homes, or it may contain one ten-unit apartment building. In either case, the density is one dwelling unit per gross acre, and the number of units per acre obviously is the governing factor for population distribution.
Density is a basic unit of measurement in determining future requirements relating to the number of schools and parks, the capacity of water and sewer systems, the volume of traffic on streets, the size and amount of shopping and service-commercial facilities, and the number of electrical power and telephone connections. Once the several densities have been agreed upon indiscriminant changes of or within areas can cause serious imbalance in the services and facilities mentioned above. The most common mistake is to increase density, because this can lead to overcrowded schools with no undeveloped land available for expansion or for a new school, lack of open space, undersized sewer and water systems, and traffic congestion on streets that are loaded far in excess of their design capacity. Conversely, a significant decrease in density can lead to a considerable waste of community capital resources and facilities if they are not needed or used by the resulting smaller population.

The moderate increases in density recommended in the general plan are slightly smaller single-family lots than are now permitted, a greater amount of area for duplexes or garden apartments, and a greater concentration of population in apartment developments in selected locations than is permitted at present. Smaller single-family lots and a larger number of apartment developments within the community should facilitate the installation of community water systems, sewer systems, streets, and other utilities including electric power, natural gas, and telephone services. Local costs relating to the installation of underground utilities are exceptionally high because of the ever-present rock. If lots are smaller and population more closely grouped, water lines, sewer lines, and other utility lines will be shorter and will require a smaller capital investment on the part of the people in the community. In addition, fewer miles of streets will be required and travel distances will be shorter. In this way, energy consumption can be reduced and possibilities for providing some sort of public transportation will be greatly enhanced.

The several residential classifications are intended to guide the future growth of the community, but in the process, to encourage variety in housing types, particularly in undeveloped areas. The 10 acre example given above, resulting in one dwelling unit per gross acre, is a case in point. Another example could be a five acre parcel of property located in the 6,000 square foot density range. The plan would permit a typical lot size of approximately 6,000 square feet per dwelling unit. Five acres of land converted to square footage terms is 217,800 square feet. If the five acres were subdivided into conventional 6,000 square foot lots, approximately 25 percent of the gross area would be developed into streets. This would result in approximately 54,500 square feet of the original 217,800 being "lost" for residential development. The net area would be 163,300 square feet of land available for houses and would amount to about 27 lots at 6,000 square feet each.

If, on the other hand, the five acres were not developed as a conventional subdivision but instead were developed using a condominium concept with a single building or several buildings, the entire original 217,800 square feet could be mathematically divided by 6,000 to yield a dwelling unit count of 36, a gain of 9 units over the conventional approach. The latter example assumes that the property is accessible to adequate roads where land for additional streets would not be required. The resulting housing density possible under a planned unit development or condominium concept yields the same number of dwelling units for the five acre tract as would be possible with a conventional subdivision at a 4,500 square foot per dwelling unit density standard. Zoning standards should recognize this possibility and establish appropriate density requirements which will lead to developments generally in conformance with the residential standards of the general plan.
The location of different residential densities designated on the plan was made on the basis of population growth and distribution estimates, existing development patterns, natural features and conditions, general accessibility, probability of commercial services, and previous land use and zoning decisions made by the city and county. The degree to which these factors or combinations of factors influenced residential density designations on the plan varies throughout the planning area. The probable availability of community water and sewer services also had a strong influence on distribution of higher residential densities. The five ranges of densities recognized on the general plan are as follows:

<table>
<thead>
<tr>
<th>Residential Density Designations</th>
<th>Gross Acres or Net Square Feet Per Unit</th>
<th>Units Per Gross Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Area Reserve</td>
<td>2 1/2 - 10 acres</td>
<td>0.4 - 0.1</td>
</tr>
<tr>
<td>Urban Low</td>
<td>20,000 - 40,000 sq. ft.</td>
<td>2.2 - 1.1</td>
</tr>
<tr>
<td>Urban Standard</td>
<td>6,000 - 20,000 sq. ft.</td>
<td>7.3 - 2.3</td>
</tr>
<tr>
<td>Urban Medium</td>
<td>2,000 - 6,000 sq. ft.</td>
<td>21.7 - 7.3</td>
</tr>
<tr>
<td>Urban High</td>
<td>1,000 - 2,000 sq. ft.</td>
<td>43.0 - 21.7</td>
</tr>
</tbody>
</table>

**Urban reserve** - Areas within the urban growth boundary but outside of the IUGB. These areas shall be considered first for inclusion in the IUGB area when need for additional urbanizable land occurs. The density shall be low — one dwelling per 2 1/2 to 10 acres or larger. The 2 1/2 acre designation reflects the existing parcel size of an area. The 10 acre density applies to largely undeveloped areas, and takes into consideration adjacent agricultural zoning, forest lands, and deer winter ranges. In those areas abutting the Tumalo winter range, the standards of the county's winter range overlay shall apply. These areas are also potential destination resort sites and should be considered for such usage, as resorts are a component of the area's basic employment base.

**Urban low density residential areas** are intended to provide large urban lots for development with a community water system and individual sewerage disposal systems. These areas occur in the eastern and southern parts of the planning area and would be excluded from areas planned for community sewerage disposal systems.

**Urban standard density residential areas** are intended to provide for the most common urban residential densities in places where community services will eventually be available. The areas shown on the plan now have some kind of community water service, are in areas which can be readily served by a community sewer system, or reflect an existing development pattern. In undeveloped areas, the greatest latitude in development type should be encouraged, and a bonus for density given to developments that use passive solar design throughout the development.

**Urban medium density residential areas** are intended to provide for lower density multiple-family developments, and all shall make provisions for both water and sewer services prior to development. Most of these areas reflect existing development or zoning patterns in the area. The largest new locations for medium density development are on the east side north of the new hospital, and east of Pilot Butte. Both of these areas should provide for community water and sewer facilities as they develop.
Urban high density residential areas are intended to provide for the greatest concentration of population in the planning area. All shall provide for community water and sewer services before development occurs. These areas are located in the central parts of the community, near Central Oregon Community College, and near the new hospital. High density residential areas are also intended to accommodate business and professional offices in a residential setting and some limited medical facilities such as pharmacies or small laboratories.

Background to Residential Policies

Virtually all the planning area is characterized by a shallow soil cover over lava rock. This condition leads to exceptionally high costs for installation of underground utilities. The nature of the lava flows and complex underlying geology has also led to the extensive use of dry wells as a replacement for septic tank drain fields. This system is so simple and apparently successful that only about nine percent of the city is connected to a sewer system. However, in recent years there has been a growing concern that this practice will lead to pollution of underground water supplies.

The city has almost completed installation of a city-wide sewer system. It is anticipated that the State requirements will become progressively more restrictive in the future. As areas urbanize and lot sizes are reduced, individual sewerage disposal systems become less desirable.

In some cases areas can be served easily by the city sewer system. In other areas septic tanks and drainage fields will work well on larger lots. In still others, septic systems are not satisfactory because of shallow soils, slope, or both. In the Ward development south of Bend, the developer has installed a sewerage disposal system and treatment plant to serve his development. Areas in that section could easily be converted to urban densities by extending the sewer lines. However, it is a privately owned system and cannot be used by the general public. Consideration should be given to the extension of this system to provide service to the areas surrounding this development. This will require a joint agreement by the city, county, DEQ, and Ward on service area and standards.

The wide variety of conditions and problems make specific policy statements difficult. The city will be in a position to provide sewer service to much of the area in the near future. If all goes well, the entire city should be served by 1982 so that lines could be extended outward from the city limits.

The county has just begun to consider becoming involved in this problem and with good reason. Historically, there have been few problems with septic tank drainfields or drill holes in the county. Recently, changes in State regulations have eliminated the use of drill holes for new development unless it is in areas where such development can connect to the Phase I system.

The city and county have many problems to consider and much to do in the process of planning and establishing sewer service in the urban growth area. As mentioned earlier, a small area east of Pilot Butte could be served now. To provide service over fairly extensive areas would require formation of a Local Improvement District and several years of planning and construction. Since there is no apparent problem in the area now, it may be very difficult to get voter approval of a sewer district. The most difficult part of this entire situation is that the problems all lie in the future and there are few, if any, indications of them today.
However, the purpose of any plan is to look to the future and attempt to foresee and avoid problems. If the plan is to be successful, problems must be solved in a context acceptable to the people of the community today.

There are some things we do know about the future. The rock will continue to make construction costs higher than normal. The rock will probably continue to require blasting. The Bend Area will continue to grow. Growth pressure will increase land values and reduce lot sizes. Smaller lots will not work as well for individual disposal systems. Sanitation problems will result and, eventually, sewers will be required. It is not a question of whether or not sewers will be necessary, but rather, how to minimize the cost.

The solution to services and increased housing densities must be a joint public and private effort. If services are to be provided, the city and county must participate by doing those things which individual property owners or small developers cannot do for themselves. Facility planning for systems, establishment of districts and unification of standards are examples of functions and responsibilities of local government. As the city and county proceed with these activities, standards may change for some areas as additional engineering data becomes available.

The development of desirable and stable residential areas is a major objective of this general plan. In urban residential areas, public and private services are necessary and desirable for safe, convenient and healthful living. Community water and sewer services are basic to all residential areas developed to urban standards. Once these more basic considerations are met, considerable attention and effort should be directed to establishing and maintaining the most desirable living areas possible within the economic constraints of each development.

This philosophy should be extended to the enhancement or rehabilitation of older, less desirable existing residential areas. These areas should be identified and examined individually to determine the exact needs of each and the most appropriate programs or courses of action to solve their problems. Some action has already begun by the city through their community development program. The rehabilitation of existing areas, together with a concerted community effort to provide adequate, safe, and sanitary housing for low and moderate income families and for the elderly, are high priority programs for future community action.

An important concept of this plan is that a range of choice in residential living alternatives in terms of location, density, and housing types should be encouraged within the planning area. Although the plan does not recommend frequent intermixing of densities, it does indicate some variety in densities in many sections of the planning area. It does, however, strongly recommend encouraging variety in housing types throughout the planning area. It also recommends the preservation of natural elements of the landscape such as rock outcrops or stands of trees which will interrupt the otherwise continuous urban development pattern. Without some effort to alter this pattern, the planning area will be filled with single-family houses, each single story, each the same distance from the street, each with a two-car garage, and each with a double driveway filled with cars, campers, or boats. It is possible that a less rigid and stereotyped development pattern will find increasing favor in the future. The increasing costs of housing construction has led to an increased use of mobile homes as living units within the planning area. It is possible that future growth will also include a higher percentage of apartments, townhouses, or other types of housing which can be constructed at lower costs than the standard single-family house. If other than single-family housing types consistent with designated densities are encouraged, they can add interest and variety to the urban scene. However, the location of mobile homes within the community should be given special consideration as part of the zoning process in order to reflect prevalent community attitudes as closely as possible.
The character of the planning area will change by 2000. The population forecast made as a part of this general plan indicates a population increase of about 51,000 people over the next 10 years. This population increase could amount to about 25,300 new dwelling units in the area over that period. With the exception of the more intensively developed close-in sections of the city, the character and livability of the Bend Area will be as strongly influenced by what happens between now and 2000 as by what exists in the community today.

Future development can recognize the preferred single-family housing development in a variety of forms. One of the more significant aspects of residential neighborhoods is the street pattern. The street system in new areas should be designed so that is provides easy access to each lot from major streets and does not encourage traffic movement through quiet residential neighborhoods. Street alignments should also provide easy access to schools, parks, and convenience shopping areas. Schools and parks should be located within the residential service areas and away from major streets. These public facilities should be easily accessible to the people in the area which they serve without having to cross heavily traveled streets. This kind of neighborhood development should be encouraged in new developments within the planning area. It is difficult to superimpose this development pattern on existing areas, but it can be used as a frame of reference for redevelopment or future expansion of existing residential districts. Variations in street patterns and relative merits of each are shown on Plate 1. Those patterns which leave open space within the residential neighborhood have several advantages and would be particularly adaptable to the uneven terrain in the eastern part of the Bend Urban Area. Obviously, it cannot be strictly applied to rural or open areas where population is widely dispersed. However, the basic road network for the planning area does establish a framework for future development of these relationships. The smaller lot size of a well designed planned unit development does not increase the density in the overall area of the subdivision necessarily, but it does offer advantages in economy and livability. Aside from the assets of usable open space, variety, and safety, some of the practical advantages are less land removed from tax roles and lower construction and maintenance costs through reduced street area and utilization of natural terrain in order to avoid problems of drainage and difficult sites. Such developments will also enhance surrounding residential neighborhoods. Plate 2 shows variations in housing types and major street access possibilities for residential development.

Some of the anticipated new growth will occur in areas where the addition of new housing units will be a problem because of existing development and property ownership patterns. Sections have been developed or segregated into relatively large residential properties ranging from one to ten acres in size, and there will be a continuing demand for some properties in this size range. However, as the area continues to grow, history shows that taxes and the pressure for more land for development will generate a strong demand to create additional lots and building sites from these larger properties. The manner in which the original properties are subdivided and where buildings have been placed will become of tremendous importance to the long-range efficient use of the land. In many cases, major land-use problems are built into the original subdivision and, if care is not taken with similar areas in the future, identical situations will again be created.
VARIATIONS IN DEVELOPMENT PATTERNS

A - CONVENTIONAL RECTILINEAR
120 LOTS 8500 LINEAL FEET OF STREET

HAZARDOUS THROUGH TRAFFIC - MONOTONY

B - MODIFIED RECTILINEAR
120 LOTS 7700 LINEAL FEET OF STREET

REDUCED TRAFFIC - ECONOMY IN SERVICES

C - CURVILINEAR
120 LOTS 8000 LINEAL FEET OF STREET

VARIETY - NO THROUGH TRAFFIC - USABLE OPEN SPACE IN SMALL PARKS

D - PLANNED UNIT CLUSTER
120 LOTS 7350 LINEAL FEET OF STREET

VARIETY - SAFETY - LOWER COSTS - USE OF NATURAL TERRAIN - EXTENSIVE OPEN SPACE
VARIATIONS IN HOUSING TYPE AND MAJOR STREET ACCESS

CONVENTIONAL

STANDARD

CUL DE SAC

PLANNED UNIT

STREET LOOP CLUSTER

CLUSTER

TOWNHOUSE

FRONTAGE

CUL DE SAC

BACKUP LOT

PLATE 2

Exhibit 22
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A common problem in suburban areas outside of cities is found with the so-called deep lot or "picture frame" developments that were created at the time when the area was rural or at least on the fringe of the original city. Lots 100 to 200 feet in width by 300 to 1,000 feet in depth with frontage on existing roads are fairly common. A home and accessory building are usually built in the middle of the lot and set back 20 to 30 feet from a narrow road. Time passes, new conventional lot subdivisions come, roads become more congested, the area is no longer rural, and land values increase significantly. The older homes remain, often with well maintained yards adjacent to the house. However, the rear 200 to 700 feet of the once rural haven is given over to weeds and no practical method is available to use the "wasted land" that suddenly has real economic value if it could be developed.

In order to illustrate these problems and to recommend reasonable solutions, a sequence of drawings which include an illustration of a means by which these areas can be further developed. Each example is an existing site within the planning area. The problems treated are an existing large lot subdivision and an example of preplanning for a large undeveloped site.

An example of the resubdivision of an existing large lot development is shown on Plates 3 and 4. The area is located south of the City of Bend south of the intersection of Brosterhous Road and Parrell Road. Plate 3 shows the area as it is at the present time with deep lots ranging in size from 1 to 5 acres. Houses generally are near the street, and some of the original parcels have been further subdivided.

Plate 4 is an example of how the property could be developed as a conventional subdivision at standard residential densities. The proposal recognizes existing property lines as much as possible, and the ownership pattern in effect dictated the design. Street access to open rear portions of properties was governed by the absence of houses and the development proposed would obviously require cooperation between property owners or their willingness to combine and sell their properties as one parcel to an interested developer.

The kinds of problems encountered in further subdividing this site are located in various places in the planning area. Although resubdivision design is possible in many cases, the difficulty of obtaining agreement between property owners as to what happens to which properties and when is often insurmountable. Efforts should be made by public agencies to encourage integrated designs for these kinds of areas so that development does not always occur in the form of small, unrelated subdivisions with no continuity to the street system which may serve to further isolate remaining undeveloped properties.

Many kinds of problems can be avoided by sensible preplanning of the original acreage site in conformity with the future densities shown on the general plan. Plates 5 and 6 show an example of how this can be done for large acreage properties located on the south side of Neff Road east of Arnold Market Road. Using this preplanning concept, the property could be subdivided into small acreage residential sites now, adn then be subdivided within a planned context at some time in the future when development pressures indicate a sufficient demand for urban size lots. Future urban subdivisions would occur according to a pattern determined prior to the time of purchase by the owners of the small acreage residential lots, and all would have been on notice as to what the future potential of their property was at the time of purchase. Plate 5 shows the site and conditions as they exist at the present time. In addition to existing circumstances of ownership and terrain, there are other factors to be considered as the area develops. Neff Road is indicated as a major street and additional right of way will be required as the area develops. Plate 5 shows the first phase of development by subdividing the larger area into smaller acreage residential sites.
RE-SUBDIVISION STUDY
EXISTING CONDITIONS
RE-SUBDIVISION STUDY
PROPOSED SUBDIVISION PATTERN

PLATE 4
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ranging in size from two to ten acres. If the most desirable living area at the ultimate housing density is to be obtained, it must be designed before larger lot subdivisions occur and unplanned property segregations prohibit a good design for the future. In areas such as this, preplanning can also increase the value of properties with an efficient design which will enhance the future livability of the site.

Plate 6 shows a further subdivision of the property to urban density standards. The area may not reach this density initially, and larger residential acreage lots on Plate 5 were designed in a pattern and configuration of ownership which can later be reduced to smaller lot sizes according to this overall plan. Future streets and usable lots can be retained by constructing the initial housing on sites so that each will occupy a lot in the final design. In this way, the area can develop to urban densities in an orderly manner with access retained to each parcel in the final design. Pre-planning not only simplifies future lotting to an ultimate housing density, it also facilitates provisions for future major streets, trails, school, and park sites, and other general plan considerations. Although the entire study site is shown as the conventional subdivision, parts of the area could be developed as other than single-family housing as long as the housing density remains the same and enough of the street plan shown is retained to provide proper access to other properties.

There are other situations within the planning area where undeveloped tracts ranging from five to 10 acres have been surrounded by development. Consideration should be given to encouraging other than single-family developments on some of these parcels. Residential uses in other forms than standard single-family subdivisions can often make better use of difficult sites. In cases such as this, increased setbacks from adjacent properties and adequate access can lead to a very desirable living situation. However, in instances such as these, housing densities should conform to those designated on the general plan.

There are several other factors and considerations which contribute to the livability of any area. Certain public and private nonresidential uses are necessary for the convenience of residents to serve their daily needs. Others can be very compatible with a residential setting and provide open space or visual breaks in the residential pattern while serving a neighborhood or general community need. However, all non-residential uses in residential areas should recognize and respect the area in which they locate and be designed and developed accordingly.

Certain kinds of commercial uses should be permitted in residential areas for the convenience of the nearby population. These include those services which are used on a frequent basis, such as a small grocery store, laundry or dry cleaning pickup agency, or a beauty or barber shop. These facilities and services should be carefully located and their siting and design subject to thorough review to insure compatibility with their surroundings. Larger commercial centers can include more extensive commercial services, but would not enjoy the same freedom of location as the small convenience centers. Their locations would be restricted to major or major and collector street intersections, but their siting and design should also be subject to thorough review as would be the case for a neighborhood commercial development. The need for these kinds of commercial uses in residential areas in the Bend Area will be fairly limited. The location and distribution of major commercial areas along Highway 97 and along the major east-west arterial should provide for most of the commercial needs of the area within the period of time considered in this general plan. More specific information relating to commercial areas is given in the commercial section of this plan.
PRE-PLANNING STUDY

EXISTING CONDITIONS

LARGE LOT - FUTURE PATTERN PRE-PLANNED
Other private or semi-public uses such as churches, golf courses, riding academies or tennis clubs can add variety to the residential development pattern. However, these kinds of uses should be carefully sited both in terms of traffic circulation and their relationship to their immediate neighbors. Most uses of this type generate traffic at times when many people are enjoying the quiet of their homes, and sites should direct as little traffic as possible on to local residential streets. Many of these uses also create noise or other problems and should be sited so that as little as possible of the activity on the site is unwillingly shared by the neighboring properties.

There are public uses such as schools and parks which contribute greatly to the livability of residential areas. Schools, particularly elementary schools, are often so attractive as an environmental consideration that they often stimulate growth in their immediate vicinity. Because they do often direct growth, the location of schools shall be subject to approval of the city or county. Although parks do not often generate development, they exert considerable influence toward maintaining values in areas where they are located. Both schools and parks are vital to living areas and should be encouraged. However, both kinds of uses and facilities should recognize the character and quality of the areas in which they locate and should be designed to be as compatible as possible with the residential surroundings.

Other public facilities such as fire stations or community buildings also can and should be functional parts of living areas. Through careful siting and design, they can be blended into the residential pattern and, at the same time, provide their essential services to the community. Each location should be considered individually, and each facility tailored to fit the need and to fit its environment.

The nature of street and other off-site improvements will significantly influence the character of any residential area and its convenience as a place to live. Major streets in residential areas should be located and designed to enhance rather than disrupt the areas through which they pass. The natural landscape should be respected as much as possible, and cuts and fills kept to a minimum consistent with traffic safety. This is particularly true of hillside developments. Major street rights of way should be defined before adjacent development occurs so that they may be obtained at the time of development in a manner which will minimize acquisition and improvement costs to the general public.

The street and circulation system should provide for other means of movement than the automobile. Major or collector streets should be able to accommodate routes and stops for mass transit vehicles. Pedestrian and bicycle walks and trails should be provided in street rights of way or along routes designated and developed for this purpose. New residential developments shall consider the need for pedestrian and bikeway facilities in all new developments, particularly as indicated on the general plan. Standards for these facilities are indicated in the circulation section of this plan. Community effort should also be made to provide these facilities in existing residential areas.

Other off-site improvements can significantly influence the appearance and livability of an area. Perhaps the most visible of these are overhead utilities and street trees. No overhead utility lines should be permitted in any new development, and a long-range program should be initiated to bury these lines in existing areas. In addition, all above-ground utility installations such as transformer yards, gas, water, or sewer pumping stations should be designed to fit into residential areas or screened if necessary.
Street trees can add beauty, character, charm, and shade to any section of the city, and are particularly valuable in residential areas. Many of the older sections of the community have mature street trees, and these trees have contributed to the value and long-range stability of these sections. A tree planting program should be developed for established parts of the community which are without trees, and encouraged in all new developments. In addition, insofar as possible, all existing mature trees on undeveloped properties should be preserved as development occurs. The preservation of the area's native juniper and pine trees in new subdivisions can greatly enhance the livability of these areas and retain some of the natural charm of Central Oregon.

As the area grows, all new residential sections should be fully improved at the time of development if possible, in order to reduce initial and long-range costs to the general public. These improvements should include present requirements plus street signs, street lights, trees, and provisions for pedestrian and bicycle circulation.

Many of the foregoing comments also apply to medium and high-density residential areas and to mobile home park and subdivision developments. Although usually smaller in extent, many similar amenities are desirable in all living areas. However, medium and high density residential developments should also be subject to certain locational standards and considerations. Community water and sewer service shall always be available before medium or high density developments are constructed, or some provisions shall be made to accommodate these facilities when they are developed. In general, these areas should be easily accessible by means of major streets, and should be located on sites which are near commercial services and/or public open space. They should be situated so that the higher residential densities do not generate excessive traffic through single family areas. The general plan also concentrates medium and high density housing in parts of the central sections of Bend and along 4th Street to locate population concentrations in areas with maximum convenience to a commercial center or public open space. The plan also recommends medium and high density residential areas east of Pilot Butte in response to the construction of the new hospital and as a means of encouraging extension of sewer services in the area near the old Bend sewage treatment plant.

No specific areas have been designated for mobile home park development. It is recommended that they be considered as a residential use and subject to the same density standards as other residential uses. However, individual mobile homes, because of their different character, should be located in mobile home parks or mobile home subdivisions, or on larger individual lots in some of the more undeveloped sections of the planning area. Individual mobile homes or mobile home parks should be treated as a conditional use in standard residential areas, and their location subject to a public hearing. Mobile home parks should be permitted in medium and high density areas, subject to site plan review.

As mentioned earlier under the general discussion of land use, the Bend Area General Plan is not a saturation plan or a plan for a specific period in the future. Rather, it is intended to provide a realistic guide for future community action, and treatment of land uses varies in different parts of the total project area. Population forecasts of 84,000 people indicate an increase of approximately 51,000 between now and 2000.

Land allocated in the general plan for residential development will accommodate larger populations than estimated by 2000. This is caused by existing land-use patterns which have already committed undeveloped land, previous planning, and zoning commitments made by the county and the city, and a clear trend in development that will occur by 2000 which will be sufficient to commit the development pattern of an area to residential use beyond that time.
Anticipated growth in the Bend Area will have as significant an influence on the character of the area as what exists today. If the character and quality of Bend are to be retained as this growth occurs, it will require considerable effort and a constant concern on the part of the people to make this happen. Good development standards, respect for the natural environment, proper public services and facilities, and concern for the appearance of the community are all essential to the retention of the character and quality of Bend. The future quality of the area as a place to live will depend to a large degree on decisions made now which will guide future growth. The statements which follow set forth guidelines for future residential areas in the community.

Residential Areas - Statements of Intent of the Plan

1. The basic and most important single development criteria for residential areas is housing density.

2. Residential densities indicated on the general plan shall be respected and reflected in city and county codes, ordinances, and development policies. The intent of the plan is to indicate housing density rather than type of building construction permitted within various density areas.

3. All new housing developments shall conform with the designated housing density, regardless of building type, site size, or timing as related to other developments.

4. All residential developments shall respect the physical characteristics of the site relating to soils, slope, geology, erosion, flooding, and natural vegetation.

5. In all residential areas, consideration shall be given to designing areas for living, rather than directing the major effort to a development which is simple and economical to build.

6. All residential areas developed to urban densities on lots of less than five acres shall be provided with community water service.

7. The minimum lot size for new lots without community sewer service shall be 14,000 square feet, and provide for further segregation to the density designated on the general plan.

8. Residential development standards within the urban growth boundary shall be the same for areas of similar densities or topographic conditions, both inside and outside the city.

9. New developments in existing residential areas shall respect the character and quality of the areas in which they locate.

10. New developments in areas without an established character or quality shall be permitted maximum flexibility in design and housing type consistent with densities and goals and objectives of the general plan.

11. Consideration should be given to simplifying review and approval procedures for non-single family housing in undeveloped or newly developing areas, such as staff review and approval of proposals conforming to general plan densities, etc., with appeal procedures to planning commissions and governing bodies by either the applicant or surrounding residents.
12. Hillside areas should be given special consideration in site design by both the developer and local regulations. Building sites, streets, and other improvements should be designed and permitted in a manner which will minimize excessive cuts and fills and other erosion-producing changes such as concentration of rapid storm water run off in inadequate facilities.

13. Areas of older or poorer quality housing within the community should be located and identified and efforts made through redevelopment programs to rehabilitate or redevelop these sections.

14. Medium and high density residential developments should be located where they have good access to arterial streets and are near commercial services or public open space.

15. Higher density areas should be concentrated along 4th Street for convenience to commercial services and public open space.

16. Higher density residential uses should be concentrated in closer-in areas to downtown to provide maximum convenience to highest concentrations of population.

17. Mobile homes should be considered as a type of residential development and be subject to the same density regulations as other residential areas.

18. Mobile homes should be permitted as part of a mobile home park, or part of a planned unit development, or on individual lots in areas designated by city and county zoning regulations.

19. Mobile homes located on individual lots other than planned unit developments should be subject to special siting standards.

20. Mobile homes should not be permitted on individual lots in areas already developed with conventional housing at urban densities unless mobile homes were part of the original development concept.

21. Certain private and public nonresidential uses are necessary and should be permitted within residential areas for the convenience and safety of the people.

22. All nonresidential uses shall recognize and respect the character and quality of the residential area in which they are located and be so designed.

23. Neighborhood commercial shopping areas may be located within residential districts and shall have development standards which recognize the residential area.

24. Development standards shall be established for those commercial uses which will provide off-street parking, landscaping, access control, sign regulations, and design review.

25. In many cases, home occupations are a legitimate use within residential areas, and should be permitted provided that the use displays no outward manifestations of a business.

26. Of necessity, nonresidential uses will have to abut residential areas in different parts of the community, and in these instances, any nonresidential use should be subject to special development standards in terms of setbacks, landscaping, sign regulations, and building height.
27. Recreational vehicle storage facilities should be permitted in residential areas and these facilities should be improved, landscaped, and screened from adjacent residential uses.

28. In new residential developments, parking for recreational vehicles should be provided in common storage facilities or in the rear yard area of each building site, with clear access to a street or alley.

29. Certain private recreational uses, such as golf courses or riding stables, can be successfully integrated into residential areas provided the location, design, and operation are compatible with surrounding residential developments.

30. Schools and parks should be distributed throughout the residential sections of the community, and every dwelling unit in the area should be within walking distance of a school or a park.

31. Because schools can encourage or direct residential development, their locations shall be subject to the approval of the city or county.

32. All new residential development shall provide public, semipublic and/or private open space as part of the development, or money in lieu of land.

33. Area dedicated or provided as public, semipublic, or private open space as part of a residential development should be counted as part of the total area when computing residential densities for any given development.

34. Fire stations are necessary in residential areas, and their location and design should be compatible with their surroundings.

35. Community buildings including community recreation buildings or health and social service buildings could be permitted in residential areas where those services are necessary or desirable, and such facilities should be compatible with surrounding developments, and their appearance should enhance the area.

36. Except for major and collector streets, street patterns in residential areas should be designed to provide convenience access to each living unit, but not encourage through traffic.

37. Major and collector streets, particularly rights of way, shall be secured as development proceeds so that a reasonable circulation pattern will result within residential areas.

38. Streets should recognize natural terrain features as much as possible to avoid unnecessary cuts and fills.

39. Streets should be designed to carry anticipated traffic volumes and to provide space for an adequate planting strip and sidewalks or bikeways.

40. Sidewalks shall be required in all new urban standard, medium, and high density developments, and on all streets and roads providing or that will provide access to schools, parks, or commercial areas, unless the developer plans an acceptable alternative system of walkways and trails to provide adequate pedestrian circulation within residential areas.
41. Efforts shall be made to complete or connect existing walks along routes to schools, parks, or commercial areas.

42. Bikeways should be considered as both a circulation and recreation element in the plan, and adequate facilities should be obtained for this purpose in all new development.

43. Efforts should be made to extend trails, pedestrian ways, and bikeways through existing residential areas.

44. Bicycle traffic should be permitted on sidewalks in all residential sections of the community in order to separate bicycle traffic from automobile traffic.

45. Provisions should be considered which will permit mass transit vehicles on arterial and collector streets within residential areas in the future.

46. All on and off-site improvements in residential areas should add to the character and quality of the area as a place for people to live.

47. Efforts should be made over a sustained period of time to place utility lines underground in existing residential areas.

48. All public utility facilities such as power, telephone, and cable TV should be located underground in new urban density developments.

49. Above-ground installations, such as power transformer yards or natural gas pumping stations, should be designed to recognize the character of the area in which they are located.

50. Water and sewer pumping facilities and other above-ground installations should be designed to blend with the residential areas in which they are located.

51. Street lighting should be provided in all new subdivisions developed at urban densities, and ornamental street lights approved by the city or county should be installed at the time of development.

52. New techniques of providing adequate lighting such as ornamental yard lights should be considered as alternate or supplemental facilities to the normal street lights at intersections.

53. Street signs of a type approved by the city or county shall be provided for each new residential development.

54. All residential areas should include other amenities as development situations permit, such as landscaped traffic islands or extra-width planting strips.

55. Street trees should be those which are suitable to the climate of the Bend Area, add color and beauty to the community, and have a root system which does not interfere with underground utilities, curbs, and sidewalks.

56. Natural tree cover should be retained along streets in new developments insofar as possible to retain the natural character of Central Oregon within the urban area as the community grows.
57. Efforts should be made to design a tree planting plan for the existing areas of the community, and to plant approved trees.

58. All residential development should respect the natural ground cover of the area to the greatest extent possible, and all existing and mature trees within the community should be preserved.

59. Fire access shall be considered during any new residential development.

60. Street names shall be unique within the postal and fire districts.

Commercial Areas

The following goals establish a framework for the commercial section of the general plan:

1. Concerted community efforts shall be made to improve the appearance of existing commercial areas, and similar considerations encouraged in all new developments.

2. New commercial areas in outlying sections shall be developed as centers rather than as strips along major roads.

3. Development standards should be established for all commercial areas and particularly for those which will be adjacent to residential districts.

4. A limited number of neighborhood commercial developments should be permitted in residential areas as a convenience to the residents, and these uses shall conform to the character of the areas in which they are located.

5. Concerted efforts shall be made to rehabilitate or redevelop older commercial areas in order to retain their values to the community.

Commercial areas designated on the plan generally recognize and reinforce existing development and zoning patterns within the planning area, and suggest locations for additional commercial development. Most existing commercial uses in the urban area occur as part of a more or less continuous strip along the major north-south and east-west routes through the city and in downtown Bend. These commercial areas account for most of the commercial land use in the planning area. Although the plan recognizes the existing strip commercial development along major highways in the area, it strongly recommends that new commercial developments occur in centers rather than as strips or extensions of the existing strips along major highways.

One of the most difficult problems in the planning process is the designation and regulations of commercial land uses. Most areas are reluctant to limit locations for business use for fear of discouraging competition and growth. This attitude is also based on a desire to allow each individual the opportunity to realize maximum gains from their property. However, time and experience have proven that this concept yields uncertainty, mixed land uses, and development patterns which are so unstable as to threaten all investments. In fact, zoning as it exists today has resulted from abuses of complete freedom of land use which have ultimately endangered life, health, and property values in many areas.

It is not the intent of the general plan to limit commercial activity, but rather to direct it into areas where it can develop harmoniously with the rest of the community. The plan proposes relationships between commercial uses and other elements of the community which can be achieved with minimum conflicts among uses. The responsibility for land-use decisions rests with the City Commission and the County Commissioners, and careful use of this authority will make the entire community more attractive and economically sound.
Aside from the economic role, commercial areas have a tremendous impact on the appearance of the community. Since they are almost invariably located along traffic arteries or at major intersections, they are seen by more people each day than any other parts of the community. They do in fact create for most citizens and visitors the visual image of the city, even though they occupy less than 5 percent of the land area. The appearance of Highway 97, Franklin and Greenwood streets, and downtown Bend play a very strong role in establishing the visual quality of the area. Improving the appearances of these sections, particularly that of Highway 97, shall be a major community objective.

As the population increases, the need for commercial land will also increase. The general plan recognizes six types of commercial areas: neighborhood, convenience, limited, highway, general, and central business district commercial. The location and distribution of these areas are related in part to existing land use and zoning commitments, and to anticipated service areas and functions. The paragraphs which follow treat each of the various commercial classifications in terms of principal use, location within the project area, and special considerations of problems.

Neighborhood commercial areas are intended to provide locations for small businesses and services which fit into the residential development pattern and provide a convenience to residents in the immediate neighborhood. A small grocery store or mini-mart, a barber or beauty shop, a dry cleaning pick-up agency, or a laundromat are examples of appropriate uses. Neighborhood commercial areas should be located on major or collector streets, and have a site size of from 1/4 to 1/2 acre. In order that the centers remain small, commercial floor area should have between 5,000 and 10,000 square feet. All possible centers are not shown on the general plan because of their small size, but they should be from 1/2 to 3/4 miles apart, and new locations should be based on realistic economic projections which demonstrate a need for the facility.

Convenience commercial areas are intended to provide for the frequent shopping or service needs of nearby residential areas. They will consist principally of a relatively wide range of small retail and service uses, the largest of which would be a grocery store. Uses such as a grocery store, drug store, small bakery shop, specialty shops, and offices would be typical of these areas. These areas are located on the plan along Greenwood on the east side, and on Galveston, 14th, and Newport on the west side.

As time passes, there may be a need for convenience areas not shown on the plan. If this happens, new convenience areas should occur as centers, rather than as commercial strips along major streets or highways. Convenience centers should be located on major or collector streets, preferably at or near an intersection with another similar street, and have a site size of from 2 1/2 to 4 acres. In order that convenience centers remain oriented toward serving nearby residential areas and do not expand to serve much larger parts of the community, commercial floor area should be limited to 35,000 to 55,000 square feet. They should be spaced from 1 to 1 1/2 miles apart, and new locations should be based on realistic economic projections which demonstrate a need for the facilities.

Limited commercial areas are intended to provide locations for a wide range of retail, service, and tourist commercial uses in the community. Uses would include such things as retail stores, offices, banks, restaurants, motels, automobile agencies, service stations, etc. These areas are shown on the plan along 3rd Street from the north overpass south to Cleveland, and along the old city entrance on First, Division, and Deschutes.

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There may be a need for additional limited commercial areas in the future which are not shown on the plan. New areas should be located as centers rather than as commercial strips. They should be located at intersections of major streets, and have a site size of from 12 to 20 acres. There may be suitable sites adjacent to or part of existing commercial areas along the highway. If centers are developed in situations related to the highway, extra care should be taken to guarantee excellent access to the site, and development plans should include proposals for solving congestion problems which may be created at highway access points. If new limited commercial centers are developed, uses in these centers should not include auto agencies or motels.

Highway commercial areas are intended to provide for those uses which have large site requirements, or are oriented to highway access, or provide service to the traveling public. Uses could include motels, auto agencies, building material sales, mobile home or trailer sales, equipment sales and rental. In addition, high way commercial areas could include uses described for limited commercial areas as well as commercial recreation facilities, such as bowling alleys, drive-in theaters, miniature golf courses, or similar activities.

Because highway commercial areas are located on the plan along major entrances to the community, special consideration shall be given to landscaping, setbacks, access, and signing. These areas will form the first impression of the community, and can have a significant impact on the traveling public.

General Commercial areas include a broad mixing of commercial uses in older close-in sections of the community. Uses should include retail, wholesale distribution, and service uses such as retail stores, plumbing supplies, cabinet shops, tire sales, auto repair, etc. These areas are shown on the plan between 1st and 3rd north of Thurston, generally east of downtown between Greenwood and Franklin, and from Hill to the railroad south of Franklin. New areas are shown on the plan adjacent to industrial areas and in centers.

Central business district commercial is downtown Bend. Uses are mainly retail, financial, and service activities located on small, individual parcels. This area is symbolized separately because of different development problems. Here, individual properties are small, and most are developed. Buildings occupy most of their sites so that building setbacks or off-street parking on each lot are impossible. Any major new developments in the Bend Central Business District will require the cooperation of downtown merchants and property owners and the city.

There is a potential for new retail commercial development in the Bend Area. Where it locates will have a strong impact on downtown. If another location is selected, it will greatly reduce the success of downtown as a retail center. The usual problems of multiplicity of ownership and tenants, small lots, lack of parking, and inadequate traffic circulation are all obstacles in the path of a healthy future for the central area. Solution of these problems must be recognized as an extremely sensitive and difficult task. It will take the active interest and cooperation of downtown property owners, businessmen, and the people of the City of Bend to accomplish any program to revitalize this central area.
As with other land uses, the general plan must recognize major existing developments even though under similar locational circumstances they may not be recommended as a future development pattern. Strip commercial developments cause many problems in terms of traffic congestion, mixed uses, and visual chaos. Each business along the street becomes a point of turning movements which can greatly reduce the traffic capacity of the streets as well as increase by many times the number of potential accident situations. The length of the commercial strip, which is often backed by residential development, greatly increases the number of land-use conflicts between property owners. The businesses are designed to face the street, and site improvements and beautification, if any, are usually done in the front part of the property. Little or no thought is given to the rear yard areas which abut back yard outdoor living spaces of adjoining residences. Very often, commercial strips are so long that available property exceeds the commercial demand, and residential uses are often intermixed along the street to the detriment of both.

The visual chaos created by strip commercial areas is so much a part of the ugliness of American cities that it is largely taken for granted. Like a bad odor, we have become accustomed to hundreds of signs fighting for a dwindling place in the sun, with utility poles suspending their wires over the clutter of obsolete, converted, added on to buildings by signs. All that we normally ask is that this visual litter be kept far enough back from intersections so that we can see the oncoming traffic when we try to drive out on to the streets. There are individual exceptions to this pattern, but they are too few and too far between to alter the picture.

Since these areas cannot be removed, steps should be taken to solve some of the problems. Median strips can solve or relieve some of the traffic problems and special site development standards relating to setbacks, fences, and screening can reduce conflicts with residential uses. Reduction of the number and size of signs would do a great deal to restore some sense of visual order. These conditions are found along virtually the full length of 3rd Street, and to some extent, on Greenwood Avenue. Development along Highway 97 through the area has significantly changed the character of Bend.

If the community is to retain its character and quality as growth occurs, significant improvements must be made in its present commercial area. Action by the city regulating signs in the central business district has altered the appearance of that area. Additional steps should be taken regarding sign regulations in other sections of the city as well. Another step is to initiate a major effort to beautify streets in commercial areas with street trees, landscape medians where possible, and landscaping on existing commercial properties along the streets through the cooperation of local businessmen in all parts of the community. These steps alone can change the face of the city in a few short years and recapture some of the charm of Bend. The statements which follow set forth future policies for commercial areas in the community:

Commercial Areas - Statements of Intent of the Plan

1. Strip commercial developments shown on the plan along highways shall not be extended.
2. No new strip commercial shall be permitted along major or secondary streets.

3. Commercial uses along major streets and highways shall be subject to special development standards relating to landscaping, setbacks, signs, and median strips.

4. On Highway 97, 3rd Street, and Greenwood, efforts shall be made to obtain landscaping along the street frontage and landscaped median strips within the street right of way in order to soften the appearance of existing commercial developments and better channelize turning movements on these streets.

5. Zoning for commercial centers other than those shown on the plan should be allocated on a basis of apparent need, and this need should be supported by "real world" data by the applicant.

6. Care should be taken to control the size of these centers so that excessive zoning does not require the addition of other kinds of uses which would generate traffic from well beyond the service area.

7. All commercial shopping centers shall be subject to special development standards relating to setbacks, landscaping, physical buffers, screening, access, signs, building heights, and design review.

8. Neighborhood commercial centers are small developments which serve the frequent needs of the people in the immediate area and should consist of uses such as a mini-mart, barber or beauty shop, or a laundromat. They should be between 1/4 and 1/2 acres, have between 5,000 and 10,000 square feet of gross floor area, serve a population of from 400 to 1,000 people, and be from 1/2 to 3/4 miles apart.

9. Care should be taken to control the size of any other new commercial developments that may be required as growth occurs. Sites should not be oversized to a point where additional uses which would generate traffic from outside the intended service area are necessary to make the development an economic success.

10. Any regional shopping center should be located in the central business district, or as identified on the plan.

11. Commercial developments which abut residential zones or residential uses should be subject to special setback and screening provisions.

12. In all existing commercial areas, sign standards with appropriate amortization provisions shall be adopted in order to change the face of the city.

13. A concerted effort should be made to revitalize the central business district through rehabilitation or redevelopment of existing areas.

14. Buildings in commercial areas in the central section of the community should be limited to three stories in height to retain the character of the area and preserve views of the mountains.
15. An area has been symbolized for highway commercial with a flexible boundary south of Murphy Road on the west side of Highway 97. This area should be approved for development only when a system of highway widening, frontage road, and limited access control is created that will insure the protection of the capacity and safety of Highway 97, and limit the points of access in this area.

16. North of Cooley Road on the west side of Highway 97 is an area designated for highway commercial, currently zoned UAR-20. This area should not be rezoned until a system of frontage roads is created that will provide access to the properties, rather than direct access to Highway 97. The property owners in this area have suggested such a plan. A copy of these plans is available in the Bend Urban Area Advisory Committee minutes. Further development in this area will necessitate highway improvements that should be borne by the area.

Commercial Areas - Statements of Intent of the Plan

1. Outlying commercial areas must provide for uses that do not generally locate in retail centers. Such may be auto dealers and repair shops, extensive recreational uses, such as bowling alley or driving range, building materials, sign shops, electrical supplies, motels, restaurants, and facilities serving tourists.

2. Some of these uses will have to locate on major highways, some will locate in areas with access to the urban arterials. However, access control, frontage roads, landscaping, and good design can minimize the physical and visual impact.

3. It is the intent of the comprehensive plan to avoid problems associated with strip development, i.e., congestion caused by turning movements, too much access to the arterial street or highway.

4. It is the intent of the plan to allow commercial development adjacent to arterials and highways, provided that the developments access onto frontage roads or interior roads, and that access on to the highway or arterial will be limited. Points of access will be encouraged that provide for adequate and safe entrances and exits and that favor right turns and merging over the use of signalization.

5. The zoning and subdivision ordinances are intended to provide the city and county the tools to regulate the growth of the Bend Area in a positive way. In the use of these tools, the city and county shall apply access control, dedication for wider streets, wider setbacks, street improvements, such as left turn refuges, medians, frontage roads, and reverse frontage to maintain the function of the collector, arterial, and highway to improve traffic.
Industrial areas -

The industrial section of the general plan was prepared in conformance with the following general policies:

1. Community efforts shall be directed toward preserving prime industrial lands for industrial purposes.

2. Industrial areas shall be protected from incompatible commercial and residential uses.

3. Adequate traffic circulation, off-street parking, loading, and service areas should be considered as essential to industrial development.

4. Community efforts should be directed toward improving the general appearance of industrial areas so that they make a positive contribution to the environment of the community.

5. Industrial development that will not impair the quality of surface or ground water nor air resources is encouraged.

Most of the existing industrial development in the planning area is located south of the City of Bend in the Diamond International complex or along the north-south corridor through the city which has rail or highway access. The general plan recognizes this basic pattern and adds considerable amounts of industrial land on the west side and at both the north and south edges of the city east of Highway 97. The industrial area to the north adds considerable acreage to the section being developed by the Bend Industrial District. Areas for heavy industrial development are symbolized in this section because the site is of sufficient extent to permit lighter industrial uses or open spaces as buffers between heavy industrial development and surrounding industrial uses. Additional industrial areas recommended south of the city are designated for light industrial development. These areas are adjacent to the railroad and have good access by means of arterial streets.

The general plan recognizes the existing development pattern, and in addition, reflects some zoning and land-use commitments previously made by the county and the city. Much of the proposed industrial land is held in large ownerships by relatively few property owners.
Industrial park areas are intended to accommodate those industrial or distribution uses which seek fully improved sites and protection against incompatible industrial uses, and are willing to abide by site improvement requirements and performance standards. These areas should provide industrial sites in a park-like environment. Industrial park sites recommended on the plan are located east of the Sisters Highway south of Cooley Road, and another is located west of Overturf Butte in the vicinity of Skyliners Road. The Skyliners Road development would be within the Phase II sewer boundary as it now exists or may be determined that service can be extended. It shall be tied into one or both of the major new streets crossing the river; Colorado and/or Arthur Avenue. It shall meet the highest environmental standards, and the design of the park shall contain an undeveloped vegetative buffer between the industrial uses and any adjoining development. The uses contemplated for this area would not include any use emitting any obnoxious odor, even though such might be within the existing State Department of Environmental Quality standards.

The BLM land east of the railroad and north of Cooley Road should be preserved as a future industrial site. The county should take the necessary steps to acquire this site for possible future development. If this area is designated as industrial and so zoned, a natural buffer of trees and natural features shall be included in the development of the area.

Light industrial areas are intended to provide for heavier commercial and light industrial uses devoted to wholesaling, warehousing, light fabrication, and repair. Extensive areas for light industrial development are shown on the plan. Most have rail access or good highway access and are extensions of existing industrial areas.

General industrial areas are intended to provide for a wide range of industrial activity including basic manufacturing industries. The areas shown on the plan reflect existing development or zoning patterns and all have existing or potential rail access.

Mineral extraction - There are some areas designated for industrial use in out-lying sections of the community. These uses relate to gravel or pumice mining, and must occur where the resource is available. Gravel despoits are rare in the planning area, but pumice is available in many locations west of Bend. These operations can be carried out in the urban reserve areas with little adverse affect on adjacent uses. However, sites shall be restored to some usable form after the resource has been extracted.

In the past, the community has made a continuing effort to attract industrial development to the Bend Area. This effort has been reasonably successful, but little or no attention was given to the manner in which new industries developed their sites. Future industrial development activities should concern themselves with quality of industrial development in the planning area, and efforts should also be made to improve the appearance of existing industrial sections.

The statements which follow set forth future policies for industrial areas in the community:

**Industrial Areas - Statements of Intent of the Plan**

1. Industrial areas shall be provided for new industry in a park-like setting.

2. Industrial developments along highways shall be subject to special development standards relating to setbacks, landscaping, signs, and outside storage.
3. Continuing efforts shall be made to upgrade the appearance of existing industrial areas and to eliminate adverse waste discharge and air quality conditions.

4. New industrial development shall be encouraged to locate in areas where community services can be provided.

5. Wherever industrial uses abut residential uses or residential zoning, special development standards relating to setbacks, screening, signs, and building height shall be established.

6. The community shall retain its policy of attempting to diversify its industrial base.

7. The sawtooth pattern symbolized on the general plan indicates a flexible boundary between uses.

8. Since it has been established that the quality of the air may be adversely affected by additional discharges, the development of new industrial sites will be closely monitored in cooperation with DEQ to prevent substantial degradation of the air shed.

Public Facilities -

Public facilities are those areas and improvements which accommodate or provide various government services to the people of the community. These include schools, parks, fire stations, and other facilities, such as public buildings, shop areas, solid waste disposal sites, sewer and water systems, etc. Adequate public facilities are essential to well ordered community life, sustaining and enhancing the health, safety, educational, and recreational aspects of urban living. In many ways, the adequacy, character, and the quality of public facilities express the community's collective opinion of itself and its environment.

Schools -

Identifying the location of public schools is an important function of the general plan. The need for new schools is closely related to residential development and housing densities in the community. It is possible, therefore, to estimate the number of school-age children for each type of school which will be required to serve anticipated residential developments in various sections of the planning area. It is extremely important that schools be located with reference to the development pattern indicated on the general plan. Elementary schools in particular can have a significant influence on the location or direction of growth in any given area, and will in themselves attract residential development. They should be centrally located with reference to their service area and spaced in a way that will permit reasonable locations for future schools as the area continues to urbanize. The responsibility of providing schools rests with the local school district, and the purpose of this plan is to recommend a comprehensive plan for location of various types of schools consistent with anticipated development patterns.

The school section of this plan has been prepared in cooperation with the staff of the Bend School District. Future enrollment estimates are based on the population forecast for 2000. Plate 7 shows existing and projected elementary, junior, and senior high school enrollment for the total project area and for each planning area. It can be seen from the data on this plate that total enrollment is expected to increase to about 15,910 students by 2000. Based on this estimate, a plan was prepared for the type and location of schools necessary to accommodate future anticipated enrollments for various parts of the project area.
The school section of the general plan is shown on the general plan map. It is anticipated that there will be a need for three additional elementary schools, two new junior high schools, and one new senior high school in the planning area by 2000. This requirement is based principally on increases in population, but also includes the phasing out of older schools. The school requirements indicated in the general plan are based on a 6-2-4 grade structure existing in the Bend School District. Modifications in grade structures or year-round school could alter school facility requirements as indicated in the plan. For this reason, the school element of this general plan may be subject to revision and amendment as the school district proceeds with its deliberations relating to modifications of educational policies.

The school section of the general plan was prepared in conformance with the following general policies:

**Schools** -

1. Schools in the planning area should be developed according to the policies of Bend School District No. 1, and the Oregon State Standards, which are:

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Site Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>400</td>
</tr>
<tr>
<td>Intermediate</td>
<td>750</td>
</tr>
<tr>
<td>Senior High School</td>
<td>1,200</td>
</tr>
</tbody>
</table>

2. The School District shall participate in providing necessary street, pedestrian, and bike facilities adjacent to the school sites as new schools are erected.

3. When a majority of a school's expected attendance will reside within the IUGB, the School District shall make every effort to construct such school(s) within the IUGB where students can walk to the school.

4. The city and county shall require major new developments to reserve land for school purposes in conjunction with the School District's plan.

**Parks** -

Exhibit "C" contains a needs assessment and inventory from the Metro District Park Plan.

The park section of the general plan applies the following general policies:

1. Develop a park system that expresses the community's personality.

2. Park and recreation development is a vital part of the future livability of the area, and efforts shall be made to keep these facilities abreast of growth.

3. Park sites should be acquired well in advance of need so that they can be reserved for community use before the cost of acquisition becomes prohibitive.
4. Parks should be located within walking distance of every dwelling unit in the community.

5. Parks should be centrally located and easily accessible to the areas they are intended to serve.

6. The park district should initiate a regular program for acquisition and development of park and recreation facilities.

Throughout the country and the northwest, development of parks and recreation facilities has become increasingly important in recent years. Over a period of time the demand for these facilities has been brought about in part by a higher standard of living and the resulting increase in leisure time. Such things as shorter work weeks, earlier retirement, and increasing life span have added many leisure hours to the lives of a growing segment of the population.

Park development has also become increasingly important because of the trend toward urban as opposed to rural living. As featured in the urban landscape, parks will improve the character of existing neighborhoods and tend to stabilize property values. Many businesses and industries seek locations with a high level of environmental quality as a means of increasing their ability to attract and retain a stable and productive work force. With the improvement of transportation systems giving greater flexibility for business and industrial site selection, a well developed park and recreation system can be an important factor in attracting such developments to the community.

The general plan recommends a park and recreation system which would place a neighborhood park within walking distance of every residential unit in the community, as well as take advantage of natural sites within the area both inside and outside of the city. As the area grows, other opportunities will occur in addition to those shown on the plan. Each should be evaluated in terms of conformance with policies and objectives of the community.

The general plan also recommends school parks be developed wherever possible. A park facility located adjacent to a school has essentially the same service area as the school. This approach to park planning has several advantages. The combined school and park make a year-round center for educational and recreational activities and utilize parts of the school facility which might not otherwise be used during the summer months. The park is immediately available during the school year for school activities and provides a larger, more usable, and more attractive school site than would otherwise be practical. The combined school-park site is somewhat larger than either a neighborhood park or an elementary school site individually. This larger combined site leads to better design of park and school facilities and allows more space to provide activities for age groups other than those served by the school.

The school-park method can also afford opportunity for substantial savings through sharing of the cost of acquisition, development, and maintenance of the site between the school and park districts. It also eliminates duplication of facilities. For example, the apparatus area and paved court customarily built with an elementary school also serve as park facilities on a combined site. Accessibility to the school from the park eliminates the need for construction of a separate recreation building for indoor activities. Some of the development costs can be shared by the school district, the park district, and the local government, particularly the cost of improving streets adjacent to the site. Agreements between the school district and the park district which would spread the maintenance cost between the two agencies would reduce the cost to each.
The Deschutes River flowing through the community represents one of the out-
standing recreational opportunities in the community. Several parks have been
developed along the river, and continuing community efforts shall be made to acquire
property as it becomes available. In addition, the plan recommends the development
of a trail system along the river wherever possible in an effort to provide public
access to this outstanding natural feature. An effort was made to design a system
of trails and bikeways which would interconnect schools, parks, and various sections
of the community. The park plan shown on Plate 8 and the general plan shows the park
system and the trail system proposed in this plan. The consultants are indebted to
the PTA's of each elementary school in the planning area for the contributions to the
bicycle and pedestrian routes shown on the general plan. The bikeway and pedestrian
routes proposed on existing streets and the trails on the general plan provide a
comprehensive system for bicycle and pedestrian movement throughout the planning area.

Improvement standards for trails and bikeways can vary considerably depending
upon the circumstances under which each is constructed.

One of the basic assumptions in the preparation of standards for bikeways is that
bicycle traffic should be physically separated from automobile traffic. Sidewalks can
be used by bicycles in all but the most congested parts of the central business dist-

Exhibit 22 
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Parks and Recreation - Statements of Intent of the Plan

1. Retain a humanistic attitude toward serving the public so that services never become impersonal or "institutionalized".

2. Work from the wishes of the people as a basis for developing park and recreation systems and programs.

3. Facilities and programs should be kept abreast of growth and change.

4. Provide community leadership in beautification by example on Park and Recreation facilities.

5. Publicly advocate and coordinate activities relating to beautification and landscaping throughout the community.

6. Consider neighborhood interests in the process of designing neighborhood parks.

7. New concepts of mixing public recreation activities with revenue-generating commercial uses such as restaurants or other concession activities should be explored in order to help finance recreation programming, park acquisition, and maintenance.

8. Provide facilities first where population is concentrated rather than in outlying areas.

9. Insofar as possible, provide a similar or equal level of service throughout all areas served by the District.

10. Neighborhood parks will provide the foundation of a system for services to the people.

11. A neighborhood park should be developed within walking distance of all residents of the District.

12. Neighborhood parks shall range from 3 to 5 acres in size.

13. Land acquisition should be the highest priority for the expenditure of capital improvement funds.

14. Park sites should be acquired in advance of need so that they can be reserved for community use before the cost of acquisition becomes prohibitive.

15. Larger parks and recreation facilities should be equally accessible as possible to areas they are intended to serve.

16. Other parks should be centrally located and as easily accessible as possible to areas they are intended to serve.

17. Opportunities may occur for development of small parks not shown on the plan, and if the site is useful, should be obtained.

18. A trail system for bicycle, pedestrian, and in some cases, equestrian use shall be developed, and wherever possible, interconnect schools, parks, and open spaces within the District.
19. All trails developed by the District should have recreation value and not be merely replacements for sidewalks which would otherwise be located elsewhere.

20. Wherever possible, trails should be developed along the Deschutes River and along major canals so that these features can be retained as an asset in the local environment.

21. Concerted community efforts shall be made to preserve and develop as much as possible of the bank of the Deschutes River and Tumalo Creek for park and recreation uses.

22. Local codes and ordinances shall be amended so that park land can be acquired through the subdivision process, and a fee in lieu of land dedication established as a policy of local government.

23. The park and recreation element of the plan should be further refined to more carefully identify potential park sites and trails and to establish a program for priorities and acquisition and development of these facilities.

24. No public land declared surplus by a local governing body shall be disposed of without first having been reviewed by other governing bodies for public use.

25. The community shall make a concerted effort to preserve access to the river and to augment the river park system whenever possible.

Fire Stations -

The fire station section of the general plan was prepared in conformance with the following general policies:

1. Fire protection in the planning area should be provided in accordance with the recommendations of the National Board of Fire Underwriters.

2. Fire protection in the planning area shall be considered as a common problem by the city, county, water districts, and the fire protection district.

3. Fire stations shall be designed to accommodate a variety of fire fighting apparatus to reflect future changes in requirements relating to development within service areas.

The general plan recommends two new fire stations to provide protection for the project area. The need for these stations is based on standards of the National Board of Fire Underwriters. The plan shows the existing stations and proposed fire station locations, and coverage from each station for high value areas (1 mile), high density residential and apartment districts (1 1/2 miles), and single-family residential areas (2 miles).

The existing central fire station will provide adequate protection for most of the close-in central part of the community in the future. Additional stations are located to provide coverage for areas north and south of the central area along Highway 97. In addition, one station is located near Central Oregon Community College, and another near the new hospital. These stations will cover those facilities and surrounding residential developments. The fifth station is proposed southeast of the city to provide coverage for industrial growth in that area as well as new residential development.
Each new station should be designed to accommodate a wide variety of fire protection equipment. Current Underwriters standards relate fire protection needs to a series of complicated criteria which can only be determined after the area develops. For this reason, equipment requirements for the various stations must be determined at some time in the future.

Public Buildings and Shops -

Both the city and county will require additional public building and shop space as the area grows. The three basic public buildings to be considered are the county courthouse, the city hall, and the public library. All three are now located in or near the central business district and have relatively convenient locations. There are several sites for expansion or relocation of these different uses within the central part of the city. The eventual disposition of Cascade Junior High School and the old hospital can affect future site possibilities. It is recommended that the city hall and courthouse be retained in or near the central business district, and that the location of each facility be agreed to by both the city and the county. The library can be expanded at its present location by acquisition of additional property in the same block. It could also be incorporated into a civic center should the city and county select a common location for joint development. The county has just completed new shop maintenance facilities.

The following policies are recommended with reference to public building and shop facilities:

1. New county courthouse and city hall facilities should be located in or near the Central Business District.

2. There are several alternative locations for courthouse and city hall facilities in the central area, and the location of each should be agreed upon by both the county and the city.

3. Efforts shall be made to group public offices in a more or less common location as a convenience to the public.

4. Efforts should be made to encourage federal and state agencies to locate in or near the Central Business District, preferably near city or county offices.

Solid Waste Disposal -

There are two solid waste disposal sites located within the planning area: a building material dump located off Century Drive on the west side of Bend, and Knott Pit at the intersection of Arnold Market and Knott Roads. The demolition dump is near its capacity, and the county has proposed to expand to the west, using old pumice pits as disposal sites. The Knott Pit sanitary landfill may have a life of 10 to 20 years; however, with the increase in population expected, this may be shorter than expected. A survey of this site should be made to determine capacity, and new sites will need to be identified. Exhibit "D" gives the background for the following policies:

1. The county shall begin to assess the useful life of Knott Pit and begin to identify and designate new site(s) for sanitary landfill purposes.

2. The county shall endeavor to take into account adjoining uses and screen, reduce dust and blowing refuse in order to insure as few impacts as possible from these necessary facilities.
3. The county shall begin investigation of the expected life of the Knott sanitary landfill and the Bend Demolition Dump.

4. The county shall identify alternatives for expansion or a new site for both of these activities for public discussion and approval. After public hearings, such sites as are environmentally sound and compatible with adjacent land uses shall be added to the plan.

5. The county and city shall work out an alignment for Simpson Avenue to be extended through the county demolition dump land as a major street providing additional east-west access.

6. The county and city shall continue to encourage recycling as an alternative to landfill disposal.

7. Since there are many lots within the county that will have to rely upon septic tank and drainfield as disposal means, and since there may be a limit on how much pumptage can be handled at the sewage plants, the county should investigate a means of disposal of septic tank pumpings over the long run.

Sewer and Water Services

One of the most important problems that will be faced by the community in the future is the provision of water and sewer services. At the present time, about nine percent of the City of Bend is served by a sewer system, and the State Department of Environmental Quality has ordered the city to provide service for the entire city. The city has proceeded with construction of a sewer system. The new system is about 80 percent complete, and has a facilities plan for a sewer system which can serve the city and some of the surrounding areas. There is a private system located in the Ward development southeast of the City of Bend at the present time. These are the only two areas in the community which currently have sewer service.

The cost of providing sewers is exceptionally high in the Bend Area because of the underlying rock. This cost is increased substantially if the sewers are installed after the area develops. For this reason, it is extremely important that every possible community effort be made to provide for these services prior to development.

The city now has a complete water system, and there has been fairly extensive development of private water systems in areas outside of the city. The systems outside of the city are small and will present problems in the future as urban densities increase and additional users are added to those systems. Action should be taken toward consolidating these various water systems into a single system, or developing common improvement standards so that they may be consolidated at some time in the future.

The city and county should consider a joint action program to solve these major problems of community services. The general sequence of action outlined herein lists steps which the county may follow to provide urban services within the urban growth area. The list is intentionally general because there are many courses of action open to the county. There are possibilities for federal grants or matching funds for several of the steps, and the city has developed or is now developing information and engineering data for a sizable section of the urban growth area. This information can be used by the county should the Board of Commissioners choose to provide urban services to unincorporated areas within the urban growth boundary.
Any county program should be closely coordinated with the city to avoid unnecessary duplication of services or facilities. The two areas should also have similar land development standards and system design and construction requirements to avoid confusion or encourage development in the area with lower requirements. Obviously, the county and city should carefully coordinate their programs and jointly develop standards acceptable to both.

The urban services treated herein are sewer and water services. They are listed separately because the alternatives and problems facing the county are different in each case even though many steps and procedures are the same.

Sewer Services -

The following outline identifies the decisions the County would need to make if it chooses to provide urban services within the Urban Growth Boundary.

1. Make policy decision that the county will become involved in providing urban services within the urban growth boundary.

2. Identify total area in which these services will eventually be provided.

3. Identify priority areas based on need, ease of providing service or probability of development.

4. Evaluate organizational alternatives for providing services: county service district, special service district, annexations to city.

5. Make policy decision relating to treatment facilities: provide county treatment facilities, contract with city for treatment, join with city to construct facility.

6. Prepare preliminary sewer service plan to determine need, areas to be served, and general cost estimates. (Some information already available from work done for the city.)

7. Based on items 1 through 6, define district and hold election to establish district.

8. Assuming district is formed, establish preliminary phasing for providing service.

9. Obtain aerial mapping of area and prepare facilities plan for areas to be served in foreseeable future.

10. Prepare detailed phasing plan relating to areas served, cost, and funding.

11. Explore probable operation and maintenance costs using County Public Works Department as responsible agency.

12. Prepare detailed engineering plans for construction of first projects, call for bids, and construct part of system.
13. Review county zoning and subdivision policies and standards in view of the availability of sewer services with reference to lot sizes and sanitation requirements.

14. Modify zoning and subdivision standards as necessary in light of potential service areas.

Water Services -

Within the UGB, the City of Bend is the major water supplier. The city has two wells that can pump six million gallons per day, and its main source of water is Bridge Creek, from which it receives 13.2 million gallons per day. Average use during winter months is 5 million gpd, and during summer months, use peaks at 18 million gpd.

The city has 11 million gallons of storage in the following reservoirs: Overturf, Awbrey, College, Pilot Butte No. 1, Pilot Butte No. 2.

The city has a non-metered single family residential system with approximately 7,000 customers. The water system, together with the Fire Department, has given the city a Class 4 fire insurance rating.

The city is presently preparing a water master plan for the next 20 years. When it is complete, it is expected that a capital improvement program for needed improvements will be adopted.

Within the urban area there a number of private water systems: Juniper Utility, MRS, Roats, Avion, Crum to name a few. The majority of these obtain their supply from wells, and supply domestic service. These systems generally do not meet the city's standards in terms of fire flows, reliability, or materials.

Policies:

1. The city and county agree that the city is the long term provider of urban services.

2. The development of new areas with utilities should be consistent with the city's water system.

3. The city shall continue to monitor its supply, reservoir, and systems needs to keep them adequate to the growing community's needs.

4. Efforts shall be made by the city and county to develop standards for water systems, in order that the future systems are compatible and eventually integrated into a whole.

The steps involved in providing sewer and water services apply mainly to the county. The city has taken most of these steps for at least part of the community at some time in the past. If both agencies are to participate in these services outside the city, the city will also have to do certain things if a joint program is to be possible. The city will have to:
1. Agree to extensions and connections to the city's system in areas outside the city limits.

2. Agree to use of city's water supply outside the city.

3. Agree to use city's sewerage treatment plant for county system.

4. Agree to common land development standards inside and outside the city.

5. Agree to common system design and construction requirements inside and outside the city.

6. Make engineering data and plans available to the county.

7. Consider county needs when developing priorities for areas to be served inside the city.

The city and county have already agreed to an urban growth boundary. The Bend Area General plan was formulated and financed by a joint city-county effort, and the provision of services to areas within the growth boundary is a logical extension of these joint efforts. Common standards and services for areas developing at urban densities can actually save the people of the community millions of dollars over the next ten years along. It will not be easy for either the county or the city to join together in this effort. Both will have to alter long-standing policies and concepts if there is to be any hope of success. It can be done, and retaining the unique character and quality of the Bend Area should make the effort well worthwhile.

**Storm Drainage**

The City of Bend has a combination of storm drains (mainly on the west side of the Deschutes River) and drill holes used to control surface drainage. Currently, the most noticeable problem with storm drainage is the flooding of the Franklin Avenue and 3rd Street underpasses. While these are a continuing nuisance each year, the more important problem faced by the city is property damage to homes in areas where drainage was not adequately addressed in the past.

The city is now experimenting with a type of dry well on the west side of the Deschutes River. Due to the difference in geologic formations, drill holes do not function well on the west side. The development of Aubrey Butte will require special treatment to handle surface drainage also.

Throughout the east side of town, streets are drained to drill holes and catch basins within the streets. New parking lots and buildings are required to control surface drainage on their property.

The city plans to continue using dry wells and storm drains as appropriate to control surface drainage.

**Policies:**

1. The city and county shall require all new developments to contain storm drainage upon their property.

2. The city and county will utilize storm drainage methods that are the most cost effective.
Police Services -

The City of Bend provides police services to the city. The police force is made up of 43 people. The enforcement problems have grown rapidly due to both growth in the area and growth of tourist and recreational use of Central Oregon. Outside the city, the urban area has police service from the county's sheriff's department and Oregon State Police. Exhibit "E" gives the background for police services for the county.

In recognition that, as the area grows, there will be increasing demands on police services, the following findings and policies are adopted:

Findings:

1. Police and correctional services will need to grow in relation to the area's growth.

2. Crime rates can be reduced by providing employment, recreational, and vocational opportunities, as well as additional manpower.

3. The city's jail facilities will not be adequate over the planning period.

4. The city and county should investigate the possibility of joint use of jail and activities that may be cost effective for both jurisdictions.

Policies:

1. The city and county should work cooperatively in the provision of police and correction facilities.

2. The city and county shall continue their crime prevention educational programs.

Circulation -

The circulation section of the general plan is based on the following policies:

1. The circulation system shall provide safe, convenient access to each parcel of property in the community.

2. Streets and highways should recognize and respect the characteristics of the natural features over which they pass, and wherever possible be designed to minimize adverse effects on these features.

3. Streets and highways shall also recognize the land use characteristics of the area through which they pass, and should be designed so that they are an asset to the community rather than a disruptive influence.

4. Streets shall be designed to serve their anticipated function with variations in design standards possible within the limits of sound engineering and planning.

5. The legitimate role of public transportation, bicycle and pedestrian circulation systems as viable future alternates or supplements to total dependence upon the automobile shall be recognized.

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The circulation plan sets forth a system of streets and roads necessary to move people and goods safely and conveniently within the planning area. The present circulation system has two major problems, an insufficient number of east-west crossings through the community, and heavy traffic volumes on various sections of Highway 97. Consideration was also given to the possibility of some sort of urban transit system for the Bend Area. At this time, there is little or no possibility that a public transportation system could be put into operation and survive in the community. The general plan does recommend a general increase in housing density throughout the planning area as a means of making public transportation more feasible in the future. However, it is reasonable to assume that any local transportation system would await some type of state or federal financial assistance before it could become a reality. The general plan does recommend expansion of the present bus terminal in the downtown area. This is one of several alternate locations which could be used depending upon future detailed plans for the central business district with reference to city, county, and library facilities.

As mentioned previously, major congestion problems in Bend result from an inadequate east-west circulation system and from heavy traffic volumes on various parts of Highway 97 as it passes through the community. Franklin and Greenwood are the only two routes in the community with any east-west continuity. They also are the only two grade separations with the railroad track. Because of this, these streets are the focal point of most east-west traffic in the community and also serve to congest 3rd Street in the central part of Bend. General traffic movements in the area are significantly increased by vehicles moving from Greenwood to Franklin on 3rd Street as part of an east-west movement.

There is also a concentration of traffic on Franklin between downtown Bend and the railroad underpass. However, there is considerable movement relating to the industrial area to the south and downtown to the west. If parking were removed from this section of Franklin, some of the congestion would be alleviated. However, at some time in the future it will be necessary to widen the Franklin underpass to four lanes.

The general plan makes several recommendations in an effort to improve east-west circulation. Arterial connections are proposed north of Bend between Highway 97 and Boyd Acres Road which would also eventually extend easterly to the Bend-Deschutes Market Road and beyond. These routes would provide access to the east side of the community without having to proceed into the central part of the city before moving east.

Additional or improved grade crossings are proposed at Underwood, Revere, Portland-Olney, and Hawthorne Avenues. All of these improvements collectively would relieve the pressure on Greenwood and Franklin as east-west routes. The Portland-Olney-Penn-Neff connection would provide an alternate east-west route across the entire community and will provide excellent access to the new hospital. This route passes by Pilot Butte Junior High and Juniper Elementary School, where there are already problems with traffic and children going to school. There is a need now for safer school crossings, and the problem will be further aggravated by future increases in traffic volumes. Consideration should be given to pedestrian over-crossings on Neff to reduce the hazard to children going to school. This route has several problems, but, generally speaking, is the only possibility for such a connection.
The grade at Greenwood Avenue should be lowered under the railroad overcrossing to permit adequate clearance for all vehicles on this major street. The intersection of Greenwood, Newport and Wall has been improved, providing better east-west movements. The Revere and Hawthorne crossings will also provide alternate movements across the central part of the community. However, railroad switching activity in the central part of the community will continue to limit the utility of these improvements. Every effort should be made to encourage the railroad to move their switching activities out of the central part of the city.

If urban development occurs to a significant degree on Awbrey Butte, Revere should be extended west across the Deschutes River to provide an alternate route across the central part of the community for population in that area. This improvement would appear to be directly related to future growth possibilities in the Awbrey Butte area.

The plan proposes a connection between Century Drive and Colorado Avenue in the southwest section of the City of Bend. This will provide an alternate to Galveston and Franklin in the central part of the city. This new route should also connect to Simpson Avenue, and Simpson should continue west to the west-side arterial.

Several street extensions and connections are recommended in the southeast part of the community to provide greater east-west continuity. Franklin should be connected to Bear Creek Road in the cemetery area, and Aiden Avenue should be extended from 4th to Bear Creek Road. Wilson Avenue has been extended from Diamond International industrial area easterly to Ferguson Road. All of these connections would increase east-west mobility in the community and tend to relieve the need for using 3rd Street and Highway 97 as parts of east-west traffic movements.

The extension of Arthur, westerly across the south end of the industrial area to connect with Century Drive will provide an alternate means of access to Mt. Bachelor from the south, and could be used as an alternate route to the residential areas of the west side of Bend.

Chase Road shall be extended from Brosterhous westerly to the proposed north-south arterial west of Highway 97. This connection could relieve some of the congestion at Brosterhous and 97, one of the more congested intersections on the south highway. It would also provide an alternative route through the industrial areas in the southern part of the community. Hamilton/Murphy Road shall be extended to Ferguson Road.

The extension of Anderson Road from O.B. Riley Road across Highway 97 to Boyd Acres and then easterly to Yoeman as a new east-west arterial will provide an alternative access to the two malls from the east.

The principal north-south congestion problems occur on 3rd Street near Greenwood and Franklin, and on Highway 97 from south of the underpass to Brosterhous Road, and north of the overpass to the Highway 20-97 intersection. The recommendations made relating to improvements in the east-west streets should relieve some of the congestion on this major north-south route.

The general plan proposes additional north-south routes as a means of reducing congestion on 3rd Street. A west side alternative is proposed on 1st and Division Streets which extends southerly to Hayes at Highway 97.
A connection is also shown from Division to Highway 97 by way of Scott and 2nd Streets. These connections will reduce the need to use Highway 97 or 3rd Street as a means of access to downtown Bend or the industrial area to the south.

There are several alternatives available to reducing congestion on Highway 97 and 3rd Street through the planning area. The State Highway Division is in the process of widening 97 from Cleveland Avenue south to Murphy Road. It appears that $3-4 million will be allocated to the area by the Oregon Transportation Commission in the next six-year highway program. These monies would be used to improve Highway 97 from O.B. Riley Road in the north to Brosterhous in the south. The project should look at all the alternatives that have been discussed: (1) widen existing structures; (2) new and more signals; (3) couplets; (4) expressway, etc. The project should be developed within a framework that recognizes that Highway 97 is an urban arterial, and that any expenditures should be made with the concept that the urban area traffic circulation as a whole be enhanced, not just the north-south movements through the community.

The extension of 4th Street south along Railroad Street and Baer Road to connect with Ferguson Road will provide an additional route to relieve congestion on Highway 97.

An additional north-south route is recommended on the east side by connecting 8th Street to 9th Street, and 9th to Baer Road south of Wilson. This route would provide for north-south circulation without having to travel into the central section of the community.

Other major and collector north-south routes on the east side can accommodate north-south traffic through the area and provide alternate routes for access to the new hospital from both the north and south.

Most of the major street systems shown on the west side of the planning area lie some time into the future. Alignments are shown as a means of indicating general locations and should be used to preserve right of way for future development. Additional collector routes are needed and should be developed as part of the planning for the development of the area.

The circulation plan is shown on the plan map. It symbolizes the major and collector streets. It establishes a system that will be adequate to accommodate anticipated major traffic movements in the planning area and will significantly improve both north-south and east-west movements. Collector streets are intended to move traffic within commercial, industrial, or residential areas to the arterial street network. Standards for street developments in the IUGB are given in Table 1.

The new street locations and alignments indicated on the plan are not exact, and a more detailed study will be necessary to determine the best precise alignments. Most standards for major streets in developed areas will be minimums because of inadequate right of way and tremendous costs of acquiring abutting land. However, in many cases, slight increases in right of way can be obtained without excessive damage to adjacent uses. It is extremely important that adequate right of way be secured before development occurs along streets in new areas, particularly as minor and major partitions take place. These streets shall be secured as part of the subdivision guarantee process or purchased through local government agencies. Money spent in advance of need for street rights of way will be returned to the community many, many times over as the area continues to grow.
<table>
<thead>
<tr>
<th>Type of Street</th>
<th>Right-of-way Width</th>
<th>Paving Width Between Curbs</th>
<th>Type of Paving</th>
<th>Curbs</th>
<th>Curb Return Radius</th>
<th>M.P.H.</th>
<th>Maximum % of Grade (4)</th>
<th>Minimum Radius of Curvature</th>
<th>Street Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial</td>
<td>80'</td>
<td>44 1/4'</td>
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<td>45</td>
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<tr>
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<td>40'</td>
<td>(2) yes</td>
<td>20'</td>
<td>35</td>
<td>8%</td>
<td>300'</td>
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<tr>
<td>Local</td>
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<td>36'</td>
<td>(2) yes</td>
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<td>25</td>
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<td>150'</td>
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<td>(3)</td>
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<tr>
<td>Cul-de-sac</td>
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<td>38' (1)</td>
<td>(2) yes</td>
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<td>25</td>
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<td>(3)</td>
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<td>15'</td>
<td>25</td>
<td>8%</td>
<td>150'</td>
<td></td>
<td>(3)</td>
</tr>
</tbody>
</table>

(1) The paving radius at the turn-a-round of a cul-de-sac shall be 38' on a right-of-way radius of 50'.

(2) Pavement must be 2" of A.C. (asphaltic concrete) or approved equal.

(3) One (1) street sign shall be provided at each intersection for each street.

(4) Minimum grade of 0.3%. If unavoidable conditions exist a grade of 2% steeper than that shown will be allowed.

(5) Varies, and will be established by Engineering or Public Works Departments, considering adjoining sections and current plans.

(6) Sidewalks will be required - location and size to be determined at the time of development.
Outside of the central area, most recommendations for major and collector streets were made to obtain continuity in future alignments and a spacing of streets which would serve anticipated growth. Local streets become a strong element in the character and quality of the residential areas they serve. They should recognize the character of the natural landscape through which they pass, and modification to design standards should be possible when necessary to preserve this character. In addition, variations to a standard residential street should be considered as a means of relieving visual monotony in residential areas. However, any design modification must accomplish the same results as would a standard street. Changes in design standards should not be permitted simply as a means of reducing right of way or paving requirements.

Plate 9 illustrates a means of reducing the visual width of paving by placing landscaped areas in parts of the parking lanes. In this case, sidewalks are at the curb and landscaping extends into the street and leaves two full traffic lanes. Intersections become green spaces and yet have ample space for turning movements. It also illustrates a local street design which provides parking bays and landscaping within the street right of way. This design requires a 54 or 58 foot right of way and provides two 12 foot moving lanes and 15 parking spaces in 3 bays along the street. Parallel on-street parking along the curb of a standard section of this length would yield about 20 spaces. If an occasional house were sited far enough back from the street to accommodate more cars in a double drive-way, the difference in available spaces would not be significant. This kind of street may have special application to parts of the east side of the planning area where rock outcrops and sharp changes in terrain elevations may lead to special consideration for street standards. These two examples of variation in street design can add variety and interest to single-family developments and make the street more compatible with living areas.

Hillside areas also require special consideration in street design. Major or collector streets with controlled access can reduce the number of lanes and parking areas required, and thereby reduce the width of the street which must be constructed on the hillside. Divided roads with different elevations for each direction of traffic can also reduce the scarring of the hillside. Small one-way loop streets providing service to limited numbers of houses will also minimize cuts and fills on hillsides.

The circulation element of this plan provides for movement within and through the project area and is extremely important. The safety, character, and quality of the streets and highways has been a tremendous influence on our daily lives. Emphasis on the engineering aspects of streets and highways historically has been so strong that no additional comment is needed in this report. However, other aspects have not been so carefully considered. For example, landscaped median strips in 3rd Street and Greenwood could considerably improve the appearance of both of these facilities and of the City of Bend. Plate 10 illustrates a median strip in Greenwood east of 3rd Street. It should be noted that the proposed landscape islands have little or no impact on access to adjacent property. However, they would be visually landscaped. This same technique could be used on 3rd Street wherever the continuous left-turn lane exists.

The ease or confusion of driving affects our attitude and frame of mind, and the areas through which we pass can be pleasant or ugly. For example, the entrance to downtown Bend along 1st and Wall Streets into the central business district provides a completely different "sense of place" than does a drive down 3rd Street. The entrances to the community from both the north and the south bare no resemblance to what people think of as "Bend". The variety of business signs, billboards, street signs, traffic signals, and brightly colored, unrelated buildings rising from the desert creates the
STREET MODIFICATION
PARALLEL PARKING

PARKING BAYS
LANDSCAPED MEDIAN ON GREENWOOD
entrances to the community. It is hard to imagine that this is the same community where several lovely parks grace the banks of the Deschutes River. The appearance of 3rd Street through the heart of the community is similar, but newer. Approximately 25,000 cars pass through this splendid view each day.

The daily experience of moving about the community on major arteries does influence attitudes and values, and streets should be more than just a place to drive cars. They should complement the environment through which they pass and should be attractive as well as safe. This will require good street design as well as control of adjacent land uses. Major streets in new areas should have controlled access wherever possible, and development should be designed to minimize unnecessary intersections and other turning movements. The installation of landscape medians and traffic islands on new and existing arterials can serve both safety and beauty, and can be done in a variety of ways that will not unduly affect the function of the street.

The statements which follow set forth policies for the circulation system in the community:

Circulation - Statements of Intent of the Plan

1. Concerted community efforts shall be made to improve east-west circulation patterns in the central part of the community.

2. Wherever possible, rights of way for major streets and highways shall be obtained as part of the development process.

3. Efforts shall be made to acquire parts of rights of way necessary for the correction of intersections, excessively sharp curves, or to complete the continuity of alignment prior to development so that the cost of acquisition to the public will be minimized.

4. Access control shall be part of the design standards for collectors and arterials wherever possible.

5. Building setback lines shall be established along existing major arterial streets to protect necessary future rights of way from encroachment by buildings.

6. In residential areas, development shall have side yards or rear yards along arterial streets as a means of reducing congestion through turning movements in and out of driveways.

7. Streets and highway rights of way shall be adequate to allow for sidewalk, bikeways and reasonable and effective planter strips.

8. Arterial streets should have landscaped median strips wherever possible together with left-turn refuge lanes.

9. Public transportation routes should be encouraged throughout the area, and, if necessary, special provisions made in street design to accommodate bus stops.

10. Local street patterns and residential areas should be varied and interesting wherever possible. Street widths should be studied to determine if alternatives can be developed that meet the public need for a safe, convenient, and cost effective transportation system.
11. Special development standards should be developed for hillside areas to avoid unnecessary scarring of hillsides.

12. Special consideration shall be given to all residential streets where appropriate to save rock outcrops or trees as a means of retaining natural character of the area.

13. Loop streets and cul-de-sacs shall be encouraged as a means of discouraging through traffic and increasing residential privacy.

14. Cul-de-sacs which end in a turn-around other than a circle should be considered as a reasonable design solution, particularly in hillside areas.

15. Bikeway and pedestrian circulation plans shown in the general plan shall be adopted and implemented as soon as possible.

16. Trails, bikeways, and pedestrian ways shall be developed into a coordinated, integrated system for local movements throughout the planning area.

17. Pedestrian and bicycle traffic should be physically separated from vehicular traffic wherever possible.

18. Trails and bikeways should be designed in a manner which will make walking or cycling safe and interesting.

19. Any necessary revisions to community codes and ordinances to permit bicycles on sidewalks, particularly along arterial and collector streets outside of the central business district, should be made.

20. The circulation system of trails, bikeways, and pedestrian ways, shall interconnect all schools and parks within the planning area.

21. Alterations to the community's design standards for curbs should be made to permit bicycles to negotiate curbs at intersections.

22. Interurban transportation facilities should be located in or near the central business district.

23. Special consideration is needed to evaluate public transportation needs and possibilities within the urban area. The city and county will need to continually evaluate public transportation feasibility.

Community Appearance

The community appearance section of this plan was prepared in conformance with the following general policies:

1. To retain and enhance the character and quality of the Bend Area as growth occurs.

2. To make a concerted effort to improve the appearance of the community, particularly in commercial and industrial areas.

3. To initiate a community action program for the purposes of developing an awareness in the citizenry of the appearance of the community, both good and bad.
4. Community action programs should be to evaluate community appearance and
develop specific programs for its improvement.

5. To attempt to identify those characteristics which give the community its
individual identity and to preserve and expand those characteristics as
growth occurs.

The basic objective of this plan is to retain the character and quality of the
Bend Area as growth occurs. Fundamental to the achievement of this objective is the
appearance of the community. One of the principal problems in the community is that,
for many years, growth occurred at a very slow pace. However, in the mid-sixties,
the rate of growth increased to a pace of six to eight percent per year and radically
changed the time available for decision making in the community. This growth has
brought many new people and new businesses to the community. The anticipated 51,000
new people will bring more new business and new industry in the future. A deliberate
and continuous effort will be necessary to see that the thousands of decisions made
in the process of growth collectively constitute progress toward retaining the liva-
bility of this lovely community.

The residential sections of the Bend Area are generally quite pleasant. However,
efforts should be made to improve streets and to improve some of the older housing
areas. However, care should be taken to retain valuable environmental features such
as mature street trees in older sections as improvements occur. In new residential
developments, street trees should be required along with other improvements to help
establish and retain values in living areas. A plan for street trees should be
prepared for both older and newly developed areas as part of a community beautifica-
tion effort. In addition, new development should respect the natural environment in
terms of rock outcrops and existing tree cover as development occurs.

It must be assumed that, in general, residential areas reflect the values of the
people who live in the community. They have invested their money, time, and effort
in establishing and maintaining these residential districts. There is a tremendous
difference between the apparent values expressed in residential areas as compared to
those of commercial or industrial districts. Industrial developments in the community
have given little or no consideration to their appearance. Almost without exception,
they exist as patches of ugliness wherever they are found in the community. Since
these are places where workers spend about half of their waking life, it seems only
reasonable that some consideration should be given to making their surroundings more
pleasant.

The commercial sections of the community also largely ignore their impact on the
appearance of the area. Located as they are along major streets or at major inter-
sections, they are seen more often by more people traveling within or through the
community than any other areas. It seems only reasonable that because of their loca-
tion, their appearance should be at least equal to other sections of the community.

The principal causes of ugliness in most commercial areas are lack of order or
relationship among buildings, lack of landscaping, hundreds of signs which completely
donate any field of vision, and the ever present utility poles with their overhead
wiring. Most commercial buildings were built one by one, lot by lot, along the street
with complete disregard for the appearance or use of other nearby buildings. Each
was intended to stand alone on its site to fulfill its original commercial function.
There was little or no thought given to their individual or collective impact on the
community. At present the only exception to this is downtown Bend. Here, a community
effort has been made to reduce the size and number of signs and it has greatly improved the appearance of the area. However, the full length of Highway 97 through the community reflects the general lack of concern for other nearby buildings or uses, and the result is a typical jumbled string of structures and uses so common along highways everywhere. This single highway has done more to change the historic image of Bend than any other single factor.

The lack of landscaping through the area is a major problem. Commercial buildings are usually separated from the street by areas of asphalt of varying widths. Again, there are exceptions and the exceptions prove what a difference landscaping can make in these commercial areas. It can soften the harshness of the paved environment and can become a means of tying together the jumble of unrelated buildings. The landscaping must be maintained, and this appears to be an insurmountable problem, even though landscaping is maintained continuously in residential sections. It is possible to develop landscaped areas which are easily kept and which strongly influence the quality of the visual environment. Evergreen shrubs, small trees, and ground covers can all be used to interrupt the continuous paving and make commercial areas a great deal more attractive than they are at the present time. The city and county now have site plan review procedures as a means of encouraging landscaping in new developments. The community should consider design review and should increase their landscaping requirements in new developments. The city and county should participate in the beautification process by adding landscaped median strips and traffic islands wherever possible in major streets.

Although building relationships and lack of landscaping are problems, signs are the greatest cause of visual chaos. They occur by the hundreds and completely dominate the appearance of most commercial areas. There are so many that competition for space reduces their effectiveness. As this competition increases, signs must become larger and larger to be seen.

If the only signs along the streets were those which identified a business, the problem would be substantially reduced. The principal signs are accompanied by many lesser messages relating to trading stamps, credit cards, prices, products sold, etc. Competition for space has driven traffic directional signs and signals out over the street itself so that they may be seen. To further clutter the view, traffic signals are often placed over each traffic lane even though there is no difference in traffic movements.

If Bend is to retain its character and quality which made it one of the most attractive communities in the State of Oregon, a major effort must be made to improve its appearance. Sign regulations should be adopted which would not only control new signs, but establish a reasonable amortization period for the removal of existing signs which would not comply with the regulations. The standards contained in the regulations should be such that signing would be consistent with other values in the community. Such standards would greatly improve the appearance of the area and would be consistent with the character and quality of Bend.

Utility poles and overhead wires are also very prominent features in the cityscape. Both the city and county have taken steps to require that new facilities be placed underground. However, this does not solve the problem in existing areas. Efforts should be made to develop a systematic program for undergrounding part of the existing system each year. Utility poles and overhead lines have a tremendous impact on the appearance of the community, and every effort should be made to hasten their removal.

-66-
The preceding paragraphs have been critical of the appearance of commercial sections of the community. The consultant would invite the reader to walk or drive through these areas and observe conditions as they exist. People are accustomed to things as they are and no longer respond to what they see. A goal for the businesses within the project area should be to improve the appearance of their districts so that they are at least equal in quality to the values expressed elsewhere in the community.

In order to treat the appearance of major streets individually, the plan symbolizes landscaping along those that will be most heavily traveled. In some cases, the treatment may only be a ten foot landscaped strip along the road. In others, it may be a scenic corridor to protect entrances to the community or areas of special visual quality. Development of concepts and standards for treatment of major streets and highways should be the subject of a special study as part of continuing community efforts to refine this general plan.

The Deschutes River has long been an important element of the appearance and quality of life in Bend. Efforts should be made to protect this lovely river as the community grows. Special consideration should be given to changes and new development along the river as urban growth increases pressures for more intensive development. It is recommended that a "scenic corridor" or a special design review procedure be established on both sides of the river.

If the appearance of the community is to be retained and improved, the people should be involved. Community action programs should be initiated to evaluate community appearance and develop programs for its improvement. These could include concerted efforts to improve the appearance of streets and highways by establishing tree planting programs in existing and developed areas; landscaping of traffic islands and median strips; establishing sign regulations for the entire area; encouraging private property owners in both residential and business districts to maintain and upgrade their properties; work toward placing utility lines underground in existing area; protecting open areas from the intrusion of billboards and signs not relating to those areas; removal of debris from public and private properties throughout the project area; and developing improvement standards which will insure that future growth occurs in a manner which does not detract from the natural beauty of the Bend Area. All of these elements play a part in the overall appearance of the community, and continued efforts by local government and its citizens can preserve and enhance the natural beauty and the livability of the area.

The statements which follow set forth guidelines for the improvement of the appearance of the community:

Community Appearance - Statements of Intent of the Plan

1. Sign regulations shall be adopted which limit the size, location, and number of signs in commercial and industrial areas and have amortization provisions to remove existing signs within a reasonable period of time which do not conform with the regulations.

2. Old or obsolete signs should be removed at the time of a change in use.

3. Consideration should be given to prohibiting all off-site advertising signs in all commercial and industrial sections of the the city.
4. Special design and landscaping requirements shall be established along the 
Sisters Highway; Highway 97 and 3rd Street; Greenwood and Highway 20; Franklin; 
Riverside opposite Drake Park; Galveston from the river to 14th; Century 
Drive to the Deschutes National Forest boundary, and 4th Street from Alden 
to Webster.

5. Landscaped median strips should be installed on Highway 97 and 3rd, and on 
Greenwood wherever possible.

6. Special design consideration should be given to development on those parts of 
Awbrey Butte visible from developed areas, and from Highway 97 within the 
Bend Area.

7. Consideration should be given to limiting building heights in the central 
area to preserve the views of the Cascades to the west.

8. Commercial and industrial areas should be separated from residential areas 
by physical buffers or screens.

9. All development along the Deschutes River should be subject to design review 
in order to protect this priceless community asset.

10. Consideration should be given to establishing design review for all new 
development in the community with the exception of single-family houses and 
duplexes.

11. Efforts should be made to encourage the upgrading of existing commercial 
uses through painting or other remodeling programs.

12. Older sections of the community should be carefully evaluated, and efforts 
made to rehabilitate or redevelop those areas requiring special treatment.

13. Concerted community efforts should be made to place existing overhead utilities 
underground in all parts of the community.

14. Special efforts should be made to preserve large rock outcrops and stands 
of trees as the area grows to preserve the character and quality of the Bend 
Area.

Implementation -

This general plan is the result of a concerted effort by the people and govern-
ment of Deschutes County and the City of Bend, and its policies were developed at 
numerous meetings with citizens, committees, and local officials. If the plan is to 
have any meaning, it must be implemented. Effectuation of a general plan is not an 
easy process and requires constant vigilance on the part of local government and 
citizens. As growth occurs and conditions change, the plan will need to be reviewed 
and updated so that it remains a viable and useful tool for guiding growth and develop-
ment. The various processes for implementing the plan are as closely interrelated as 
the elements of the plan itself.
Public information and participation is essential if the plan is to succeed. This plan was prepared with the assistance of many citizens in the community, and efforts must be made to continue this involvement. The plan should be kept before the public as a basis for community action. By involving citizens and by keeping the plan current, it can become an effective tool for guiding future community development patterns in a manner consistent with the goals and objectives of the people.

In the fall of 1973 the City and County Commissions jointly appointed the Bend Urban Area Advisory Committee. This committee met once a month throughout 1974 and the first part of 1975 in reviewing the draft materials that became the Bend Area General Plan. After the committee made a recommendation on the plan, the City and County Planning Commissions held joint hearings on the proposed plan. After this review, it was recommended to the City and County Commissions, who also held joint hearings.

The Bend Area General Plan was adopted on June 2, 1976, by both commissions. Since then a new zoning ordinance was prepared and adopted by both the city and county within the urban growth boundary.

Every two years the plan calls for a review to be made in February. These reviews have resulted in additional work by the Bend Urban Area Advisory Committee as particular items have been discussed. The use of the committee in plan updates is a longstanding tradition of citizen involvement within the community.

Citizen Involvement Policies -

1. The city and county will continue to use an advisory committee(s) in their planning process, members of which are selected by an open process, and who are widely representative of the community.

2. The city and county will utilize other mechanisms, such as planning commission hearings and public meetings to provide an opportunity for all the citizens of the area to participate in the planning process.

Adoption of the plan as a statement of community policy is essential to its effectiveness. When the plan is officially recognized as a guide to future growth patterns, public and private community actions must be evaluated in terms of the general plan. Action contrary to the plan shall not be taken unless the plan is first amended to reflect the change in objectives or policy.

Revision of codes and ordinances is an important step in effectuating the plan. The zoning ordinance shall reflect and refine land-use relationships and development standards recommended in the general plan, and zoning issues shall be evaluated in the context of the plan. Subdivision and partitioning ordinances shall also reflect improvement requirements and other development standards included in the plan.

Capital improvement programing is an important process in the implementation of the general plan. It consists of three basic elements - listing of necessary public improvements, determination of priorities, and a financial analysis. A listing of all capital improvements that will be needed in the foreseeable future is first established. Based on evaluation of the projects and their relative urgency, a priority is assigned to each project based on the apparent need. A financial analysis is
prepared to determine existing and anticipated future sources of revenue which can be applied to the capital improvement programs. From these projections, it is possible to estimate the amount of revenue available annually for capital expenditures and to allocate these funds to appropriate projects. Capital improvement programs are usually prepared on an overall basis for 20 years in 5-year increments, and they are revised annually as funds are expended and priorities change. Developing a realistic capital improvement program and applying it to the city and county budgeting process can be one of the most significant and beneficial steps which the community can take to guide its growth in an orderly manner. There are many federal and state programs which can be applied to the community's capital improvement requirements. These programs cover a wide variety of problems and these sources of assistance should be fully explored and used as necessary to implement the plan.

Plan Amendments will be necessary as time passes and conditions change. As stated at the outset, this plan is intended to be a guide for the future growth of the community. It should be subject to periodic review and should be flexible, but not so flexible as to be meaningless as a statement of community policy. Changes in the plan should be made in light of considerations relating to all or part of the community, rather than to who owns the property and is he a "good" guy or a "bad" guy.

Procedure -

The Planning Commission shall review and report every other year on the adequacy of the plan to the governing body. The report may include, after appropriate hearing, such recommendations as seem necessary to insure that the plan continues to function as a guide for community development. Individuals may petition for changes or amendments to the plan by filing with the Planning Department on forms prescribed by the Commission, a request for plan change. The governing body may initiate a change to the plan by referring such a change to the Planning Commission for review, hearing, and recommendation. The governing body and Planning Commission shall hold one or more hearings, giving notice of the hearing to consider the proposed change to the public in general, and in the case of individual map changes, the the area particularly affected. The Planning Commission shall recommend to the governing body approval, disapproval, or modification of the proposed plan change.

Plan changes shall be consistent with the goals, objectives, policies, and statements of intent of the plan, or these guidelines shall be first changed or amended to reflect new policies. An individual requesting a change shall demonstrate that the change is warranted due to changed conditions, a mistake, or other specific facts that demonstrate a public need and benefit for the change.

The governing body shall maintain records of all amendments to the plan in a form convenient for public use.
AN INVENTORY
OF
FOREST PRODUCTIVITY
BEND URBAN RESERVE AND SURROUNDING AREA

DOCUMENTATION

PREPARED BY
JORDAN B. MALEY
ASSOCIATE PLANNER
DECHUTES COUNTY PLANNING DEPARTMENT

FEBRUARY 12, 1980
The inventory of productive forest land, according to cubic foot site classes, within the Bend Urban Growth Boundary was based upon the following methodology.

Cubic foot site class information was assembled for areas of the Deschutes National Forest which are in the vicinity of the proposed Bend Urban Growth Boundary. This data was derived from the Deschutes NF Soil Resource Inventory document and map atlas generated in 1976. Map units were located, then compared to information in the SRI table (2) of Vegetation Characteristics of Landtypes, where associated cubic foot site classes were identified. Map units were then color-coded on the Soil Map according to their indicated productivity.

In most instances, map units were composed of various plant communities, whose components could be identified on the ground. This became an important factor in the interpretation of aerial photographs. In order to provide a base for the selection of ground sample sites, interpretation from the sites, and mapping of data; photographic frames were selected from 1:125,000 scale infrared aerial photography, for interpretation. For the photographic frame which includes all of the urban reserve area, an overlay was produced to include information on the location of the Bend City Limits, Urban Growth Boundary, and productivity units of adjacent National Forest lands. Based upon a correlation of productivity mapping and aerial imagery, comparable ground sample sites were identified within the urban reserve area for field assessment. The sites were additionally located on road and street maps of the city, as well as on a 1:24,000 scale infrared aerial photograph of the city. Each ground location was visited, photographed, and evaluated for its general plant cover types, site condition, and percent vegetative cover.

Upon completion of ground work, field notes were reviewed to determine which plant communities occurred on
each site, and whether a site's productivity was affected by topography or slope aspect. Based upon the location, productivity of plant communities, and aerial image of all ground sites; productivity mapping units were extrapolated through stereo photointerpretation from the National Forest boundaries to encompass land within the Bend Urban Growth Boundary.

Cubit foot site class boundaries were transferred from the 1:125,000 scale aerial photo overlay to an identical scaled USFS Soil Map. Map unit boundaries were then drafted onto a 1:84,480 scale Soil Map where site classes had been previously color-coded for National Forest lands. New site class data for the Bend urban reserve was color-coded, and the map completed with a legend.

Material Sources:

1:125,000 scale infrared high-altitude aerial photographic film-positive, flight number 78-107B, 2 August 1978, Airborne Missions and Applications Division, National Aeronautics and Space Administration, Ames Research Center

Plant Communities of the Central Oregon Pumice Zone, R6 Area Guide 4-2, January 1976, USDA, Forest Service, Pacific Northwest Region

Soil Resource Inventory, Deschutes National Forest, 1976, Pacific Northwest Region, USFS-Soil Map-R6 (document and map atlas)
## Historical Sites

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Orchard</td>
<td>O.B. Riley Road, near Sawyer State Park</td>
</tr>
<tr>
<td>Old Apple Tree</td>
<td>Sawyer State Park</td>
</tr>
<tr>
<td>Bend Athletic Club Building</td>
<td>NW Wall Street - between the old Cascade Jr. High and Reid School</td>
</tr>
<tr>
<td>Bend Bruck Yard (Bend Brick &amp; Lumber Co.)</td>
<td>2.8 miles west of Bend on Shevlin Park Road NW of SW 1/4 of Section 25</td>
</tr>
<tr>
<td>Bend Water and Light Co. Power House</td>
<td>Deschutes River, 200 yards below Newport Ave. bridge T. 17 S., R. 12 E., NE 1/4 Section 32</td>
</tr>
<tr>
<td>Bend School Landmark</td>
<td>17-12-32</td>
</tr>
<tr>
<td>Bend Woolen Mill</td>
<td>East side of NE 1st Street between Revere and Thurston</td>
</tr>
<tr>
<td>Boyd Homestead</td>
<td>O.B. Riley Road, east of Highway 97, north of Swalley Canal - 17-12-21</td>
</tr>
<tr>
<td>Brooks Scanlon &quot;Mill A&quot;</td>
<td>(Administrative School District Office) 17-12-32</td>
</tr>
<tr>
<td>Brooks Scanlon Office</td>
<td>Pioneer Park 17-12-32</td>
</tr>
<tr>
<td>Central Oregon Pioneers Landmark</td>
<td>Originally First Presbyterian Church - SE corner of Franklin and Harriman</td>
</tr>
<tr>
<td>Chapel of the Cascades</td>
<td>17-12-32 BC, BD, CB - east side of Deschutes River</td>
</tr>
<tr>
<td>Drake Park</td>
<td>O.B. Riley Road - next to Fix Trailer Court</td>
</tr>
<tr>
<td>Emigrant Grave</td>
<td>South end of Broadway near east side of Deschutes River and adjacent to Brooks Scanlon mill properties</td>
</tr>
<tr>
<td>Kelly, J.H. House</td>
<td>440 NW Congress - Lots 1, 2, 3, &amp; 4, Block 12, Park Addition.</td>
</tr>
<tr>
<td>Lumberman's Hospital</td>
<td>South side of Oregon Avenue between Wall and Bond 17-12-32 AC, Tax Lot 6200</td>
</tr>
<tr>
<td>McCann, Thomas house</td>
<td>17-12-32</td>
</tr>
<tr>
<td>O'Kane Hugh Building</td>
<td>17-12-32</td>
</tr>
<tr>
<td>Oregon Trunk Depot</td>
<td>North of Harmon Park, west side of Deschutes River 17-12-32 BC</td>
</tr>
<tr>
<td>Oregon Trunk Freight Warehouse</td>
<td>953 Wall Street - West side of Wall, south of Oregon Avenue</td>
</tr>
<tr>
<td>Pagent Park</td>
<td></td>
</tr>
<tr>
<td>Patterson Drug Co.</td>
<td></td>
</tr>
</tbody>
</table>
Historical Sites
Page 2

Pilot Butte Inn: Corner of Wall Street and Newport Avenue - location of Pacific Northwest Bell offices.

Pioneer Museum Building: 17-12-32

Pioneer Hotel, James E. house: 17-12-32

Reed School: NE 1/4 SW 1/4 Section 31, T. 17 S., R. 12 E. NW Wall Street, south of old Cascade Jr. High building.

Reid School: NE 1/4 SW 1/4 Section 31, T. 17 S., R. 12 E., approximately the center of Section 7.

1813 Rock: South of Bend - east side of Deschutes River, T. 18 S., R. 12 E., between the Cascade and the IOOF Hall.

Rockwell, Kathleen house (Klondike Kate): 231 Franklin Avenue - South side of Franklin, between the Chapel of the Cascades and the IOOF Hall.

Sheep Bridge: Portland Avenue.

Shevlin-Hixon Mill Site: 18-12-6

Shevlin-Hixon Lumber Shed: 18-12-6

Shevlin Park Landmark: 17-11-23

Smith Building: 937 Wall Street - west side of Wall, south of Oregon Avenue.

U.S. Post Office Building: SW corner of Wall and Franklin

Water Tank Hill: Old St. Charles Hospital Site

Weist Homestead House: 1352 NE 2nd, at Norton Avenue.

Weist, John Building: .
INTRODUCTION

The quality of air, water and land resources in the Bend Area is considered to be very good. Maintaining or improving this quality for a healthful and desirable environment is one of the goals that will be addressed in this chapter. An overview of air, water and land resource quality data will be presented along with expected impacts that are associated with population growth and what the city and county can do to minimize negative impacts on the Bend Urban Area environment.

AIR QUALITY

(A) GENERAL SOURCES AND TYPES OF POLLUTANTS

Air pollutants come from many sources — most of them man-made, some natural. Air pollution is defined as "any air contaminant that is present in the atmosphere in sufficient quantities as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property, or to interfere unreasonably with enjoyment of life or property."[1] A list of pollutants is shown in Table I. Most pollutants are the result of incomplete combustion, as in automobiles, industries, and agricultural field or slash burning. Some are from natural sources, such as wind or agriculturally raised dust or pollen. Most air pollutants cause or aggravate respiratory and heart problems, particularly in the elderly and those with chronic disease. Some cause damage to plants or crops and some are corrosive to metals and stone.

(B) AIR QUALITY STANDARDS

These are standards set by the Federal and State governments that areas must meet to protect the public from adverse effects of air pollution. These standards are shown in Table 2. The standards are divided into primary standards, designed to protect the public health and secondary standards, intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance and other forms of damage. The Oregon standards are set to meet

Footnote:
### Table 1

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>What It Is</th>
<th>What It is From</th>
<th>What Damage It Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended Particulate</td>
<td>Solid and liquid particles of soot, dust, aerosols and fumes ranging from 0.1 to 100 microns and averaging about 2 microns in size. (1 micron = 1/2540&quot;)</td>
<td>Combustion sources, cars, industry process losses, fugitive dust, field and slash burning and natural sources, such as ocean spray and wind-raised dust and pollen.</td>
<td>Aggravates chronic lung disease, heart and lung disease symptoms. Causes material damage and visibility reduction.</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>A colorless, pungent, irritating gas.</td>
<td>Oil and coal combustion and industry process losses.</td>
<td>Aggravates asthma, heart and disease in the elderly, irritates lungs, is corrosive to metals and marble, and causes plant damage.</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>A colorless, odorless gas that is highly toxic.</td>
<td>Incomplete combustion sources, mostly cars.</td>
<td>Interferes with the blood's to carry oxygen, causing heart difficulties in those with chronic diseases, reduces lung capacity and impairs mental abilities.</td>
</tr>
<tr>
<td>Photochemical Oxidants</td>
<td>Mostly consists of ozone which is a toxic gas.</td>
<td>Photochemical processes in the atmosphere by reaction between oxides of nitrogen and hydrocarbons in the presence of sunlight.</td>
<td>Eye irritation, damage to lung tissue and lung functions; material damage and plant damage.</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>A reddish-brown gas, toxic in high concentrations.</td>
<td>Formed by conversion of nitric oxide (from autos and combustion sources) and from industrial sources.</td>
<td>Increases chronic bronchitis and irritates lungs.</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>A large family of compounds consisting of hydrogen and carbon.</td>
<td>Autos, evaporative fuel losses, industry and combustion processes.</td>
<td>Hydrocarbons actively participate in oxidant formation and cause plant damage. Methane is produced naturally by decay of organic matter and is not significant in oxidant formation.</td>
</tr>
</tbody>
</table>

Table II
Ambient Air Quality Standards for Oregon

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Federal Standards</th>
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<tr>
<td></td>
<td></td>
<td>Primary (Health)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary (Welfare)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oregon Standards</td>
</tr>
<tr>
<td>Total Suspended Particulate</td>
<td>Annual Geometric Mean</td>
<td>75 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td>24 hours$^{(1)}$</td>
<td>60 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td>Monthly$^{(2)}$</td>
<td>150 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 ug/m$^3$</td>
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<tr>
<td></td>
<td></td>
<td>150 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ug/m$^3$</td>
</tr>
<tr>
<td>Ozone$^{(4)}$</td>
<td>1 hour</td>
<td>235 ug/m$^3$$^{(3)}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>235 ug/m$^3$$^{(3)}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 ug/m$^3$$^{(3)}$</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>8 hours$^{(1)}$</td>
<td>10 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>1 hour$^{(1)}$</td>
<td>10 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 mg/m$^3$</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual Arithmetic Average</td>
<td>80 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td>24 hours$^{(1)}$</td>
<td>365 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td>3 hours$^{(1)}$</td>
<td>1300 ug/m$^3$</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual Arithmetic Average</td>
<td>100 ug/m$^3$</td>
</tr>
<tr>
<td>Hydrocarbons (Nonmethane)</td>
<td>3 hours$^{(1)}$ (6-9 a.m.)</td>
<td>160 ug/m$^3$</td>
</tr>
<tr>
<td>Lead</td>
<td>Monthly Calendar Quarter</td>
<td>1.5 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 ug/m$^3$</td>
</tr>
</tbody>
</table>

NOTES:
(1) not to be exceeded on more than one day per year.
(2) 24-hour average not to be exceeded more than 15 percent of the time.
(3) a statistical standard, but basically not to be exceeded more than an average one day per year based on the most recent three years of data.
(4) The federal standards were revised in February, 1979, and the state standard changed from photochemical oxidant to ozone in June, 1979.
the more stringent secondary ambient air standards -- a goal consistent with Oregon's environmental concerns. These standards have been adopted by the Oregon Environmental Quality Commission (EQC) and the Oregon State Legislature; they are administered by the Oregon Department of Environmental Quality (DEQ).

The Clean Air Act is a Federal law that addresses air pollution. It sets the air quality standards that areas must maintain, and provides funds so that the standards may be met. In 1974, EPA established "clean areas" for the prevention of significant deterioration (PSD). Under the PSD system, all areas in the nation are classified as Class I, Class II, or Class III (non attainment) areas, and are permitted, or not permitted, certain degree of net air pollution increases (measured in "ambient increments").

The Bend Urban Area has been designated a Class II PSD area. Class II increments permit a moderate amount of deterioration. The federal and state ambient air quality standards, not to be exceeded in the Bend Urban Area, are listed in Table 2. Class I PSD areas are subject to the most stringent restraints on air quality deterioration. Included in this classification are national parks and wilderness areas; no degradation of the airshed is permitted within this designation. There is a possibility that pollution sources as far as twenty miles away from a Class I area could threaten its air quality. Within this radius from Bend lie the Mt. Washington, Mt. Jefferson, and Three Sisters Wilderness areas.

The Bend Urban Area is unique in that the area is subject to inversions coupled with very low wind speeds in the early morning and late evening hours. The potential for an air pollution problem does exist because of the occurrence of this meteorological condition. However, pollution levels are not likely to accumulate for any length of time as they do in Portland, Medford, and Eugene since Bend does not have the trapping landforms that characterize those metropolitan areas.

Although updated wind information is not available for the Bend Urban Area, it is evident that the predominant wind direction is from the southwest except in the summer when they come predominantly from the west (see Table 3). Analysis of the available data reveals that the lowest windspeeds occur from 6 p.m. to 9 a.m. (mean average) and the highest windspeeds occur from 10 a.m. through 5 p.m. Daily and seasonal variations are common.
TABLE 3

BEND WINDS

<table>
<thead>
<tr>
<th>MONTH</th>
<th>PREDOMINANT DIRECTION</th>
<th>WINDSPEED (MPH/24HR. PERIOD)</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>SW</td>
<td>5.5-7.5 mph</td>
<td>6.2</td>
</tr>
<tr>
<td>February</td>
<td>SW</td>
<td>5.4-8.6 mph</td>
<td>6.8</td>
</tr>
<tr>
<td>March</td>
<td>SW</td>
<td>4.8-9.2 &quot;</td>
<td>6.9</td>
</tr>
<tr>
<td>April</td>
<td>SW</td>
<td>4.1-9.4 &quot;</td>
<td>6.6</td>
</tr>
<tr>
<td>May</td>
<td>SW</td>
<td>3.3-8.2 &quot;</td>
<td>5.6</td>
</tr>
<tr>
<td>June</td>
<td>SW</td>
<td>3.0-8.1 &quot;</td>
<td>5.2</td>
</tr>
<tr>
<td>July</td>
<td>W</td>
<td>2.8-7.5 &quot;</td>
<td>4.7</td>
</tr>
<tr>
<td>August</td>
<td>W</td>
<td>2.9-7.5 &quot;</td>
<td>4.8</td>
</tr>
<tr>
<td>September</td>
<td>W</td>
<td>3.1-6.8 &quot;</td>
<td>4.8</td>
</tr>
<tr>
<td>October</td>
<td>SW</td>
<td>4.0-7.4 &quot;</td>
<td>5.4</td>
</tr>
<tr>
<td>November</td>
<td>SW</td>
<td>5.1-7.7 &quot;</td>
<td>6.1</td>
</tr>
<tr>
<td>December</td>
<td>SW</td>
<td>6.1-8.1 &quot;</td>
<td>6.8</td>
</tr>
</tbody>
</table>


Predominant wind direction is only partially indicative of the wind patterns. The following wind rose (Figure 1) for Bend and Redmond illustrate other significant wind directions.

Bend is much more prone than Redmond to calm periods, (35.7% vs 11.9%), Redmond receives a significant amount of wind from the southeastern and northwestern directions, and Bend's wind is less widely varied than Redmond's.

Wind directions determine the amount of wind coming from other parts of Oregon, which determine the amount and kind of incoming pollution. In turn, they reveal where Deschutes County sends its pollution. It should be noted that almost 40% of Bend's wind travel toward Sisters. Bend and Redmond get 10-13% of their winds from Madras (mostly during late summer, and early fall months) which can carry late summer field burning smoke south to the areas of Deschutes County. In addition, westerly winds occur 10-36% of the year, mostly during the summer and autumn months when slash is burned in the Cascade Mountains.

More detailed information is needed on weather patterns in the Bend Area including inversion patterns and wind direction, windspeed variation and average windspeed per month.
There are several major point sources of air pollution in the Bend Urban Area. Point source air pollution is any pollutant that enters the atmosphere from a specific point. There are, of course, other sources besides these, called area sources, such as motor vehicles, residential/commercial/industrial heating and blowing dust. A list of the sources of air pollution in the Bend Urban Area and their emissions is shown in Table 4. These emissions are based on DEQ measurements taken periodically at the point source site. As can be seen from Table 4 most of the particulate matter comes from forest slash burning and from lumber mills in the area. Residential space heating emissions levels do not include particulate matter from wood stoves as of 1979. The amount of wood smoke particulates...
### TABLE 4

**BEND AREA POINT SOURCE EMISSIONS - TONS/YEAR**

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Bend Manufacturing Inc.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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</tr>
<tr>
<td>Bend Mill Works</td>
<td>1.75</td>
<td>0.18</td>
<td>0.00</td>
<td>0.86</td>
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<tr>
<td>Bend Redi-Mix Inc.</td>
<td>0.47</td>
<td>0.47</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Brooks Scanlon</td>
<td>295.90</td>
<td>221.51</td>
<td>0.00</td>
<td>672.00</td>
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<tr>
<td>Cascade Forest Prod.</td>
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<td>0.00</td>
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<td>0.00</td>
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<tr>
<td>Central Oregon Pumice</td>
<td>8.35</td>
<td>1.25</td>
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<td>Deschutes Ready Mix</td>
<td>5.20</td>
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<td>4.80</td>
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<td>Maywood Industries</td>
<td>0.18</td>
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<tr>
<td>Mid-Oregon Ready-Mix</td>
<td>4.00</td>
<td>1.40</td>
<td>0.00</td>
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<td>0.00</td>
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<tr>
<td>North Pacific Products</td>
<td>0.11</td>
<td>0.03</td>
<td>0.00</td>
<td>0.79</td>
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<tr>
<td>Oregon Trail Wood Prod.</td>
<td>0.50</td>
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<td>Oregon Woodwork LTD</td>
<td>0.55</td>
<td>0.27</td>
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<tr>
<td>Sageland Manufacturing</td>
<td>0.01</td>
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<td>Stemont Inc.</td>
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<td>St. Charles Mem. Hosp.</td>
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<td>0.01</td>
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<tr>
<td>Sun Craft</td>
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<td>0.00</td>
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<tr>
<td>Willamette Industries</td>
<td>351.21</td>
<td>95.31</td>
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<td>127.12</td>
<td>25.16</td>
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### AREA SOURCES FOR DESCHUTES COUNTY

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<td></td>
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<td>34.49</td>
<td>1.01</td>
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<td></td>
<td>63.00</td>
<td>63.00</td>
<td>7.37</td>
<td>35.95</td>
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<td>219.85</td>
<td>57.24</td>
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<td>10.21</td>
<td>7.09</td>
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<td>302.00</td>
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<td>10.21</td>
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<td>55.16</td>
<td>35.95</td>
<td>0.96</td>
<td>2.39</td>
<td>302.00</td>
</tr>
<tr>
<td></td>
<td>31705.28</td>
<td>31705.28</td>
<td>31705.28</td>
<td>31705.28</td>
<td>31705.28</td>
<td>31705.28</td>
<td>31705.28</td>
</tr>
<tr>
<td>Summed Annual Emission Rates for 29 sources in the Bend Urban Area</td>
<td>3048.63</td>
<td>2429.80</td>
<td>528.28</td>
<td>4116.43</td>
<td>47156.51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Bob Danko, DEQ, Central Region, Bend Office Environmental Information Data System (EIDS) 12/31/79

* Does not include emissions from wood residential heating.
<table>
<thead>
<tr>
<th>YEAR</th>
<th>ANNUAL GEOMETRIC MEAN</th>
<th>24 HOUR AVERAGE</th>
<th>DAYS &gt;150</th>
<th>DAYS &gt;260 (1)</th>
<th>NO. OF SAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MAXIMUM 2nd HIGHEST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>50.1</td>
<td>400 171</td>
<td>4 (2) 1</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>49.5</td>
<td>162 130</td>
<td>1 0</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>53.6</td>
<td>192 137</td>
<td>1 0</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>48.7</td>
<td>236 153</td>
<td>2 0</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>51.2</td>
<td>294 221</td>
<td>2 1</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>46.9</td>
<td>164 164</td>
<td>2 0</td>
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<td></td>
</tr>
<tr>
<td>1976</td>
<td>42.9</td>
<td>143 88</td>
<td>0 0</td>
<td>55</td>
<td></td>
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<tr>
<td>1977</td>
<td>54.6</td>
<td>130 110</td>
<td>0 0</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>71.9</td>
<td>476 337</td>
<td>4 2</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>89.3</td>
<td>294 233</td>
<td>4 1</td>
<td>61</td>
<td></td>
</tr>
</tbody>
</table>

(1) Definition: Violation days - 24 hour average in excess of state standards of 150 or federal standard of 260.

(2) The four violation days in 1970 were due to an unusually severe February inversion.
should be monitored since the use of wood stoves as an auxiliary or primary heating source has increased significantly in the last years of the 1970's.

Violation of ambient air quality standards in the Bend Urban Area occurred in 1978 and 1979 when the annual geometric mean well exceeded the allowable Oregon standards of 60 ug/m$^3$ (see Table 5). These figures pose a reason for concern since a deteriorating trend in the air quality of the Bend Area appears to be manifesting itself. Monitoring and analysis of air quality data for the Bend Urban Area should continue to determine the extent and source of this increase in particulate levels.

There are presently two air quality monitoring instruments located atop the Courthouse in Bend. The High Volume Sampler which has been in operation since 1970 measures total suspended particulate. A nephelometer, erected on the roof of the Courthouse in October, 1979 measures the level of fine particulate matter in the air. Although the data from the nephelometer is brief, and long term averaging is desirable to discern trends in air quality, the preliminary results are interesting. The preliminary data show distinct daily trends of high levels of fine particulate, especially after 6 p.m. in the early morning hours. This may be directly related to the increased usage of wood stoves as auxiliary residential space heating. This data should continue to be monitored and evaluated.

Another source of pollution that should be considered when monitoring air quality is carbon monoxide (CO), concentrations. There is no regular monitoring of CO concentration in the Bend Urban Area at this time. Using the DEQ Handbook test for the 8-hour CO standards, an estimate can be derived on whether or not automobile exhaust accumulations exceed those standards. Using average winter workday traffic volumes (AWDT) projected for 1983 along Third Street with an average traffic speed of 25.75 mph, traffic levels appear to be below the threshold of 40,400 AWDT.

However, even though the estimated volume of traffic on Third Street falls below the CO standard suggested by DEQ for the City of Bend, other factors such as congestion and length of time spent idling at traffic lights increase the amount of CO concentrations in spot areas. The entire length of Third Street as it extends through the City denotes concern, since the traffic forecast for 1990 indicates that parts of the section will be operating at Level of Service F, and the resultant lower speeds and congestion could cause a future problem. In recognition of future traffic loads through the Bend Urban Area, emphasis should be placed on improving vehicle operating

* Winter traffic volume estimates are used rather than peak summer AWDT because this is the time of year where the likelihood of exceeding the DEQ CO standards is most likely due to the more frequent inversions and low temperatures.

(2) ODOT, City of Bend: Arterial Street Study Update, 1979.
(3) Level of Service F is described as the least desirable level of traffic flow. Traffic flow is forced, meaning excessive delay. May occur only during p.m. peak hours during summer months in recreational areas. Maneuverability at these locations is "jammed." Backups from other locations may restrict or prevent movement of vehicles at the intersection under consideration. ODOT, City of Bend: Arterial Street Study Update, 1979.
TABLE 6
VOLUME OF CARS REQUIRED THAT MAY EXCEED 8-HOUR CARBON MONOXIDE STANDARD IN 1983

<table>
<thead>
<tr>
<th>Average Speed (MHP)**</th>
<th>Volume of Cars (AWDT) 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>19,000</td>
</tr>
<tr>
<td>15</td>
<td>27,200</td>
</tr>
<tr>
<td>20</td>
<td>34,000</td>
</tr>
<tr>
<td>25</td>
<td>40,400</td>
</tr>
<tr>
<td>30</td>
<td>47,300</td>
</tr>
<tr>
<td>35</td>
<td>54,300</td>
</tr>
<tr>
<td>40</td>
<td>60,300</td>
</tr>
<tr>
<td>45</td>
<td>64,100</td>
</tr>
<tr>
<td>50</td>
<td>65,900</td>
</tr>
<tr>
<td>55</td>
<td>69,200</td>
</tr>
</tbody>
</table>

* Background 3 mg/m3 on 8-hour basis
** Use the peak 8-hour operating speed or the posted zone speed whichever is lowest.

TABLE 7
THIRD STREET (HWY 97) PROJECTED TRAFFIC VOLUMES 1983

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Winter Weekday Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>South of Mt. View Mall</td>
<td>22,680</td>
</tr>
<tr>
<td>South of Nels Andersen</td>
<td>30,250</td>
</tr>
<tr>
<td>South of OB Riley</td>
<td>36,600</td>
</tr>
<tr>
<td>Intersection at 1st &amp; Hwy 97N</td>
<td>27,100</td>
</tr>
<tr>
<td>&quot; Revere &amp; 3rd.</td>
<td>33,400</td>
</tr>
<tr>
<td>&quot; Greenwood &amp; 3rd.</td>
<td>36,450</td>
</tr>
<tr>
<td>&quot; Franklin &amp; 3rd.</td>
<td>32,770</td>
</tr>
<tr>
<td>&quot; Wilson &amp; 3rd.</td>
<td>31,900</td>
</tr>
</tbody>
</table>

Average speed along 3rd Street - 25.75 mph

conditions and in encouraging non-automobile dominated transportation. Vehicles emit less pollutants per mile when traffic is smooth and emissions decrease with increasing speeds. Eliminating bottlenecks, improving streetlight timing, and providing left-turn lanes where needed are measures that can reduce auto emissions.

(E) GUIDELINES FOR REDUCING AIR POLLUTION PROBLEMS

Suspended particulate matter is currently the major pollutant in the Bend Urban Area. The Bend Area is experiencing a rapid rate of growth, and with an increase in wood burning at home, and traffic congestion (to name two pollution sources), it can be expected that emission levels will increase. Deschutes County and the City of Bend should work with DEQ in monitoring and enforcing air quality goals. The maintenance of the high quality of the Bend air shed is recognized as important to our tourist oriented economy, to the aesthetic qualities of the area, and to help maintain a healthful environment.

The following policies are set forth for air quality maintenance:

1. The City and County shall encourage DEQ to perform more thorough monitoring of the air quality of the Bend Area, and shall work with DEQ to ensure that State and Federal ambient air quality standards shall not be exceeded.

2. The City and County shall maintain an aggressive program of paving or sealing dirt streets.

3. The City, County and State shall continue to work towards improving circulation and traffic flow through the City.

4. The City, County, and DEQ shall investigate control of open burning, or other activities that can improve air quality, within the Urban Area.

5. The City and County will cooperate with DEQ in continuing to monitor industrial emissions, especially those located in the SW section of the City, due to high dust levels and prevailing winds.

6. The City and County shall encourage the study of meteorological data to identify potential air quality problems.

7. The City and County shall review land-use development in the Bend Urban Area as to its potential air quality impact on Class I areas within a 20 mile radius.

8. The City and County shall develop a plan and program to mitigate any air quality problems, if one is identified by further monitoring.
BIBLIOGRAPHY

1. DEQ personal conversations Bob Danko, Dick Nichols; and DEQ reports.


$. ODOT, City of Bend: Arterial Street Study Update, 1979.
Noise Pollution

Introduction

This report will focus on the issues of noise pollution, location of offending noise sources, and noise sensitive areas in the Bend Urban Growth Boundary, as required by Statewide Land Use Goal No. 6.

The rapid growth of the Bend Area presents conflicts between noise sensitive areas and offending noise sources which must be recognized if the quality of the environment and standard of living are to be maintained.

Noise

Noise is generally thought of as being an irritation or annoyance, but excessive noise can have an effect on the human health. It has been documented that headache, muscle tension, fatigue, and digestive problems can result from loud or continuous noise exposure. Noise can interrupt communication, including direct conversation, radio, television, or telephone. Noise can also disrupt rest, study, and sleep.

Feelings of annoyance, such as irritability, distractibility, and frustrations are also caused by noise. Physically measurable stress effects of noise, such as glandular responses, cardiovascular response, and hypertension, are well documented. All of these adverse effects of noise on humans are cited as examples to understand why excessive noise is recognized as a serious threat to public health and welfare.

Noise Measurement

Noise is generally measured with an instrument called a "sound level meter" or SLM. This instrument normally is hand-held and light-weight, consisting of a microphone and a meter that is visually read. Most environmental noise is measured by a sound level meter in terms of A-scale decibels, abbreviated dBA. This measurement corresponds to the way the human ear responds to sound. The A-scale thus measures the sound throughout the human audible frequency range, from approximately 20 Hertz to 10,000 Hertz, and applies the appropriate amplitude correction factor at each frequency as does the human ear.

Sources of Noise Pollution

The following is a general breakdown of the current sources of noise pollution in the Bend Urban Area.

1. Commercial and Industrial:
   a. Brooks-Scanlon/Korpine/Willamette Industries area
   b. Wilson Avenue - 9th Street area
   c. Brinson Park area
   d. BID area
   e. Boyd Acres Road area (Bend Millwork and other industry)
   f. Highway 20, south of Pilot Butte
2. Transportation Related:
   a. Highway 97 - Third Street
   b. Highway 20 (east and west)
   c. Franklin Avenue
   d. Greenwood Avenue
   e. Downtown area
   f. Riverside Drive
   g. 8th Street

Location of Noise Sensitive Areas

In the Urban Area there are numerous locations which, due to the nature of the land use or activities involved, should be considered as noise sensitive areas. Those areas are listed as follows:

1. Noise Sensitive Areas:
   a. St. Charles Medical Center
   b. All residential areas
   c. All park and open space areas
   d. Nursing homes
   e. Schools and other public buildings
   f. Hotels, motels, and offices.

Community Attitudes Towards Specific Sources of Noise Pollution:

Deschutes County and the City of Bend have recognized the problems concerning noise pollution and the need for legislation to deal with those concerns. The County in early 1980 passed an ordinance known as "The Deschutes County Noise Control Ordinance." The purpose of that ordinance is to promote the public peace, health, safety, and general welfare, which the County Board of Commissioners finds to be adversely affected by unreasonably loud or raucous noises. The County applies this ordinance on a complaint-nuisance type of procedure, and it is enforced by the County Sheriff.

The City of Bend also has an ordinance that deals with the noise problem. The noise section is included in a nuisance ordinance similar to Deschutes County's, and the problem is dealt with on a complaint basis. The City of Bend ordinance is enforced through the Police Services Department.

As pointed out above, the Urban Area has experienced noise problems in the past, and has enacted legislation to deal with the concerns. Although the enforcement of the law is only through investigation after a complaint, methods should be incorporated into the Bend Area General Plan which address the noise problem through site plan or subdivision review. DEQ has standards and equipment, although a limited budget, for enforcement of their regulations.

Policies:

1. Techniques shall be studied to deal with noise problems when applications for land use actions are received by the two local jurisdictions.
Techniques could involve:

a. Disclosure of Noise Level - A useful technique for protecting home owners or centers is to require notice of the property noise exposure in property deeds and rental leases. The notice should be in clear, simple language and be given good visibility in the deed or lease.

b. Public Acquisition of Land - The simplest but most expensive approach is to buy land in high noise areas and keep the land from any type of incompatible development.

c. Site Planning - Site planning and the site plan review process offers perhaps the most logical and efficient means to approach the offending noise source problem. When application is made for a commercial, industrial, multi-family residential, community building, or subdivision, specific conditions could be included as conditions of approval which would deal with the noise situation.

2. The City and County will cooperate with DEQ in reviewing industrial applications which may have noise problem potential, and strive to mitigate such problems during the approval process.

JCH:bf
5/2/80
THE MUNICIPAL WATER SYSTEM

Since 1926 the City of Bend's main source of water supply has been from the Tumalo Creek Watershed. This has proven to be an excellent choice. Tumalo Creek rises on the eastern slopes of the Ball Butte and Borken Top Mountain about 20 miles west of Bend in a protected watershed area, most of which lies within the Deschutes National Forest. The water is of excellent chemical quality, and the bacteriological quality is good with only chlorination treatment. The water is a constant 48° winter and summer, and is clean except that it is slightly turbid during periods of high runoff from the watershed. These periods occur only occasionally and are of only a few days duration. The system operates on gravity. The intake is about 1,150 feet above the usual water level in the City's Overturf Reservoirs, and water is delivered to these reservoirs by gravity flow through 11 3/4 miles of transmission lines (2) composed of 12 and 14 inch pipes. Since 1954, following construction of the second pipeline, a total of 7.1 MGD* has been available to the City through out the year. The City of Bend holds a total of 12.5 MGD of municipal water rights on Tumalo Creek. Approximately 5.24 MGD is allocated to the Tumalo Irrigation District to meet irrigation demands from April 15 to October 15.

Minimum flows of Tumalo Creek are fully appropriated. Since there are no suitable sites for construction of seasonal storage reservoirs, further development of the Tumalo source by the City would require acquisition of additional water rights, the construction of additional intake and screen facilities, and the laying of a third transmission line to the City.

Supplementary to the Tumalo source, two deep wells have been constructed. Both wells are located in the southwest portion of the City, drilled and operated through an agreement with Brooks-Scanlon. The first City well was drilled in 1972 to a depth of 900 feet with a static water level 564 feet below the top of the casing. City well No. 2 was drilled in 1978, 365 feet north of Well No. 1. Well No. 2 was drilled to a depth of 800 feet and a static level 247 feet below the surface was recorded after drilling. Combined, the City wells can supply approximately 5.7 MGD.

The combination of Tumalo Creek and Wells No. 1 and 2 provide approximately 17 MGD of water for Bend's population. The projected population of Bend in the year 2000 is 45,000. Assuming consumption continues at the present rate, a total of 42 MGD of water will be required in the year 2000.

*MGD = Million Gallon per Day
THE EFFECTS OF METERING ON WATER USE

In Bend, commercial and industrial water accounts are individually metered but domestic services are not. On occasions, the citizens of Bend and City Officials have considered universal metering of domestic water use. Although past decisions have rejected the idea, recent deliberations have resulted in a positive posture on installing domestic meters, since major expansion of the water supply system is being studied. One of the principal advantages of metering is that it provides a means of equitably distributing, on the basis of use, the cost of the water system and its operation. Additionally, a margin of thriftiness in domestic use is introduced as the thrifty or careful user is rewarded by a lower water bill. This would bear a direct relationship to the longevity of the capacity of the Municipal Sewer Facilities as well, since maximum capacity is based on total number of gallons treated per day. Disadvantages of metering include the cost of meters, meter reading, maintenance, and bookkeeping. Sufficient savings must be documented to justify their use economically.
The quality of water in the Bend Urban Area is a matter of major importance. Not only does water furnish the needs of residential, commercial, and industrial users, but it provides many of the recreational and scenic opportunities that make the Bend Area an especially attractive place to live.

WATER SUPPLY

Since 1926 the City of Bend's main source of water supply has been from the Tumalo Creek watershed. This has proven to be an excellent choice. Tumalo Creek rises on the eastern slopes of Bail Butte and Broken Top Mountain about 20 miles west of Bend in a protected watershed area, which lies within the Deschutes National Forest. The water is of excellent chemical quality, and the bacteriological quality is good with only chlorination treatment. The water is constant 48° winter and summer, and is clear except that it is slightly turbid during periods of high runoff from the watershed. These periods occur only occasionally, and are of only a few days duration.

The primary source of water for those residents outside the City Limits yet within the urban growth boundary (UGB) is ground water. There are approximately 270 well logs on file with the Deschutes County Watermaster's Office as of January 1980, which lie outside the Bend City Limits but within the UGB. The depth of wells range from 72' to 1,100', yielding various gallons per minute flows. The shallowest wells are found in the north, northeast and northwestern areas of the UGB.

The regional water table at Bend lies within the Deschutes Formation, some 600 or more feet below land surface. Regional ground water is at least partially confined, as indicated by the general rise in the static water level in wells which tap this body. The regional water table potentiometric surface has a gentle gradient to the north (Sceva, 1968). Consequently, ground water in the Bend area flows in a generally northerly direction.

Many of the wells located north of Bend develop ground water from a perched sand and cinder zone above the Deschutes Formation. These wells generally range from 100 to 200' in depth, while the regional water table is presumed to be close to 600 feet or more below land surface. Most of the perched ground water in the Bend Area is believed to be recharged from local precipitation, canal losses and irrigation, although some of the perched zones may be locally recharged from the Deschutes River. The deepening of a perched ground water well often results in the loss of the perched water supply out the bottom of the well into the underlying materials, and the creation of a new source of recharge for the next underlying perched water table (Sceva, 1968).
The City of Bend, through the city water system, serves about 5,000 users. Approximately 3,500 users are furnished domestic water through private or public utility water systems. There are six primary water systems in the Bend Urban Area, designed and operated by their owners (see map). The existence of these private water systems poses a problem for the future expansion of the City of Bend water system. The specifications to which they have been constructed are not up to the City standards. Plastic pipes rather than steel have been utilized which are undersized and understrengthened. By and large, the supply and pressure level is inadequate to meet the summer use demands and City fire regulations.

As the City expands and the Bend Urban Area begins to infill, the provision of an adequate water system which meets City and State standards throughout the urban area will be imperative.

The DEQ Water Quality program is primarily responsible for surface water, river and lake quality; they grant and monitor discharge permits and administer the Sewer Facility Construction Program provided on a grant basis by the Clear Water Act.

Guide concentrations for dissolved Chemical Substances for the Deschutes River Basin are provided in the Oregon Administrative Rules and are monitored by the DEQ. Unless the natural water quality of the Deschutes Basin exceeds the assigned water quality standards, the following chemical standards apply:

<table>
<thead>
<tr>
<th>Substance</th>
<th>mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (As)</td>
<td>0.01</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>1.0</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>0.5</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>0.003</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>0.02</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>0.005</td>
</tr>
<tr>
<td>Cyanide (CN)</td>
<td>0.005</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>1.0</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>0.1</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>0.05</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>0.05</td>
</tr>
<tr>
<td>Phenols (totals)</td>
<td>0.001</td>
</tr>
<tr>
<td>Total dissolved solids</td>
<td>500.0</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Currently the water quality of the Deschutes River is excellent. DEQ grants a warm water discharge permit to a local lumber mill for operation of a turbine generator. Besides storm water discharge from the city's system, no other effluent is allowed to be discharged into the Deschutes.
# CITY OF BEND DRINKING WATER ANALYSIS

## Chemical Quality

<table>
<thead>
<tr>
<th>Chemical, mg/l</th>
<th>1978 Test Result*</th>
<th>1979 Test Result**</th>
<th>Oregon State Water Quality Stds.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.001</td>
<td>0.006</td>
<td>0.050</td>
</tr>
<tr>
<td>Barium</td>
<td>0.050</td>
<td>0.100</td>
<td>1.000</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.005</td>
<td>0.005</td>
<td>0.010</td>
</tr>
<tr>
<td>Chromium</td>
<td>0.010</td>
<td>0.220</td>
<td>0.050</td>
</tr>
<tr>
<td>Fluoride</td>
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<td>0.005</td>
<td>1.800</td>
</tr>
<tr>
<td>Lead</td>
<td>0.010</td>
<td>0.001</td>
<td>0.050</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.0006</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.033</td>
<td>0.070</td>
<td>10.000</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.002</td>
<td>0.005</td>
<td>0.010</td>
</tr>
<tr>
<td>Silver</td>
<td>0.005</td>
<td>0.005</td>
<td>0.050</td>
</tr>
</tbody>
</table>

*Drinking Water Analysis by CH₂M Hill - February 15, 1978

**Drinking Water Analysis by Century Testing Laboratories, Inc.
July 27, 1979

## Chemical, mg/l | 1980 Test Result*** | Oregon State Water Quality Stds. |
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>0.23</td>
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</tr>
<tr>
<td>Alkalinity as CaCO₃</td>
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</tr>
<tr>
<td>Calcium</td>
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<td>N.A.</td>
</tr>
<tr>
<td>Chloride</td>
<td>6.0</td>
<td>250.0</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.21</td>
<td>2.0</td>
</tr>
<tr>
<td>Mardness as CaCO₃</td>
<td>14</td>
<td>N.A.</td>
</tr>
<tr>
<td>Iron</td>
<td>0.03</td>
<td>0.30</td>
</tr>
<tr>
<td>Magnesium</td>
<td>1.4</td>
<td>0.050</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.05</td>
<td>10.00</td>
</tr>
<tr>
<td>Nitrate Nitrogen</td>
<td>0.02</td>
<td>N.A.</td>
</tr>
<tr>
<td>pH Value</td>
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<td>---</td>
</tr>
<tr>
<td>Potassium</td>
<td>3.2</td>
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</tr>
<tr>
<td>Silica</td>
<td>22</td>
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</tr>
<tr>
<td>Sodium</td>
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</tr>
<tr>
<td>Solids Total</td>
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</tr>
<tr>
<td>Solid Volatile</td>
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<td>N.A.</td>
</tr>
<tr>
<td>Fixed Solids</td>
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<td>---</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.9</td>
<td>250.00</td>
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</tbody>
</table>

"N.A." means "not applicable" as applies to a maximum concentration, but the determination shall be included in the analysis.

***Drinking Water Analysis by Century Testing Laboratories, Inc.
January 24, 1980
Drinking water standards were set forth in the Public Health Service Act, which was amended in 1974 by the Federal Safe Drinking Water Act. This Act specified more complete standards for biological, chemical, and radiological contaminants in drinking water. These standards are shown on Table 8. The Oregon State Health Division has established a system for monitoring water quality in systems supplying water for four or more users. The schedule for submitting samples is provided for in Chapter 333 of the Oregon Administrative Rules, and is as follows:

<table>
<thead>
<tr>
<th>Supply</th>
<th>Type of Exam</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community water supply</td>
<td>Bacteriological</td>
<td>Weekly to monthly</td>
</tr>
<tr>
<td>Surface water supply</td>
<td>Chemical</td>
<td>Yearly</td>
</tr>
<tr>
<td>Well supply</td>
<td>Chemical</td>
<td>Every 3 years</td>
</tr>
</tbody>
</table>

The quality of water from deep water wells (500'-1,100') is generally good in the Bend Urban Area. This is the primary source for most public systems. Most private wells, however, utilize shallower wells from perched water tables. Contamination of this water supply through surface water drainage practices and septic waste disposal has been and continues to be a concern.

The use of drill holes for sewage disposal and surface water drainage has been a common practice in the Bend Urban Area since the early 1900's. The possibility of this practice contaminating the underground water supply is still a possibility, although no indication that this has occurred has been detected. The Oregon Department of Environmental Quality is requiring that all drill holes inside the boundaries of an incorporated city, sanitary district, or county service district be phased out by January 1, 1983. Drill holes outside these boundaries must be phased out as alternatives become available.

The City of Bend has, in the past, used a combination of storm drains (mostly on the west side of the Deschutes River) and drill holes to dispose of surface water. Currently, the most noticeable problem with storm drainage in the City is the flooding of the Franklin Avenue and Third Street railroad underpasses. The City of Bend and the State Highway Division have been working cooperatively on improving the efficiency of the drill hole system, resulting in a recent improvement of the problem. Throughout the east side of town, streets and parking lots are drained into a series of drill holes and catch basins within the streets. By tracing problem runoff back to the source and requiring private drill holes to accommodate the water drainage, the City has been able to improve several problem areas. New parking lots and buildings requiring site design review within the urban area are required to control surface drainage on their property.
In the area north of Bend near the Mountain View Mall shopping center, lies a shallow aquifer from which surrounding residents acquire their domestic water. The shopping center is presently disposing of its sewage by septic tank drainfield. Storm water runoff is controlled through the use of dry wells. Because of the presence of a perched water table (at a depth of 72-150 feet) and the number of shallow domestic wells in the area, this is an area of underground water quality concern. Although no degradation of water quality in the area is presently evident, the situation bears monitoring.

The City and the Department of Environmental Quality are recommending the use of dry wells rather than drill holes to dispose of storm water. In most cases, the dry well should operate more reliably because of a larger surface area. The dry well is fairly shallow compared to a disposal well and provides for more separation between the point of injection and the ground water. This allows for better treatment of the storm water by soil filtration. Another advantage of the dry wells is that they can be cleaned. When a disposal well plugs, the only solution is reboring the hole, generally to a deeper level. In order to maximize protection of the ground water resources in Central Oregon, the use of dry wells for storm water runoff should be strongly encouraged, especially in areas of shadow acquifers.

**SEWAGE TREATMENT**

The City of Bend has been developing an expanded waste water treatment system since 1976. The laying of sewer lines and construction of the sewage treatment facility is expected to be completed in spring of 1981. A waste water planning report entitled "Sewerage Facilities Plan" was prepared in 1976. An addition to the existing sewer system and the construction of a new regional treatment facility is intended to serve sewage treatment and disposal needs.

The site chosen for the new waste water treatment facilities lies approximately six miles northeast of Pilot Butte, on BLM land. In contrast to the increasing suburban setting of the existing plant, the alternative site northeast of the City is undeveloped. The portion of land that would be used as a treatment plant location is characterized by sparse juniper, sagebrush, and bunchgrass. Although the land is grazed to a limited extent, it mainly provides only marginal wildlife habitat. No endangered or threatened species were reported in the Facilities Plan.

The North Unit Irrigation Canal, which runs diagonally across the site, is the only surface water supply available in the area. Except for possible perched water tables, the ground water level is generally 500 to 600 feet below the surface.
Water is assumed to migrate in a northerly direction. This is the general direction of ground water movement described for the entire Deschutes River Basin by Sceva in 1968.

An archaeological survey conducted in 1976 revealed no significant cultural resources at this site.

The Phase II element of the sewage plan encompasses approximately 20 square miles. In order for the sewer system to reach the majority of urban density developments outside of the Phase I boundary, a capital improvement plan is needed coupled with a strong policy requiring mandatory provisions for eventual sewer hook-ups.

POLICIES

In recognition of the importance of preserving and maintaining the high quality of water in the Bend Urban Area, the following policies are set forth:

1. A water and sewer master plan should be developed for all areas within the UGB. Once this overall plan is developed, developers should be required to construct their water systems in such a fashion that they will eventually become part of the area-wide planned system as full development takes place.

2. City sewer service agreement should be required for every subdivision in the Bend Urban Area.

3. The City and County should develop a financial and an implementation plan for future expansion of the Sewage Facility considering, but not limited to, a sinking fund, connection fees, or user fees.

4. The use of dry wells or storm drains for storm water runoff should be required for all land developments within a designated shallow aquifer areas.

5. The preservation and use of natural drainage ways for storm runoff shall be required as much as possible in new developments.

6. The City and County shall help meet and maintain the water quality standards required in accordance with the Federal Clear Water Act, the National Safe Drinking Water Act, and applicable state DEQ and Health Division regulations and standards.
GOAL 13
ENERGY CONSERVATION

The efficient use of energy has several benefits in this period of increased costs and questionable long-range supply. Not only does energy conservation save the consumer money, but the need for developing new (and oftentimes more expensive) sources of energy is reduced. This element addresses energy conservation through a variety of land use planning and construction practices.

Certainly the Bend Urban Area is the most energy consumptive area in Deschutes County. Increased energy costs and limitations of supply of gasoline, electricity, and natural gas will pose certain economic and welfare hardships on the Bend citizenry. The price of gasoline continues to rise which may have a dramatic effect on the local economy. Studies have been conducted for the Bend School District (1) analyzing the tri-county and the Bend area economy, with respect to the impact of gasoline shortages. These reports support the area's future role as a tourist destination. While long-range automobile tourism may be affected, the area's strength lies in its skiing, hunting, fishing, and resorts as destinations.(2) It is possible higher gasoline prices could bring more Willamette Valley tourists to replace California, Canadian, etc., visitors. Greater emphasis on destination resorts, tours, shuttle services, and diversity in recreational activities could help soften the impact of high gasoline prices on Bend's tourist trade.

Certainly one issue bound to be of increasing importance is the cost of commuting locally. The sprawling development pattern which has characterized development in recent years will mean expensive transportation for families locally. Effective transportation planning and suitable facilities development will grow increasingly important, as will appropriate land use planning, since the two processes are inseparable.

By emphasizing conservation, local energy supplies can be effectively extended and used more efficiently. Further, conservation tends to make an area more self-sufficient and therefore less susceptible to national or regional energy shortages. Local efforts to encourage PUD development, a more efficient energy pattern, higher densities for housing, and recycling of materials could have important impacts on local energy consumption.

While no known deposits of fissionable nuclear materials or potential for oil and gas exist in the Bend Urban Area, there is definite potential for solar, hydropower, geothermal, and windpower sites. In addition, the potential for greater domestic and industrial use of locally generated wood wastes, such as slash and mill trimmings, exists in the Bend Urban Area. One local lumber producer is currently operating a 9,000 KW generating plant on wood wastes.


Lutes and Admundson.

The negative externalities associated with expanded use of wood wastes as an energy source should not go unnoticed. DEQ monitoring of air quality in the Bend Urban Area reveals some degradation of the quality of the Bend air shed in recent years. Certain factors, such as time of day of largest levels of fine particulate matter, point to the possibility of this being attributable to wood smoke. More study by the Department of Environmental Quality in cooperation with local planning agencies is warranted to determine the extent and possible solutions to negate or reverse this trend.

While nuclear power plants have been considered for areas east of the Cascades, Deschutes County areas have been identified as either "unsuitable" or "less suitable". While completely foreclosing this energy option is inappropriate, there exists little justification for site identification or preparation for such sites in our present planning period.

The large number of sunny days make this area particularly suitable for solar power, both passive and active systems. During the summer, 300-350 BTU's of sunlight are delivered to each square foot of land in the area. In the winter the BTU's delivered decline to between 175-200. Deschutes County has recently acquired an OSU Energy Extension Agent. The City of Bend should explore, with aid of the local Energy Extension Agent and the Oregon Department of Energy, regulatory and educational provisions to encourage more efficient use of the sun. This should include, but not be limited to, building and development siting standards to encourage maximum use of the sun both summer and winter, building construction standards to provide maximum insulation value per building, and ordinance provisions for protection of solar rights.

The Bend area is fortunate to have some potential energy sources available since its expanding population will continue to strain the ability of energy suppliers to meet the demand. To meet this demand, all available resources will have to be evaluated and utilized and made compatible with the economic, social, and environmental goals of the local and regional population. No single answer exists, but a reasonable combination will have to be found. In the meantime, local land use planning efforts must be aimed at promoting greater efficiency in the use of existing energy resources, the protection and development of those resources we will need in the future, and the preparation for a new era where less per capita energy usage is necessitated.

POLICIES

Transportation:

1. The City of Bend, Deschutes County, and the State Department of Transportation shall work together in providing an efficient and adequate transportation network for the Bend Urban Area.

2. Conservation in private and public vehicle use shall be encouraged.

3. Provision for less energy-consumptive modes of travel such as walking, bicycling, and various forms of mass transit shall be considered in the expansion or repaving of streets, and in subdivision and new development design.

4. The provision of less energy-consumptive recreation transportation alternatives, such as shuttle services, and limited mass transit, shall be encouraged.
5. The land planning and site design shall be encouraged to position buildings and use vegetation to maximize effects of the sun and modify effects of the wind.

6. The use of alternative energy sources such as solar, wind, or geothermal should be encouraged.

7. New development is encouraged to utilize the best available energy conservation techniques in new construction.

8. Innovations in design in residential developments that utilize solar, common wall, or clustering shall be encouraged.

9. The City and County shall encourage the infilling of existing areas to use existing utility systems and avoid having to construct additional systems.

JCH:bf
4/7/80
Revised 5/1/80
1. River otter - *Lutra canadensis*

   Resident population observed regularly
   Individual observations include mating, feeding, playing, courtship
   Primary breeding habitat, food, and refuge available
   Absence of human activity and heavy fishing pressure appear important
   Group of five individuals observed June 1980

2. Mink - *Mustela vison*

   Resident population observed regularly
   Observed feeding along most of both sides of the river
   Primary breeding habitat, food and refuge available
   Absence of human activity and pets appears important
   Preferred food includes crayfish, muskrats, and fish

3. Osprey - *Pandion haliaetus*

   Observed regularly throughout spring and summer
   Individual observations include courtship, nesting, fishing, roosting
   Hunts regularly from snags along river
   Combination of high perches and unboated water appears important

4. Bald eagle - *Haliaeetus leucocephalus*

   Observed occasionally
   Individual observations include fishing, perching, overflying
   Considered transient thus far, but suitable nesting habitat is available
   Rare and endangered nationally

5. Canada goose - *Branta canadensis*

   Observed regularly throughout breeding season
   Observations include courtship, mating, nesting, parental care, grazing
   Feeds regularly along both sides of the river
   Primary nesting sites on river islands and feeding areas on banks

6. Muskrat - *Ondatra zibethica*

   Observed occasionally along river banks and in marshy areas
   Presumed to be a regular resident but less conspicuous than others
   Burrows at waters edge or builds conical houses in marsh
   Occasional prey of mink and river otter

7. Great blue heron - *Ardea herodias*

   Observed regularly throughout warm months
   Feeds along river edge and in marshy areas
   Primary feeding habitat available
   Absence of human activity and pets along river appears important
8. Wood duck - *Aix sponsa*

   Observed occasionally
   Feed along river edge
   Primary feeding habitat available
   Construction of nest boxes planned to encourage breeding

9. Great horned owl - *Bubo virginanus*

   Observed easily throughout most of year
   Observations include courship, nesting, feeding, roosting
   Nests in dense conifers near river
   Abundance of food available

10. Mule deer - *Odocoileus hemionus*

    Observed throughout year regularly
    Winters along river where thermal cover appears important
    Winter food and absence of vehicular traffic appears important
    Refuge from fall hunting also available

11. California quail - *Lophortyx californicus*

    Observed regularly throughout the breeding season
    Prefers protected areas along river
    Thermal cover in early spring and absence of pets appears important
    Primary breeding cover and feeding habitat available

12. Water ouzal (dipper) - *Cinclus mexicanus*

    Observed throughout year
    Observations include breeding, nesting, fledging, feeding
    Nests in hollows in rocks close to waterline
    Feeds in shallows along river edge - dives underwater
    Absence of foot traffic and pets appears important

Other species considered uncommon or of particular interest

Mammals: beaver, grey squirrel (an uncommon breeder in Central Oregon), chickaree (confined to mature undisturbed coniferous stands), golden mantled ground squirrel, yellow-bellied marmot (required rimrock or outcrops), yellow pine chipmunk, woodrat, cotton-tail rabbit, black-tailed jackrabbit, bobcat, coyote, badger, long-tailed weasel

Waterfowl: mallard, ringneck duck, canvasback, cinnamon teal, ruddy duck, common eider, hooded merganser, common merganser, red-breasted merganser, American coot, American widgeon

Other aquatic birds: dipper (water ouzal, a regular breeder) ring-winged blackbird (regular breeder), belted kingfisher (feeds regularly), nighthawk (feeds regularly in summer), spotted sandpiper, double-crested cormorant
Snag species and cavity nesters: common flicker, yellow-bellied sapsucker, hairy woodpecker, downy woodpecker, western bluebird, white-breasted nuthatch, red-breasted nuthatch

Other breeding birds of interest: mourning dove, canyon wren, winter wren, house wren, red-tailed hawk, cliff swallow (requires rimrock nesting habitat), barn swallow, tree swallow, brown creeper, common bushtit, ruby-crowned kinglet, western wood peewee, dusky flycatcher, violet-green swallow, killdeer, Audobon warbler, Wilson warbler, western tannager

Other visitors of particular interest: golden eagle, common snipe, Forster tern, sharp-shinned hawk, Cooper ahwk, goshawk, pigeon hawk, sparrow hawk
Solid waste from the Bend Urban Area is handled at two sites. Building wood wastes are disposed of at the County demolition dump within the Urban Growth Boundary. All other wastes are taken to Knott Pit Sanitary Landfill on the east edge of the Urban Growth Boundary at Arnold Market and Knott Roads.

Knott Pit

In accordance with the Central Oregon Intergovernmental Council Solid Waste Management Plan, Knott Sanitary Landfill is considered a long term site serving the area around Bend. It receives the following approximate monthly quantities of materials:

- 25,000 cu. yd. general solid waste
- 200 cu. yd. hospital wastes
- 175,000 gal. septic tank pumpings
- 50 cu. yd. dead animals
- 40 cu. yd. sewage treatment plant solid and semisolid wastes

The site is fenced with only one entrance and is open seven days a week. Currently, fees are charged to all commercial haulers. The general public is not charged.

All materials, except septic tanks pumpings, placed in landfill sites are covered daily with a six inch cover. The following items are not accepted at this site:

A. Whole car bodies (to go to local wreckers)
B. Oils
C. Chemicals
D. Liquids (other than septic tank pumpings)
E. Explosives
F. Demolition items (to go to Bend demolition site)
G. Hazardous waste containers

The excavation for the hole is accomplished by selling fill dirt material to private commercial haulers. Surface drainage poses no problem at this site.

All solid wastes are treated according to DEQ requirements and standards. All appropriate permits have been received.

The lagoons for septic tank pumpings are considered a secondary backup system. No future development is planned. The City of Bend's new treatment plan can accept trucks with special pumping attachments; however, most septic tank trucks are not equipped with this gear. The City's charges for this service is currently in the range of $12-$15, vs. the County's charge fee for Knott Pit.

The County should re-evaluate the life of Knott Pit with updated data on depth of excavation, revised population projections, and other factors. There are currently no provisions for relocating the sanitary landfill elsewhere in the County. A study is needed to identify and designate suitable future sites for solid waste disposal near the Bend Metro area.

Bend Demolition Dump Site

The Bend Demolition Dump site consists of 15.1 acres on Simpson Road off of Century Drive in the southwest area of Bend. The operation began in 1972, utilizing abandoned pumice trenches. The site is owned and operated by the Deschutes County Department of Public Works as a modified landfill for only demolition, construction debris, industrial wood wastes, tires, and similar non-putrescible solid wastes, with compaction and cover of all wastes deposited at least once a week. No open burning of any wastes is allowed. The County has recently traded land for another site of approximately 80 acres adjacent to the existing site. However, this area abuts a new subdivision and has not had a conditional use approval nor was it included in the original Bend Area General Plan or Solid Waste Plan.

The Bend Demolition site received approximately 1,000 tires and 9,000 cubic yards monthly of demolition and construction wastes. The following items are not accepted at this site:

A. Food wastes and garbage
B. Dead animals
C. Whole car bodies (to go to local car wreckers)
D. Oils
E. Chemicals
F. Liquids
G. Explosives
H. Sewage sludge or septic tank pumpings
I. Hospital wastes

Fees are charged all commercial haulers. The general public is not charged. The site is fenced or barricaded with dirt berms with one entrance, and is open 6 days a week. The existing site is almost full, and a new site or expansion of this site is needed.

Plans for expansion to the west are in process, which, if approved, should expand the life of the site for many years. The total expected life of the demolition dump site is years. The County is negotiating with the Bend Metro Park and Recreation District to convert the existing site into a baseball or soccer field.
Exhibit 22
Page 177 of 180
The Deschutes County Sheriff's Department shares joint responsibility with the Oregon State Police in the Bend Urban Area. The Oregon State Police basically stick to the main highways (Highways 97, 20, and 31), and investigate accidents and automobile related infractions; whereas the sheriff's officers patrol and investigate crimes throughout the county.

It is estimated that approximately 75% of the crimes committed in the county occur within the Bend Urban Area.

Traffic related crimes and accidents take up a large percentage of the county officers' time, with false alarms from residential burglar alarm systems causing an increasing problem. (This is soon to be remedied, however, through a registration and penalty procedure for those alarms which frequently activate.) The total number of crimes reported in Deschutes County has increased 47 percent, 36 percent of which is attributed to better reporting mechanisms. The sheriff's office has access to a computerized reporting system compiled by the state which tallies reported crimes by such factors as sex, age, and the geographic area where the crime was committed. They have an area that is comparable to the geographic boundary of the Bend UGB; unfortunately no past data is available by area, but present (October 1979-December 1979) and future data will be broken down in this form.

The total sheriff department's staff is currently short eight officers for the FY 1979-80, based on a one officer per 1,000 citizens national median average. The main concerns of the sheriff's office are providing better service in the LaPine area, as manifested in the LaPine sheriff's substation bond issue, and the new correction facilities retention capabilities. The capabilities of meeting an increased crime rate in the Bend Urban Area associated with an increased population does not appear to offer a serious enforcement problem for the department other than bridging the present and expected shortage of law enforcement officers. The sheriff's department indicated that they would favor an increased density surrounding the urban areas (particularly the Bend Area, since their main offices and equipment are situated here), rather than scattered development throughout the county.

Source: Interview with Lt. George Mortan, Deschutes County Sheriffs Office, 12/12/79
The following information describes the current status of the land being excluded from the UGB. The City and County adopted an Urban Growth Boundary in 1972, and this boundary was modified several times through 1978. In 1979 the City and County submitted the Bend Area General Plan and UGB to LCDC, and LCDC directed that a new boundary be prepared using the following criteria.

1. Revise the Bend Urban Growth Boundary to include:
   a. All lands within the City limits.
   b. All lands beyond the City limits which are demonstrably needed, based on factors 1 and 2 of Goal 14, and the buildable lands information in Goal 10, and factors 3-7 of Goal 14.
   c. All lands beyond need which are justified, based upon consideration of factors 3-7 of Goal 14.

2. All lands remaining outside the boundary established as listed above, but inside the current UGB must be designated as natural resources, rural, or urban reserve, and zoned in the UAR-10 or other protective zone classification until such time as a boundary change is justified.

The City and County have agreed to a new Initial Urban Growth Boundary that excludes approximately 25 percent of the land contained in the 1979 Urban Growth Boundary. These lands are designated as urban reserve and surface mining, and zoned SR-2½, UAR-10, and SM. The majority of the SR-2½ areas are currently developed with lot sizes of that size or smaller.

The inventory of soil data indicates that most of the agriculture lands are Class VI and are interspersed between lava ridges of scabland Class VIII. The forest soils are site 6 except for a small area of 4 contained within the Tumalo Creek canyon which is Shevlin Park. The conclusion from this analysis is that these lands are marginal resource lands. Much of the land is surrounded by existing one to five acre subdivisions. These areas have been excepted in the Deschutes County Comprehensive Plan.

The urban reserve area acts as a buffer to the more rural and resource lands beyond the UGB. The use of the urban reserve will promote more orderly and efficient development, and still retain the 1972 planning commitments which have resulted in financial commitments from both the public and private sectors. The minimum lot sizes of 2½ to 10 acres will be compatible with the adjacent land uses, and in most cases are the same as the adjacent MUA-10 and RR-10 zoning outside the UGB.

The provision of these areas as urban reserve will enable the community to convert these areas when needed, and hopefully reduce any impact of the small number of individual owners of larger parcels within the UGB. It is important to pre-plan future expansion areas for compatibility and consistency with adjacent uses and services. These areas offer opportunities important to the Bend's and Deschutes County's economy for destination resorts. These areas offer the community an opportunity to review rural urban conflicts and develop more compatible urban and rural relationships.

No alternatives were considered, since this would require the enlargement of the 1979 UGB.

Based on these considerations, the City and County are taking an exception to Goals 3 and 4 as they relate to the land between the IUGB and the UGB.

JCH:bf
Revised 9/24/80
The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: [Web Soil Survey](https://websoilsurvey.nrcs.usda.gov/

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

Survey Area Data: Version 12, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 21, 2013—Sep 7, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
# Map Unit Legend

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>61C</td>
<td>Henkle-Fryrear-Lava flows complex, 0 to 15 percent slopes</td>
<td>67.4</td>
<td>15.2%</td>
</tr>
<tr>
<td>62D</td>
<td>Henkle-Lava flows-Fryrear complex, 15 to 50 percent slopes</td>
<td>20.1</td>
<td>4.8%</td>
</tr>
<tr>
<td>72C</td>
<td>Laidlaw sandy loam, 0 to 15 percent slopes</td>
<td>121.7</td>
<td>29.3%</td>
</tr>
<tr>
<td>85A</td>
<td>Lundgren sandy loam, 0 to 3 percent slopes</td>
<td>10.1</td>
<td>2.4%</td>
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<tr>
<td>101E</td>
<td>Redslide-Lickskillet-Rock outcrop complex, 30 to 50 percent south slopes</td>
<td>11.3</td>
<td>2.7%</td>
</tr>
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<td>106E</td>
<td>Redslide-Lickskillet complex, 30 to 50 percent north slopes</td>
<td>15.1</td>
<td>3.6%</td>
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<td>155D</td>
<td>Wanoga sandy loam, 15 to 30 percent slopes</td>
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<td>0.6%</td>
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<tr>
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<td>Wanoga-Fremke-Rock outcrop complex, 0 to 15 percent slopes</td>
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<td>40.1%</td>
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<tr>
<td>W</td>
<td>Water</td>
<td>0.6</td>
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<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>415.5</strong></td>
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</table>
Nonirrigated Capability Class—Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (Coastal Subject Property)
Nonirrigated Capability Class—Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (Coats Subject Property)

MAP LEGEND

Area of Interest (AOI)

Soils

Soil Rating Polygons

Capability Class - I
Capability Class - II
Capability Class - III
Capability Class - IV
Capability Class - V
Capability Class - VI
Capability Class - VII
Capability Class - VIII
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)
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Survey Area Data: Version 12, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

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<td>6</td>
<td>121.7</td>
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<tr>
<td>85A</td>
<td>Lundgren sandy loam, 0 to 3 percent slopes</td>
<td>6</td>
<td>10.1</td>
<td>2.4%</td>
</tr>
<tr>
<td>101E</td>
<td>Redslide-Licksillet-Rock outcrop complex, 30 to 50 percent south slopes</td>
<td>6</td>
<td>11.3</td>
<td>2.7%</td>
</tr>
<tr>
<td>106E</td>
<td>Redslide-Licksillet complex, 30 to 50 percent north slopes</td>
<td>6</td>
<td>15.1</td>
<td>3.6%</td>
</tr>
<tr>
<td>156D</td>
<td>Wanoga sandy loam, 15 to 30 percent slopes</td>
<td>6</td>
<td>2.3</td>
<td>0.6%</td>
</tr>
<tr>
<td>157C</td>
<td>Wanoga-Fremkie-Rock outcrop complex, 0 to 15 percent slopes</td>
<td>6</td>
<td>166.8</td>
<td>40.1%</td>
</tr>
<tr>
<td>W</td>
<td>Water</td>
<td></td>
<td>0.0</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td></td>
<td><strong>415.5</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified
Tie-break Rule: Higher
Irrigated Capability Class—Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (Coast Subject Property)

MAP LEGEND

Area of Interest (AOI)

Soils

Soil Rating Polygons

Capability Class - I
Capability Class - II
Capability Class - III
Capability Class - IV
Capability Class - V
Capability Class - VI
Capability Class - VII
Capability Class - VIII
Not rated or not available

Map Features

Streams and Canals

Transportation

Trails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Data: Version 12, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:80,000 or larger.

Date(s) aerial images were photographed: Jun 21, 2013—Sep 7, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
### Irrigated Capability Class

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>61C</td>
<td>Henkle-Fryrear-Lava flows complex, 0 to 15 percent slopes</td>
<td>7</td>
<td>67.4</td>
<td>15.2%</td>
</tr>
<tr>
<td>62D</td>
<td>Henkle-Lava flows-Fryrear complex, 15 to 50 percent slopes</td>
<td>7</td>
<td>20.1</td>
<td>4.8%</td>
</tr>
<tr>
<td>72C</td>
<td>Laidlaw sandy loam, 0 to 15 percent slopes</td>
<td>4</td>
<td>121.7</td>
<td>28.3%</td>
</tr>
<tr>
<td>85A</td>
<td>Lundgren sandy loam, 0 to 5 percent slopes</td>
<td>10.1</td>
<td></td>
<td>2.4%</td>
</tr>
<tr>
<td>101E</td>
<td>Redslide-Licksillet-Rock outcrop complex, 30 to 50 percent south slopes</td>
<td>7</td>
<td>11.3</td>
<td>2.7%</td>
</tr>
<tr>
<td>106E</td>
<td>Redslide-Licksillet complex, 30 to 50 percent north slopes</td>
<td>7</td>
<td>15.1</td>
<td>3.6%</td>
</tr>
<tr>
<td>155D</td>
<td>Wanoga sandy loam, 15 to 30 percent slopes</td>
<td>6</td>
<td>2.3</td>
<td>0.6%</td>
</tr>
<tr>
<td>157C</td>
<td>Wanoga-Fremkle-Rock outcrop complex, 0 to 15 percent slopes</td>
<td>4</td>
<td>166.8</td>
<td>40.1%</td>
</tr>
<tr>
<td>W</td>
<td>Water</td>
<td>0.6</td>
<td></td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td></td>
<td><strong>415.5</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

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Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watersheds, or esthetic purposes.

Rating Options

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher
Forest Productivity (Cubic Feet per Acre per Year): ponderosa pine (Meyer 1961 (600))—Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (Coats Subject Property)

MAP LEGEND

<table>
<thead>
<tr>
<th>Area of Interest (AOI)</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of Interest (AOI)</td>
<td>Aerial Photography</td>
</tr>
</tbody>
</table>

Soils

Soil Rating Polygons

- <= 46.00
- > 46.00 and <= 50.00
- > 50.00 and <= 53.00
- Not rated or not available

Soil Rating Lines

- <= 46.00
- > 46.00 and <= 50.00
- > 50.00 and <= 53.00
- Not rated or not available

Soil Rating Points

- <= 46.00
- > 46.00 and <= 50.00
- > 50.00 and <= 53.00
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: Web Mercator (EPSG:3857)
Coordinate System: Web Mercator

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Data: Version 12, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 21, 2013—Sep 7, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
Forest Productivity (Cubic Feet per Acre per Year): ponderosa pine (Meyer 1961 (600))

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>51C</td>
<td>Henkle-Fryrear-Lava flows complex, 0 to 15 percent slopes</td>
<td>50.00</td>
<td>67.4</td>
<td>16.2%</td>
</tr>
<tr>
<td>62D</td>
<td>Henkle-Lava flows-Fryrear complex, 15 to 50 percent slopes</td>
<td>50.00</td>
<td>20.1</td>
<td>4.8%</td>
</tr>
<tr>
<td>72C</td>
<td>Laidlaw sandy loam, 0 to 15 percent slopes</td>
<td>53.00</td>
<td>121.7</td>
<td>29.3%</td>
</tr>
<tr>
<td>65A</td>
<td>Lundgren sandy loam, 0 to 5 percent slopes</td>
<td>46.00</td>
<td>10.1</td>
<td>2.4%</td>
</tr>
<tr>
<td>101E</td>
<td>Redside-Lickskillet-Rock outcrop complex, 30 to 50 percent south slopes</td>
<td>11.3</td>
<td>11.3</td>
<td>2.7%</td>
</tr>
<tr>
<td>106E</td>
<td>Redside-Lickskillet complex, 30 to 50 percent north slopes</td>
<td>15.1</td>
<td>15.1</td>
<td>3.5%</td>
</tr>
<tr>
<td>155D</td>
<td>Wanoga sandy loam, 15 to 30 percent slopes</td>
<td>50.00</td>
<td>2.3</td>
<td>0.6%</td>
</tr>
<tr>
<td>157C</td>
<td>Wanoga-Fremke-Rock outcrop complex, 0 to 15 percent slopes</td>
<td>50.00</td>
<td>166.8</td>
<td>40.1%</td>
</tr>
<tr>
<td>W</td>
<td>Water</td>
<td>0.6</td>
<td>0.6</td>
<td>0.1%</td>
</tr>
<tr>
<td>Totals for Area of Interest</td>
<td></td>
<td>415.5</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Description

Forest productivity is the volume of wood fiber that is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Rating Options

Tree: ponderosa pine

Site Index Base: Meyer 1961 (600)
Aggregation Method: Dominant Component
Component Percent Cutoff: None Specified
Tie-break Rule: Higher
Interpret Nulls as Zero: No
Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

Rio Lobo Soil Data
Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/souls/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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72C—Laidlaw sandy loam, 0 to 15 percent slopes ........................................ 16
155D—Wanoga sandy loam, 15 to 30 percent slopes ..................................... 17
157C—Wanoga-Fremkle-Rock outcrop complex, 0 to 15 percent slopes .... 18
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil
scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.
The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Date: Version 12, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 21, 2013—Aug 17, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background.

Exhibit 25
Page 10 of 21
imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
Map Unit Legend

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>62D</td>
<td>Henkle-Lava flows-Fryrear complex, 15 to 50 percent slopes</td>
<td>5.6</td>
<td>1.8%</td>
</tr>
<tr>
<td>72C</td>
<td>Laidlaw sandy loam, 0 to 15 percent slopes</td>
<td>23.5</td>
<td>7.6%</td>
</tr>
<tr>
<td>155D</td>
<td>Wanoga sandy loam, 15 to 30 percent slopes</td>
<td>12.5</td>
<td>4.1%</td>
</tr>
<tr>
<td>157C</td>
<td>Wanoga-Frenkle-Rock outcrop complex, 0 to 15 percent slopes</td>
<td>265.6</td>
<td>86.5%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>307.2</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.
The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.
Custom Soil Resource Report

Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

62D—Henkle-Lava flows-Fryrear complex, 15 to 50 percent slopes

Map Unit Setting
- National map unit symbol: 24f6
- Elevation: 2,800 to 4,000 feet
- Mean annual precipitation: 12 to 18 inches
- Mean annual air temperature: 42 to 47 degrees F
- Frost-free period: 60 to 90 days
- Farmland classification: Not prime farmland

Map Unit Composition
- Henkle and similar soils: 35 percent
- Lava flows: 30 percent
- Fryrear and similar soils: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henkle

Setting
- Landform: Hillslopes
- Landform position (two-dimensional): Shoulder, backslope
- Landform position (three-dimensional): Nose slope, side slope
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Volcanic ash and colluvium over volcanic rock

Typical profile
- Oi - 0 to 1 inches: slightly decomposed plant material
- H1 - 1 to 3 inches: very cobbly sandy loam
- H2 - 3 to 18 inches: very cobbly sandy loam
- H3 - 18 to 28 inches: unweathered bedrock

Properties and qualities
- Slope: 15 to 50 percent
- Depth to restrictive feature: 10 to 20 inches to lithic bedrock
- Natural drainage class: Somewhat excessively drained
- Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups
- Land capability classification (irrigated): 7e
- Land capability classification (nonirrigated): 7e
- Hydrologic Soil Group: D
- Ecological site: JUNIPER-PINE-FESCUE (R006XB002OR)
- Hydric soil rating: No
Description of Lava Flows

Typical profile

R - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Fryrear

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and colluvium over basalt

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 4 inches: stony sandy loam
H2 - 4 to 19 inches: very stony sandy loam
H3 - 19 to 28 inches: very stony sandy loam
H4 - 28 to 38 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: JUNIPER-PINE-FESCUE (R006XB0020R)
Hydric soil rating: No
72C—Laidlaw sandy loam, 0 to 15 percent slopes

Map Unit Setting

- **National map unit symbol**: 24fp
- **Elevation**: 2,800 to 4,000 feet
- **Mean annual precipitation**: 12 to 18 inches
- **Mean annual air temperature**: 42 to 47 degrees F
- **Frost-free period**: 60 to 90 days
- **Farmland classification**: Farmland of statewide importance

Map Unit Composition

- **Laidlaw and similar soils**: 85 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidlaw

Setting

- **Landform**: Hillslopes
- **Landform position (two-dimensional)**: Footslope, summit
- **Landform position (three-dimensional)**: Base slope, interfluve
- **Down-slope shape**: Linear
- **Across-slope shape**: Linear
- **Parent material**: Volcanic ash over old alluvium

Typical profile

- **Oi - 0 to 1 inches**: slightly decomposed plant material
- **H1 - 1 to 16 inches**: sandy loam
- **H2 - 16 to 39 inches**: sandy loam
- **H3 - 39 to 46 inches**: fine sandy loam
- **H4 - 46 to 61 inches**: loamy fine sand

Properties and qualities

- **Slope**: 0 to 15 percent
- **Depth to restrictive feature**: More than 80 inches
- **Natural drainage class**: Well drained
- **Capacity of the most limiting layer to transmit water (Ksat)**: High (1.98 to 5.95 in/hr)
- **Depth to water table**: More than 80 inches
- **Frequency of flooding**: None
- **Frequency of ponding**: None
- **Available water storage in profile**: High (about 10.3 inches)

Interpretive groups

- **Land capability classification (Irrigated)**: 4e
- **Land capability classification (Nonirrigated)**: 6e
- **Hydrologic Soil Group**: A
- **Hydric soil rating**: No
155D—Wanoga sandy loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2426
Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 42 to 47 degrees F
Frost-free period: 60 to 90 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wanoga and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Wanoga

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, interfluve, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over tuff or basalt

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 13 inches: sandy loam
H2 - 13 to 25 inches: sandy loam
H3 - 25 to 35 inches: weathered bedrock
H4 - 35 to 45 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 30 to 50 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No
157C—Wanoga-Fremkle-Rock outcrop complex, 0 to 15 percent slopes

Map Unit Setting

*National map unit symbol: 242b*

Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 42 to 47 degrees F
Frost-free period: 60 to 90 days
*Farmland classification: Farmland of statewide importance*

Map Unit Composition

Wanoga and similar soils: 35 percent
Fremkle and similar soils: 30 percent
Rock outcrop: 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Wanoga

Setting

*Landform: Hillslopes*

*Landform position (two-dimensional): Summit, shoulder*

*Landform position (three-dimensional): Crest, interfluve, nose slope*

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over tuff or basalt

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 13 inches: sandy loam
H2 - 13 to 25 inches: sandy loam
H3 - 25 to 35 inches: weathered bedrock
H4 - 35 to 45 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 30 to 50 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No
Description of Fremklle

Setting
- Landform: Hillslopes
- Landform position (two-dimensional): Summit, shoulder
- Landform position (three-dimensional): Crest, interfluve, nose slope
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Volcanic ash over tuff or basalt

Typical profile
- Oi - 0 to 1 inches: slightly decomposed plant material
- H1 - 1 to 4 inches: sandy loam
- H2 - 4 to 15 inches: sandy loam
- H3 - 15 to 25 inches: unweathered bedrock

Properties and qualities
- Slope: 0 to 15 percent
- Depth to restrictive feature: 10 to 20 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water storage in profile: Low (about 3.1 inches)

Interpretive groups
- Land capability classification (irrigated): 4e
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: D
- Ecological site: JUNIPER-PINE-FESCUE (R006XB002OR)
- Hydric soil rating: No

Description of Rock Outcrop

Typical profile
- R - 0 to 60 inches: unweathered bedrock

Properties and qualities
- Slope: 0 to 15 percent
- Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups
- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 8
- Hydric soil rating: No
References


Project Wildfire receives national honor for wildfire mitigation efforts

After a competitive review by representatives from National Association of State Foresters, National Fire Protection Association, Forest Service and the International Association of Fire Chiefs, Central Oregon’s Project Wildfire has been selected to receive a 2018 Wildfire Mitigation Award. The award is the highest national honor a program can receive for outstanding work and significant program impact in wildfire preparedness and mitigation.

"This award belongs to each person who built Project Wildfire and who sustains its efforts in Deschutes County," said Deschutes County Commissioner and Project Wildfire Board Member Phil Henderson. "Since Project Wildfire was formed in 2004, program staff, many partners, and residents have worked tirelessly to create disaster-resistant communities in Central Oregon."

The National Wildfire Mitigation Award recognizes the efforts of organizations and individuals who have implemented successful and sustainable wildfire mitigation projects on the ground in their community. These awards are designed to recognize outstanding service at the federal, state, local and tribal levels of government and at the local community level.

"We’re honored to receive this recognition," said Project Wildfire Coordinator Alison Green. "This is a great recognition of the engagement we see in Central Oregon, through collaborative partnerships and with our engaged residents. We look forward to continuing to work together to ensure we have innovative, cutting edge tools to tackle the wildland fire problem we face in Central Oregon."

About Project Wildfire: Formed in 2004, Project Wildfire seeks to prevent deaths, injuries, property loss, and environmental damage resulting from wildfires in Deschutes County. Project Wildfire is a community organization that facilitates, educates, disseminates, and maximizes community efforts toward effective fire planning and mitigation. Project Wildfire serves as the caretaker to seven (7) Community Wildfire Protection Plans in Deschutes County. These plans are tailored to specific geographic locations within Deschutes County to address the unique needs of residents and fire professionals. Together, the partners of
Project Wildfire achieve its mission by building partnerships, sharing resources, and eliminating redundancies. Often Project Wildfire succeeds where individuals and individual agencies cannot.

For more information, visit www.projectwildfire.org [1] or call 541-322-7129.

A Municode Design

Source URL: https://www.deschutes.org/forester/page/project-wildfire-receives-national-honor-wildfire-mitigation-efforts

Links:
Deschutes County Large Fire History
1900 - 2017

Deschutes County Fire Acreage by Decade

Land Ownership
- Ignitions 2006 - 2015
- USFS
- BLM
- GISL
- OPRD
- PRIVATE
- Deschutes County
- Wilderness Area

FIRE OCCURRENCE BY DECADE

0 5 10 20 Miles

Exhibit 26
Page 3 of 3
BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Amending Ordinance No. 80-216, the Bend Area General Plan, as Amended, By Reconfiguring the Inner Urban Growth Boundary, Changing Certain Plan Designations to Reflect the Changes to the Inner Urban Growth Boundary, and Declaring an Emergency.

91-26421
ORDINANCE 91-030

WHEREAS, Cascade Highlands, Inc. (Cascade Highlands) owns a large property to the west of Bend that straddles the Bend Inner Urban Growth Boundary (IUGB);

WHEREAS, as part of a development proposal, Cascade Highlands proposed the reconfiguration of the IUGB as established in the Bend Area General Plan (Plan), resulting in the inclusion of certain property currently located outside the IUGB (described in Exhibit B and depicted as Parcel B on Exhibit D) within the reconfigured IUGB and the exclusion of certain property currently located inside the IUGB (described in Exhibits A and C and depicted respectively as Parcels A and C on Exhibit D) from the reconfigured IUGB;

WHEREAS, in accordance with its requested redesignation of the IUGB and in accordance with its request, granted on this date by Ordinance 91-032, to relocate an Industrial Park designation under the Plan, Cascade Highlands requested that said Parcel B be redesignated from Urban Reserve to Residential-Standard Density on the Plan; that said Parcel C be redesignated from Residential-Standard Density to Urban Reserve on the Plan; and that said Parcel A be redesignated from Industrial Park to Urban Reserve.

WHEREAS a hearing was held, after notice given in accordance with law, before the County Hearings Officer;

WHEREAS, the Hearings Officer approved of the proposed IUGB reconfiguration and the proposed redesignations under the Bend Area General Plan;

WHEREAS, the decision of the Hearings Officer has not been appealed; now, therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. Subject to Section 3, the Bend Area General Plan, adopted as Ordinance 80-216, as amended, (Plan) is further amended to reconfigure the Bend Urban Growth Boundary (IUGB) from its present configuration generally depicted as "Current UGB" on
Exhibit D attached hereto and by this reference incorporated herein, to the configuration generally depicted on Exhibit D as "Proposed UGB" and more particularly described in Exhibit E, attached hereto and by this reference incorporated herein, which change results in the inclusion of Parcel B, as generally depicted on Exhibit D and more particularly described in Exhibit E, attached hereto and by this reference incorporated herein, inside the UGB and the exclusion of Parcels A and C, as generally depicted on Exhibit C and more particularly described in Exhibits A and C, attached hereto and by this reference incorporated herein, from the UGB.

Section 2. Subject to Section 3, the Plan is further amended to redesignate under the Plan the lands included in Parcel A, as described in Section 1 above, consistent with Ordinance 90-032 also adopted on this date, from Industrial Park to Urban Reserve; to redesignate the lands included in Parcel B, as described in Section 1 above, from Urban Reserve to Residential Standard Density; to redesignate the lands included in parcel C, as described in Section 1 above, from Residential Standard Density to Urban Reserve; and consistent with Ordinance 90-032 also adopted on this date to redesignate those lands within the reconfigured UGB currently designated Industrial Park to Residential Standard Density.

Section 3. The Board of County Commissioners adopts as its decision and findings in support of the above-referenced Plan Amendments the Findings and Decisions of the Hearings Officer, dated June 21, 1991 relating to Plan Amendment Application No. PA-90-11, marked Exhibit F, attached hereto and by this reference incorporated herein. The Board's adoption of these Plan Amendments is subject to all conditions of approval set forth in the aforementioned Hearings Officer's decision.

Section 4. This Ordinance being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this Ordinance takes effect on its passage.

DATED this 22nd day of September, 1991.

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

TOM THROOP, Commissioner

NANCY POPE SCHLANGEN, Commissioner

ATTEST:

Maureen Hink, Recording Secretary

DICK MAULIN, Chairman

2 - ORDNANCE 91-030
PARCEL A

PROPERTY DESCRIPTION

A parcel of land in the north half of the northwest quarter of Section 1, Township 18 South, Range 11 East, Willamette Meridian, Deschutes County, Oregon fully described as follows:

Beginning at the northwest corner of said Section 1; thence South 89°38'58" East 2419.57 feet along the north line of said Section 1; thence leaving said north line South 03°06'41" West 529.17 feet; thence North 87°23'48" West 126.39 feet; thence 260.72 feet along the arc of a 830.00 foot radius curve left (the long chord of which bears South 83°36'16" West 259.65 feet); thence South 74°36'20" West 170.73 feet; thence 826.47 feet along the arc of a 551.00 foot radius curve left (the long chord of which bears South 31°38'07" West 751.14 feet); thence 89.26 feet along the arc of a 317.00 foot radius curve right (the long chord of which bears South 03°16'05" East 88.97 feet) to the south line of said north half; thence North 89°47'24" West 1469.17 feet to the southwest corner of said north half; thence North 00°41'38" East 1334.76 feet to the point of beginning. Contains 58.18 Acres.

SEE EXHIBIT D

August 22, 1991
EXHIBIT "B"

PARCEL B

PROPERTY DESCRIPTION

A parcel of land in the west half of Section 1, and the southeast quarter of the northeast quarter of Section 2, Township 18 South, Range 11 East, Willamette Meridian, Deschutes County, Oregon fully described as follows:

Commencing at the northwest corner of said Section 1; thence South 00°41'38" West 1334.76 feet to the southwest corner of the north half of the northwest quarter of said Section 1; thence South 89°47'24" East 1469.17 feet along the south line of said north half to the point of beginning; thence South 89°47'24" East 1175.97 feet to the southeast corner of said north half; thence South 00°38'43" West 3806.77 feet along the east line of the West Half; thence leaving said east line North 84°51'22" West 565.81 feet; thence North 11°27'42" West 607.38 feet; thence North 47°47'18" West 942.66 feet; thence South 37°36'01" West 246.88 feet; thence North 48°21'33" West 60.15 feet; thence North 37°36'01" East 247.48 feet; thence North 47°47'16" West 104.07 feet; thence North 38°17'25" East 588.54 feet; thence 453.45 feet along the arc of a 628.00 foot radius curve left (the long chord of which bears North 17°36'18" East 443.66 feet); thence South 78°18'19" West 113.11 feet; thence South 47°21'26" West 1105.03 feet; thence 791.19 feet along the arc of a 2326.00 foot radius curve right (the long chord of which bears North 29°20'49" West 787.38 feet); thence 997.41 feet along the arc of a 2680.00 foot radius curve left (the long chord of which bears North 30°15'49" West 991.66 feet); thence North 14°18'05" East 87.98 feet; thence South 74°22'49" East 789.59 feet; thence 130.99 feet along the arc of a 555.50 foot radius curve right (the long chord of which bears North 09°03'11" East 130.69 feet); thence North 58°31'54" West 537.43 feet; thence North 70°17'40" East 1419.88 feet; thence 3.95 feet along the arc of a 317.00 foot radius curve left (the long chord of which bears North 05°09'20" East 3.95 feet) to the point of beginning. Contains 144.73 Acres.

SEE EXHIBIT D

August 22, 1991

DAVID EVANS AND ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS, LANDSCAPE ARCHITECTS
OFFICES IN OREGON, WASHINGTON AND CALIFORNIA
700 N.W. WALL STREET, SUITE 102
BEND, OREGON 97701-2712
(503) 389-7614

chd8ugbb.jcp

Exhibit 27
Page 4 of 33
PARCEL C

PROPERTY DESCRIPTION

A parcel of land in the southwest quarter of the southeast quarter of Section 1, and the West Half of the northeast quarter of Section 12, Township 18 South, Range 11 East, Willamette Meridian, Deschutes County, Oregon fully described as follows:

Commencing at a brass cap at the southwest corner of said Section 1; thence South 89°51'16" East 2648.53 feet to a brass cap at the southwest corner of said southeast quarter and the point of beginning; thence North 00°38'43" East 156.79 feet along the west line of said southeast quarter; thence leaving said west line South 84°51'22" East 215.30 feet; thence North 79°16'17" East 574.10 feet; thence North 73°18'29" East 200.72 feet; thence South 12°25'04" East 129.67 feet; thence North 80°34'09" East 324.54 feet; thence South 00°23'49" East 231.48 feet to a brass cap at the northeast corner of said west half; thence South 00°39'59" West 2650.05 feet to a brass cap at the southeast corner of said west half; thence North 89°48'15" West 1323.99 feet to the southwest corner of said west half; thence North 00°42'23" East 2648.47 feet to the point of beginning. Contains 86.56 Acres.

SEE EXHIBIT D

July 9, 1991

chd8ugbc.jcp
REVISED URBAN GROWTH BOUNDARY

Revised Urban Growth Boundary in the west half of Section 1, and the southwest quarter of the southeast quarter of Section 1, and the southeast quarter of the northeast quarter of Section 2, and the west half of the northeast quarter of Section 12, Township 18 South, Range 11 East, Willamette Meridian, Deschutes County, Oregon fully described as follows:

Beginning at the northwest corner of said Section 1; thence South 89°38'58" East 2419.57 feet along the north line of said Section 1; thence leaving said north line South 03°06'41" West 529.17 feet; thence North 87°23'48" West 126.39 feet; thence 260.72 feet along the arc of a 830.00 foot radius curve left (the long chord of which bears South 83°36'16" West 259.65 feet); thence South 74°36'20" West 170.73 feet; thence 826.47 feet along the arc of a 551.00 foot radius curve left (the long chord of which bears South 31°38'07" West 751.14 feet); thence 93.21 feet along the arc of a 317.00 foot radius curve right (the long chord of which bears South 02°54'39" East 92.88 feet); thence South 70°17'40" West 1419.88 feet; thence South 58°31'54" East 537.43 feet; thence 130.99 feet along the arc of a 555.50 foot radius curve left (the long chord of which bears South 09°03'11" West 130.69 feet); thence North 74°22'49" West 789.59 feet; thence South 14°18'05" West 87.98 feet; thence 997.41 feet along the arc of a 2680.00 foot radius curve right (the long chord of which bears South 30°15'49" East 991.66 feet); thence 791.19 feet along the arc of a 2326.00 foot radius curve left (the long chord of which bears South 29°20'49" East 787.38 feet); thence North 47°21'26" East 1105.03 feet; thence North 78°18'19" East 113.11 feet; thence 453.45 feet along the arc of a 628.00 foot radius curve right (the long chord of which bears South 17°36'18" West 443.66 feet); thence South 38°17'25" West 588.54 feet; thence South 47°47'16" East 104.07 feet; thence South 37°36'01" West 247.48 feet; thence South 48°21'33" East 60.15 feet; thence North 37°36'01" East 246.88 feet; thence South 47°47'18" East 942.66 feet; thence South 11°27'42" East 607.38 feet; thence South 84°51'22" East 781.11 feet; thence North 79°16'17" East 574.10 feet; thence North 73°18'29" East 200.72 feet; thence South 12°25'04" East 129.67 feet; thence North 80°34'09" East 324.54 feet; thence South 00°23'49" East 231.48 feet to the northeast corner of said west half of the northeast quarter of Section 12; thence South 00°39'59" West 2650.05 feet to a brass cap at the southeast corner of said west half of the northeast quarter of Section 12; thence North 89°48'15" West 1323.99 feet to the southwest corner of said west half of the northeast quarter of Section 12 and terminus of this description.

SEE EXHIBIT D

August 30, 1991

CHD8UGB.JCP
FINDINGS AND DECISION


APPLICANT: CASCADE HIGHLANDS, INC. One Financial Center 121 S.W. Morrison, Suite 950 Portland, OR 97204

REQUEST: Applications for a conditional use permit for a golf course and club house, a conditional use and master plan for a planned unit development in the Bend Urban area; a plan amendment to move the alignment of Mount Washington Drive on the transportation plan map and to move an industrial reserve area from the subject property to another property; and a plan amendment and zone change to rezone property from RS, Urban Standard Residential to UAR-10, Urban Area Reserve, and from UAR-10 to RS. Applicant also seeks plan amendments to remove a park dedication on the Bend area general plan for a portion of the Broken Top Development and a permit for the proposed access road from the development to Century Drive.

PLANNING STAFF REPRESENTATIVE: Paul Blikstad

BURDEN OF PROOF: Where applicable the applicant must establish that the above referenced request conform with the Oregon Statewide Planning Goals, the Oregon Administrative Rules establishing criteria relevant to changes to the acknowledged urban growth boundaries, The Bend Area General Plan, Title 19 in Deschutes County Code which is the Bend Urban Growth Boundary Zoning Ordinance.

PRELIMINARY FINDINGS

1. LOCATION:

The subject property is located in the western portion of the Bend Urban Area, between Skyliner’s Road and Century Drive. The property abuts the Overturf Butte Subdivision and the Bend Metro Parks and Recreation Ball Field facility off of Century Drive and near Cascade Junior High School. The property is described as 18-11, Tax Lot #100RI and 18-11-12, Tax Lot

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2. ZONE:

The subject property is zoned RS, Urban Standard Residential and UAR-10 Urban Area Reserve. The property currently has a designation of Urban Reserve, Standard Residential and an Industrial Park on the Bend Area General Plan.

HEARINGS AND EXHIBITS

Hearings were held on the above-referenced application on April 25, 1991 and on May 9, 1991 at the City of Bend Public Works Building. The following exhibits make up the record in this matter:

(See attached Exhibit "A")

The Hearings Officer also traversed the site on foot prior to the hearing and is familiar with the topographical features of the subject property.

STANDARDS AND APPLICABLE CRITERIA

The following criteria may apply:

* Title 19 of the Deschutes County Code, which is the Bend Urban Growth Boundary Zoning Ordinance, Section 19.12, UAR-10 zone; Section 19.28, RS zone; Section 19.100, Conditional Use Permits; Section 19.104, Planned Unit Development Approval; Section 19.116, Amendments, Appeals and Procedures.

* The Bend Area General Plan which establishes goals and policies for land development in the Bend urban area.

* The Statewide Planning Goals which establish general goals for land use planning and development.

* Oregon Administrative Rules Division 4, Chapter 660-04-010 (1) (c) (B) which establishes criteria for reviewing changes to acknowledged urban growth boundaries.

* The Deschutes County Uniform Development Procedures Ordinance which establishes criteria for the land use applications in the County.

FINDINGS AND FACT

1. The two tax lots involved in the proposed land use action encompass approximately 1,687 acres. The applicant is proposing development on approximately 437 acres out of the overall total. The subject property has a varied topography,
consisting of large rock outcroppings in areas previously excavated. The property has dirt roads and trails that dissect it in several places. The property suffered substantial burn in the Awbrey Hall fire in August of 1990. The property at this time has no direct access to a public road except at the western termini of Forest Ridge and Knoll Roads. The outer boundaries of the existing tax lots are adjacent to US Forest Service land on the west side of Bend.

2. The applicant proposes to construct a planned unit development (Broken Top PUD) known as Broken Top on 483 acres. Broken Top PUD will consist of approximately 436 single family dwellings, 100 multi-family dwellings, and a country club with an 18 hole golf course, related recreational amenities. The proposed PUD is scheduled to be constructed in seven (7) phases. The golf course and club house would be constructed in the first phase.

3. The applicant proposes to incorporate an 18 hole golf course designed by Weiskopf/Morriish a club house with restaurant and bar, and other recreational amenities such as tennis courts and a swimming pool into the design of the proposed 536 unit development. The country club and golf course are the central features of the project. The applicant proposes that the existing topography and post fire vegetation govern the golf course design. The residential lots and roads are designed to take advantage of the golf course. The golf course and club house will be open to the general public. The details of the golf course, club house and other recreational facilities are proposed to be reviewed by the County at the time of the site plan review.

4. As part of the application, the applicant is proposing a relocation of Mount Washington Drive as depicted on the Comprehensive Plan transportation map, Mount Washington Drive bisects the applicant’s property. The applicant proposes to move Mount Washington Drive to the northern and eastern boundary of the subject property. The applicant also proposes an access road from the west side of applicant’s property to Century Drive.

5. The applicant further proposes to move a comprehensive plan industrial park designation and a comprehensive plan park designation on the property to other properties located off of Broken Top. Applicant proposes to transfer the industrial reserve designation to property owned by William Miller north of Skyliner’s Road. A park designation is proposed to be moved to property owned by the applicant to the north and west of Broken Top on Skyliner’s Road.

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6. As indicated above, a substantial number of the trees on the property owned by Cascade Highlands were destroyed by the Awbrey Hall fire. A little more than one-half of the PUD area and a portion of the remaining Cascade Highlands were not burned in the fire. It is expected that wildlife will continue to use these unburned areas mainly for cover and forage. The applicant has developed a recovery plan which is more particularly described in Exhibit #14, "Cascade Highlands Recovery Plan."

7. A minimum of 10 acres is required for any planned unit development. The Broken Top development meets the minimum size requirements for a planned unit development.

8. Subsequent to the filing of the staff report the applicant entered into a number of agreements with affected agencies concerning the various applications on file. These agreements can be summarized as follows:

A. Roads.

1. The agreements concerning roads are best summarized in the letters of April 25, 1991 from David Alden to Larry Rice of Deschutes County Public Works Department and John Hossick of the City of Bend Planning Department. The facts set forth in those letters are incorporated by reference herein. In summary, the applicant has agreed to construct Simpson Avenue in accordance with the public works specifications and in accordance with specifications required by the public works department. The applicant has also agreed to construct a permanent access to 18th Street from Simpson Avenue and gated emergency accesses from Mount Washington Drive to Knoll Avenue and Forest Ridge Avenue.

2. The Applicant has agreed to construct Mount Washington Drive from Simpson Avenue to Century Drive in conjunction with the first phase of development. The applicant has further agreed to construct Mount Washington Drive from Simpson Avenue North to Skyliner’s Drive in conjunction with construction of phase seven (7).

3. The applicant has agreed to provide a direct access from Mount Washington Drive to the Broken Top club house with a two lane gated emergency access to the internal road system.

4. The construction of Mount Washington Drive to Century Drive may require reconstruction of the access road to Cascade Junior High School depending upon the road alignments selected by Deschutes County. Cascade Highlands has agreed to construct a realigned access road to the school in conjunction with the requirements of the Deschutes County Public Works
Department.

5. In addition to the construction of these roads off site the applicant continues to propose to construct a private access road from the west side of the Broken Top development to Century Drive.

B. SEWER AND WATER.

1. The applicant has agreed to provide to the City of Bend a water/sewer master plan that would be coordinated with the city system by city staff. The applicant has agreed to construct a new well for the city off-site, to construct all requisite sewer and water transmission lines and to transfer to the City ownership of the new water well. In summary, all sewer and water requirements requested by the City of Bend are agreed to by the Applicant.

2. A separate water well would be utilized for irrigation water. The applicant proposes to use a sophisticated computer system to minimize the amount of water needed to irrigate the golf course.

C. SCHOOL.

1. Cascade Highlands has agreed to make a fifteen (15) acre site available to the school district provided the estimated elementary school pupil yield from Broken Top is at least 55 students. The site would have direct access to a public street, and the difference between the elevation of the highest and lowest points will be less than 25 feet. (See Alden letter of April 23, 1991 to John Rexford concerning the details which are incorporated by reference (Exhibit #60.)

D. PARKS.

1. The Bend Area Urban Comprehensive Plan designates an area on the southeast portion of the Broken Top Development. The applicant’s alternate park site is located on the northwestern portion of the Cascade Highlands property with direct access to Skyliner’s Road. The Bend Metro Park and Recreation District has indicated that the park needs of the Bend community would be better served by the alternate park site, because that site would better serve the growth pattern west of Bend and would be more suitable for development than a reconfiguration of the presently designated site.

E. INDUSTRIAL PARK RESERVE.

1. The proposal by the applicant has not changed concerning the relocation of an industrial park reserve designated on the applicant’s property in the Bend Area General Plan Map. The
applicant has requested a plan amendment to relocate approximately 80 acres of the 240 industrial park reserve shown on the plan. Those 80 acres would be located immediately north of the present reserve site. The applicant has set forth a burden of proof statement to justify the amendment (Exhibit #4).

It appears that 81 acres of land within the Broken Top project are zoned UAR-10 rather than RS. This is the property which was previously designated as an Industrial Park Reserve.

ISSUES PRESENTED

In determining whether or not the proposed planned unit development is in conformance with the applicable land use criteria, several issues need to be addressed. These issues are as follows:

A. Urban Growth Boundary/Density - The Applicant has proposed an adjustment to the Urban Growth Boundary. Also, opponents have raised the issue that the density provided for in this project is inconsistent with the provisions of the Bend Area General Plan.

B. Roads - There are two issues to be addressed concerning roads within the project. First, the Applicant has proposed the realignment of Mount Washington Drive. Opponents assert that the realignment is inconsistent with the Bend Area General Plan and that the Applicant has provided insufficient facts to show that there will not be adverse impacts based upon this realignment. Second, the Applicant proposes a limited access road west from Broken Top to Century Drive. The issue here is whether or not this road, which is outside the Urban Growth Boundary, must be established under an exceptions process.

C. Industrial Land - As indicated above, the Applicant is proposing a transfer of an Industrial Reserve designation to other property. The Applicant must establish that designation is consistent with the applicable criteria.

D. Park - The Applicant must establish that the removal or transfer of the Park designation is consistent with the Bend Area General Plan.

E. Privacy - Opponents to the proposed planned unit development claim that the gated access is incompatible with adjoining uses and inconsistent with the Bend Area General Plan.

Each of these issues will be addressed in view of any applicable land use criteria as follows:

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The Applicant has proposed to reconfigure the present inner urban growth boundary to accommodate the Broken Top planned unit development. Although the alignment of the boundary would change, the area within the boundary would remain essentially unchanged. In other words, approximately 142 acres currently within the Inner Urban Growth Boundary would go outside and 142 outside would now be within the Inner Urban Growth Boundary. No resource lands would be affected.

The outer Urban Growth Boundary for the Bend Urban Area was never acknowledged by the Land Conservation and Development Commission. It is a recognition of previous planning for the Bend Urban Area and reflects an area of planning concern for the City of Bend. The inner Urban Area Growth Boundary is the only acknowledged boundary with the State of Oregon.

The applicant’s proposal requires the extension of urban services into areas not presently inside the inner Urban Growth Boundary. As a general rule, urban services should not be allowed outside of an acknowledged Urban Growth Boundary. In light of that, the request for the reconfiguration of the Urban Area Growth Boundary is required.

The Hearings Officer does find that the original inner Urban Growth Boundary (IUGB) did not take into consideration any topographical features of the subject property but was merely drawn along section lines. There is more than ample evidence in the record to warrant a reconfiguration of the Urban Growth Boundary so long as the overall area of the Urban Growth Boundary remains unchanged. The Hearings Officer finds that because no resource lands are affected and the overall density of the IUGB as well as its geographic area will remain the same, no exception is required.

If an exception is found to be required, however, the Hearings Officer makes the following findings regarding the request for a Comprehensive Plan Amendment to reconfigure the Inner Urban Growth Boundary and zone change from UAR-10 to RS an RS to UAR-10:

(a) The Hearings Officer hereby approves and incorporates by reference the facts and conclusions set forth in the Burden of Proof statement submitted by the Applicant, a copy of which is attached hereto (Exhibit #3 and #5). ¹

¹ Those exhibits wherein facts are incorporated are on file at the Deschutes County Planning Department.
(b) The Hearings Officer has reviewed these findings and believes that the Applicant has done an excellent job of presenting the facts and issues and finds that they are supported by the evidence presented at the hearing and also by the language set forth in the Bend Area General Plan or by the provisions of the Bend Urban Area General Plan.

In conjunction with the revision to the Urban Growth Boundary, the underlying zoning for the property must also change. Otherwise, the overall density for the Bend Urban Area would not remain unchanged. Therefore, the 142 acres in the newly created Urban Growth Area must be rezoned to RS and that portion of the Urban Growth Area which is to be deleted through this plan amendment shall be rezoned to UAR.

DENSITY

Regarding the issue of density, a question has been raised as to whether or not this planned unit development meets the minimum density for an urban standard (RS) zone and/or an urban reserve (UAR-10) zone.

As noted above that 81 acres inside the Inner Urban Area Growth Boundary are zoned UAR-10, and that the zone allows planned unit developments as a conditional use. (See 19.12.030 (o).) That zone also allows destination resort as a conditional use. (See Section 19.12.030 (p). The lot area for the UAR-10 zone is a minimum of 10 acres.

The purpose of the planned unit development is to allow and make possible greater varieties and diversification in the relationships between buildings and open space within building groups while insuring compliance with the purposes and objectives of the various zoning regulations and intent and purpose of this ordinance.

In allowing flexibility of design, planned unit developments allow a shifting of density. That is, the overall density of the entire project is considered and the particular lot size within the planned unit development does not necessarily have to meet the minimum lot requirements for the underlying zone. This practice was confirmed during the hearing process by the Planning Department.

Because a planned unit development (PUD) is a conditional use in the UAR-10 zone and the PUD allows the Applicant to "shift" densities within the PUD so long as the overall density is consistent with the applicable land use criteria, the Hearings Officer finds that the Broken Top planned unit development may be established on both RS and UAR land. The Hearings Officer
finds that a change in the zone for these 81 acres is not necessary for the approval of this planned unit development if the application otherwise meets the requirements of the Bend Area General Plan and implementing ordinances.

The Bend Urban Area Plan has a number of policies which relate to the issue of density. Those policies could be the subject of differing interpretations. Those policies include:

A. No Minimum Density (Policy Considerations).

There is language in the Bend Urban Area General Plan which could lead one to conclude that the minimum density would not have to be met if certain factors were present. These factors include topographical restraints on the property, the provision of open space such as golf courses, the proximity of this property to the Forest Service lands and the wildlife habitat thereon and the potential of a destination resort west of this PUD.

Indeed the Plan notes that “the wide variety of conditions and problems makes specific policy statements difficult”. As the Applicant pointed out in his Burden of Proof statement, there are a number of policies which support the proposition that this Application should not be approved nor denied on the basis of density. Those policies include:

Policy 4: All residential development shall respect the physical characteristics of the site relating to soils, slope, geology, erosion, flooding and natural vegetation;

Policy 29: Certain private recreational uses, such as golf courses or riding stables can be successfully integrated into residential areas provided the location, design and operation are compatible with the surrounding residential developments.

Further, the Bend Urban Area General Plan states on page 11, "The area also has some potential for destination resorts and recreational development. The Bend Area and Central Oregon are desirable for recreation places and developments such as Sun River and Black Butte Ranch have become valuable assets to the area. Open lands west of Bend have potential for similar or smaller recreation developments and related activities which can be developed in concert with the general goals and objectives of this plan."

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B. Minimum Density Required (Policy Considerations).

On the other hand, the Bend Urban Area General Plan has fairly strong and specific language regarding the importance of density in residential projects. The plan provides for a specific range of density in the Urban Standard zone for 2.3 to 7.3 units per acre. The policies further state:

Policy 1: The basic and most important single development criteria for residential areas is housing density.

Policy 2: Residential densities indicated on the General Plan shall be respected and reflected in city and county codes, ordinances and development policies. The intent of the Plan is to indicate housing density rather than the type of building construction permitted with various density areas.

Policy 3: All new housing developments shall conform with the designated housing density regardless of building type, site size or timing as related to other developments.

No legislative history of these plan policies was presented. Indeed, there may not be much of a legislative history available to help determine the intent of the City Commission and Board of Commissioners when these plan policies were adopted. In the absence of such history, the Hearings Officer finds that the language in the plan must be interpreted by looking at the Residential section as a whole. In viewing the residential policies as a whole the Hearings Officer finds that every development must, at the very least, meet the minimum lot size requirements regardless of conditions or design. The key issue in this analysis is whether or not the acreage on which the golf course is situated should be included within the density calculation or not. The Applicant has proposed a formula to meet the minimum density requirements by taking the gross acreage and subtracting that portion of the property used as a golf course and Mount Washington Drive. (Memorandum from Karen Swirsky dated April 24, 1991: Exhibit No. 9)

The Hearings Officer, however, finds that the golf course acreage should be included within the calculation for density. It is the Hearings Officer's interpretation of the plan that a developer has the option of developing the total acreage of a project in a multitude of ways. It is up to the Applicant to determine which is the most feasible design for the development. An Applicant cannot, however, carve out areas of
the property and delete them from the density calculation. The density calculation will apply to all areas within any development, except those areas dedicated to the public or other land used for roads, etc. If this methodology were used, the appropriate calculation for the minimum density at the Broken Top development would be as follows (this calculation assumes the industrial reserve property would retain its current zoning):


2. Subtract the acreage for Mount Washington Drive (right of way and buffer easement) and streets in the project: 112 acres (Mount Washington Drive comprises 25 acres and the Hearings Officer roughly estimated an additional 97 acres for other streets [approximately 25% of the project land].)

3. Determine the allocation units for the RS and UAR acreage:
   a. RS 290 acres at 2.3 units per acre: 667 units
   b. UAR-10 81 acres at 0.1 units per acre: 8 units
   c. The total number of units required: 675 (536 proposed)

4. Determine any (deficiency) surplus: (139) units

It must be emphasized that if the acreages set forth above are incorrect, the calculation should be revised. It is anticipated by the Hearings Officer that those figures may be refined and, if necessary, made accurate before the approval process for Broken Top is finalized. It does appear, however, that the applicant has not provided sufficient housing within the development to meet the Bend Urban General Plan policies.

The Hearings Officer, therefore, finds that based upon the language in the Bend Area General Plan, the provision of the golf course does not lessen the requirement that the development meet the minimum density requirements for the applicable zone. It must be emphasized, however, this is a case at first impression concerning the interpretation of minimum density. If this decision stands, then all future land divisions shall be required to meet the minimum density requirements of the underlying zone.
1. The Hearings Officer hereby approves and incorporates by reference the provisions of the Applicant's Burden of Proof statement as set forth in Exhibit No. 4, pages 7 through 16 as pertaining to Mount Washington Drive. Provided, however, that that portion of the statement which does not contemplate the construction of Mount Washington Drive is not approved and incorporated as the Applicant's position on that issue changed subsequent to the submittal of that Burden of Proof statement.

2. The Hearings Officer approves and incorporates by reference the provisions of the Applicant's supplemental Burden of Proof statement which pertains to the relocation of Mount Washington Drive (Exhibit #8).

3. The Hearings Officer finds that the relocation of Mount Washington Drive will not have an adverse impact on schools, parks or the provisions of any public services. In fact, the realignment of the access to Cascade Junior High School should be beneficial.

4. The Hearings Officer hereby approves and incorporates by reference the facts and conclusions set forth in the memorandum of Dave Alden to Paul Blikstad dated April 23, 1991 (Exhibit No. 59).

5. The Hearings Officer finds that the relocation of Mount Washington Drive and the ancillary requirements that Applicant provide emergency gated access to Knoll and Forest Avenue and a new access to 18th Street will enhance both the public safety needs for the residents of the Overturf Butte subdivision and traffic circulation.

6. The Hearings Officer finds that the landscape buffer and construction methodology proposed by the Applicant for Mount Washington Drive will mitigate any adverse impacts of the relocation of Mount Washington Drive, vis a vis the Overturf subdivision (see Exhibit 20A, Mount Washington Drive landscape buffer drawings). Since there will not be any direct access into the Overturf Butte subdivision, the Hearings Officer believes that Mount Washington Drive will not have an adverse impact in terms of circulation or noise, in light of the buffer and the methodology of construction.

7. Century Drive Access. With the construction of Mount Washington Drive and Simpson Avenue, the Hearings Officer finds that the primary access for the Broken Top subdivision will be via Simpson and Mount Washington Drive. The Applicant has proposed a limited access route...
to the west of Broken Top subdivision. There are three purposes for this access road. First, this will be an image access which will provide outstanding views to visitors and residents of the Broken Top subdivision. The Applicant has proposed to introduce new vegetation along this access route so that the traffic going into Broken Top subdivision via this access will have an aesthetically pleasing entrance. Second, this road will provide easy access from the Broken Top subdivision to the recreational amenities at Mt. Bachelor and other areas in the Cascades to the west of Bend. A third justification for this road is to provide alternate access in the event of emergencies.

8. Prior to the Applicant’s agreement to construct Mount Washington Drive, the County and the State Department of Land Conservation and Development concluded the proposed Century Drive access road was a collector road for the Broken Top subdivision and future development of the Applicant’s property to the west of Broken Top. In light of the applicant’s agreement to construct Mount Washington Drive, the County now agrees that this is a limited road, private in nature, and should not be categorized as a collector road. The Hearings Officer agrees that the access road to the west can now be characterized as a private access road and would not function as a collector road for future development with proper conditions.

9. However, in light of concerns raised previously, the Hearings Officer believes that it would be appropriate to make findings regarding the exception for this road so that if it was determined later that such an exception was necessary, there would be findings in the record supporting the same. In support of that exceptions process, the Hearings Officer hereby approves and incorporates the findings and conclusions regarding the exceptions requirement set forth in the Applicant’s Burden of Proof statement, pages 30 to 37. (Exhibit #2).
INDUSTRIAL LAND

1. Regarding the zone change for the property which is presently designated Industrial Reserve, the Hearings Officer finds that the zone change is not necessary because of the fact that the planned unit development is a conditional use in the UAR zone. If the zone change is necessary, however, the Hearings Officer hereby approves and incorporates as findings of facts and conclusions an amended burden of proof regarding a zone change from UAR-10 to RS, Deschutes County Land Use Application ZC-90-11 attached hereto (Exhibit #7).

2. The Hearings Officer finds that the relocation of the industrial land north to the Miller property is consistent with the General Plan to locate an industrial reserve on the west side of Bend. The Hearings Officer further finds that the topography of the proposed industrial site is far superior to the present plan location. The location on the Broken Top property has severe drops in elevation within the 80 acre parcel. The land located on the Miller property to the north is much flatter and will provide a better site for an industrial development than the acreage on the Broken Top property.

PARKS

1. The Hearings Officer hereby approves and incorporates herein the findings and conclusions set forth in the revised Burden of Proof regarding the Comprehensive Plan Amendment to Move a Park Designation (Exhibit #6).

2. The Hearings Officer further concludes that the relocation of a park designation on the Cascade Highlands property is consistent with the provisions and intent of the Bend Area General Plan. The Hearings Officer finds that the relocation of the park will, in fact, enhance the ability of public agencies to provide park services to the citizens of the Bend community as evidenced by the letter from the Bend Metro Park and Recreation District (Exhibit #61).

PRIVACY

1. At the hearing, opponents raised the issue as to whether or not a gated community with private streets is consistent with the Bend Area General Plan and policies. This issue, to the best of the Hearings Officer’s knowledge, has never been raised before. The opponents’ argument, as the Hearings Officer understands it, is that a gated community is not open to the general public and
is undesirable because of its "snobbish" effect and because Bend, in general, is a community where neighborhoods are open to the general public. There are, however, precedents for private communities in Bend. For example, the Sunrise Development on Century Drive is such a community. This Hearings Officer previously approved the Awbrey Glen Development where there was no opposition to a similarly proposed community.

2. No specific plan policies or ordinance sections have been brought to the Hearings Officer's attention indicating these types of developments are not acceptable. To the contrary; both the plan and implementing ordinance, especially the ordinance sections concerning planning developments, anticipate such developments. Private streets are an alternative allowed under planned unit developments. If the streets are truly private, there is no impediment to closing those streets to the general public subject to safety concerns for police and fire access. The Hearings Officer believes that that issue would have to be addressed as a policy matter and some specific language introduced into the plan or ordinances. Under the existing plan and implementing ordinances, and the practice of both the City of Bend and Deschutes County in the past, a planned unit development with private streets and limited access is allowed.

PLANNED UNIT DEVELOPMENT CRITERIA

Section 19.104.070 and 19.104.080 provides specific standards of approval of planned unit developments. Those criteria are as follows:

"19.104.070 Standards for Approval

In granting approval for a planned unit development, the Hearings Body or Planning Director shall be guided by the following:

A. Whether applicant has, through investigation, planning and programming, demonstrated the soundness of the proposal and an ability to carry out the project as proposed, and whether the construction shall begin within six months of the conclusion of any necessary action by the County, or within such longer period of time as may be established by the Hearings Body or Planning Director.

B. Whether the proposal conforms with the general plans of the County in terms of location and general development standards.

C. Whether the project will accrue benefits to the County
and general public in terms of need, convenience, service and appearance sufficient to justify any necessary exceptions to the regulations of the Zoning and Subdivision Ordinance.

D. Whether the project will satisfactorily take care of the traffic it generates by means of adequate off-street parking, access points, additional street right of way and improvements and any other traffic facilities required.

E. Whether the project will be compatible with adjacent developments and will not adversely affect the character of the area.

F. Whether the project will satisfactorily take care of sewer and water needs consistent with the Bend Urban Area General Plan.

G. A planned unit development shall not be approved in any R zone if the housing density of the proposed development will result in an intensity of land use greater than permitted by the Comprehensive Plan."

The Hearings Officer makes the following findings regarding these criteria:

1. The Hearings Officer finds based upon the Burden of Proof statements submitted by the applicant, the correspondence and memoranda submitted by their engineers, and the presentation at the hearing, that the applicant has demonstrated the soundness of the proposal and the ability to carry out the project.

2. The proposal as conditioned by this decision will conform with the general plans of the Bend Urban Area General Plan in terms of its location and general development standards.

3. The Hearings Officer does find that this project will accrue significant benefits to the Bend urban area. What appears to be an excellent golf course, would be open to the general public, thus providing a valuable recreational resource. The applicant is also providing the city a new water well. Finally, and probably of the greatest significance, is the applicant’s willingness to construct Mount Washington Drive which is a significant collector for future traffic on the west side of Bend. The Hearings Office also finds that the construction of Simpson Avenue with the limited gated access to Knoll and Forest Ridge Avenues and a direct access to 18th Street will provide valuable circulation and increased safety
access for the residents of Overturf Subdivision. The construction of all these roads will further make other areas available for development, thus meeting the housing requirements of the Bend urban area in the future.

4. As the proposal has been amended by the applicant, the project will satisfactorily take care of the traffic it generates by the construction of Simpson Avenue and Mount Washington Drive together with the private roads within the Broken Top Development.

5. The project will be separated from the only subdivision adjacent to it (Overturf Subdivision) by Mount Washington Drive and a considerable landscape buffer. The housing in this development is generally single family with some multi-family. The housing proposed by the applicant is consistent with or of superior quality to the housing generally found along Century Drive and in the Overturf Subdivision. The proposal does respect the topographical features of the property and should not adversely affect the character of the area, in comparison to any other type of residential development that could occur on this property. As evidenced by the correspondence between the applicant and the City of Bend, the applicant will comply with all requirements of the city for sewer and water in the Broken Top Development. The Hearings Officer finds that the applicant's agreement with the city regarding sewer and water meets the requirements of Subsection F.

6. The planned unit development will not exceed the density allowable for this area under the Comprehensive Plan.

19.104.080 Standards and Requirements

Approval of a request for a planned unit development is dependent upon the submission of an acceptable plan and satisfactory assurance that it will be carried out. The following minimum standards and requirements shall apply:

"A. A dwelling use permitted in any zone may be permitted in a planned unit development.

B. A manufactured home may be permitted in a planned unit development. However, manufactured home parks shall not be allowed in any commercial or industrial zone.

C. Developments which either provide for or contemplate private streets and ways and common areas which will be or are proposed to be maintained by the owners of units or lots within a development must organize and maintain an owner's association. The owners' association shall
consist of all the owners of units or lots within the development and membership in the association must be required of all owners; adopt and record bylaws as provided by ORS 91.555; adopt bylaws that contain the provisions required by ORS 91.560; and have power to create a lien upon the unit or lot for services, labor or material lawfully chargeable as common expenses as provided in ORS 91.580. The association's power to create such a lien shall exist whether or not the property is subject to the Oregon Unit Ownership Law (ORS 91.505 - 91.675.)

D. If the property is not subject to the Unit Ownership Law, the association shall also create, by contract, the right to claim a lien upon any unit or lot for services, labor or material chargeable as common expenses. This lien may be created by covenants between the association and the property owners and shall supplement the lien created by (C) above and require all owners of units or lots within the development to consent to and pay the reasonable value of services, labor or material expended by the County for common expenses where such County expenditures are made because the owners or the owners' association does not provide the necessary services, labor or material for common expenses.

E. Streets and roads in planned unit developments shall be public roads and ways developed to County standards or be private roads of a minimum of 14 feet wide paved surface for one-way traffic, minimum 20 feet wide paved surface for two-way traffic and parallel parking as permitted shall require minimum additional 8 feet of width for each side of parking. In addition to these requirements, the Planning Director or Hearings Body may specify other requirements including, but not limited to, increased or decreased pavement width.

F. Pedestrian walkways shall be provided for adequate pedestrian and bicycle traffic and shall be constructed with Portland cement or asphaltic concrete to County standards, except as varied by the provisions of this section or by the Planning Director or Hearings Body.

G. All utility facilities shall be installed underground and in accordance with County standards.

H. The design of all planned unit development projects shall provide direct access for all units and lots to open space areas and facilities.
I. A statement must be submitted relative to the solar access to be provided by the planned unit development."

The following findings pertain:

1. The Hearings Officer incorporates all of the Findings of Fact set forth above.

2. The PUD will have single family and multi-family units within the development.

3. Type A manufactured homes are allowed in the urban area. Manufactured homes are not anticipated in the Broken Top PUD.

4. The proposed PUD is to have private streets. The applicant must submit the required documentation of the owners' association being established and conformance with the appropriate sections of the Oregon Revised Statutes. County Legal Counsel will be reviewing the proposed bylaws for conformance with Section 19.104.080.

5. If the property is not subject to the Unit Ownership Law, the applicant must meet the requirements of this subsection.

6. The revised transportation improvements to be constructed by the applicant conform with Subsection E.

7. Applicant will be required to submit detailed information on the bike plan or any pedestrian walkway plan in conjunction with their site plan.

8. All utilities shall be installed underground.

9. The proposed planned unit development master plan map shows seven phases for the project. The first phase is to include golf course and clubhouse, as well as the multi-family portion of the development. The proposal reflects access from the lots to open space areas. The applicant must submit with the site plan review information as to the type of dwelling proposed for this phase, and whether any of these units will have direct access to open space areas and facilities.

10. The applicant has agreed to abide by any solar setbacks required.

11. Additional review can occur at the time of the filing of the subdivision plat.

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CONFORMANCE WITH SECTION 19.100.030 FOR GOLF COURSES AND CONDITION USE IN THE RS AND UAR-10 ZONES:

19.100.030 General Conditional Use Criteria

A conditional use may be granted only upon findings by the Planning Director or Hearings Body that the proposal meets all of the criteria in this section, as well as all other applicable criteria contained in this ordinance. The general criteria are:

"A. That the location, size, design and operating characteristics of the proposed use are such that it will have minimal adverse impact on the property value, livability and permissible development of the surrounding area. Consideration shall be given to compatibility in terms of scale, coverage and density with the alteration of traffic patterns and the capacity of surrounding streets and to any other relevant impact of the proposed use.

B. That the site planning of the proposed use will, as far as reasonably possible, provide an aesthetically pleasing and functional environment to the highest degree consistent with the nature of the use and the given setting.

C. The if the use is permitted outright in another zone, there is substantial reason for locating the use in an area where it is only conditionally allowed, as opposed to an area where it is permitted outright.

D. That the proposed use will be consistent with the purposes of this Ordinance, the Comprehensive Plan, Statewide Goals and any other applicable statutes, ordinances or policies."

The following findings pertain:

1. The Hearings Officer incorporates by reference all of the Findings of Fact set forth above.

2. The proposed golf course is to have 18 holes spread throughout the Broken Top Development. The golf course should be operated in an efficient manner similar to golf courses in the area.

3. The design of the golf course has taken into consideration the topographical features of the property. The golf course will provide important open space areas for this part of the Bend urban area. The golf course will further provide some open space breakages which
could act as fire breaks.

4. The revegetation plans of the applicant should help the appearance of those portions of the property which suffered from the Awbrey Hall fire. The open space characteristics of the golf course will also be consistent with the proximity of this development to the Tumalo wildlife winter range farther west of the Broken Top planned unit development.

5. The applicant’s revised plans which should provide excellent access from Mount Washington Drive to the clubhouse for the general public.

6. A detailed site plan must be submitted concerning the particulars of the golf course, the clubhouse and the restaurant.

7. Golf courses are not a permitted use outright within any zone within the Bend urban area. The applicant has chosen this property as it is one of two or three properties that has a potential for PUD development in the Bend urban area.

8. The proposed golf course is consistent with the purposes of Title 19, the Bend Urban Growth Boundary zoning ordinance and all other applicable land use regulations.

CONDITIONAL USE CRITERIA FOR THE MASTER PLAN FOR THE PLANNED UNIT DEVELOPMENT:

Section 19.100.030 of the County Code General Conditional Use Criteria.

A conditional use permit may be granted only upon findings by the Planning Director or Hearings Body that the proposal meets all of the criteria in this section, as well as all other applicable criteria contained in this Ordinance. The general criteria are:

A. That the location, size, design and operating characteristics of the proposed use are such that it will have minimal adverse impact on property value, livability and permissible development of the surrounding area. Consideration shall be given to compatibility in terms of scale, coverage and density with the alteration of traffic patterns and the capacity of surrounding streets and to any other relevant impact of the proposed use.

B. That the site planning of the proposed use will, as far as reasonably possible, provide an aesthetically pleasing and functional environment to the highest degree consistent with the nature of the use and given setting.

PAGE 21 - FINDINGS AND DECISION, File No. SP-91-18
C. That if the use is permitted outright in another zone, there is substantial reason for locating the use in an area where it is only conditionally allowed, as opposed to an area where it is permitted outright.

D. That the proposed use will be consistent with the purposes of this ordinance, the Comprehensive Plan, Statewide Goals and any other applicable statutes, ordinances or policies.

The following findings pertain:

1. The Hearings Officer hereby incorporates all of the findings of fact set forth above.

2. A planned unit development is not a use permitted outright in any zone in the Bend urban area.

DENSITY CONDITION OF APPROVAL

The Hearings Officer will be requiring as a condition of this approval that the developer increase the density to conform with the minimum density requirements of the Bend Urban Area Plan. The alternative to this decision was to deny the planned unit development. The Hearings Officer finds that that would be an inappropriate result for the following reasons:

1. There is more than ample evidence in the record to support a conclusion that all of the public facilities required for this planned unit development shall be sufficient to meet the density required by the Plan (Buttke traffic reports, Public Works Memoranda, City of Bend Memoranda, etc.).

2. Even though the original application called for 536 units, the requirement that the development meet the minimum density requirements does not require any future variance or modification to the applicable standards or regulations for this zone, and/or planned unit development.

3. What is being approved here is only the master plan for the planned unit development. The applicant will still be required to bring in site plans and subdivision plats for approval. The configuration of the lots to conform with this density requirement can be adequately addressed during those review procedures.

BASED UPON the foregoing Findings of Fact and Conclusions, the Hearings Officer hereby:

PAGE 22 - FINDINGS AND DECISION, File No. SP-91-18
1. Recommends APPROVAL of:

   A. The plan amendment and zone change to reconfigure the Urban Growth Boundary by providing an additional 142 acres within the Broken Top development and deleting 142 acres from the Bend Urban Area as outlined in the applicant's application and Burden of Proof Statement.

   B. A plan amendment to relocate a park designation from property within the Broken Top development to property owned by the applicant located north and west of Broken Top on Skyliner Road.

   C. A plan amendment to relocate the realignment of Mt. Washington Drive on the transportation plan map.

Approval of said amendments and zone change shall be subject to the applicant obtaining all necessary approvals for the project.

2. APPROVES the applications for a conditional use permits for a golf course and club house and a conditional use and master plan for planned unit development in the Bend Urban Area subject to the following conditions:

   A. Receive final approval for the plan amendments for the relocations of the industrial reserve designation, relocation of the park designation and realignment of Mt. Washington Drive.

   B. Obtain site plan approval for the golf course and golf course clubhouse and other recreational amenities.

   C. Obtain subdivision approval for each phase of the subdivision as it is constructed.

   D. Construct all off-site improvements including Simpson Avenue and Mt. Washington Drive in accordance with the memorandum of Dave Alden dated April 23, 1991 to Larry Rice, Director of the Deschutes County Public Works Department. All such improvements are to be constructed in accordance with the specifications of the Deschutes County Public Works Department.

   E. Construct all sewer and water facilities as agreed to by the applicant with the City of Bend. All sewer and water facilities are to be constructed in accordance with the City of Bend specifications.
Ownership of all sewer and water facilities is to be vested in the City of Bend in accordance with the approved policies and procedures of the City of Bend.

F. Obtain approval from the Oregon State Highway Department for the intersections of Mt. Washington Drive and the secondary private access road west of Broken Top with Century Drive.

G. Construct the access drive from Century Drive in accordance with the private road standards of Deschutes County. The private access road from the west shall have a gate house located within 100 feet of Century Drive. Said road shall not be used to access any other property other than the Broken Top development unless approved otherwise by Deschutes County.

H. Enter into an agreement with the Bend School District regarding the dedication of a school site in accordance with the letter agreement between the applicant and the School District.

I. Provide a minimum density in the Broken Top planned unit development to comply with the minimum density requirements of the Bend Urban Area Plan as set forth in the Findings above. The provision of such density is to be reflected in a revised master plan wherein the provision of public facilities, roads and the golf course shall not be materially altered.

3. As indicated above, the Hearings Officer has concluded that it is not necessary to rezone the 81 acre parcel in the Broken Top development from UAR to RS.
THIS DECISION BECOMES FINAL TEN (10) DAYS FROM THE DATE MAILED,
UNLESS APPEALED.

DATED and MAILED this 21st day of June, 1991.

EDWARD P. FITCH

cc: BOCC
Bend Urban Area Planning Commission
Deschutes County Planning Director
City of Bend Planning Director
Mike Freeman
Robert S. Lovlien
Mike Lollern
Robert Odermatt
Lamoine Eiler
Bob Bobsky
Robert Jameson
Ann Thompson
Dave Reynolds
Bill Boyer
Patrick and Sharron Green
Janet Reynolds
Dr. and Mrs. F. D. Piacentini
Lynn Marshall
George Marshall
Norm Rife
D. C. Carlson
Brett Evert
Paul Buchanan
Karen Swirsky
Carl Buttke
Dave Alden
Joleen Howard
Diane Elliott
Sharon Jensen
David Webster
Dan Grimberg
James Twedt
Nancy Crossan
Ed Neumann
Brian Tarrant
John Vatcher and Rebecca Leone
Ron Hoyt
Lyle Stratton
Daniel Altman
Randy Partipilo
Ross Alexander

PAGE 25 - FINDINGS AND DECISION, File No. SP-91-18
Grant Hudkins
John Rexford
Dick Johnson
Dan Seeman
Terry Luelling
Ben F. Williams
Lynn J. Bruno
Nick Amundson
Eileen Woodward
Yaakov Firestone
Tom Petullo
John L. Jones
Earl E. Nichols
John Head
Eldon J. Howard
Jim Beauvais
Mr. and Mrs. Dale Lillard
Dave Tewalt
Pat Edwards
Jack Beemer
Dave Stalker
Pat McClain
Tom Pickett

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BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Amending the Bend Area General Plan to Change the Plan Designation for Certain Property From Industrial Reserve to Urban Reserve Area and Declaring an Emergency. 

ORDINANCE NO. 2005-033

WHEREAS, Miller Tree Farm, LLC, has proposed a Plan Map Amendment to the Bend Area General Plan to change the designation of certain property from Industrial Reserve to Urban Reserve Area in order to change the zoning from Surface Mining to Urban Area Reserve (UAR-10) zone; and

WHEREAS, a public hearing was held on February 1, 2005, after notice was given in accordance with applicable law before the Deschutes County Hearings Officer; and

WHEREAS, the Deschutes County Hearings officer, after review conducted in accordance with applicable law, approved the proposed Plan Amendment from Industrial Reserve to Urban Reserve Area; and

WHEREAS, the Hearings Officer's decision was not appealed; and

WHEREAS, the Deschutes County Code 22.28.030(B) requires the Board to adopt the Hearings Officer's decision without further argument or testimony; now therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. AMENDMENT. The Bend Area General Plan is hereby amended to change the plan designation for certain property described by the legal description attached hereto as Exhibit “A,” and the map set forth as Exhibit “B” and by this reference incorporated herein from Industrial Reserve to Urban Reserve Area.

Section 2. FINDINGS. The Board adopts as its findings in support of this decision, the Decision of the Hearings Officer, attached hereto as Exhibit “C,” and by this reference incorporated herein.
Section 3. EMERGENCY. This Ordinance being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this Ordinance takes effect on its passage.

DATED this 7th day of Sept., 2005.

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

TOM DEWOLF, Chair

MICHAEL M. DALY, Commissioner

DENNIS R. LUKE, Commissioner

Date of 1st Reading: 7th day of Sept., 2005.

Date of 2nd Reading: 7th day of Sept., 2005.

Record of Adoption Vote

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<th>Yes</th>
<th>No</th>
<th>Abstained</th>
<th>Excused</th>
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<td>Dennis R. Luke</td>
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<td>Tom DeWolf</td>
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<td>Michael M. Daly</td>
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Effective date: 7th day of Sept., 2005.

ATTEST:

Bonnie Baker
Recording Secretary
Exhibit “A”
Legal Description
For the Deschutes County Comprehensive Plan Amendment
Approved under File PA-04-9 in June 2005.

The East Half of the Southeast Quarter (E½ SE¼) of Section Thirty-five (35), Township Seventeen (17) South, Range Eleven (11) East, of the Willamette Meridian, Deschutes County, Oregon.

Except that portion lying South of Skyliners Road.
PROPOSED COMPREHENSIVE PLAN MAP
File No. PA-04-09

Exhibit B
to Ordinance 2005-033

A Portion of:
1711000006201

Plan Amendment from
Industrial Reserve (IR)
to Urban Reserve
Area (URA)
DECISION OF DESCHUTES COUNTY HEARINGS OFFICER

FILE NUMBERS: PA-04-9 and ZC-04-7

APPLICANT/PROPERTY OWNER: Miller Tree Farm, LLC
110 N.E. Greenwood Avenue
Bend, Oregon 97701

APPLICANT'S AGENT: Jon Skidmore
W&H Pacific, Inc.
920 S.W. Emkay Drive
Suite C-100
Bend, Oregon 97702

REQUEST: The applicant is requesting approval of a plan amendment from Industrial Reserve to Urban Reserve Area and a zone change from Surface Mining to Urban Area Reserve for a 133-acre parcel located west of Bend.

STAFF REVIEWER: Catharine White, Associate Planner

HEARING DATE: March 29, 2005

RECORD CLOSED: March 30, 2005

I. APPLICABLE STANDARDS AND CRITERIA:

A. Title 19 of the Deschutes County Code, the Bend Urban Area Zoning Ordinance
   1. Chapter 19.12, Urban Area Reserve (UAR-10) Zone
      * Section 19.12.010, Purpose
   2. Chapter 19.16, Surface Mining Zone (SM)
      * Section 19.116.010, Amendments
      * Section 19.116.020, Standards for Zone Change

B. Title 22 of the Deschutes County Code, the Development Procedures Ordinance
   1. Chapter 22.28, Land Use Action Decisions
      * Section 22.28.030, Decisions on Plan Amendments and Zone Changes
C. Bend Area General Plan

D. Oregon Administrative Rules, Chapter 660
   1. Division 12, Transportation Planning
      * OAR 660-012-060, Plan and Land Use Regulation Amendments
   2. Division 15, Statewide Planning Goals and Guidelines
      * OAR 660-015-0000, Statewide Planning Goals and Guidelines 1 through 20
   3. Division 23, Procedures and Requirements for Complying with Goal 5
      * OAR 660-023-0180, Mineral and Aggregate Resources

II. FINDINGS OF FACT:

A. Location: The subject property is located at 19100 Skyliners Road, Bend, and is further identified as Tax Lot 6201 on Deschutes County Assessor’s Map 17-11-00. The subject property also is known as Surface Mining Site 302.

B. Zoning and Plan Designation: The entire subject property is zoned Surface Mining (SM). The Bend Area General Plan designates the approximate eastern half of the property as Industrial Reserve and the western half as Urban Reserve Area.

C. Site Description: The subject property is approximately 132.77 acres in size and square in shape. The record indicates the property was used as a pumice mine from around 1950 to the early 1980s. As a result of mining and reclamation activity, the property’s topography varies from relatively level areas where no mining occurred and depressions where the property was mined and reclaimed. Vegetation consists of a mixture of scattered mature pine trees, shrubs, and grasses outside of the mined area and grasses in the mined area. The property is undeveloped except for a fenced-in equipment yard near the north end of the mined area and abandoned dirt roads. The property abuts Skyliners Road on the south.

D. Surrounding Zoning and Land Uses: To the east of the subject property are the City of Bend Urban Growth Boundary (UGB) and city limits. Abutting land uses within the city include Summit High School on a parcel zoned Public Facilities, and a vacant 26-acre parcel that is part of the “Northwest Crossing” mixed use development, zoned Industrial Park, and subject to a pending application for a 13-lot industrial subdivision. Adjacent parcels to the north, west, and south are outside the city limits but within the city’s Urban Reserve Area. They include the following uses: to the north and west are large tracts of vacant land owned by the applicant and receiving forest tax deferral; and

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to the south are Skyliners Road and residential development consisting of 10-acre lots in "The Highlands at Broken Top" planned unit development.

E. Procedural History: In April 1997 a county hearings officer approved a quasi-judicial plan amendment and zone change (PA-97-2/ZC-97-2) affecting three tax lots owned by the applicant including the subject property. The decision amended the plan to place these tax lots in the Urban Reserve and to change their plan designation to Urban Reserve. The record indicates that in September 1997 the applicant requested that the effective date of the plan amendment be delayed until the location of Mt. Washington Drive right-of-way was established as it related to the applicant’s property. The applicant’s burden of proof states these plan amendment applications eventually were withdrawn and the plan designation changes were not implemented.

In 1998, the county and the City of Bend engaged in a joint legislative effort to update the Bend Area General Plan and related maps, effected at the county by Ordinance 98-074. As a result of this ordinance, the subject property was shown on the 1998 Bend General Plan Map as having an Industrial Reserve plan designation.1

The applicant submitted the subject plan amendment and zone change applications on November 29, 2004. On December 21, 2004 the Planning Division advised the applicant that the application was incomplete and requested that the applicant submit the missing information. The applicant submitted the information on January 4, 2005 and the county accepted the application as complete on that date. On January 27, 2005 the Planning Division mailed notice of the proposed plan amendment to the Department of Land Conservation and Development (LCDC). A public hearing on the applications was held on March 29, 2005. At the hearing, the Hearings Officer received testimony and evidence and left the written evidentiary record open through March 30, 2005, and the applicant waived its right to submit final argument pursuant to ORS 197.763. Because the applicant is requesting a plan amendment and related zone change, the 150-day period for issuance of a final local land use decision under ORS 215.427 is not applicable.

F. Proposal: The applicant is requesting approval of a plan amendment from Industrial Reserve to Urban Reserve Area for the eastern half of the subject property and a zone change from Surface Mining (SM) to Urban Area Reserve (UAR-10) Zone for the entire subject property. The applicant does not propose any property development at this time.

G. Public/Private Agency Notice and Comments: The Planning Division sent written

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1 The Staff Report notes that in September 1991 the county adopted Ordinance 91-031 amending the Bend Area General Plan Transportation Element to adjust the location of Mt. Washington Drive and to relocate some of the Industrial Park comprehensive plan designation to land owned by Cascade Highlands located south of Skylines Road. The Staff Report indicates this relocated Industrial Park designation did not include the subject property.

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notice of the applicant’s proposal to a number of public and private agencies and received responses from: the Deschutes County Property Address Coordinator, and the City of Bend Planning and Fire Departments. Those comments are set forth at pages 3-4 of the Staff Report. The following agencies either had no comment or did not respond to the notice: the Deschutes County Assessor, Road Department, Transportation Planner, Building Safety Division, and Environmental Health Division; the Bend Metropolitan Parks and Recreation District; the Oregon Department of Water Resources, Watermaster-District 11; the Oregon Departments of Fish and Wildlife and Geology and Mineral Industries (DOGAMI); and the U.S. Forest Service, Bend-Fort Rock District Ranger.

H. **Public Notice and Comments:** The Planning Division mailed individual written notice of the applicant’s proposal and the public hearing to the owners of record of all property located within 250 feet of the subject property. In addition, notice of the public hearing was published in the Bend “Bulletin” newspaper and the subject property was posted with a notice of proposed land use action sign. As of the date the record in this matter closed, the county had received one letter from the public in response to these notices. No members of the public testified at the public hearing.

I. **Lot of Record:** The Staff Report states the county considers the subject property to be a legal lot of record because of prior land use actions.

III. **CONCLUSIONS OF LAW:**

A. **Title 19 of the Deschutes County Code, the Bend Urban Area Zoning Ordinance**

1. **Chapter 19.116, Amendment, Appeals and Procedures**

   a. **Section 19.116.010, Amendments**

   DCC Title 19 may be amended by changing the boundaries of zones or by changing any other provisions thereof subject to the provisions of DCC 19.116.

   A. **Text changes and legislative map changes may be proposed by the Board of County Commissioners on its own motion, by the motion of the Planning Commission, upon payment of a fee, by the application of a member of the public. Such changes shall be made pursuant to DCC 22.12 and ORS 215.110 and 215.060.**

   B. **Any proposed quasi-judicial map amendment or change shall be handled in accordance with the applicable provisions of DCC Title 22.**
FINDINGS: The applicant is requesting approval of a quasi-judicial map amendment from Industrial Reserve to Urban Reserve Area, and a quasi-judicial zone change from SM to UAR-10. The record indicates the applicant submitted its application on a form provided by the county and accompanied by the required application fee. The applicant’s proposal is being processed pursuant to the provisions of Title 22 of the Deschutes County Code, the Development Procedures Ordinance. Therefore, the Hearings Officer finds the applicant’s proposal satisfies the criteria in this section.

B. Title 22 of the Deschutes County Code, the Development Procedures Ordinance

1. Chapter 22.28, Land Use Action Decisions

a. Section 22.28.030, Decisions on Plan Amendments and Zone Changes

A. Except as set forth herein, the Hearings Officer or the Planning Commission when acting as the Hearings Body shall have authority to make decisions on all quasi-judicial zone changes and plan amendments. Prior to becoming effective, all quasi-judicial plan amendments and zone changes shall be adopted by the Board of County Commissioners.

B. In considering all quasi-judicial zone changes and those quasi-judicial plan amendments on which the Hearings Officer has authority to make a decision, the Board of County Commissioners shall, in the absence of an appeal or review initiated by the Board, adopt the Hearings Officer’s decision. No argument or further testimony will be taken by the Board.

FINDINGS: The plan amendment and zone change approved in this decision will be considered by the Board of County Commissioners before becoming effective, therefore satisfying these standards.

C. Plan amendments and zone changes requiring an exception to the goals or concerning lands designated for forest or agricultural use shall be heard de novo before the Board of County Commissioners without the necessity of filing an appeal, regardless of the determination of the Hearings Officer or Planning Commission. Such hearing before the Board shall otherwise be subject to the same procedures as an appeal to the Board under DCC Title 22.

FINDINGS: The Hearings Officer finds the proposed plan amendment does not require an exception to any statewide planning goal because it does not involve land designated for forest or agricultural use. In addition, the Bend Area General Plan states at Page 1-4:

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When the General Plan was “acknowledged” by the state in 1981, the Urban Reserve Area was recognized as an “exception area” to long-term farm or forest uses under statewide planning Goals 3 and 4, and therefore available for urban development.

For these reasons, I find the applicant’s proposal satisfies this standard.

D. Notwithstanding DCC 22.28.030(C), when a plan amendment subject to a DCC 22.28.030(C) hearing before the Board of County Commissioners has been consolidated for hearing before the Hearings Officer with a zone change or other permit application not requiring a hearing before the board under DCC 22.28.030(C), any party wishing to obtain review of the Hearings Officer’s decision on any of those other applications shall file an appeal. The plan amendment shall be heard by the Board consolidated with the appeal of those other applications.

FINDINGS: As discussed above, the applicant’s proposed plan amendment does not involve a goal exception and therefore need not be considered at a de novo hearing before the Board of County Commissioners.

PLAN AMENDMENT

C. Bend Area General Plan

FINDINGS: The applicant is requesting approval of a plan amendment to change the designation of the eastern half of the subject property (approximately 65 acres) from Industrial Reserve to Urban Reserve Area. As discussed above, the western half of the property already is designated Urban Reserve Area. The Hearings Officer finds the following provisions of the Bend Area General Plan are applicable to the proposed plan amendment. Compliance with these plan provisions is discussed in detail in the findings below.

Future Plan updates (Page P-6)

The General Plan is a document that changes over time to reflect new information and new directions for the future. Amendments or additions to the General Plan text, exhibits, and policies go through a public hearing and review process before being adopted by the governing bodies. Changes and updates can be generated in at least six ways:

* * *

Changes proposed by individuals or other agencies. At any time an individual, corporation, or public agency can propose a change to the Plan text, land use map, other exhibits, or policies. A person or agency proposing
**a change has the burden to demonstrate a public need and benefit for the change.** (Emphasis added.)

**FINDINGS:** The applicant is proposing the plan map change and therefore has the burden to demonstrate a public need for and benefit from the change.

1. **Public Need.**

The applicant argues the proposed plan amendment from Industrial Reserve or Urban Area Reserve serves a public need because the Industrial Reserve designation is no longer needed due to the city's recent annexation of 550 acres of land into its UGB for industrial uses ("Juniper Ridge"). The applicant also argues the proposed plan amendment is justified to meet a need for buildable residential lands. The applicant asserts that the subject property was included in the city's analysis of suitable industrial lands in its "Economic Lands Study" but ultimately was not included in the city's industrial lands inventory. The applicant's burden of proof explains the city's reasoning as follows:

"The [residential lands] study evaluated 14 different sites to determine the suitability of those lands for inclusion in the Urban Growth Boundary to provide needed industrial lands. The subject property is a small portion of one area evaluated as part of this study. The study referred to that property as 'Miller West.' Each area evaluated was ranked according to nine (9) suitability factors. The Miller West property received a score of 45 out of 90 possible points and ranked 9th on the list of 14. The property was not considered as a viable candidate for UGB expansion to meet the City's industrial land needs."

In addition, the applicant argues the subject property no longer is suitable for industrial use because: a) such use is not compatible with surrounding uses; b) the property is isolated from other lands designated and zoned for industrial use; and c) the property does not have adequate access to a transportation network designed for industrial traffic, but rather is surrounded by a street system serving residential zoning districts including two-lane bridge crossings.

Finally, the applicant relies on preliminary conclusions from the city's residential lands study which identify two methods by which the city could obtain additional buildable residential lands: a) rezoning lands that are presently within the UGB to residential zones; and b) expanding the UGB to include lands that are the most suitable for residential development based on a ranking system. Based on this method of analysis, the applicant argues the subject property likely would be ranked high for residential development because the property:

1. is surrounded on three sides by residentially zoned properties;
2. is near property south of Skyliners Road that is currently developed and developing with residential uses;
3. is near property to the east and northeast that is developed with a high school and an

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elementary school;

4. is in close proximity to numerous residential developments including Broken Top, Northwest Crossing, and Skyliners Summit; and

5. has topography suited to residential development.

The Staff Report states, and the Hearings Officer concurs, that the most compelling argument that the applicant’s proposed plan amendment will meet a public need is the city’s determination not to include the subject property in its recently adopted industrial lands inventory. I also concur with the applicant that given the type of development that has occurred on surrounding lands, industrial use of the subject property no longer is appropriate.

The Staff Report questions whether the applicant’s reliance on the city’s “Residential Lands Study” is misplaced inasmuch as the study is not completed. The record includes a copy of two status reports on this study that indicate the city has completed its inventory of currently buildable residential lands but has not yet identified the future need for buildable residential lands. Nevertheless, the Hearings Officer concurs with the applicant that the subject property appears a likely candidate for future inclusion in the residential lands inventory – assuming the city concludes its current supply is not adequate to meet its 20-year need. That is because of the property’s location virtually surrounded by land zoned and/or designated for future residential development as well as the available urban facilities and services in the surrounding area including schools, utilities, and transportation facilities. The proposed Urban Reserve designation would allow such development at the time the property is annexed into the city’s UGB.

For the foregoing reasons, the Hearings Officer finds the applicant has demonstrated the proposed plan amendment from Industrial Reserve to Urban Area Reserve for the eastern half of the subject property would meet a public need.

2. Public Benefit

FINDINGS: The applicant argues the proposed plan amendment would confer a public benefit because: a) it would promote efficient and orderly growth by providing buildable residential lands adjacent to the city’s UGB that could meet the city’s future housing needs; b) there is no benefit to retaining the subject property for industrial uses given the surrounding residential development and the annexation into the UGB and the city’s industrial land inventory the “Juniper Ridge” land north of Bend; and c) development of the subject property for residential uses can be accomplished efficiently because of its location adjacent to existing and planned residential development and necessary infrastructure.

As discussed above, the Staff Report suggests the Hearings Officer should not rely on the city’s residential lands study as a basis for approving the proposed plan amendment because the study has not yet been completed and the city has not yet determined whether it has a sufficient supply of buildable residential lands. Nevertheless, the Staff Report states, and I agree, that in Miller Tree Farm
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light of the designation and zoning of the surrounding land, and the city's annexation of the 550-acre "Juniper Ridge" property to satisfy its industrial lands needs, it is difficult to imagine that the city would conclude the subject property should be held for industrial development and should not be available for residential development.

For the foregoing reasons, the Hearings Officer finds the applicant has demonstrated the proposed plan amendment from Industrial Reserve to Urban Area Reserve for the eastern half of the subject property would confer a public benefit. Therefore, I find the applicant has met its burden of proving the proposed plan amendment from Industrial Reserve to Urban Area Reserve for the western half of the property satisfies the plan amendment requirements of the Bend Area General Plan.

ZONE CHANGE

D. Title 19 of the Deschutes County Code, the Bend Urban Area Zoning Ordinance


   a. Section 19.116.020, Standards for Zone Change

      The burden of proof is upon the applicant. The applicant shall in all cases establish:

      A. That the change conforms with the Comprehensive Plan. Specifically, the change is consistent with the plan's intent to promote an orderly pattern and sequence of growth.

FINDINGS: The Hearings Officer finds this approval criterion includes three separate requirements: 1) conformance with the comprehensive plan map; 2) conformance with the comprehensive plan text; and 3) consistency with the plan's intent to promote "an orderly pattern and sequence of growth." Each of these requirements is discussed below.

1. Conformance With the Comprehensive Plan Map.

As discussed in the Findings of Fact above, the Bend Urban Area General Plan Map shows the eastern 65 acres of the subject property is designated Industrial Reserve, and the western half of the property is designated Urban Reserve Area. The applicant proposes a zone change for the entire subject property from SM to UAR-10. That proposal is consistent with the plan designation of Urban Area Reserve for the western half of the property. And as discussed above, the applicant has proposed a plan amendment from Industrial Reserve to Urban Area Reserve for the eastern half of the property. For the reasons discussed in the findings above, the Hearings Officer has found the applicant has met its burden of proving the proposed plan amendment satisfies the requirements of the Bend Urban Area General Plan. Therefore, I find the applicant's proposed zone change to UAR-10 is consistent with the General Plan Map as amended by my decision.

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2. Conformance With the Comprehensive Plan Text.

The Bend Area General Plan includes the following language at page P-4:

At the end of each chapter [of the plan] are policies that address issues discussed in the chapter. The policies in the General Plan are statements of public policy, and are used to evaluate any proposed changes to the General Plan. Often these statements are expressed in mandatory fashion using the word “shall.” These statements of policy shall be interpreted to recognize that the actual implementation of the policies will be accomplished by land use regulations such as the city’s zoning ordinance, subdivision ordinance and the like. The realization of these policies is subject to the practical constraints of the city such as availability of funds and compliance of [sic] all applicable federal and state laws, rules and regulations, and constitutional limitations. (Emphasis added.)

In a previous decision approving a zone change from SM to UAR-10 (Shevlin Heights, ZC-00-5, TP-00-916, CU-00-112), this Hearings Officer made the following findings concerning the applicability of the comprehensive plan to applications for quasi-judicial zone changes:

“In previous city zone change decisions (e.g., Clabaugh, City file 99-118) the Hearings Officer has held the underscored language signifies comprehensive plan policies are not approval criteria for quasi-judicial land use applications. Rather, they provide guidance in interpreting and applying the provisions of the zoning ordinance. I adhere to and apply this holding in this county application because my review is governed by Title 19, the Bend Urban Area Zoning Ordinance, which is the same ordinance applicable in the city. Therefore, I find the applicant is not required to demonstrate the proposed zone change complies with individual plan policies.”

Once again, the Hearings Officer adheres to these findings and concludes the text of the Bend Area General Plan -- including plan policies -- is not applicable to the proposed zone change.

3. Consistency with the Plan’s Intent to Promote An Orderly Pattern and Sequence of Growth.

In the same zone change decision cited above, this Hearings Officer made the following findings concerning the meaning of the phrase “orderly pattern and sequence of growth”:

“In previous city zone change decisions the Hearings Officer has held the phrase ‘orderly pattern and sequence of growth’ in this approval criterion contemplates consideration of both the location and timing of development. I have held an orderly pattern of growth is one that promotes compatible physical relationships between zoning districts and uses, while an orderly sequence of growth promotes development concurrent with the provision of adequate services.”

Again, the Hearings Officer adheres to these findings in considering whether the applicant’s Miller Tree Farm
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proposal satisfies this requirement.

a. **Orderly Pattern of Growth.** The applicant argues the proposed zone change would contribute to the overall orderly pattern of growth in the city by allowing future residential “infill” development consistent with the type and density of development on surrounding lands within the city limits and UGB. As discussed in the findings above, the subject property is surrounded by and in the city limits developed with residential uses and schools, as well as land outside the city limits zoned UAR-10 and thereby identified for future urban development when annexed into the city. As discussed in detail in the findings below, the Hearings Officer has found the current SM zoning for the subject property no longer is warranted because the mineral and aggregate resource has been depleted. And as discussed above, I have concluded the city’s decision not to include the subject property in its inventory of buildable industrial lands signals the city’s determination that industrial development of the property is no longer appropriate because it would not be compatible with surrounding zoning and uses. For these reasons, I find the proposed zone change will promote an orderly pattern of growth by promoting compatible physical relationships between zoning districts and uses.

b. **Orderly Sequence of Growth.** The record indicates the subject property currently is located outside the boundaries of the Bend Rural Fire Protection District #2. However, the Hearings Officer is aware the fire district will consider district annexation petitions from the owners of property abutting the district’s boundaries, therefore making possible future fire protection for the subject property. In addition, the subject property is served by Skyliners Road, a designated city arterial street inside the UGB and a designated Forest Highway/Major Collector outside the UGB. I am aware both arterial and major collector streets are designed to handle large volumes of traffic. The Staff Report assumes, and I concur, that other public facilities and services such as water and sewer service, police protection, electricity and telephone would be available to the subject property once annexed into the city since such services currently are provided to adjacent properties within the city limits. Moreover, as the Staff Report notes, the subject property could be developed with residential uses while zoned UAR-10 by using on-site sewage disposal systems and individual private wells. For these reasons, I find the proposed zone change will promote an orderly sequence of growth by promoting development concurrent with the provision of adequate services.

B. That the change will not interfere with existing development, development potential or value of other land in the vicinity of the proposed action.

**FINDINGS:** The Hearings Officer concurs with staff’s finding that the proposed zone change from SM to UAR-10 will not interfere with the existing residential, school, and industrial uses in the vicinity of the subject property, and that it likely would enhance the value of other nearby land by permanently abandoning conflicting surface mining use of the property. This is particularly true inasmuch as the record indicates the subject property has not been mined since the 1980s, long before the adjacent lands were annexed into the city’s UGB and developed with residential and school uses.

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C. That the change in classification for the subject property is consistent with the purpose and intent of the proposed zone classification.

FINDINGS: Section 19.12.010 states the purpose of the UAR-10 Zone is:

To serve as a holding category and to provide opportunity for tax differentials as urban growth takes place elsewhere in the planning area, and to be preserved as long as possible as useful open space until needed for orderly growth.

The Hearings Officer finds the proposed zone change from SM to UAR-10 is consistent with the purpose of the UAR-10 Zone because it will allow the subject property to be held in reserve for future urban development if and when the property is annexed into the Bend UGB.

D. That the change will result in the orderly and efficient extension or provision of public services. Also, that the change is consistent with the county’s policy for provision of public facilities.

FINDINGS: The Hearings Officer finds the proposed zone change in and of itself will not result in any extension of public services. However, I concur with the applicant that if the property is annexed into the city’s UGB or developed pursuant to the UAR-10 Zone, the property will be “well positioned for orderly and efficient extension of” public services including sewer and water, public safety, and transportation.

E. That there is a proof of a change of circumstances or a mistake in the original zoning.

FINDINGS:

1. Mistake. The applicant does not argue there was a mistake in the original SM zoning of the subject property and the Hearings Officer finds there was none. The record indicates the subject property was included in the county’s Goal 5 inventory of significant mineral and aggregate resources -- even though it was located within the city’s Urban Reserve Area -- to reflect the historic use of the property for surface mining and the presence of a significant pumice resource.

2. Change of Circumstances. The applicant argues, and the Hearings Officer concurs, that there has been a change of circumstances justifying the proposed zone change from SM to UAR-10 – i.e., depletion of the identified pumice resource since the property was zoned SM. The applicant’s burden of proof includes a January 4, 2005 letter from Charley Miller, co-manager of the Miller Tree Farm, stating that mining the subject property no longer is economically feasible because “the costs to extract the limited remaining resource will exceed the prices the pumice will demand in the marketplace.” The applicant also argues, and I concur, that development of the surrounding area with predominantly residential uses has signaled a
dramatic change in the character of this part of the Bend area from resource extraction (forestry and surface mining) to more urban uses, making continued surface mining of the subject property incompatible. For these reasons, I find the SM zoning of the subject property no longer is warranted.

For the foregoing reasons, the Hearings Officer finds the applicant has demonstrated the proposed zone change satisfies the approval criteria in Section 19.116.020.

2. Chapter 19.16, Surface Mining Zone (SM)

   a. Section 19.16.010, Purpose

   The purpose of the Surface Mining Zone is to allow the extraction of surface mining materials needed by the community while protecting the health and safety of adjoining residents and uses.

   b. Section 19.16.020, Uses Permitted Outright

   In the SM Zone, the following uses and their accessory uses are permitted outright subject to the provisions of this chapter:

   A. Extraction of all minerals, sand, gravel, rock, cinders, pumice, topsoil, fill material (including select fill) and any other mineral or aggregate material.

FINDINGS: As discussed above, the subject property is designated Industrial Reserve and Urban Area Reserve. The property’s status in the county’s Goal 5 inventory of significant mineral and aggregate resources is unclear. The record indicates the county adopted its Goal 5 mineral and aggregate inventory in July 1990 through Ordinance 90-0025. However, SM Site 302 was identified as located within the Bend UGB and was included as “Exhibit A” to the ordinance. Findings in the ordinance state in pertinent part:

"Sites Within Urban Growth Boundaries

19. The County’s preliminary list and the inventory adopted by the Board in December 1988 include sites that fall within the Urban Growth Boundaries of the Cities of Bend and Redmond. The Board finds that these sites inside the urban growth boundary are not included in this review process and are therefore not a part of the inventory to be adopted by this process. However, the quantities and qualities of minerals, if any, identified at those sites are included in the overall calculations of quantities of available mineral resources.” (Emphasis added.)

The Hearings Officer is aware that at the time Ordinance No. 90-0025 was adopted the county and the City of Bend recognized two UGBs – the “inner UGB” and the “outer UGB.” The former was acknowledged by the Land Conservation and Development Commission and was annexed into the Bend city limits in 1998. The latter consisted of urban reserve areas that remained within the county’s jurisdiction following the 1998 annexation. The portion of SM Site 302 that consists of the subject property was not annexed by the city, was designated

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reserve land, was zoned SM and is subject to the provisions of Title 19 of the Deschutes County Code.

Sections 19.16.010 and 19.16.020 authorize the preservation and extraction of mineral and aggregate resources “needed by the community.” The applicant has requested approval of a plan amendment and zone change for the subject property for the reason that the mineral and aggregate resource (pumice) has been depleted. The Hearings Officer understands this argument to mean the applicant believes the pumice resource on the subject property no longer is a “significant” resource requiring protection under Goal 5. Given the above-quoted language from the findings in Ordinance No. 90-0025, it is not clear whether the county identified Site 302 or the subject property as a “significant” resource. In this Hearings Officer’s previous decision in Shevlin Heights (ZC-00-5), I made the following findings:

“* * * [T]he Hearings Officer concurs with the applicant that because the county’s inventory of mineral and aggregate sites did not include quantity and quality for Site 301, it was not considered a ‘significant’ site and therefore it is not necessary for the county to undertake another Goal 5 analysis to determine if a ‘significant’ resource remains on the property.”

The Hearings Officer finds a similar conclusion could be reached in this case inasmuch as it appears the county did not intend to include the subject property or the rest of SM Site 302 on its inventory of significant mineral and aggregate resources. Moreover, although the county zoned the subject property SM – suggesting the county considered the site to be “significant” and to require Goal 5 protection — I find it is more likely the subject property was zoned SM to reflect its historic use for surface mining rather than a determination that the site had a significant resource.2

Based on the foregoing discussion, the Hearings Officer finds the unusual status of SM Site 302 likely negates any need to undertake a Goal 5 analysis to determine if the SM zoning of the subject property should be terminated. However, assuming for purposes of discussion that such an analysis is required, I include the following findings.

Unlike the SM Zone provisions in Title 18, the county’s zoning ordinance, Title 19 has no provisions addressing the procedures or standards for termination of surface mining zoning.3 In other words, Title 19 does not identify at what point a surface mining site can be removed from that inventory because it is no longer “significant.” The Oregon Administrative Rules, Division 660, Chapter 23, govern post-acknowledgment plan amendments (PAPAs) affecting inventoried Goal 5 resources. These rules are addressed in the findings below.

E. Oregon Administrative Rules, Chapter 660

1. Division 23, Procedures and Requirements for Complying with Goal 5
   a. OAR 660-023-0180, Mineral and Aggregate Resources

2 The record indicates mining on Site 302 began in the 1950’s, long before county zoning.

3 See 18.52.200, Termination of the Surface Mining Zoning and Surrounding Surface Mining Impact Area Combining Zone.

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This rule has seven subsections. Subsection (1) sets forth definitions. Subsection (2) describes the procedures and standards for inventorying mineral and aggregate resources. Subsection (3) establishes standards for determining if a site is "significant." Subsection (4) describes the process for identifying conflicting uses. Subsection (5) requires the county to conduct an ESEE (economic, social, environmental and energy) consequences analysis to determine whether or not an inventoried site should be mined. Subsection (6) establishes standards for determining whether information about a site is adequate for the required analyses. And subsection (7) describes the applicability of the rules to post-acknowledgment plan amendments (PAPAs) as follows:

Local governments shall amend the comprehensive plan and land use regulations to include procedures and requirements consistent with this rule for the consideration of PAPAs concerning aggregate resources. Until such local regulations are adopted, the procedures and requirements of this rule shall be directly applied to local government consideration of a PAPA concerning mining authorization, unless the local plan contains specific criteria regarding the consideration of a PAPA proposing to add a site to the list of significant aggregate sites, provided:

(a) Such regulations were acknowledged subsequent to 1989; and

(b) Such regulations shall be amended to conform to the requirements of this rule at the next scheduled periodic review, except as provided under OAR 660-023-0250(7). (Emphasis added.)

The county has not amended the Bend Area General Plan or Title 19 to incorporate this Goal 5 rule. Therefore, the Hearings Officer finds this rule is directly applicable to the subject plan amendment.

In a previous decision concerning a proposed plan amendment and zone change for a site zoned SM (Stott, PA-98-12/ZC-98-6), this Hearings Officer found OAR 660-023-0180 contains no provisions expressly addressing the removal of a site from an adopted inventory. However, I made the following findings:

"** [I]t would not be reasonable to conclude the new Goal 5 rules exclude PAPAs to remove sites from an adopted inventory. That is because the analysis for determining whether a Goal 5 resource site is significant necessarily is the same for any inventory decision - whether that decision is to add a site to the inventory, to leave it off the inventory or to remove it from the inventory. For these reasons, I find the new Goal 5 rules in general, and the provisions of OAR 660-023-0180 in particular, apply to the subject application to the extent they reasonably can be applied to a decision to remove a site from the adopted inventory."

I adhere to those findings here, and analyze the applicant's proposed plan amendment under this rule.

Subsection (3)(a) of OAR 660-023-0180 establishes standards for determining whether a site is "significant." Title 19 does not define "significant" for purposes of mineral and aggregate resources. Therefore, the Hearings Officer will rely on the standards in the administrative rule. Subsection (3)(a) provides in pertinent part:

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(3) An aggregate resource shall be considered significant if adequate information regarding the quantity, quality, and location of the resource demonstrates that the site meets any one of the criteria in subsections (a) through (c) of this section . . . :

(a) A representative set of samples of aggregate material in the deposit on the site meets Oregon Department of Transportation (ODOT) specifications for base rock for air degradation, abrasion, and sodium sulfate soundness, and the estimated amount of material is more than 2,000,000 tons in the Willamette Valley, or 100,000 tons outside the Willamette Valley;

(b) The material meets local government standards establishing a lower threshold for significance than subsection (a) of this section; or

(c) The aggregate site is on an inventory of significant aggregate sites in an acknowledged plan on the applicable date of this rule. (Emphasis added.)

The record indicates the county’s inventory of significant mineral and aggregate resources was acknowledged prior to the effective date of this Goal 5 administrative rule. Therefore, I find the subject property falls within the “significant” standard in paragraph (c). Arguably, if the subject property were indeed included in the county’s inventory of “significant” mineral and aggregate resources, the resource on the subject property is considered “significant” since it meets one of these three criteria. However, as discussed above, it is far from clear whether the subject property was included in the county’s Goal 5 mineral and aggregate inventory. And in any case, in the aforementioned Stott decision I found that interpreting OAR 660-023-0025(3)(c) to mean any site on the county’s inventory is by definition “significant” would create a “Catch-22” where, as in Stott and here, the applicant seeks to remove a site from the inventory as no longer “significant.” Consequently, I find the “significant” standard in paragraph (c) should not be applied to PAPAs requesting removal of a site from an acknowledged inventory.

As discussed above, the county has not adopted a significance standard in either Title 19 or the Bend Area General Plan. While the inventory and supporting findings in Ordinance No. 90-025 reflect what standards the county initially used in including and excluding sites from the adopted inventory, the Hearings Officer found in Stott that these documents cannot reasonably be considered “standards” adopting a lower significance threshold for purposes of this paragraph. I adhere to those findings here and find the subject property is not “significant” under paragraph (b).

Thus, for the subject property to be considered to have a “significant” resource it must meet the criterion in paragraph (a) requiring that the resource consist of at least 100,000 tons of material meeting Oregon Department of Transportation (ODOT) specifications for road construction base rock. Exhibit A to Ordinance No. 90-0025, which lists the mineral and aggregate sites located in the Bend UGB, describes SM Site 302 as having 100,000 cubic yards of “good quality” pumice. At the outset, the Hearings Officer finds pumice is not an aggregate material that can be used as base rock. The record indicates pumice is used primarily for construction materials. Therefore, I find SM Site 302 and the subject property do not constitute a “significant” resource as defined in OAR 660-023-0180(3)(a). And even if pumice could be considered such a resource, the applicant submitted credible evidence that the subject property no longer contains a significant pumice resource. This evidence consists of a 1996 letter and a 1998 memo from Ben Mundie, Mined Land Reclamationist for DOGAMI, stating that portions of Miller Tree Farm

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of the SM site have been fully mined and reclaimed, and a letter dated January 4, 2005 from Charley Miller, the applicant's co-manager, stating that Site 302 was depleted of pumice resource in the early 1980s. In addition, the record includes several documents indicating that the portion of SM Site 302 that produced pumice resource was the parcel abutting the subject property on the west that is now occupied by Summit High School, and that the subject property was used to dry and stockpile the pumice resource removed from the portion of SM Site 302 that is now the high school site.

For the foregoing reasons, the Hearings Officer finds that to the degree the provisions of OAR 660-023-0025 apply to the applicant's proposed plan amendment and zone change, the applicant has demonstrated the subject property no longer contains a "significant" mineral and aggregate resource requiring preservation and protection through Goal 5.

F. Oregon Administrative Rules

1. OAR 660, Division 12, Transportation Planning Rule

   a. OAR 660-012-060, Plan and Land Use Regulation Amendments.

      (1) Amendments to functional plan, acknowledged comprehensive plans, and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and level of service of the facility. This shall be accomplished by either:

         (a) Limiting allowed land uses to be consistent with the planned function, capacity and level of service of the transportation facility;

         (b) Amending the TSP [Transportation System Plan] to provide transportation facilities adequate to support the proposed land uses consistent with the requirements of this division;

         (c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.

      (2) A plan or land use regulation amendment significantly affects a transportation facility if it:

         (a) Changes the functional classification of an existing or planned transportation facility;

         (b) Changes standards implementing a functional
classification system;

(c) Allows types or levels of land uses which would result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or

(d) Would reduce the level of service of the facility below the minimum acceptable level identified in the TSP.

FINDINGS: The applicant argues the proposed plan amendment and zone change will not “significantly affect” a transportation facility because:

- the applicant is not proposing any development of the subject property at this time;
- surface mining operations have ceased on the property; and
- future development of the subject property with urban uses (following annexation into the city’s UGB) can be served by extension of the transportation system serving adjacent urban lands, including Skyliners Road which is a designated city arterial and rural collector street.

In support of its argument, the applicant submitted into the record information on traffic impacts included in a traffic study prepared by Kittelson and Associates for the proposed Cascade Highlands Destination Resort on property south of subject property across Skyliners Road. That information indicates Skyliners Road currently operates at Level of Service (LOS) A during the p.m. peak hour (4:00 to 6:00 p.m.). The applicant argues that the addition of traffic generated by residential development of thirteen 10-acre lots under UAR-10 zoning of the 132-acre property would have minimal if any effect on the function of Skyliners Road.4 The traffic study states in pertinent part:

“According to the City of Bend’s Transportation System Plan (TSP) the projected daily traffic for a Major Collector is 1500 – 9000 trips per day. The projected daily trips for a Minor Arterial are 5000 – 18,000 trips per day.”

Based on this evidence, the Hearings Officer finds the minimal traffic that would be generated by residential development on the subject property with UAR-10 zoning will not significantly affect a transportation facility.

2. OAR 660, Division 15, Statewide Planning Goals and Guidelines

FINDINGS: The Hearings Officer makes the following findings concerning the proposal’s

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4 The Hearings Officer is aware that the Institute of Transportation Engineers Trip Generation Manual predicts each single-family dwelling will generate approximately 10 trips per day, and that an estimated ten percent of daily vehicle trips are generated during the p.m. peak hour. Therefore, thirteen residential lots would generate approximately 130 daily vehicular trips and approximately 13 p.m. peak hour trips.

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compliance with the applicable statewide land use planning goals:

Goal 1, Citizen Involvement. The Hearings Officer finds this goal is met because the county provided notice of proposed plan amendment and zone change to the public through individual notice to affected property owners, posting of the subject property with a notice of proposed land use action sign, and notice of the public hearing in the “Bend Bulletin” newspaper. In addition, a public hearing was held on the proposed plan amendment before the Hearings Officer. The Hearings Officer’s decision and the staff report provide the public with information concerning the proposed plan amendment.

Goal 2, Land Use Planning. The Hearings Officer finds this goal is met because at least one public hearing has been held on the proposed plan amendment and zone change.

Goal 3, Agricultural Lands. The Hearings Officer finds this goal is not applicable because the subject property is not zoned or designated for agriculture.

Goal 4, Forest Lands. The Hearings Officer finds this goal is not applicable because the subject property is not zoned or designated for forest use.

Goal 5, Open Spaces, Scenic and Historic Areas and Natural Resources. The applicant’s proposal would remove the subject site from the county’s Goal 5 inventory of significant mineral and aggregate resource sites. As discussed in detail in the findings above, the Hearings Officer has found the subject site no longer contains a resource meeting the minimum threshold for significance in the new Goal 5 administrative rules. Therefore, I find the applicant’s proposal is consistent with Goal 5.

Goal 6, Air, Water and Land Resources Quality. The Hearings Officer finds this goal is not applicable because none of these resources will be impacted by the proposed plan amendment or zone change.

Goal 7, Areas Subject to Natural Disasters and Hazards. The Hearings Officer finds this goal is not applicable because the subject property is not located in a known natural disaster or hazard area.

Goal 8, Recreational Needs. The Hearings Officer finds this goal is not applicable because the proposed plan amendment and zone change do not reduce or eliminate any opportunities for recreational facilities either on the subject property or in the impact area.

Goal 9, Economy of the State. This goal is to provide adequate opportunities throughout the state for a variety of economic activities. The Hearings Officer finds this goal is met because the proposed plan amendment and zone change would allow the subject property to be managed developed with needed housing while in the Urban Reserve Area and after annexation into the Bend UGB and city limits.

Goal 10, Housing. The Hearings Officer finds the proposed plan amendment and zone change

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are consistent with this goal because the applicant's proposed plan amendment and zone change will allow the subject property to be developed with needed housing while in the Urban Area Reserve and after annexation into the Bend UGB and city limits.

**Goal 11, Public Facilities and Services.** The Hearings Officer finds the applicant’s proposed plan amendment and zone change, in and of themselves, will have no effect on the provision of public facilities and services to the subject site.

**Goal 12, Transportation.** The Hearings Officer finds the proposed plan amendment and zone change are consistent with this goal because the applicant has demonstrated the potential traffic impacts from redesignating the subject property to Urban Area Reserve and rezoning the property to UAR-10 will not generate traffic significantly impacting a transportation facility.

**Goal 13, Energy Conservation.** The Hearings Officer finds the applicant’s proposal will have no effect on energy use or conservation because redesignating and rezoning the subject property will not have an energy impact.

**Goal 14, Urbanization.** The Hearings Officer finds this goal is not applicable because the applicant’s proposal does not affect property within an urban growth boundary and does not promote the urbanization of rural land.

**Goals 15 through 19.** The Hearings Officer finds these goals, which address river, ocean, and estuarine resources, are not applicable because the subject property is not located in or adjacent to any such areas or resources.

**IV. DECISION:**

Based on the foregoing Findings of Fact and Conclusions of Law, the Hearings Officer hereby APPROVES the applicant’s proposed plan amendment from Industrial Reserve to Urban Area Reserve for that portion of the subject property designated Industrial Reserve, and the applicant’s proposed zone change from Surface Mining to Urban Area Reserve (UAR-10) for the entire subject property.

Dated this 14th day of June, 2005.

Mailed this ____ day of June, 2005.

Karen H. Green, Hearings Officer
BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Amending Title 19, the Bend Urban Area Zoning Map to Change the Zone Designation on Certain Property from Surface Mining to Urban Area Reserve and Declaring an Emergency.

WHEREAS, Miller Tree Farm, LLC, has proposed a Zone Change to the Bend Urban Area Zoning Map to rezone certain property from Surface Mining (SM), to Urban Area Reserve (UAR-10); and

WHEREAS, a public hearing was held on February 1, 2005, after notice was given in accordance with applicable law before the Deschutes County Hearings Officer; and

WHEREAS, the Deschutes County Hearings Officer, after review conducted in accordance with applicable law, approved the proposed Zone Change to the Bend Urban Area Zoning Map; and

WHEREAS, the Hearings Officer’s decision was not appealed; and

WHEREAS, the Board adopted the Plan Amendment in Ordinance 2005-033; now therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. AMENDMENT. The Bend Urban Area Zoning Map is hereby amended to change the zone designation of certain property described by the legal description attached hereto as Exhibit “A,” and the map set forth as Exhibit “B” and by this reference incorporated herein, from Surface Mining (SM) to Urban Area Reserve (UAR-10).

Section 2. FINDINGS. The Board adopts as its findings in support of this decision, the Decision of the Hearings Officer, attached to Ordinance 2005-033 as Exhibit “C,” and by this reference incorporated herein.

///
Section 3. EMERGENCY. This Ordinance being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this Ordinance takes effect on its passage.

DATED this 7th day of Sept., 2005

BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

TOM DEWOLF, Chair

MICHAEL M. DAILY, Commissioner

DENNIS R. LUKE, Commissioner

Date of 1st Reading: 7th day of Sept., 2005.

Date of 2nd Reading: 7th day of Sept., 2005.

Record of Adoption Vote

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<th>Yes</th>
<th>No</th>
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<td>Tom DeWolf</td>
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<td>Dennis R. Luke</td>
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Effective date: 7th day of Sept., 2005.

ATTEST:

Bonnie Baker
Recording Secretary
Exhibit "A"
Legal Description for the Deschutes County Zone Change
Approved under File ZC-04-7 in June 2005.

The Southeast Quarter (SE ¼) of Section Thirty-five (35), Township Seventeen (17) South, Range Eleven (11) East, of the Willamette Meridian, Deschutes County, Oregon.

Except that portion lying South of Skyliners Road.
PROPOSED ZONING MAP
File No. ZC-04-07
Exhibit B
to Ordinance 2005-034

Zone Change from Surface Mining (SM) to Urban Area Reserve (UAR10)

1711000008201
CERTIFICATE OF MAILING

FILE NUMBERS PA-04-9 and ZC-04-7

DOCUMENT MAILED: Adoption of Ordinances: 2005-033 and 2005-034

LOOKUP AREA (circle one): NA

SUBJECT TAX LOT:

I certify that on the 13th day of September 2005, the attached notice/report, dated September 13, 2005, was mailed by first class mail, postage prepaid, to the person(s) and address(es) set forth on the attached list.

DATED this 13th day of September 2005.

COMMUNITY DEVELOPMENT DEPARTMENT

By: Bend Mailing Services

<table>
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<th>Applicant/Owner:</th>
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<tr>
<td>Charlie Miller</td>
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<td>Miller Tree Farm, LLC</td>
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<td>110 NE Greenwood Avenue</td>
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<td>Bend, Oregon 97701</td>
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<td>c/o Tom Walker &amp; Jon Skidmore</td>
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</tr>
<tr>
<td>920 SW Emkay Drive</td>
<td></td>
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<tr>
<td>Suite C-100</td>
<td></td>
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<tr>
<td>Bend, Oregon 97702</td>
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<table>
<thead>
<tr>
<th>Agent:</th>
<th></th>
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<tbody>
<tr>
<td>City of Bend</td>
<td></td>
</tr>
<tr>
<td>David Knitowski</td>
<td></td>
</tr>
<tr>
<td>710 Wall Street</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 431</td>
<td></td>
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<tr>
<td>Bend, Oregon 97709</td>
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<tbody>
<tr>
<td>Paul D. Dewey</td>
<td></td>
</tr>
<tr>
<td>1539 NW Vicksburg</td>
<td></td>
</tr>
<tr>
<td>Bend, Oregon 97701</td>
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<th>Agent:</th>
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<tbody>
<tr>
<td>Bend Fire Dept.: Brian Huff</td>
<td></td>
</tr>
<tr>
<td>1212 SW Simpson, Suite B</td>
<td></td>
</tr>
<tr>
<td>Bend, Oregon 97702</td>
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</tbody>
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Quality Services Performed with Pride