

# CHAPTER 2. STUDY AREA CHARACTERISTICS

## BACKGROUND

This chapter presents the characteristics of McMinnville's service area relevant to the Water Reclamation Facilities, including population, land use, climate, soil types, and topography. Existing and future conditions are described and will be used to establish flows for the analysis of the City's wastewater.

Much of the information presented in this report has been developed from work conducted as part of the *1994 Collection System Facilities Plan* (CH2M HILL, 1994), *1998 Wet Weather Overflow Management Plan* (CH2M HILL, 1998), and the *Growth Management and Urbanization Plan* (ECONorthwest, 2003).

## PLANNING AREA

The planning area for the current and future service area is 8,299 acres, or approximately 13.0 square miles, and is consistent with the City's Comprehensive Plan. The planning area is the same as the City's newly proposed UGB (8,299 acres), which is 1,255 acres greater than the existing UGB (7,044 acres). The enlarged UGB has been proposed in order to account for future population and economic expansion identified in the 2003 *Growth Management and Urbanization Plan*. A request to expand the UGB was acknowledged by the Oregon Department of Land Conservation and Development (DLCD) and approved by the Land Conservation and Development Commission (LCDC) in September, 2006. The City is now waiting for the Final Order for this acknowledgement, upon which when issued, there will be a 60-day appeal period. The extent of the planning area, including the existing and proposed UGBs, are shown in Figure 2-1, with the planning area matching the limits of the proposed UGB.

## TOPOGRAPHY

While McMinnville is bounded by hills and low-lying mountains to the west, the City has relatively flat topography. Several local creeks drain from the City to the North and South Yamhill Rivers. The northern portion of the study area is bounded by the North Yamhill River and has greater topographic relief. The southern and eastern portions of the study area are within the flood plain of the South Yamhill River and are narrowly-to-moderately terraced.

The study area is divided into seven urban basins, which are defined by topography and the configuration of the sanitary collection system. These seven basins contain the City's current and future service areas. Those portions of the seven drainage basins contained within the proposed UGB are illustrated in Figure 2-2.

Figure 2-1. City of McMinnville Planning Boundaries

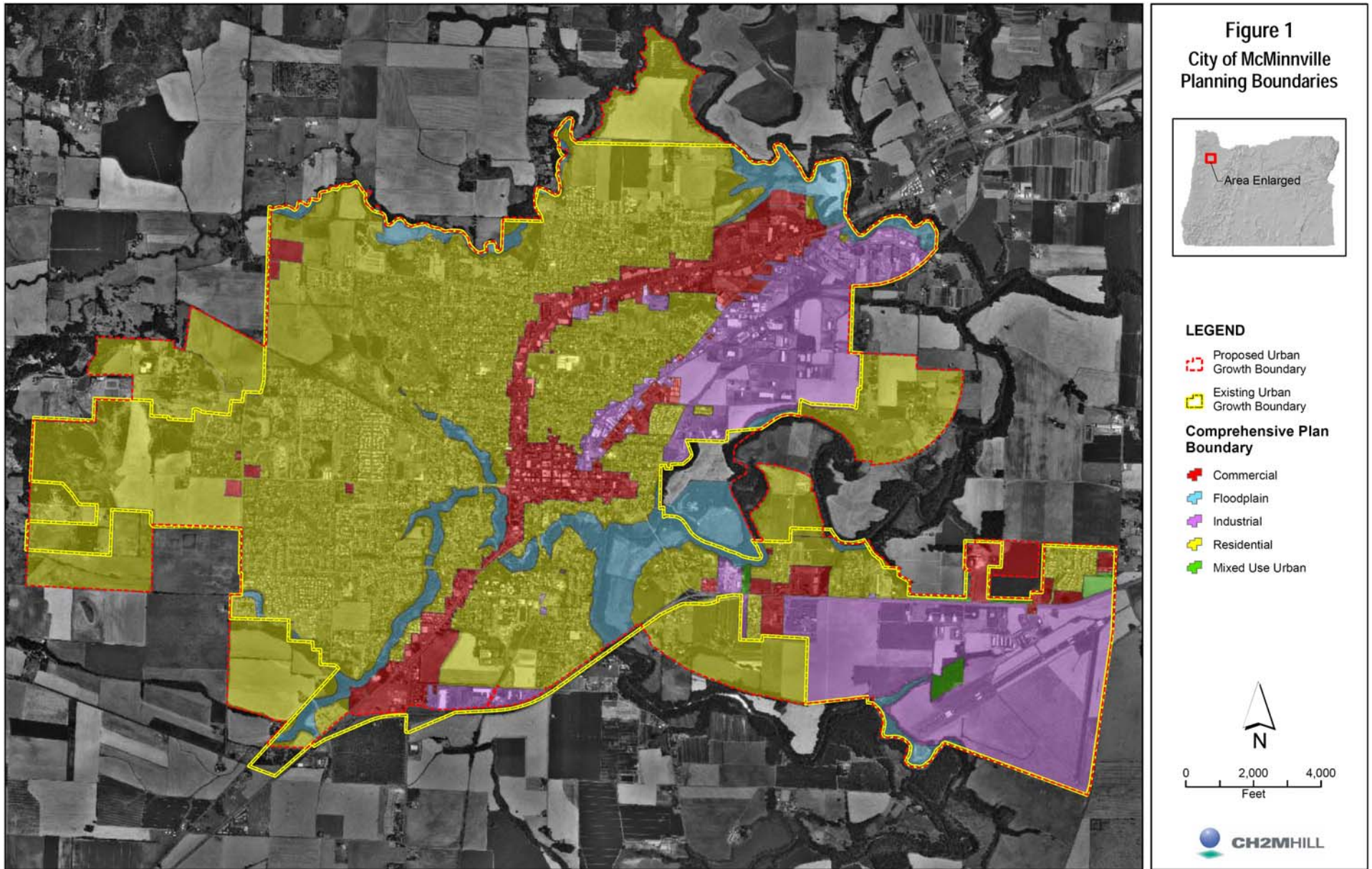


Figure 2-2. City of McMinnville Drainage Basins



## **SOILS**

The study area is composed primarily of one major surface geologic unit—Willamette Silt—with minor areas of recent alluvium deposits adjacent to streams and large creeks.

Recent alluvium deposits are found in areas adjacent to both forks of the Yamhill River. Stream action has cut localized valleys below the level of the Yamhill Valley, leaving meander-scarred flood plains below the initial surface of the Willamette Silt deposition. The flood plains are covered with a thin veneer of recent alluvium that varies from coarse gravels along the tributaries of steeper gradients to the flood plain silt that is prevalent along major streams. The recent alluvium unit is composed primarily of poorly sorted, unconsolidated to semi-consolidated deposits up to 50-feet thick of clay, silt, sand, and fine to very coarse gravel.

## **CLIMATE**

The Yamhill valley has a modified marine climate with moderately warm, dry summers and moist, cool winters. Precipitation and temperatures are affected by the Pacific Ocean and the Coastal Range.

### **Precipitation**

Moisture from the Pacific Ocean is picked up from westerly winds and carried east. Precipitation decreases as it moves east due to the orographic effect of the Coastal Range as the wind flows eastward into the Willamette Valley. Rainfall decreases sharply on the east side of the Coastal Range and on the valley floors. Winter precipitation is the result of storms moving in from the Pacific Ocean, whereas summer precipitation is often the result of an occasional localized thunderstorm.

Approximately 80 percent of the annual total precipitation falls between November and April, but even as late as mid-June there is a 33 percent chance of rain on any given day. Table 2-1 summarizes monthly precipitation data from 1971-2000.

### **Temperature**

According to 1971-2000 data from the Oregon Climate Service, the normal range of temperatures is from 33°F to 82°F and the mean annual temperature is 53°F. Maximum and minimum temperatures over this time period have been recorded at 106°F and -5°F, respectively.

## **HISTORICAL POPULATION TRENDS**

The population of McMinnville has grown at a relatively steady and rapid pace over the last twenty-five years. From 1980 to 2002, the average annual growth rate was 3.2 percent. From 1990 to 2002 the average annual growth rate increased to 3.9 percent. From 2000 to 2005, however, the growth rate has slowed to an annual growth rate of 2.3 percent. The City's *Growth Management and Urbanization Plan* is currently using a future population growth rate of 2.2 percent per year. Table 2-2 summarizes the historical population growth from 1980 through 2005 and the annual growth from 2000-2005.

**Table 2-1. Historical Precipitation (inches) – 1971 through 2000**

Month	Mean	Extreme (24 hr)	Average Number of Days				Snow Mean
			≥ 0.01"	≥ 0.10"	≥ 0.50"	≥ 1.0"	
Jan	6.63	2.70	16.3	11.6	4.7	1.5	1.07
Feb	5.50	2.05	15.5	11.1	3.8	1.0	0.64
Mar	4.65	1.61	15.8	11.0	3.2	0.7	0.10
Apr	2.81	1.97	12.6	7.4	1.5	0.3	0.01
May	1.94	1.76	9.3	5.7	1.1	0.1	0.00
Jun	1.14	1.07	5.7	3.2	0.7	0.1	0.00
Jul	0.43	1.05	2.5	1.2	0.2	0.0	0.00
Aug	0.52	1.69	2.5	1.4	0.3	0.0	0.00
Sep	1.37	3.10	5.8	3.6	1.0	0.1	0.00
Oct	2.96	3.58	9.8	6.0	1.9	0.4	0.00
Nov	6.23	2.50	16.6	12.1	4.4	1.4	0.12
Dec	7.48	3.50	17.0	12.4	5.6	2.0	1.20
<b>Total</b>	<b>41.66</b>	<b>2.70</b>	<b>133.8</b>	<b>89.6</b>	<b>28.3</b>	<b>7.2</b>	<b>3.14</b>

Source: Oregon Climate Service (<http://www.ocs.oregonstate.edu/index.html>)

**Table 2-2. Historical Population Trends – 1980 through 2005**

Year	Population	Annual Growth Rate (%)
1980	14,080	—
1990	17,894	—
2000	26,499	—
2001	27,500	3.8
2002	28,200	2.5
2003	28,890	2.5
2004	29,200	1.1
2005	30,020	2.8

Sources: Portland State University Center for Population Research (2005)  
McMinnville Growth Management and Urbanization Plan (2003)

## LAND USE

The orderly development of land within the city is guided by the City's Comprehensive Plan and its implementing ordinances and agreements. Ordinances and agreements include the McMinnville Zoning Ordinance of 1981, the Land Division Ordinance, the Annexation Ordinance, and the Urban Growth Boundary Management Agreement, which coordinates land development review between the City and Yamhill County.

Growth over the last fifteen years has resulted in the City evaluating the need to expand its UGB. Documents that have evaluated this expansion include the *McMinnville Residential Lands Need Analysis, May 2001*, *McMinnville Economic Opportunities Analysis, November 2001*, and most recently the *Growth Management and Urbanization Plan, May 2003* (as amended in January 2006). Results of these studies support the expansion of the present UGB by approximately 1,255 gross acres (of which 881 acres are buildable), approximately an 18 percent increase in the gross land area contained within the present UGB. This is the first significant amendment to the City's urban growth boundary since its adoption in 1981.

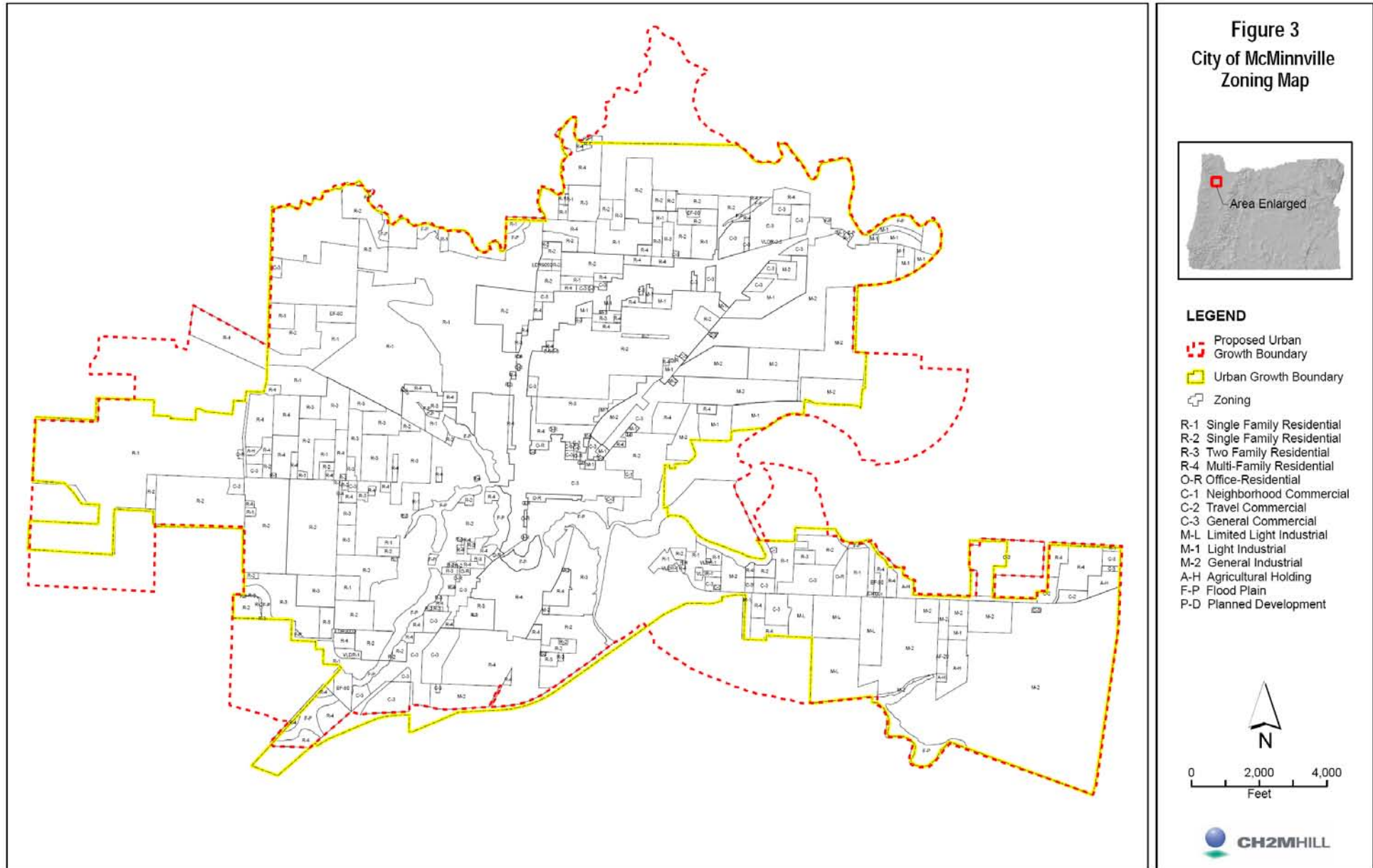
Existing land use within the City includes zoning for residential (single and multiple-family), commercial, industrial, and open land (park space and flood plain). The City's zoning map, based on the existing UGB, is reproduced in Figure 2-3. Table 2-3 summarizes the gross (total) acres for residential and commercial/industrial development, as designated in the Buildable Lands Analysis inventory; land designated as newly expanded areas, and other undevelopable areas. Undevelopable land primarily includes public right-of-ways and water bodies. The newly expanded area represents the additional land identified as being required in the future through the analysis conducted in the *Growth Management and Urbanization Plan*.

**Table 2-3. Land Use Designation by Basin within UGB – Gross Area**

Basin	Land Use Designation, acres				
	Residential <sup>(a)</sup>	Commercial / Industrial <sup>(b)</sup>	Expanded Areas <sup>(c)</sup>	Other Undevelopable <sup>(d)</sup>	Total
Airport	271	499	304	706	1,780
Cozine	1,192	80	331	298	1,901
Downtown	327	181	0	203	711
Fairgrounds	569	722	356	252	1,899
High School	433	128	0	113	674
Michelbook	724	22	232	157	1,135
Yamhill	56	22	0	121	199
<b>Total</b>	<b>3,572</b>	<b>1,654</b>	<b>1,223</b>	<b>1,850</b>	<b>8,299</b>

- (a) Based on information from the Buildable Lands Analysis inventory. Includes zoning classifications: residential (R-1, R-2, R-3, R-4), exclusive farm use (EF-40, EF-80), agricultural holding (A-H), AF-20, VLDR-1, VLDR-2.5. Also includes parcels classified as undevelopable.
- (b) Based on information from the Buildable Lands Analysis inventory. Includes zoning classifications: commercial (C-1, C-2, C-3), industrial (M-1, M-2), agricultural holding, (A-H), exclusive farm use (EF-40, EF-80), and office-residential (O-R), AF-20, VLDR-1, VLDR-2.5. Also includes parcels classified as undevelopable.
- (c) Not accounted for in the Buildable Lands Analysis inventory. Nine areas have been identified for future development. Portions of these areas include what is referred to by the City Planning Department as “Neighborhood Activity Centers.” The majority of this area is outside the extent of the existing UGB and represents the boundary of the proposed UGB.
- (d) Represents other undevelopable area contained within the proposed UGB boundary that is not accounted for in the Buildable Lands Analysis inventory or the nine newly expanded areas such as right-of-way, water bodies, etc.

Figure 2-3. City of McMinnville Zoning Map





For this study, future development is expressed in equivalent dwelling units (EDU) that have been estimated using the following design criteria and assumptions:

- Residential dwelling units – currently developed:
  - With the exception of a recent 12-year study that reflects density only for the 1988-2000 period, densities for existing development have not been determined. As a result, EDUs for existing development have not been determined.
- Residential dwelling units – future development (Source: *Growth Management and Urbanization Plan, Appendix B, Table 11, May 2003*):
  - R-1            3.5 dwelling units per acre
  - R-2            4.3 dwelling units per acre
  - R-3            5.4 dwelling units per acre
  - R-4            8.8 dwelling units per acre
  - R-5            15.0 dwelling units per acre
- Residential dwelling units – future development (Source: *Growth Management and Urbanization Plan, Table 16 and Appendix B, Table 7, May 2003*):
  - Additional residential dwelling units needed at buildout = 6,014
- Based on an additional assessment of commercial/industrial flow contributions, this study recommends using sanitary flow equal to 12 dwelling units per acre, which has been used in past studies and reports conducted for the City. Assuming 150 gpd (gallon/day)/dwelling unit and 12 dwelling units per acre equates to 1,800 gpad (gallon/acre-day). The industry standard is between 1,000 – 2,000 gpad.

Table 2-4 shows the estimated distribution of current development by drainage basin.

**Table 2-4. Developed Land within UGB – Existing Net Area**

Basin	Residential, acres	Commercial/Industrial, acres	Total, acres
Airport	112	165	277
Cozine	597	48	645
Downtown	197	141	338
Fairgrounds	294	469	763
High School	327	118	445
Michelbook	240	4	244
Yamhill	52	19	71
<b>Total</b>	<b>1,819</b>	<b>964</b>	<b>2,783</b>

## DEVELOPMENT FORECASTS

A 20-year planning period from now until 2029 is used for this evaluation. Growth projections are based on the City’s Comprehensive Plan which projects full buildout by 2023 after which no additional growth has been projected. The buildout planning scenario represents development of lands within the expanded UGB that have been classified as developable in the Comprehensive Plan. The buildout projections assume development of all lands designated as developable in the Comprehensive Plan at the densities previously shown.

Buildout projections were developed using data in the Buildable Lands Analysis inventory and Appendix B from the *Growth Management and Urbanization Plan*. Using current and estimated zoning regulations, the Growth Management and Urbanization Plan estimated the 2023 population for the City to be 44,055; this is an increase of 14,035 from the 2005 population shown in Table 2-2. Future developable land distributions for residential parcels by basin were determined by applying future densities (shown previously) to developable lands and then proportioning the distribution to the required future dwelling units of 6,014. Future developable land distributions for commercial/industrial parcels by basin were determined by applying a density of 8 dwelling units per acre to developable non-residential lands identified in the Buildable Lands Analysis inventory. Table 2-5 summarizes the future (not including existing development) distribution of development by drainage basin.

**Table 2-5. Developed Land within Proposed UGB – Future Additional**

Basin	Residential		Commercial/Industrial		Total EDUs
	Acres	EDUs	Acres	EDUs	
Airport	261	831	231	1,848	2,679
Cozine	500	2,209	16	127	2,336
Downtown	11	48	28	225	273
Fairgrounds	361	1,307	192	1,533	2,840
High School	5	25	8	65	90
Michelbook	400	1,590	14	114	1,704
Yamhill	1	3	0	0	3
<b>Total</b>	1,539 <sup>(a)</sup>	6,013	489	3,912	9,925

(a) Includes approximately 531 acres containing residential land designation that has been identified for use other than for housing—schools, parks, religious, government, semi-public services, and infrastructure. To the total area of 1,539 acres a flow contribution value of 2000 gallons/acre-day (gpad) will be applied.

Table 2-6 summarizes the total (existing and future) area distribution of developed land within the planning area at buildout.

The EDU and acreage information in Table 2-5, along with flow monitoring data collected in early 2006 will be used as the basis for developing sanitary sewer system flows for existing and future development conditions.

**Table 2-6. Developed Land within Proposed UGB – Buildout Total Net Area**

Basin	Residential, acres	Commercial/Industrial, Acres	Total, acres
Airport	373	396	769
Cozine	1,097	64	1,161
Downtown	208	169	377
Fairgrounds	655	661	1,316
High School	332	126	458
Michelbook	640	19	659
Yamhill	53	19	72
<b>Total</b>	<b>3,358</b>	<b>1,454</b>	<b>4,812</b>

**MEASURE 37 ISSUES**

There are currently several Measure 37 claims within the City’s UGB and two outside of the UGB. Four properties located within the UGB in the southwest portion of town, with a total area of 88 acres, have been approved for residential development. Another claim is a 32 acre site in the southwest corner of town located between Old Sheridan Road and Hill Road that has been approved for residential development. This claim is outside the expanded UGB and will not be considered in the Master Planning analysis. The other claim outside the UGB is a 342 acre site (Abrams property) located on the northwest edge of McMinnville, west of Hill Road that has been approved for both residential and commercial development. This claim will not be considered in the Master Planning analysis. To determine the impact of the four claims within the UGB on future sanitary flow generation, the assumption of 7.5 EDU/acre for the 88 acre site has been used. Using this assumption results in approximately 660 EDUs, which is <6.5 percent of the future EDU estimation of 10,093 (Table 2-5). Thus, the claims associated with this area appear to have minimal impact to overall future sanitary sewer flow estimates. However, the 88 acres and 660 EDUs will be used in developing future sanitary flow calculations in the Master Planning analysis.