

# Service Area

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## Redwood Sanitary Sewer Service District Josephine County, Oregon



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Parametrix, Inc.

## 2. SERVICE AREA

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### 2.1 INTRODUCTION

Service area characteristics strongly influence the quantity and quality of the wastewater generated in that area. Physical characteristics such as the extent of precipitation and groundwater influence the quantity of wastewater requiring treatment, and they influence the concentration of pollutants in the wastewater.

Land uses and the types of customers in a service area also influence the type and quantity of pollutants in the wastewater. Socioeconomic factors can not only determine whether a service area requires expansion to serve additional area and customers, but also when that expansion should occur.

### 2.2 DESCRIPTION OF AREA

The District's service area encompasses approximately 3,480 acres, or 5.4 square miles (Figure 2-1).

The service area lies south of the Rogue River, west of Allen Creek, north of the South Highline Canal of the Grants Pass Irrigation District, and east of Rounds Avenue. The service area also includes the Rogue Community College campus, which lies southwest of this general area and south of the Redwood Highway.

In the same drainage basin as the service area but to the south and west are an additional 3,000 acres, or approximately 4.7 square miles. This area does not have sewer service at present and service is not expected in the foreseeable future. The region is not part of the service area at this time.

In addition to the service area boundary shown on Figure 2-1, two other boundaries can be found on this figure. Josephine County's Planning Department Urban Growth Boundary Limits are also shown as is the service area of the existing wastewater collection system. This latter boundary defines the area of the original assessment district. In 1977, properties within this area were assessed to finance the original wastewater collection system and treatment plant built in 1977-78.

### 2.3 TOPOGRAPHY

The District lies in the Rogue River Valley, a broad and relatively flat valley that slopes an average of 1 to 2 percent towards the River. Elevations within the district range between 880 and 1,000 feet above mean sea level. The Rogue River traverses the valley in a general east-west direction with an average gradient of 6 feet per mile.

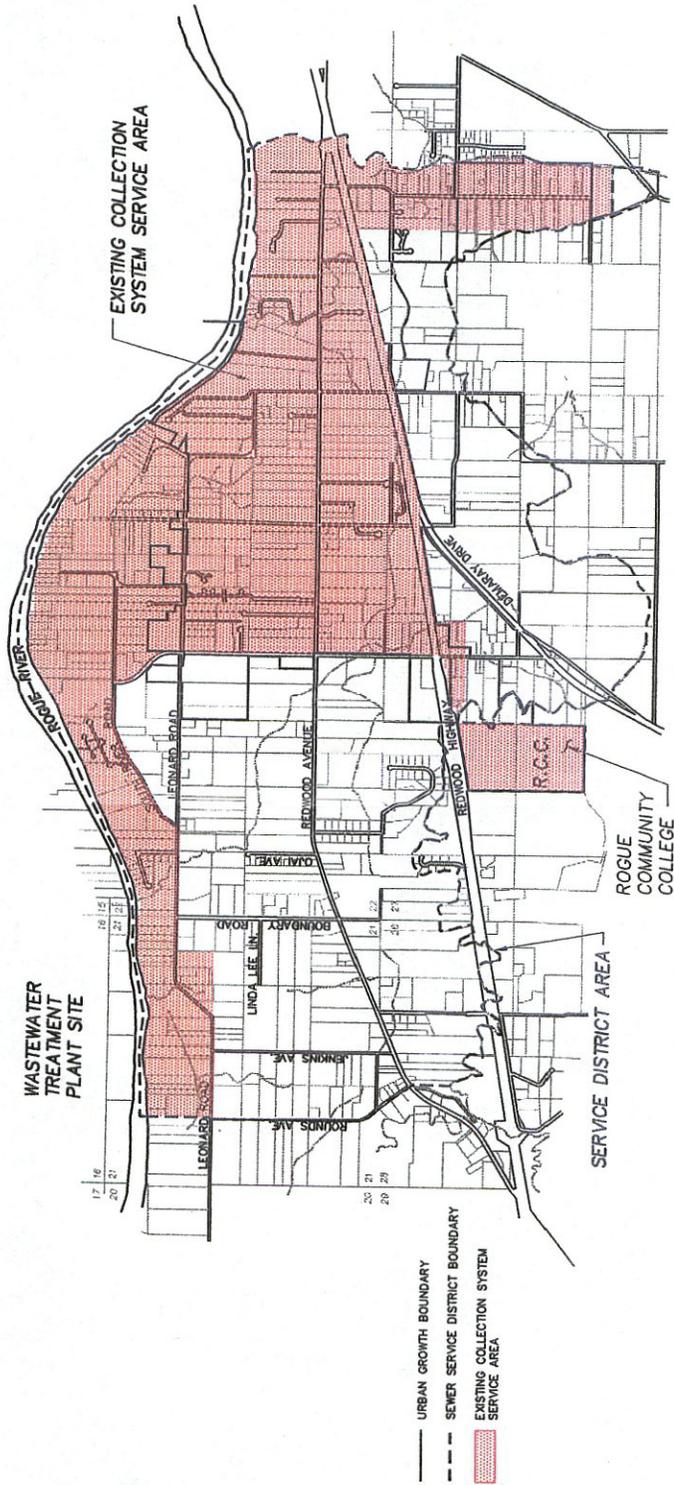


Figure 2-1  
Service Area

## 2.4 PRECIPITATION

The nearest National Oceanographic and Atmospheric Administration (NOAA) station to the District is located in the City of Grants Pass. This station records daily rainfall and temperature data; it also stores the data gathered for over 90 years. Annual precipitation rates at this station during the past 13 years appear in Figure 2-2; they indicate that nearly 75 percent of the annual rainfall occurs between November and March of each year (Figure 2-3).

Additionally, historical data evaluated by NOAA shows what the following statistical storm events occurring in the Grants Pass area will generate in inches of precipitation:

|                   |            |
|-------------------|------------|
| 2-year, 24-hour   | 3 inches   |
| 5-year, 24-hour   | 3.5 inches |
| 10-year, 24-hour  | 4 inches   |
| 25-year, 24-hour  | 5 inches   |
| 50-year, 24-hour  | 5.5 inches |
| 100-year, 24-hour | 6 inches   |

These data are provided to help evaluate wastewater flows in the collection system during storm events.

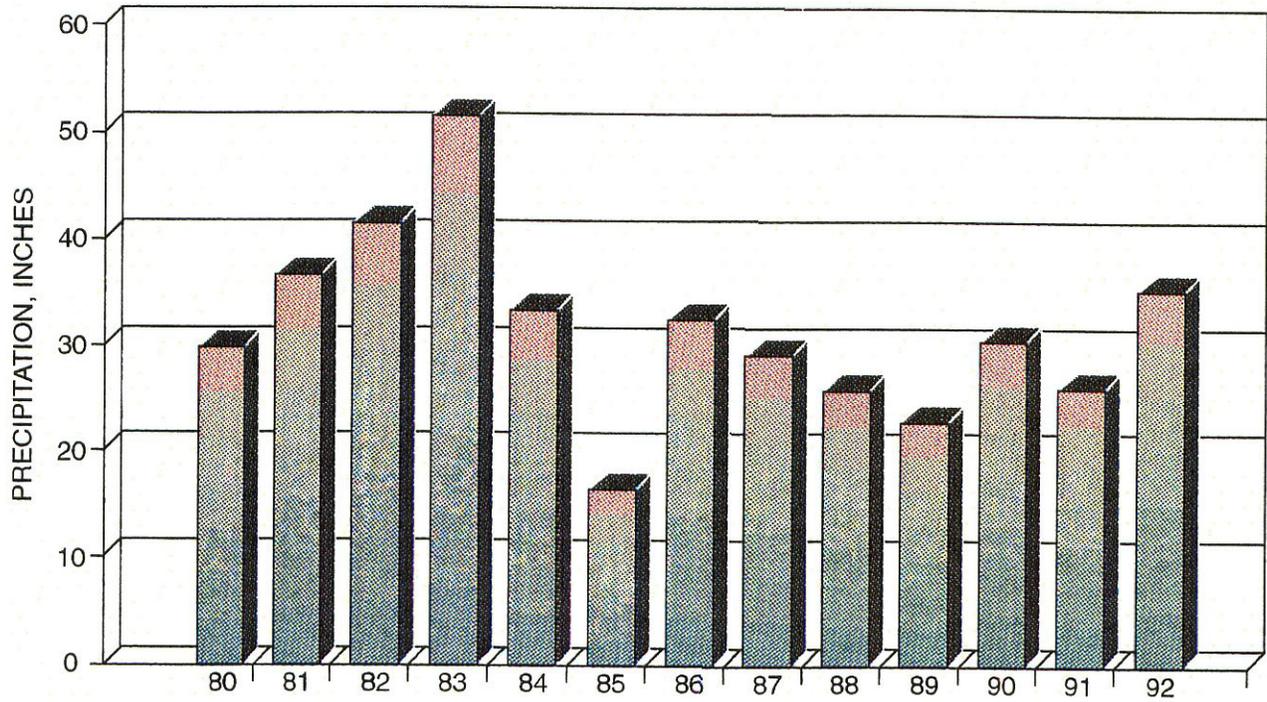
## 2.5 GRANTS PASS IRRIGATION DISTRICT

The District is located within the Grants Pass Irrigation District. This is significant because the irrigation district annually floods the irrigation canals within the sewer district, and this action affects local groundwater levels.

The Grants Pass Irrigation District was formed in the early 1920s to supply irrigation water to land located between the town of Rogue River and the confluence of the Applegate and Rogue Rivers. Currently, about 7,700 acres of agricultural and residential lands are irrigated. The irrigation district has water rights to divert up to 150 cfs from the Rogue River during the irrigation season, which normally falls between April 15 and October 1 of each year.

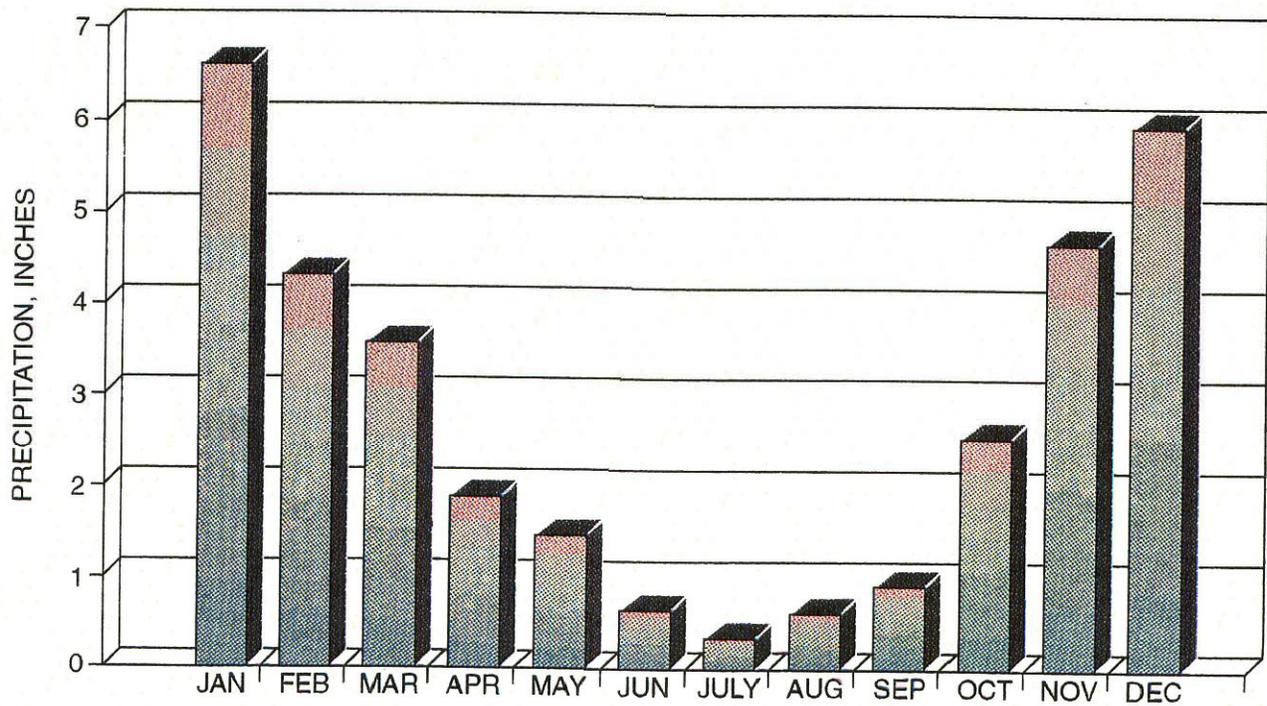
During this time, canals constructed by the irrigation district are flooded with water from the Savage Rapids Dam. Many sewer service area residents use the canal water to irrigate their land and garden areas. The canals also convey stormwater away from these adjacent lands.

The net effect of these irrigation practices is to significantly raise the groundwater table in the area of the canals; however, the extent of any irrigation impacts on the groundwater table is not defined. Generally, the groundwater table in this area is higher than normal during the irrigation season.



Redwood Wastewater Treatment Plant  
#27-2192-05 2/99

**Figure 2-2**  
Yearly Average  
Precipitation



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NOTE: MONTHLY AVERAGE PRECIPITATION BASED ON NOAA (NATIONAL OCEANOGRAPHIC & ATMOSPHERIC ADMINISTRATION) RECORDS FROM 1980 TO 1992

**Figure 2-3**  
Monthly Average  
Precipitation

## 2.6 LAND USE

The District currently consists of predominately single- and multi-family residential homes and agricultural land use. Such land use is consistent with current land use planning documents within the area. Therefore, no change in land use is anticipated other than the continued development of single- and multi-family residential units.

## 2.7 EXISTING POPULATION

The current population served by the Redwood wastewater collection system is estimated at 4,905 (October 1998). This figure was calculated using the number of equivalent residential units (ERUs) or single-family dwelling units served and the average number of persons per residential unit.

Since its origination, the District has issued sewer permits for approximately 2,027 equivalent residential units as of October 1998. This figure is based on a review of all sewer permits issued. It also includes the Rogue Community College, which was assigned 48 ERUs based on one ERU per 18 fixture units.

Based on census data from the Josephine County Planning Department for the Redwood District area, the average number of persons per residential unit in the District is 2.42.

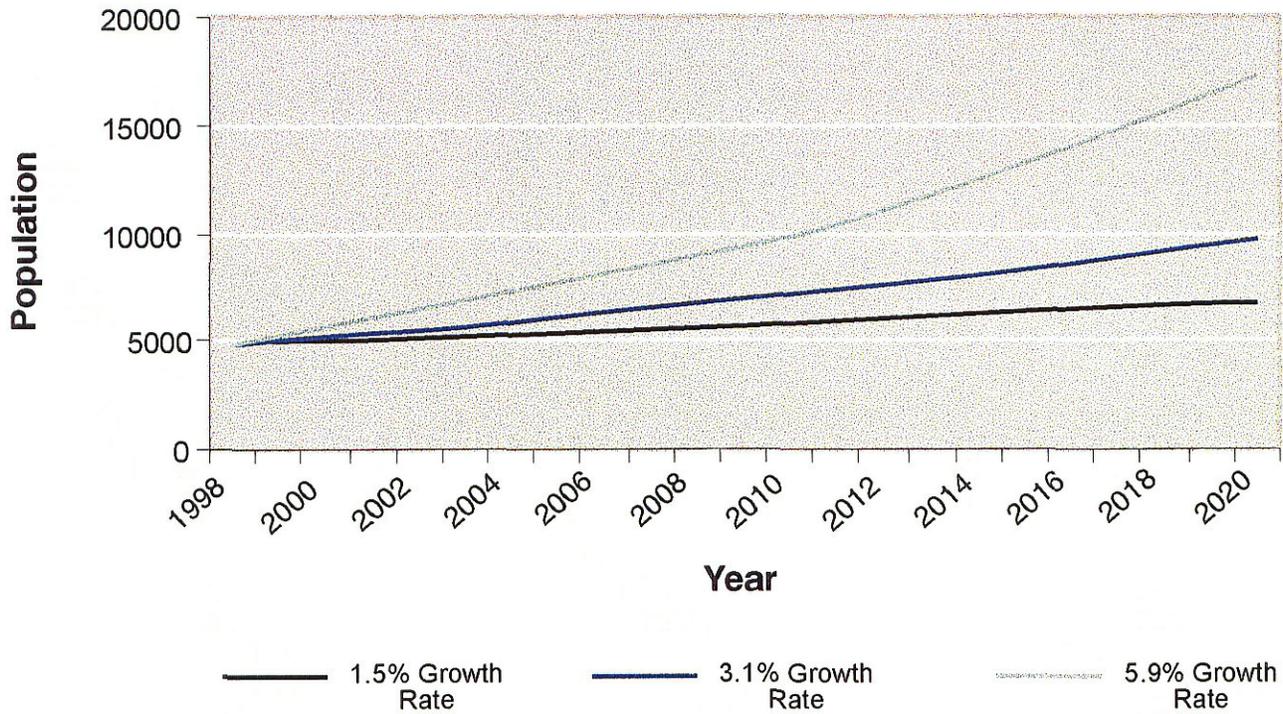
## 2.8 POPULATION PROJECTIONS

To estimate future wastewater loads and flow, population projections in the Redwood District service area were developed through a planning period ending 2020 (Figure 2-4). Also, projections of ERUs in the service area were developed using 2.42 persons per residential unit.

Population and ERU projections for four scenarios were made, based on the following varying growths:

**The District's Estimate** – The District's estimate has been based on two criteria: (1) the number of new sewer connections made each year for the last 11 years was evaluated, and (2) the increase in student enrollment in School District No. 7 over the last several years was evaluated. Data on these criteria appear in Appendix B. The average increase in sewer connections was 5.4 percent each year. The average increase in school enrollment since 1993 was calculated at 3.9 percent each year. The District's population estimate was based on an average of these two numbers, or 4.9 percent each year.

**Josephine County Planning Department Estimate** – In response to comments in a December 10, 1998, letter from the ODEQ to William Peterson of the City of Grants Pass regarding the District's growth rate, the County Planning Department developed its own population growth estimate for the District. A copy of the County's estimate worksheet is included in Appendix B. This estimate, based on GIS records documenting the number of new homes in the District, projected growth at 3.41 percent per year.



Redwood Wastewater Treatment Plant  
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**Figure 2-4  
Redwood District  
Population Projections**

Although this estimate includes the entire District area, not just the sewered area, it should accurately represent the District's growth based on GIS records.

**City of Grants Pass Comprehensive Plan Estimate** – Although the City's comprehensive plan does not evaluate growth projections specific to the District, it does contain projections for the urban growth area (UGA). According to the City's 1992 Comprehensive Plan, the city's population growth for 1980 to 1990 was 1.5 percent each year. The plan's population growth projection to year 2010 was 1.5 percent per year for the UGA and 1.4 percent for the existing city limits. Approximately one-half of the Redwood District is included in the UGA.

**State of Oregon Estimate** – The State set the County's population growth rate at 1.0 percent per year for the years from 2000 to 2020. The County and City are obligated to use this number for planning or they need to formally appeal to the State to change the estimate. According to Oregon's Department of Land Conservation and Development (Griffin 1998 Personal Communication), 1.0 percent per year growth is to be used as a countywide average. If plans for one area of the County are based on a growth rate greater than 1.0 percent, then growth must be reduced from somewhere else in the County. ODEQ has stated that before the District can proceed with the Wastewater Facility Plan, the City and County need to agree on a District growth rate.

The historical district growth since 1987 is tabulated in Table 2-1, and these data indicate that recent growth in the district has been significantly greater than the other estimates quoted above. Therefore the high-growth scenario, or the recent rate of sewer connections, could probably not be sustained over a long planning period. In addition, since a good portion of the population served is made up of retired persons, the rate of student population growth in the school district may not be indicative of increases in sewer population.

**Conclusion**

Because the City Comprehensive Plan and the District estimates are not specifically targeted to population growth in the District, the County estimate would probably be the best population predictor available. In January 1999, City and County representatives agreed to use a value of 3.1 percent growth rate per year.

| <b>Table 2-1<br/>Historical Growth</b> |                              |                                |                   |
|--|------------------------------|--------------------------------|-------------------|
| <b>Year</b>                            | <b>Annual Increased ERUs</b> | <b>Annual Percent Increase</b> | <b>Total ERUs</b> |
| 1987                                   | ---                          | ---                            | 1,083             |
| 1988                                   | 53                           | 4.9%                           | 1,136             |
| 1989                                   | 57                           | 5.0%                           | 1,193             |
| 1990                                   | 75                           | 6.3%                           | 1,268             |
| 1991                                   | 62                           | 4.9%                           | 1,330             |
| 1992                                   | 140                          | 10.5%                          | 1,470             |
| 1993                                   | 126                          | 8.6%                           | 1,596             |
| 1994                                   | 119                          | 7.5%                           | 1,715             |
| 1995                                   | 92                           | 5.4%                           | 1,807             |
| 1996                                   | 132                          | 7.3%                           | 1,939             |
| 1997                                   | 63                           | 3.2%                           | 2,002             |
| 1998                                   | 25                           | 1.3%                           | 2,027             |
| <b>Average Growth Rate - 5.9%</b>      |                              |                                |                   |

NOTE: Table based on information from Josephine County