Section 2

Study Area and Planning Considerations

SECTION 2
STUDY AREA AND PLANNING CONSIDERATIONS

2.1. Study Area

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.

The City's Comprehensive Plan was developed in the early 1980's. The Comprehensive plan established a large urban growth boundary (UGB) which encompasses 2,129 acres, approximately 1,171 of which are outside the present City Limits. Eventually the entire area will be part of Junction City and will be served by the City's utility systems.

This report is based on the assumption that there will be no significant changes to the urban growth boundary or zoning designations. The planning area of this report is limited to the land within the present UGB of the City. The improvements recommended in this plan are based on 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.

2.2. Physical Environment

2.2.1 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. Growing seasons in the Willamette Valley are long, and moisture is abundant during most of the year (although summer irrigation is common).

The study area has a predominant winter rainfall climate. Typical distribution of precipitation includes about 50 percent of the annual total from December through February, lesser amounts in the spring and fall, and very little during summer. Rainfall tends to vary inversely with temperatures. The cooler months are the wettest, the warm summer months the driest.

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 below 0°F temperatures 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 (in addition to 3 partly cloudy and 2 clear days). 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. Although there may be daily and weekly variations, the annual average climate is approximately the same. Data from the Eugene Airport will be used for the purposes of evaluating long-term climatic behavior. The City also measures daily precipitation at the wastewater treatment plant. The treatment plant readings will be used to evaluate the effect of precipitation on plant inflows.

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.

Based on the isopluvials of 24-hour precipitation from the NOAA Atlas 2, Volume X (Oregon), Figure 26, the 5-year 24-hour rainfall for the study area is approximately 3.3 inches. The other two rainfall statistics applicable to the facilities plan are the monthly precipitation amount from May with a 10% probability of exceedence and the monthly precipitation amount for January with a 20% probability of exceedence. Based on rainfall data collected at the Eugene Airport from 1933 to the present time, these values are 4.20 inches and 10.92 inches respectively.

2.2.2 Topography

Junction City is located on the floor of the Willamette Valley. The entire area is essentially flat with very little noticeable relief. In general, the study area slopes from the south to the north. Elevations range from approximately 330 feet in the south to approximately 315 feet in the north.

2.2.3 Soils

Soil information for the Junction City study area was developed and mapped by the U.S. Department of Agriculture Natural Resource Conservation Service. Within the Study area eleven different soils have been identified and mapped. The soil types found in the study area are shown in **Figure 2-1**. The reader is referred to the Lane County Soil Survey for detailed descriptions of the individual soil designations shown in **Figure 2-1**.

Each soil has its own unique qualities and while some soils may be excellent for agriculture, they may pose substantial problems with regards to foundation suitability. In general none of the soil types outright preclude the construction of typical wastewater facilities from a foundation stability point of view. A detailed geotechnical report will be required prior to final design of the recommended improvements.

2.2.4 Geologic Hazards

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

2.2.4.1 High Groundwater.

As previously discussed, seasonal high groundwater is a common occurrence within the study area, and is a primary cause for the observed high levels of infiltration and inflow. The high groundwater problems are caused primarily by perched water tables due to soil saturation and lack of local drainage.

2.2.4.2 Flooding.

The Willamette and Long Tom Rivers are the primary streams near the study area. Junction City is located on a flat plain between these two streams. The Willamette River is located approximately four miles east of the City and the Long Tom River is located approximately five miles west of the City. Flat Creek is the only major tributary within the study area. Flat Creek, enters Ingram Slough near Willamette River mile 155. Flat Creek is an intermittent stream that does not normally convey water year-round.

The Federal Emergency Management Agency (FEMA) has established a 100-year floodplain designation and insurance ratings for the study area. While sometimes referred to as the "100 year flood", it is more accurate to consider it the flood having 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 (as defined by the Federal Emergency Management Association, FEMA), the Willamette River, the Long Tom River, Flat Creek and the nearby unnamed drainage channels rise out of their normal channels creating a large floodplain. The limits of the 100 floodplain are shown on **Figure 2-2**. Flood profiles and maps for the streams in and around the study area are included in the Flood Insurance Study prepared for Lane County as follows.

- FIRM Map Numbers 41039C0602, 41039C0604, 41039C0605, and 41039C0610, June 2, 1999.

It should be noted that the Floodplain and Floodway boundaries shown on the FEMA flood maps are based on flood elevations, as such the actual boundaries may vary slightly from the location shown. Final determinations of whether a property is within the floodway or floodplain must be determined based on a topographic survey of the property in question.

2.2.4.3 Seismic.

If the wastewater alternative selected by the City includes the construction of buildings or other significant structures, a detailed geotechnical report will be required prior to design. Therefore, a more detailed review of local geology and faulting, as well as seismic and settlement considerations specific to the site selected, will be deferred until the predesign report.

2.2.4.4 Stream Erosion

As is common with most valley bottom streams, the Willamette River channel as well as the secondary tributaries within the study area continuously erode and deposit bank material. This is especially prevalent on the outer bends of the stream where undercutting and caving of the banks is common. The potential for streambank erosion is an important design issue that must be carefully considered for facilities sited near the river such as the treatment plant outfall piping. As part of the Facilities Planning effort, the Willamette River was evaluated from the south edge of the UGB to Harrisburg for potential outfall locations. Historic maps and aerial photos were used to gauge the stability of the river channel. Field investigations were performed to verify the presence of revetment projects and to locate potential outfall locations. Based on this work, the preliminary outfall location shown in **Section 7** was selected.

2.2.5 Public Health Hazards

Discussions with City staff have not revealed any known or documented chronic public health hazards within the study area.

2.2.6 Energy Production and Consumption

The proposed wastewater system will not produce any electricity or other energy sources. With regards to energy consumption, the major energy consumers in a wastewater collection and treatment system are the electric motors required to drive pumps, and other equipment. It is recommended that these components be specified as having high or premium efficiency motors, which will reduce the operating costs over the life of the project. Depending on the current programs in place with the electric utility providing service, there may be rebates available if high/premium efficiency electrical motors are specified that will tend to offset the slightly higher capital construction cost.

2.2.7 Water Resources

There are two classes of water resources within the study area, namely surface water and ground water.

2.2.7.1 Surface Water.

Surface water includes all drainage channels that convey storm and surface runoff, up to and including the Willamette and Long Tom Rivers. Surface water quality protection is subject to extensive regulation by the State of Oregon. Water quality regulations related to the treatment and disposal of wastewater are summarized in **Section 3** of this report.

2.2.7.2 Groundwater.

Groundwater protection is also important from the standpoint of both natural resource protection and public health protection. Groundwater is currently the primary drinking water source for the City. The primary groundwater concern relating to wastewater collection and is the potential for contamination of drinking water wells from sewage or treated effluent. This is the basis for the minimum separation distances between wastewater facilities and groundwater wells.

2.2.8 Flora and Fauna

2.2.8.1 Flora.

The natural vegetation within the study area has been largely replaced by urban or agricultural (pasture or seed grass) uses. The area is capable of supporting valley bottom meadows or forests but to a large extent these have been replaced. Typical native vegetation along these areas include such tree species as Douglas Fir, Big Leaf Maple, Hazelnut, Vine Maple, California Black Cottonwood, Ash, Oregon White Oak, and Hawthorn. Shrubs that can be found are Snowberry, Indian Plum and Western Hazel. Willows and various grasses are also found in this habitat.

2.2.8.2 Fauna.

A variety of wildlife species are found within the study area. Big game species include black-tailed deer. Several species of birds and small animals are found in and around the study area. Included in this group are ring-necked pheasant, turkeys, grouse, quail, waterfowl, doves, pigeons, and several varieties of song birds.

Forest Cover and riparian areas provide the habitat necessary for most big-game, bird, and small animal species. The agricultural areas within the study area provide feeding and cover for a variety of waterfowl and song birds.

The Willamette River and its tributaries are important habitat for a variety of fish. Common fish species found include large mouth bass, rainbow trout, coastal cutthroat trout, dace and sculpin as well as anadromous salmonids, including coho salmon, chinook salmon, and steelhead.

2.2.9 Air Quality and Noise

2.2.9.1 Air Quality.

The existing air quality in the study area is generally good. Agricultural, slash and field burning can be significant intermittent air pollution sources, primarily during July and August. During cold periods with stagnant air, residential wood heating may impact local air quality. There are no known air quality monitoring stations located within the study area.

2.2.9.2 Noise.

There are no significant generators or sources of noise in the study area. Noise levels are low and do not exceed DEQ standards. Noise sources within the

study area are largely limited to vehicular traffic. None of the alternatives evaluated herein are expected to generate significant noise.

2.2.10 Environmentally Sensitive Areas

2.2.10.1 Riparian Zone.

Riparian zones include the riparian zone adjacent to the Willamette River, as well as incidental riparian zones that are a part of the intermittent drainage channels found throughout the study area. Riparian zones are considered sensitive due to the variety of vegetative and wildlife species that utilize these areas as habitat. Riparian zones provide erosion control, drainage and runoff water quality management, wildlife habitat, and shading for surface waters.

2.2.10.2 Wetlands.

Wetlands are considered to be one of the most biologically productive components of the environment. Their functions and value include primary production, fish and wildlife habitat, flood control, water quality improvement and erosion control and point of entry for groundwater recharge. Detailed wetland surveys or delineations are not included in the scope of this Facilities Plan. However, a cursory overview of previous wetland surveys and related information is presented below.

The methodology for determining wetland areas is based on the Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987), used by the U.S. Army Corps of Engineers and the Oregon Division of State Lands (DSL). The regulatory definition of wetlands in the 1987 Manual requires that, under normal circumstances, positive indicators of wetland hydrology, hydric soil, and hydrophytic vegetation be present. Wetlands are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas, but also include seasonal wet meadows, farmed wetlands and other areas that may not appear "wet" all the time. Wetland determinations consist of documenting three criteria: hydrophytic (water-tolerant) vegetation, hydric (wet) soils, and wetland hydrology.

The Oregon Division of State Lands (DSL) is responsible for developing and maintaining the Statewide Wetlands Inventory (SWI). The inventory consists of two types of inventories - the National Wetlands Inventory (NWI) developed by the U.S. Fish and Wildlife Service and Local Wetlands Inventories (LWI) developed by cities according to standards set by the DSL.

The National Wetlands Inventory (NWI) was developed by the U.S. Fish and Wildlife Service (FWS) and is available statewide. Wetlands and deepwater habitats (streams, lakes, estuaries, etc.) are mapped on a USGS quad map base; most are at a scale of 1:24,000. Only those wetlands and other waters that are visible on high altitude aerial photographs are mapped, and most maps date to the mid-1980s. There are 1,865 maps for Oregon. These maps are available from the Oregon Division of State Lands (DSL).

The relevant National Wetlands Inventory Map for the study area is the Junction City Quadrangle. These maps show jurisdictional wetlands along and within the study area that had been identified as of that date, including along stream corridors and drainage channels. The wetlands shown on this map that are near the study area are included in **Figure 2-3**.

Of the improvements recommended herein, only the treatment plant project has the potential to be significantly affected by wetlands. As part of this facilities planning effort, a wetland delineation of the ground immediately south of the existing lagoons was performed. This area is the proposed site for the two new wastewater lagoons that are a key element of the recommended treatment plant improvements as described in **Section 7.** The results of this delineation are included in the stand-alone NEPA environmental report for this project. The delineation showed significant wetland impacts in the area south of the existing lagoons. The costs to mitigate for these impacts are included in recommended project budgets. Though significant, the wetland impacts are not likely to prohibit the implementation of the recommended treatment plant alternative. However, due to the expense of the wetland mitigation, additional study to identify modifications to the recommended plan that may decrease wetland impacts is warranted during the predesign phase of the project. A more detailed discussion of the wetland issue including potential modifications to the recommended plan that may reduce the wetland impacts is included in **Section 8.4**.

2.2.10.3 Historical and Archaeological Sites.

Incorporated in 1872, Junction City has a rich history as one of the early settlements in the Willamette Valley. The town was originally settled in the early 1860's after it moved to its present location from two miles north at Lancaster. The City was named after a railroad junction that never came to be that would have linked the rail lines on the east and west sides of the Willamette River. Several buildings and structures throughout town are included on the National Register of Historic Places. The selected alternative will likely not have any impact on these historical sites.

The mid Willamette Valley was originally inhabited by the Kalapuya people when the first western settlers arrived in the mid 1840's. It is also possible that prehistoric people inhabited the study area at one time. Remains of these cultures may be located adjacent to the Willamette River. Therefore, an archaeological assessment may be required during the predesign phase, especially in areas adjacent to the river. Should any remains be discovered during construction of the improvements, the work must be stopped and the appropriate agencies must be notified.

2.2.11 Threatened or Endangered Species.

A comprehensive inventory for threatened or endangered species in the study area has not been completed. Significant discussion and interest in anadromous salmonids exists in the Willamette Basin. The National Marine Fisheries Service (NMFS) is responsible for evaluating the "health" of different species and individual runs under the terms of the Endangered Species Act (ESA). The NMFS has defined the Upper Willamette Evolutionarily Significant Unit (ESU) as the Willamette basin upstream of Willamette Falls (Oregon City).

On March 24, 1999, the NMFS listed as threatened all naturally spawned populations of spring chinook salmon in the Upper Willamette ESU. This listing impacts that reach of the Willamette River adjacent to the study area which has been classified by the Oregon Department of Fish and Wildlife (ODFW) as providing rearing and migration habitat for spring chinook.

On March 25, 1999, the NMFS listed as threatened all naturally spawned populations of winter run steelhead in the Upper Willamette ESU. This listing also impacts that reach of the Willamette River adjacent to the study area which has been classified by the ODFW as providing migration habitat for winter steelhead.

The NMFS issued the proposed 4(d) rules in December 1999 and the final rules in June 2000. The 4(d) rules are the mechanism under the ESA for protecting threatened as opposed to endangered species. A copy of the plain language Citizen's

Guide to the 4(d) Rule for Threatened Salmon and Steelhead on the West Coast is available at http://www.nwr.noaa.gov/1salmon/salmesa/4ddocs/citguide.htm.

How the listings of steelhead and salmon will impact projects, including public wastewater projects, is not fully known at this time. A general consensus is that work that impacts riparian vegetation or work within the stream channels proper will come under increasing scrutiny. To the extent feasible, alternatives that either do not impact or minimize impacts to riparian zones should be considered.

No other threatened or endangered species are known to reside in the study area. However, a biological inventory has not been completed. If the actual alternative constructed differs from the proposed alternative and results in construction at land sites not considered under this report, it will be necessary to perform both historical/archaeological and biological surveys to assure that impacts to threatened or endangered species do not occur.

2.3. Socio-Economic Environment

Growth within the study area will depend on socio-economic 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 both the study area and the City of Junction City.

2.3.1 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 later 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 reachable by the boats 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 rare among City's 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, 2,252. Therefore, 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 experienced the loss of timber-related jobs, but has successfully transitioned to other major employers, particularly those in the recreational vehicle industry. The recreational vehicle industry is prominent in Junction City, and the largest local 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.

2.3.2 Historical Population & Growth Projections

2.3.2.1 Historic Population.

Population histories provide a tool for determining the future growth of the wastewater system. Much of the challenge in projecting wastewater flows and loading within the study area relates to the difficulty in accurately tracking or projecting actual populations. **Figure 2-4** shows the population trends for the City of Junction City from 1920 to the present. The population in Junction City has steadily increased from approximately 700 people in 1940 to 4,721 people in 2000. The current population of Junction City is approximately 4,900 people.

2.3.2.2 Future Population.

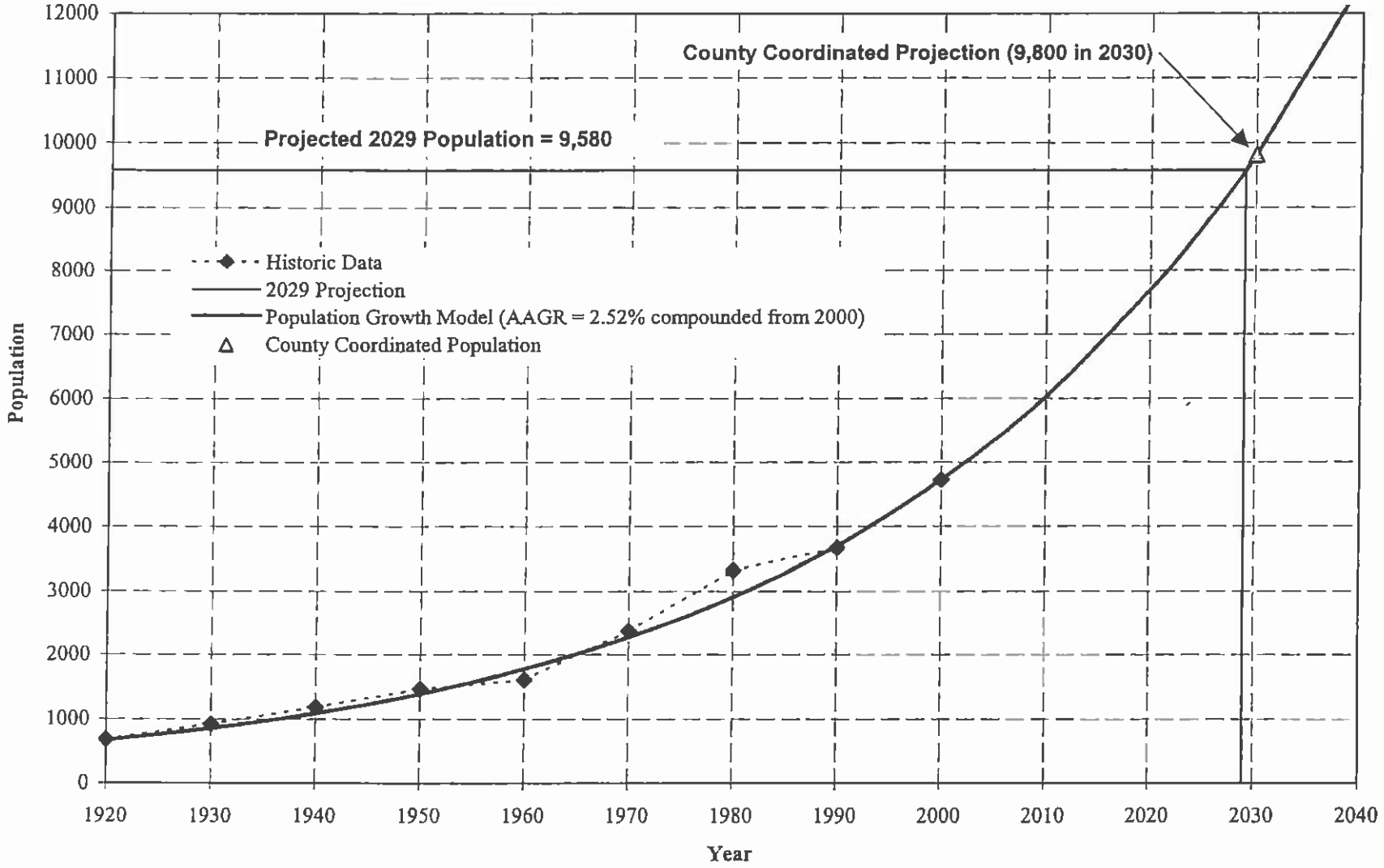
In the review of Facilities Plans, the DEQ relies on the County population allocations as the 'coordinated number' for evaluating population projections. The City is obligated under ORS 195.036 to conform to the County population allocation in order for the Department to approve the Facilities Plan. Lane County is currently developing coordinated numbers for the City's that fall under its jurisdiction. However, based on correspondence with representatives from the Lane Council of Governments (LCOG), final numbers will not be available before this facilities plan must be finalized. In order to facilitate completion of this facilities plan, representatives from the City, LCOG, and the Oregon Division of Land Conservation and Development (DLCD), worked together to determine a reasonable population projection for Junction City. The results of this work are summarized in the

memo included in **Appendix A**. As a result of this work, the DLCD granted preliminary approval for a 2030 population of 9,800. This equates to an average annual growth rate of 2.44% when compounded from the 2000 population of 4,721. This growth rate will be used to project the existing population to the design year population.

As described below, the planning period for wastewater treatment facilities is 20 years from the completion of the facilities. Based on past experience, the treatment plant improvements recommended in this plan will likely not be completed until approximately 2009. Therefore, the current planning period will end 20 years later in the year 2029. As such, population projections to the year 2029 are required.

As discussed above, the DLCD has granted preliminary approval for a population projection that equates to an average annual growth rate of 2.44%. This growth rate may be used to estimate the 2029 population by compounding the 2000 population of 4,721 for 29 years. This methodology results in a projected 2029 population of 9,580. The population growth model is shown in **Figure 2-4**. As shown in **Figure 2-4**, the model correlates well to the historical population trends. The design year population of 9,580 in 2029 will be used throughout the remainder of this plan.

Figure 2-4
Junction City Population Projection



2.4. Land Use Regulations

2.4.1 Comprehensive Plan

All of the land within the planning area is within the Junction City UGB. The City's Comprehensive Plan was adopted in the early 1980's.

2.4.2 Land Use Zoning

The City's Comprehensive Plan was developed in the early 1980's. The Comprehensive plan established a large urban growth boundary (UGB) which encompasses 2,100 acres, approximately 1,250 of which are outside the present 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 but inside of 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. The location of the UGB, City limits and land use zoning designations Junction City are shown in **Figure 2-5**.The total areas contained under each zoning designation are listed in **Table 2-1**.

TABLE 2-1
Approximate Areas By Land Use Zone

Land Use Category	Area in City Limits (Acres)	Area in UGB Outside City Limits (Acres)	Area in City Limits Outside UGB (Acres)	Total Area (Acres)
Low Density Residential	300	423	0	723
Medium Density Residential	120	49	0	169
Commercial	166	66	0	232
Commercial-Residential	31	1	0	32
Industrial	150	466	0	616
Professional/Technological	0	76	0	76
Public	95	120	0	215
Open Space/Wetlands	0	63	0	63
Agricultural	0	0	84	84
TOTALS	850	1,254	84	2,188

a. Land Use within City Limits

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.

b. Land Use outside City Limits but within UGB

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, approximately 37% appears to be 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.

2.5. Planning 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 demands exceeding capacity, requiring the system to be continually upgraded or replaced. For systems that do not lend themselves to economical incremental expansion, short design periods lead to excess expenditures of capital. Sewage collection and treatment facilities fall into this category, including collector and trunk sewers, for which DEQ suggests a design period of 30-50 years.

On the other hand, choosing a design period which is too long can lead to facilities with excess capacity which may never be needed if population growth does not occur at the projected rates. Such facilities can place an economic burden upon the present population and may become obsolete before being fully used.

The Department of Environmental Quality (DEQ) has established 20 years as being the proper planning period for sanitary sewer system improvements. This report will evaluate the anticipated sewage collection, pumping, treatment and disposal needs during the 20 year planning period. The collection system piping will be planned for the ultimate development of land within the UGB based on current land use designations. Although this may result in capacities greater than those needed during the 20-year planning period, sewage collection lines are, by their very nature, unsuited for incremental expansion without extensive capital outlays. The planning period for proposed wastewater treatment systems will be 20 years from the projected completion of the improvements.

It should be recognized that projections into the future are subject to many variables and inaccuracies. Accordingly, it is recommended that the sewer system capabilities and needs be reviewed at five-year intervals and this report updated as appropriate