CHAPTER 2

STUDY AREA AND PLANNING CONSIDERATIONS

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STUDY AREA AND PLANNING CONSIDERATIONS CHAPTER 2

2.1 INTRODUCTION

Junction City is located approximately 15 miles north of Eugene near the northern boundary of Lane County. Highway 99 bisects Junction City north to south and provides the major road transportation into and through the City. Near the north end of the City, Highway 99 branches into 99E and 99W. The Union Pacific and Burlington Northern Santa Fe Railroad lines run in a north south alignment through the City. Figure 2-1, presented at the end of this chapter for formatting reasons, is a vicinity map depicting these features.

The City's Comprehensive Plan was developed in the 1980's and established a large urban growth boundary (UGB) encompassing 2,188 acres, approximately 1,254 of which are outside the present City limits. Eventually all areas inside the UGB will be part of the City and will be served by the City's utility systems.

2.2 STUDY AREA

Junction City currently provides water service to all areas within the City limits with the exception of several small water districts. The study area of this report is the entire area within the UGB.

The improvements recommended in this plan are based on the development of land within the UGB in its present location, as well as the existing land use zoning for these areas. It is assumed that no significant development will occur within the study area that will require major changes to the existing zoning, and that there will be no significant expansions of the UGB within the study period. Changes in any of these assumptions could change the recommendations contained in this Facilities Plan. Should significant changes in any of the above occur, this Facilities Plan should be updated accordingly.

The location of the UGB, City limits and land use zoning designations for Junction City are shown in Figure 2-2 presented at the end of this chapter.

2.3 STUDY PERIOD

Choosing a "reasonable" design period for which a utility system should be designed is a somewhat arbitrary decision. If the design period is too short the public faces the prospect of continual upgrades and replacements as demands exceed capacity. On the other hand, choosing a design period that is too long can lead to facilities with excess capacity that may never be needed if population growth does not occur at the projected rates. Such facilities can place an economic burden on the present population and may become obsolete before being fully utilized.

The Oregon Department of Human Services Drinking Water Program (ODWP) has established 20 yeas as a proper planning period for water system improvements. This report will evaluate the anticipated water supply, treatment, pumping and storage needs for the 20 year planning period. Major transmission pipes are by their nature unsuited for incremental expansion without

extensive capital outlays. For this reason these facilities will be designed for the ultimate development of land within the UGB based on current land use designations. For other facilities such as treatment and storage facilities a staged approach to expansion is recommended.

The near term development of the Oregon Department of Corrections (DOC) prison and Oregon Department of Human Services (DHS) hospital, as discussed in Section 2.5.2 of this chapter, will require a significant expansion to the City's water system. The water system improvements recommended in this report include new storage reservoirs, a new treatment facility new transmission and distribution mains as well as pumping improvements. It is anticipated that construction of these water system improvements will be completed between 2010 and 2012. A planning period of 20 years commencing at the close of these near term improvements will be utilized for this report. The end of the planning period is accordingly set at 2030.

It should be recognized that projections into the future are subject to many variables and assumptions, some of which may prove inaccurate. Accordingly, it is recommended that the City review its water system at five-year intervals and update this report as appropriate.

2.4 PHYSICAL ENVIRONMENT

2.4.1 Climate and Rainfall Patterns

The study area is located on the Willamette Valley floor approximately three miles west of the Willamette River. The climate in Junction City is relatively mild throughout the year, characterized by cool, wet winters and warm, dry summers. Irrigation in the summer months is common due to low precipitation.

Extreme temperatures in the study area are rare. Days with maximum temperature above 90°F occur only 5-15 times per year on average, and temperatures below 0°F occur only about once every 25 years. Mean high temperatures range from the low 80s in the summer to about 40°F in the coldest months, while average lows are generally in the low 50s in summer and low 30s in winter.

Although snow falls nearly every year, amounts are generally quite low. Willamette Valley floor locations average 5-10 inches per year, mostly during December through February. High winds occur several times per year in association with major weather systems.

Relative humidity is highest during early morning hours, and is generally 80-100 percent throughout the year. During the afternoon, relative humidity is generally lowest, ranging from 70-80 percent during January to 30-50 percent during summer. Annual evaporation is about 35 inches, mostly occurring during the period April through October.

Winters are likely to be cloudy. Average cloud cover during the coldest months exceeds 80 percent, with an average of about 26 cloudy days in January. During summer, however, sunshine is much more abundant, with average cloud cover less than 40 percent. More than half of the days in July are clear.

There are extensive weather records for Eugene Airport approximately seven miles south of Junction City. While the data from this weather station is not specifically for Junction City, these values are generally believed to be representative for the immediate area around the City. Despite

daily and weekly variations, the annual average climate is representative. The City also measures daily precipitation at the wastewater treatment plant.

The study area receives an average of approximately 46.23 inches of precipitation annually, with the majority of the rainfall occurring during the winter months. The wettest year (since 1933) was 1996 when approximately 76.5 inches of rainfall was measured. The second wettest year was 1995, with approximately 65.5 inches of rainfall. Approximately 79% percent of the annual precipitation occurs between November 1 and April 30.

2.4.2 Topography

The area within Junction City's UGB is essentially flat with very little noticeable relief. In general, the study area slopes from the south to the north with elevations ranging from approximately 345 feet in the south to approximately 315 feet in the north.

2.4.3 Soils

Soil surveys for the areas within the Junction City UGB are available from the U.S. Department of Agriculture Natural Resource Conservation Service. Twelve different soil types have been identified and mapped within the study area and appear on Figure 2-3, presented at the end of this chapter.

Each soil type has unique qualities and while some may be excellent for agriculture they may pose substantial problems with regard to foundation suitability. There do not appear to be any soil types that are unsuitable for the construction water system infrastructure from a foundation stability point of view. The construction of significant structures—buildings and storage reservoirs—recommended by this report will require detailed geotechnical reports that will be performed during the design development phase.

2.4.4 Water Resources

Approximately 70% of Oregon residents rely on groundwater for drinking water[1]. This is particularly true of the southern Willamette Valley where a large percentage of the population relies in part on groundwater either from public water suppliers or private wells. Drinking water for Junction City is comprised entirely of groundwater sources. The City owns nine municipal wells and currently operates four of these for water production.

Numerous studies have documented rising nitrate levels in the groundwater of the southern Willamette Valley. Although low levels of nitrate are naturally present, studies have shown that the cause of nitrate contamination in this region is commonly related to human activity, and is primarily the result of non-point agricultural activities (fertilizers, animal waste) and wastewater applications (septic systems and large wastewater facilities).

On May 10, 2004, the Oregon Department of Environmental Quality created the Southern Willamette Valley Groundwater Management Area (GWMA). The GWMA committee formed from this declaration, in conjunction with the Lane Council of Governments (LCOG), authored the GWMA Action Plan that was published in December of 2006. The plan is the first step

[1] DEQ, 2007

toward reducing nitrate levels in the study area and protecting the aquifers from other potential contaminants.

Groundwater in the area is also characterized by moderate to elevated levels of dissolved mineral content that, in addition to nitrate, is primarily comprised of iron, sodium and sulfate. An in depth discussion of the City's groundwater sources and water rights is presented in Chapter 6. Water quality discussions appear in Chapter 7.

2.4.5 Geologic Hazards

Known geologic hazards within the study area include seismic concerns, flooding, and seasonally high groundwater.

2.4.5.1 Seismic

The 2008 U.S. Geological Survey (USGS) National Seismic Hazard Maps[2] display earthquake ground motions for various probability levels across the United States. These factors are applied in the seismic provisions of building codes, insurance rate structures, risk assessments, and other public policy. A review of these maps identifies Oregon as having a relatively high seismic risk. The Uniform Building Code shares this assessment and classifies Junction City and much of the Willamette Valley as seismic zone 3. Seismic risk factors for structures are typically influenced by a combination of factors including the geographical location, specific building and structural configurations, and local soil types. The construction and rehabilitation of significant structures recommended by this report (buildings and storage reservoirs) will require detailed geotechnical reports and seismic evaluations.

2.4.5.2 Flooding

The Willamette River and Long Tom Rivers are the primary streams near the study area and are located four miles east and five miles west of the City respectively. Junction City is located on a flat plain between these two streams. The Federal Emergency Management Agency (FEMA) has established a 100-year floodplain designation and insurance ratings for the study area. While sometimes referred to at the "100 year flood", it is more accurate to consider the event to have a one percent chance of occurrence in any year, or a 10 percent chance of occurrence during any 10 year period. During a 100 year flood the Willamette and Long Tom Rivers as well as other intra-basin drainage channels rise out of their normal channels creating a large flood plain. The limits of this floodplain are defined by FEMA and are presented on Figure 2-4, which appears at the end of this chapter. Flood profiles and maps for the streams in and around the study area are included in the Flood Insurance Study prepared for Lane County and appear on Flood Insurance Rate Maps (FIRMs)[3]. It should be noted that the FEMA flood boundaries are based on flood elevations and as such the actual inundation boundaries may vary due to localized topographical variations. Final determinations of whether a specific property is affected must be determined based on a topographic survey of the property in question.

[2] Petersen et al, 2008
[3] FIRM numbers 41039C0602, 41039C0604, 41039C0605 and 41039C0610, June 2, 1999

2.5 SOCIOECONOMIC ENVIRONMENT

Growth within the study area will depend on socioeconomic conditions within the City of Junction City. The following section contains a general discussion of economic conditions, trends, population, land use and public facilities relating to the both the study area and the City.

2.5.1 Economic Conditions and Trends

The development patterns in Junction City have mirrored those of the Willamette Valley in general. The City was originally an agricultural center and regional transportation hub. The City subsequently transitioned into a logging and timber products based economy. Today the City is transitioning away from timber products into a period of increased economic diversification. This trend is expected to continue.

Originally, Junction City was an important agricultural and transportation point in the southern Willamette Valley. The community was the southernmost point served by riverboats that transported goods up and down the Willamette River. The City was located a day's journey from Portland by steam locomotive, making it an ideal place to locate refueling and roundhouse facilities. Although the railroad junction for which the City was named never materialized, several important highways intersect at the City. These include Highways 99 East, 99 West, and Highway 36.

After World War II, Junction City's economy focused on agriculture and, to a lesser extent, logging and timber production. The decline of the timber industry in the 1980s and 1990s reduced the City's reliance on this sector and resulted in significant job losses for residents.

The quality of life in Junction City is stable and improving. Local commerce is enhanced by the City's close proximity to the Eugene-Springfield metro area. The City offers a range of varied employment opportunities for its workers who have the added option of commuting to the Eugene-Springfield metro area. Junction City is an attractive town with a rural atmosphere and a relatively low cost of living. As such, it has to some extent evolved into a bedroom community for persons employed in the Eugene-Springfield area. Junction City is unique among cities its size in that it has more jobs than housing units. In 1998, there were 2,992 jobs in the city, over 30 percent more than the number of housing units. In addition to local residents commuting elsewhere for work, many workers commute into the City from outside locations. Over half of the workers who live in Junction City commute to Eugene-Springfield; and more than one quarter of the local jobs in Junction City are held by workers who live outside the city, primarily in Eugene-Springfield, based on 1995 data.

The economic situation in Junction City is rare. The City has successfully transitioned from the loss of timber-related jobs to other large employers, most notably those in the recreational vehicle industry. Junction City's largest employer is Country Coach, Inc., with 1,000 employees. The City is also home to a number of spin-off industries that support the recreational vehicle manufacturing industry.

2.5.2 Population and Growth Projections

2.5.2.1 Municipal Population Base

Junction City's year 2000 population was 4,721[4]. With an annual growth rate of approximately 2.5% the municipal population is expected to grow to 9,800 by the year 2030. Additional population influxes are anticipated with the development of the new state prison and state hospital.

2.5.2.2 Oregon Department of Corrections Prison

The Oregon Department of Corrections (DOC) is planning to construct a new correctional facility on a 240 acre site located approximately 3 miles south of Junction City. Construction is scheduled to begin in the Summer of 2009. The current development plan calls for the completion of a minimum-security facility by Fall of 2012 and a medium-security facility by the Spring of 2014. The complex will include areas for inmate housing, work and education programs, health services, and other related functions.

2.5.2.3 Oregon Department of Human Services Hospital

In 2007 the Oregon Legislature authorized funding estimated at $458 million for the Department of Human Services (DHS) to build two new state-operated psychiatric facilities, one in Salem and another co-sited on the aforementioned DOC property south of Junction City. The hospital will include single and double occupancy patient rooms, and indoor and outdoor recreation areas.

An in depth discussion of population inclusive of the DOC and DHS facilities is presented in Chapter 5—Present and Future Water Demands.

2.5.3 Land Use

The City's Comprehensive Plan was adopted in the early 1980's and established a large urban growth boundary (UGB) that encompasses approximately 2,200 acres. Roughly 1,260 acres (60%) of this area is outside the current City Limits.
Eventually the entire area within the UGB will be part of Junction City and will be served by the City's utility systems. The planning area is made up of land in two general categories, namely land inside of City limits and land outside of the City limits, all of which is inside the Urban Growth Boundary. Land use zoning in Junction City is comprised primarily of residential uses, although the Comprehensive Plan sets aside large areas for industrial and commercial development. Lesser amounts of land are designated for professional/technological, public, and park uses. Total areas under each zoning designation are listed in Table 2-1 and ranked in Figure 2-5. A map showing the UGB, City limits and land use zoning areas appears on Figure 2-2 at the end of this chapter.

The majority of the land within the City limits is currently developed or partially developed. Much of the ongoing and anticipated development within the City is occurring outside the City limits under deferred or delayed annexation agreements.

The majority of the land inside the UGB, but outside the City limits, is undeveloped or underdeveloped. Of the undeveloped land inside the planning area and outside the City limits,

[4] Census data, United States Bureau of Census

approximately 37% is zoned for residential use and the remainder for a mix of industrial, commercial, professional, parks and open spaces. The majority of the industrial zoned land is either undeveloped or being utilized at less than the anticipated zone intensity.

Table 2-1 | Approximate Areas by Land Use Zone

Land Use	Area inside City Limits	Area in UGB & Outside City Limits	Area in City Limits & Outside UGB	Total (Acres)	(%)
Low Density Residential	300	423	0	723	33%
Medium Density Residential	120	49	0	169	8%
Commercial	166	66	0	232	10%
Commercial/Residential	31	1	0	32	1%
Industrial	150	466	0	616	28%
Professional/Technological	0	76	0	76	3%
Public	95	120	0	215	10%
Open Space/Wetlands	0	63	0	63	3%
Agricultural	0	0	84	84	4%
Total (Acres)	862	1,264	84	2,210	100%

Figure 2-5 | Ranked Land Uses