Chapter 2
Community Profile

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Why Plan for Natural Hazards in Beaverton?

(Revised 03/2011) In 2000, Congress passed and the President signed the Disaster Mitigation Act of 2000, commonly known as DMA 2000. Under DMA 2000 and rules published in 44 CFR Part 201.6, communities, states, and tribal governments must have FEMA-approved natural hazard mitigation plans to be eligible for certain federal assistance programs such as the Hazard Mitigation Grant Program (HMGP).

Additionally, while the City of Beaverton's climate is generally mild and its terrain gentle in its relief, natural hazards do pose a threat to the city's economy and its citizen's property and health. As noted in the following chapter, natural disasters have caused major problems in Beaverton in recent history. Heavy winter rainstorms and windstorms, along with occasional severe winter snow or ice storms, pose a threat to the City. Beaverton's location near a major geologic subduction zone places it in danger of experiencing significant earthquake damage as well as fallout from volcanic eruption. Planning for the occurrence of these hazards will help strengthen vital components of the city's infrastructure and minimize the risk and incidence of personal injuries, fatalities, and property damage.

History of Natural Hazards in Beaverton

The City of Beaverton is directly affected by a number of natural hazards including: windstorms, severe winter storm, flood, volcanic eruption, and earthquake. Potential impacts from wildfire and landslides are limited in the City because Beaverton lacks a true wildland-urban interface and has minimal development on slopes. However, future annexation and development may increase the city's exposure to these hazards. The following section will describe a brief history of natural events that have significantly impacted Beaverton.

On October 12, 1962, the largest windstorm in recorded history hit Oregon. The infamous "Columbus Day Storm," the most powerful non-tropical storm to hit the lower-48 states, blasted all of western Oregon. Beaverton's neighbor, Hillsboro, recorded wind gusts of up to 90 mph. In terms of both human life and property, the Columbus Day Storm was by far the most costly to the City of Beaverton, Oregon residents and the entire Northwest. The storm claimed 23 lives and caused $235 million (1962 dollars) in property damage throughout the Northwest.

(Revised 03/2011) The most recent windstorm to have a significant impact on Beaverton occurred December 12, 1995. While this storm was not as powerful as the Columbus Day Storm, it still caused significant property damage and claimed four lives in the state. Maximum gusts during the 1995 storm measured between 70-80 mph in the greater Beaverton area. Other windstorms that caused major damage throughout Beaverton occurred in October 1967; January 1971; November 1981; November 1982, January 1991, and December 2007.

(Revised 9/2010) Winter storms of snow and ice do not commonly occur in Beaverton. However, when they do occur, they can cause significant damage. Heavy snow and icefall contribute to disruption of transportation, downed limbs, trees, and telephone lines, as well as power outages. The most recent significant winter storm to hit Beaverton occurred in December

2008. Other winter storms that caused significant damage in Beaverton happened in January, 1962; January 1969; January 1979; January 1980; December 1983; February 1989; December/January 1991; January/February 1993; November 1996; December 1999, and December 2009.

(Revised 03/2011) Flooding is a common occurrence in Beaverton that presents a threat to both property and human life. Although the City does not contain any rivers, there are a number of creeks within the city limits. Historically, Beaverton has had substantial flood problems predominately from Beaverton, Fanno, Johnson, and Cedar Mill creeks. A significant flood occurred in 1996, with the majority of the flood damage occurring near the intersection of State Highway 217 and State Highways 8 (Canyon Road/Tualatin-Valley Highway) and 10 (Beaverton/Hillsdale Highway/Farmington Road). Much of the flood damage that has occurred in Beaverton has impacted structures in both the Beaverton and Fanno Creek floodplains. Other recent flood events that have caused property damage in Beaverton occurred in January 2003; February 2003; and December 2007.

Another major natural hazard that Beaverton has had to contend with is volcanic eruption. Mount Saint Helens and Mount Hood are both active volcanoes within the vicinity of Beaverton, each lying approximately 50 miles away. Historically, Mount Hood has had two significant eruptive periods, one about 1,500 years ago and another about 200 years ago. Mount Saint Helens has been active throughout its 50,000-year lifetime, with its last major eruption on May 18, 1980. The eruption resulted in ash fall in and around Beaverton, which created a significant health hazard to residents.

Earthquakes are another hazard of concern for Beaverton residents. On February 28, 2001, Beaverton residents felt a 6.8 magnitude earthquake centered near Anderson Island, in Pierce County, Washington. Local damage from that earthquake was limited, but it served as an important reminder of the potential that Beaverton has for sizeable earthquakes. Portland and its surrounding areas have recorded several earthquake events, including a 5.3 magnitude earthquake in 1877, a 5.5 magnitude earthquake in 1962, and a 5.5 magnitude earthquake in 1993. Oregon ranks third in the nation for potential earthquake losses, which are expected to exceed $12 billion in the event of a Cascadia Region Subduction Zone earthquake. Although the faults in Beaverton and elsewhere in Washington County are currently considered inactive, the location of the faults, slope instability, and the prevalence of certain soils in the city that are subject to liquefaction and amplification make it highly prone to potential loss from future earthquakes.

While wildfire and landslides have had less of an impact on city residents, they still pose significant risk in terms of potential occurrence and loss as the city continues to grow. Wildfires are a natural part of the ecosystem in Oregon and present a substantial hazard when threatening life and property in growing communities. While the city may not share a boundary with a large forest, there are four natural area parks within the city totaling over 300 acres. The largest park is the Tualatin Hills Nature Park adjacent to the Merlo light rail station. Areas with steep slopes, which have the potential for landslides and debris flows, occur within the city's Urban

Service Area.

Beaverton's past experiences with natural hazards serve as important lessons about the potential impacts of future events. The potential threat from any one of these events points to the importance of planning for and reducing the risks posed by natural hazards.

Geography and Environment

The City of Beaverton abuts the City of Portland, Oregon, in Washington County. Washington County extends from Beaverton's east side to the northern Oregon Coast Range in the west and is part of the Portland metropolitan area, which includes Multnomah, Clackamas, and Washington Counties. The dominant natural feature in Washington County is the Tualatin River, which forms the agriculturally rich Tualatin Valley. The county is also bordered by four mountain ranges: the Coast Range to the west, the Tualatin Mountains to the north, the West Hills of Portland to the east, and the Chehalem Mountains to the south.

Beaverton's terrain is predominately flat or rolling hills, with an average elevation of 189 feet. There are two prominent features around Beaverton: Portland's West Hills, which are to the northeast of Beaverton, and Cooper Mountain, elevation of 730 feet, to the southwest. Mount Williams, elevation of 471 feet in west Beaverton, and Sexton Mountain, elevation of 413 feet in southwest Beaverton, are two moderate features that create visual relief in the landscape. Maps of Beaverton's Environmental Assets showing the community's parks and open space as well as significant trees are located in this plan's map section.

Rivers and Streams

Beaverton is a fast-growing community with considerable areas of present and potential development adjacent to waterways. Although the city does not contain any rivers, a number of creeks run through it that have a tendency to flood during heavy rains. Beaverton Creek, the most significant stream in the City, drains approximately 36 square miles as it flows through the City's major commercial center. Numerous wetlands surround Beaverton Creek, which help control runoff and prevent flooding, but flooding continues to present a hazard to structures located near the stream. Fanno Creek runs through eastern Beaverton from the West Hills, under Highway 217, and then south to Tigard. Fanno Creek presents erosion and flooding hazards to properties on its banks. In December 1996, flooding from Fanno Creek caused the closure of Highway 217, a major north-south transportation route.

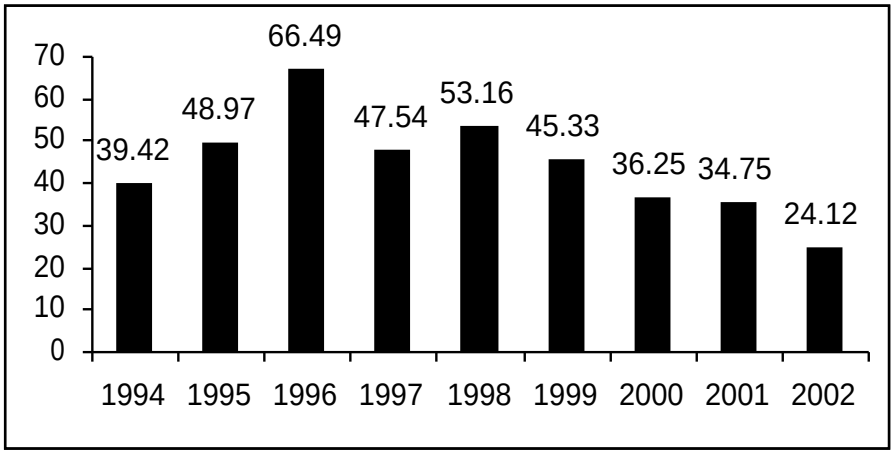
As Beaverton has grown, hydrology has been altered by development, which increases runoff from impervious surfaces and can be accompanied by problems like erosion and flooding. Some stream segments in the city have been enclosed in culverts, including a portion of Beaverton Creek that passes beneath the parking lot at City Hall and the Beaverton Town Square shopping center.

Climate

The climate in Beaverton is mild year-round. Beaverton has a modified marine climate, with most of the weather coming from the Pacific Ocean.

The Cascade Mountains to the east help prevent colder continental air from influencing temperatures in the winter. However, arctic air masses occasionally move from the east through the Columbia River Gorge, which result in freezing rain and snow. Large Pacific storms that bring high winds and heavy rain also hit the area, particularly in winter. Beaverton receives approximately 39.4 inches of rain per year, most of which falls from October through April, with December being the wettest month of the year. The average annual low is 33 degrees Fahrenheit, which occurs in January. The average annual high is 81 degrees Fahrenheit occurring in August. Average humidity ranges from 82% in the winter to 62% in the summer. Figure 2.1 shows the annual rainfall in inches for Beaverton from 1994 to 2002.

Figure 2.1 Annual Precipitation, Beaverton, Oregon, 1994 – 2002



Source: Oregon Climate Service
*1997 – data missing one day of data
**2002 – data missing three days of data

Minerals and Soils

Several common natural hazards are related to soil stability and water retention. These hazards include landslides, erosion, flooding, and liquefaction resulting from an earthquake. Mineral and soil compositions are important factors for determining whether Beaverton is prone to hazards such as landslides. The soils in Washington County include "semi-consolidated sedimentary rocks, basaltic lavas, marine sedimentary rocks, and Eocene Age volcanic and sedimentary rocks." The soils in Beaverton fall into three general soil associations, which are one or more component soils combined with associated landscape characteristics. The main soil association in Beaverton is the Aloha-Amity-Dayton Association. This is a silty or clayey poorly draining soil and is found in flood plains and bottomlands. Natural vegetation linked with this soil type includes Oregon white oak, low shrubs, and grasses. Sedimentation risk is low, but pooling of water during wet months is likely. In southern Beaverton, the soil changes into the Woodburn-Quatama-Willamette Association. These soils are also found in lowlands, but they are silty, and moderately well drained. Sedimentation risk in this soil association is moderate to high. Associated

natural vegetation includes Douglas fir, Oregon white oak, and shrubs. The third major soil type in Beaverton is that of the Cascade-Cornelius Association. These soils are found in the hills of Beaverton, in very steep to gently sloping areas. Formed from loess and alluvium, the Cascade-Cornelius Association ranges from somewhat poorly drained to moderately well drained. The vegetation on this soil type includes Douglas fir, big-leaf maple, western red cedar, shrubs, and grasses. Sedimentation risk from runoff on this soil type is high.

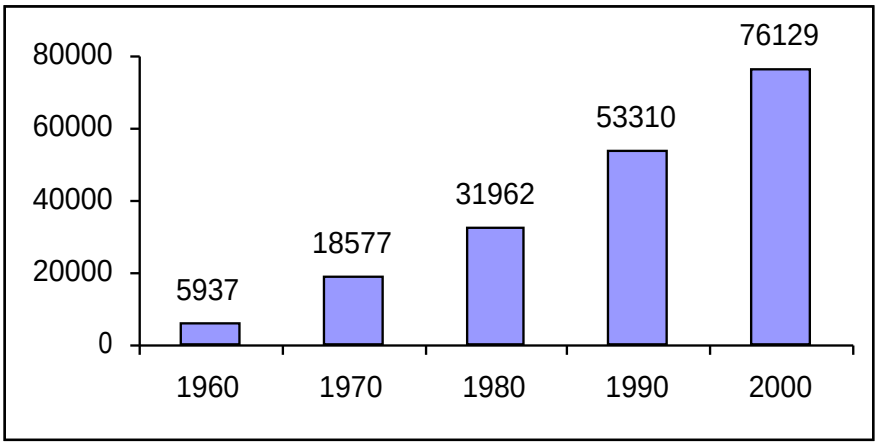
Significant Geological Factors

Most of the Pacific Northwest lies within the Cascadia Subduction Zone, where the Juan de Fuca and North American plates meet. The convergence of these tectonic plates puts most areas of western Oregon and Washington at risk for a catastrophic earthquake with a magnitude of 8.0 or higher. Beaverton lies in this area of risk. Another earthquake risk for Beaverton is the Portland Hills fault, which may be capable of generating moderately large earthquakes. As a result of the subduction zone, there are active volcanoes nearby, including Mt. St. Helens in southwest Washington, and Mt. Hood. Major eruptions of these volcanoes may cause significant ash fall in the Beaverton area.

Population and Demographics

According to the 2000 Census, Beaverton's population in 1990 was 53,310; by the year 2000, the population had grown to 76,129 resulting in a 42% growth rate during that decade. Figure 2.3 illustrates Beaverton's population from 1960 to 2000. As of July 1, 2009 Beaverton's Population was 86,860.

Figure 2.3. Historic Population Trends, Beaverton, 1960 – 2000



Source: Metro, 2015 Regional Forecast and Urban Development Patterns February 1996.

While natural hazards do not discriminate, the impacts in terms of loss and the ability to recover vary greatly among those affected. According to Peggy Stahl of the FEMA Preparedness, Training and Exercise Directorate, 80% of the disaster burden falls on the public. Women, children, minorities and the poor bear a disproportionate amount of this burden because of misunderstandings of FEMA's role in disaster relief. Because women, children, minorities, and the poor are especially at risk during disasters, it is important to identify those populations within Beaverton. Potential language, economic, physical, and social barriers could inhibit disaster preparedness and limit the efficacy of relief efforts during a disaster.

In Beaverton, 9.7% of households are female-headed households. There are approximately 20,906 Beaverton residents below the age of 19; this represents 27.5% of the City's total population. In 2000, 11.1% of Beaverton's population was Hispanic or Latino, 9.7% were Asian and 0.7% was American Indian and Alaska Native. Five percent of Beaverton's families are below the poverty level, at the same time, 14.5% of families with female-headed households are below the poverty level. This climbs to 18.5% with related children under 18 years of age and all the way to 32.3% with related children under 5 years of age.

In 2000, the City of Beaverton conducted a survey of its residents to gather information on housing issues within the City. Survey objectives included housing conditions, housing affordability, population demographics, and commuting habits. A survey was prepared in five languages: English, Spanish, Cambodian, Korean, and Vietnamese. The results of the survey

indicate that English is the most common language spoken among the respondents. Spanish is the primary language spoken in 2% of the households. No other language is spoken by more than 1% of respondents. However, there are major differences in some segments. For example, 99% of White Caucasians use English as their primary language, but only 63% of non-Whites use English as their primary language.

Land and Development

Beaverton is a community of residential, commercial, and industrial uses. Fifty-three percent of the land in the City is designated as "standard density." Beaverton has many commercial centers serving the community's needs. Beaverton Town Square and Cedar Hills Crossing form two primary shopping areas in Beaverton's downtown for the community. A growing commercial area is the Murray-Scholls Town Center, near the intersection of Scholls Ferry Road and Murray Boulevard. This is an area of compact development and high-quality transit service.

Beaverton's downtown is designated a Regional Center. As such, new development must meet new mixed-used transit-oriented standards. The Round, a mixed-use transit oriented development at the intersection of Watson Avenue and the Westside Light Rail line, is being constructed in phases. The current proposal for the Round includes, 123,500 square feet of retail space, 342,000 square feet of commercial space, 264 residential units, and approximately 810 parking spaces. The development is encouraged by and is designed, in part, to meet regional growth policies that encourage compact mixed-use development in close proximity to transit; this type of development is less land consumptive and provides a high level of pedestrian amenities.

Major employment areas within Beaverton generally include the areas commonly known as the Twin Oaks Industrial Park and Cornell Oaks Corporate Center. A map in this plan's Map Section titled Economic Assets – Employment shows the 1996 employment densities. Designated industrial areas in Beaverton include Southern Pacific Industrial Park, Allen Business Park, and Bevest Industrial Park developments. The rest of the land in Beaverton is mostly comprised of neighborhoods of varying densities. See this plan's Map Section for the map titled Economic Assets – Zoning for more information and in addition Table 2-1 illustrates the total number of acres and percentages of each land use designation in Beaverton.

Table 2.1. Land Use Designation, Beaverton, 2002

Source: City of Beaverton Community Development Department, GIS Division

Development Regulations

There are a number of current regulations regarding development in areas subject to natural hazards. The following is a brief outline of the applicable regulations.

Street slope can increase the potential for landslides as a higher street slope creates a significantly greater risk that surface drainage and near surface ground water will go to unintended places increasing the slide potential. Steep street slopes can also lead to increased response time for wildfires. Currently, the City's maximum street grade is 15% for neighborhood routes and 10% for all other routes. Grades steeper than 15% are allowed only through approval of a City Engineer. Future annexation of lands in sloped areas may include streets that do not meet current City requirements. Washington County's current maximum allowable grade is 15% for all roads. Exception for grades steeper than 15% must be approved by the Fire Marshal. Some streets in future annexation area may exceed the 10% requirement for non-neighborhood routes; therefore, the issue of non-compliant roads must be addressed.

There exists a potential conflict between preserving environmental

sensitive lands and "buildable" lands in the Urban Growth Boundary (UGB) inventories in the Portland Metro area. Removing environmentally sensitive lands from development infringes on the ability of the jurisdiction to maintain the required 20 years of housing capacity. The Metro Council's Resolution Number 99-2820 "encourages all local jurisdictions in the Metro region to actively protect environmentally sensitive areas, even if they include lands that Metro is required by state law to classify as "buildable" for its UGB inventory." A previous resolution related to the resolution above, 97-2562B, provided similar recommendations to local jurisdictions. The resolution indicates that:

> the protection of environmentally sensitive lands from development could result in a decline in net buildable acres in a local jurisdiction. Upon demonstration by a local jurisdiction that such protection results in an inability to meet jobs, housing and other targets established in the Urban Growth Management Functional Plan, which includes a recommendation which identifies land that would provide for the unaccommodated capacity located inside or outside the urban growth boundary and near or adjacent to the city of county, the Metro Council will grant an exception consistent with Title 8 of the Functional Plan. The exception will be granted to the extent the local jurisdiction establishes that decline in net buildable acres is the result of lands being protected from development by locally adopted and implemented regulations.

The City's Comprehensive Plan currently outlines goals, policies, and actions regarding natural hazards in Beaverton, which are listed below. Chapter Seven of Beaverton's Comprehensive Plan addresses seismic, geological, and flood hazards.

Seismic Hazards

Goal: Protect life and property from potential earthquake hazards.

1. Policy: Limit as much as possible the potential loss of life and property resulting from earthquakes, and minimize disruption of public facilities, services, and transportation systems.
    a. Action: Prepare and adopt programs and regulations to reduce the potential impacts of earthquakes on: existing and new structures, infrastructure, and transportation systems.
2. Policy: Ensure that key public, semi-public and private building retain structural integrity and remain functional in the event of an earthquake.
    a. Action: Develop a program and seek funding to retrofit existing public buildings and consider establishing tax incentives to retrofit other semi-private, or private structures that house essential services and are identified as high risk sites.

Geological Hazards

Goal: Protect life and property from geological hazards associated with identified unstable steep slopes, erosion and deposition, and weak foundation soils.

1. Policy: Limit or prohibit development in geologically hazardous

areas that pose a threat to life and property

a. Action: Identify geological hazard sites in the City including unstable steep slopes, weak foundation soils, and areas subject to erosion and deposition. Adopt and apply regulations to these sites through engineering standards and site development design criteria to allow, limit, or prohibit development, as appropriate.

b. Action: Periodically review and update the existing erosion control regulations and enforcement procedures to improve their effectiveness.

c. Action: Adopt and apply land use regulations requiring that building sites, streets and other improvements in areas with 25% or greater slopes, be designed so that cuts and fills are minimized and best management practices for erosion control are integrated into the design.

2. Policy: The City shall support the reclamation of aggregate sites having a Department of Geology and Mining Industry (DOGAMI) mining permit, to ensure the stability of slopes and prevention of erosion, and to prevent the creation of weak foundation soils.

a. Action: Adopt and apply appropriate site development code requirements to ensure the DOGAMI reclamation process is completed prior to the issuance of a site development permit.

Flood Hazards

Goal: Maintain the functions and values of floodplains, to allow for the storage and conveyance of stream flows and to minimize the loss of life and property.

1. Policy: Utilize uniform or complementary inter-jurisdictional floodplain development and management programs to reduce flood hazards, protect natural resources, and permit reasonable development.

2. Development shall be prohibited in the floodway, except as necessary for the placement of roadways, utilities, stormwater conveyance, bridges, culverts, and grading related to public utility projects as permitted by the appropriate implementing ordinances.

3. Construction within the flood fringe shall be regulated through the City's implementing ordinances, such as the City's Engineering Design Manual and Standard Drawings.

4. Uncontained areas of hazardous materials, as defined by the DEQ, shall be prohibited in the floodplain.

a. Action: Develop a program to remove hazardous obstructions and debris from floodplains.

b. Develop a flood damage reduction program to protect, to the extent practicable, existing development in the 100-year floodplain, following guidelines and regulations established by the Federal Emergency Management Agency (FEMA).

Alternatively, explore programs to encourage removal of existing development from floodplains.

The City of Beaverton Development Code outlines special requirements for utility undergrounding as well as floodplain regulations. The purposes for the utility requirements include protecting essential public services from natural and manmade accidental disruptions as well as improving public safety by reducing the possibility for injury from downed lines. Traditional overhead power lines can cause significant damage during severe weather events and undergrounding the lines has been identified as a potentially effective mitigation strategy. The floodplain regulations are designed to:

- Protect human life and health property;
- Minimize expenditure of public money, costly repairs of flood damage, and costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
- Make information available upon request to potential buyers that property is in an area of special flood hazard;
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and
- Maintain the functions and values of floodplains, such as allowing for the storage and conveyance of stream flows through existing and natural flood conveyance systems.

Housing and Community Development

Gaining an understanding of the City's current housing stock as well as trends in community development are important in planning for natural hazards because development in Beaverton has increased steadily with population growth. Each year Beaverton's Building Division issues a combined total of 4,200 to 5,000 building, mechanical, plumbing, electrical, and sewer permits. In 2002, 1,156 building permits were issued, compared with 1,127 permits issued in 2001. The number of permits issued has been steadily increasing over the last decade, and are up 10% since 1990.

According to the 2000 US Census, there are 32,507 housing units within the City. Of the total housing units, 52.3% are rental units and the remaining 47.7% are owner-occupied. The majority of homes in Beaverton were built between 1970 and 1989; new dwelling construction has been on the decline since that period. The year in which a structure is built is an important indicator of how well a structure will perform during an event. For

example, in 1990 the Oregon Building Codes Division revised its construction standards for new buildings to make them more resistant to seismic events. Therefore, homes built after 1990, are likely to perform better during an earthquake or related hazard. The following table provides information on the age structure of Beaverton's housing units.

Table 2.2: Housing Age Structure, Beaverton

Existing Housing Units

Year Built	Number	Percent
1999- March 2000	647	1.8%
1990-1998	8495	23.9%
1980-1989	7962	22.4%
1970-1979	8413	23.7%
1960-1969	4110	11.6%
1940-1959	5427	15.3%
1939 or Earlier	423	1.2%

Source: US Census 2000

Beaverton's housing market has demonstrated a fluctuating growth pattern over the past forty years. While the number of housing units built from 1990 to 1998 shows an increase over the previous decade, the majority of that construction, 5048 units, occurred in the first 5 years. This slower pace is also evident in only 647 units being built during 1999 and the first quarter of 2000. Although some of this slowdown can be attributed to market fluctuations, a significant measure can also be explained by the fact that, while the city's population has increased, the amount of land capable of absorbing the need for new housing has decreased.

In recognition of the fact that Beaverton suffers from a shortage of buildable residential land, the city has begun to examine alternatives associated with housing types that emphasize increasing the density potential for new residential development. Recent policy changes designed to address these factors include the adoption of an R4 zone (allowing for a minimum lot size of 4,000 square feet per dwelling unit), the easing of restrictions associated with accessory dwelling units and manufactured housing, adoption of mixed use zones, and development of code text amendments requiring that all new development achieve a minimum density of the 80% of allowable capacity.

Affordable housing has also become a topic of great concern over the past decade. The problem is largely due the fact that wage rates have not been able to keep pace with escalating housing costs. The result has been an ever-widening affordability gap that has the potential to dislocate area residents. According to Oregon's Multiple Listing Service, the average home price for the Beaverton area in 1990 was $91,633. By 1999, the average price had almost doubled at $175,700. While a segment of this increase can be attributed to escalating costs in permit fees, transportation impact fees, and system development charges, the bulk of the change comes from an increase in land value.

During 2002, Beaverton's Community Development Block Grant funds

supported housing rehabilitation, public facilities, planning and administration, and public services expenses. The city's Housing Rehabilitation Program is funded by two federal sources: Community Development Block Grant (CDBG) funds and Home Investment Partnerships Program (HOME) funds.

Employment and History

Beaverton's per capita income according to the 2000 Census is $25,419. Median earnings are $41,863 for full-time male workers, and $31,204 for females. According to the 2000 Census, Beaverton had 40,922 employees, accounting for one-third of all Washington County employees. Table 2.3 provides a breakdown of jobs and the number employed by industry type.

Washington County's largest public and private employers are Intel, Tektronix, Nike, Sequent Computer Systems, and the Dynamics Research Corporation. The total number of employees working for these top five employers totaled 18,750. Approximately, 76% of Beaverton's employment are small businesses with more than 20 employees.

Today, Beaverton's economy is a mix of high tech and software companies, professional and business services, and retail and wholesale trade. It supports both traditional and knowledge-based industries, as well as provides goods and services to export markets and local consumers.

Table 2.3: Employment by Industry, Beaverton, 2000

Source: US Census 2000

Transportation and Commuting

Transportation in Beaverton includes State and County highways, arterial streets, collector streets, neighborhood routes, local streets, Tri-Met bus service, Westside Light Rail, Westside Commuter Rail and multiple bicycle routes. Beaverton's transportation network serves both residential and commercial commuters. A map in this plan's Map Section titled Functional Road Classification further highlights the area's transportation network.

The Tri-County Metropolitan District of Oregon (Tri-Met) provides public transportation in Beaverton. Tri-Met's service includes bus, light rail and commuter rail. The MAX Westside Light Rail line is aligned in an east-west direction from downtown Portland following Highways 26 and 217 to the Beaverton Transit Station and continuing west to downtown Hillsboro. The newly opened WES commuter rail line lies in a north-south orientation paralleling portions of Interstate 5 and Highway 217 from Tualatin to the

Beaverton Transit Station.

U.S. Highway 26, also known as the Sunset Highway, has the greatest traffic volume, and serves as a central connecting route between the coast and downtown Portland. Oregon Highway 217 serves to connect Highway 26 to and from Interstate 5. Highway 26 runs east to west, while Highway 217 runs north to south. Both of these highways are major traffic routes through and around Beaverton. Highway 210, also known as Scholls Ferry Road, has the next highest traffic volume. Highways 8 and 10 are major commuting routes as well, but are not as significant in overall traffic volume.

Congestion is an increasing problem for Beaverton, even with the recent expansion of the light rail system. Overall, the two-way traffic volumes in Beaverton have increased from 5 to 50 percent between 1996 and 2000. However, some of the two-way traffic volumes have actually decreased over the four-year period. Traffic volumes on Scholls Ferry Road have shown the greatest increase, mostly due to residential development towards the west.

Overall, commuting patterns in Beaverton are similar to the rest of the state and the nation. The majority of people traveling to work do so alone in their car. Approximately 72.5% of workers drive alone, 10.6% carpool, and 8.3% commute by public transit with an average commute time of approximately 23 minutes. However, one exception is the number of workers commuting by public transit, which is well above that of the state and nation as a whole. In addition, 4.5% of the workforce works from home. According to the 2000 *Oregon Employment Department: Regional Economic Profile for Region 2*, which includes the City of Beaverton, approximately 40% of the working population in Washington County commuted to destinations outside of the county, primarily to Multnomah County.

Historic and Cultural Resources (Revised 03/2011)

The City of Beaverton has 96 identified historic resources on its Historic Resources Inventory; of those 19 "significant" and 22 “important” historic resources. Regulated resources under Statewide Planning Goal 5 include the “Significant” and “Important” categories on Beaverton’s Historic Resource Inventory. “Significant” resources are defined as: individually the important buildings, sites, structures or objects in Beaverton distinguished by outstanding qualities or architecture, relationship to environment and/or historic associations. “Important” resources are defined as: buildings, sites, structures or objects, which are not of outstanding distinctiveness or variety, in terms of architecture or historic association and/or relationship to environment, but have sufficient significance to make them worthy of preservation. In addition to inventorying the “significant” and “important” resources, the Inventory also identifies “contributing” and “unrankable” resources. “Contributing” is defined as: buildings, sites, structures or objects, which are less significant examples of architecture or of lesser historical association, which may also provide the contexts for more significant resources. “Unrankable” resources are defined as: lacking sufficient information to be ranked. Additionally, the City has one historic district on the National Register of Historic Places.

Critical Facilities and Infrastructure

Critical and essential facilities are those facilities that are vital to the continued delivery of key governmental services that may significantly impact the public's ability to recover from the emergency. During a natural disaster, it is very important to have operational facilities from which the city and recovery organizations can provide assistance. These critical facilities include 911 centers, emergency operations centers, police and fire stations, public works facilities, hospitals, bridges and roads, and shelters. Facilities that may cause secondary impacts if damaged or destroyed, such as chemical production plants, are considered critical facilities as well. Essential facilities include schools, jails, law enforcement centers, public service buildings, and the courthouse. A map in this plan's map section titled Critical Facilities highlights public and private schools, community centers, nursing homes, hospitals, and the light rail system.

Table 2.4: Structures in Hazard Area* (New 03/2011)

	Structure Types							
	Residential		Commercial	Multi-use	Critical Facilities			
	Multi-Family	Single family			Human Services	Utilities	Govt.	Schools
Hazard					0	0	0	0
100 Year	64	60	60	130	0	0	0	0
Steep Slope	8	261	2	16	0	0	0	1**
Debris Flow	0	10		0	0	0	0	0
Methane	0	78	1	0	0	0	0	0
TOTALS	**72**	**409**	**63**	**146**	**0**	**0**	**0**	**1**

*Hazard Areas within Beaverton City limits, as of 08/2010; based on GIS data
**The German American School

Section Endnotes