Lolo RSID 901

Water Rights Needs Assessment

May 3, 2019

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Missoula County, Montana

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Introduction

Missoula County is currently working on determining the adequacy of water rights to serve the area known as Lolo RSID 901. The purpose of this study is to determine the potential future water demand and in turn the future water rights need for the area that could be served by the Lolo RSID 901 water system to planning year 2070. Determination of the future water rights need is dependent on current population served, projected population growth and per capita water demand.

Study Area

In January of 2000, Missoula County completed a Wastewater Facility Plan. Through the Wastewater Facility Planning process, meetings were conducted with stakeholders, including the Lolo Community Council, Lolo RSID 901 Board, Missoula County Chief Executive Officer, Missoula County Office of Planning and Grants, and the Lolo RSID 901 District Water and Wastewater Superintendent. A proposed sewer service area was determined through these discussions. It is the intent of Missoula County and RSID 901 to provide water service to all areas served by sewer; therefore, the proposed sewer service area was also adopted as the proposed water service area for the 2004 Water System Facility Plan. The planning horizon for these studies was 2045.

As described above, it is the intent of this study to evaluate water demand and subsequently water rights needs to year 2070, 25 years beyond the previous wastewater and water facility planning efforts. As such, it is reasonable to assume the wastewater and water service areas could extend beyond the boundaries established in the previous studies. Figure 1 depicts the Lolo RSID 901 service area boundary as of 2019. Instead of attempting to establish a 2070 water service area boundary, this study will determine the potential population that could be served by 2070 and assumes there is ample developable property in the vicinity of the Lolo water utility to accommodate that population.

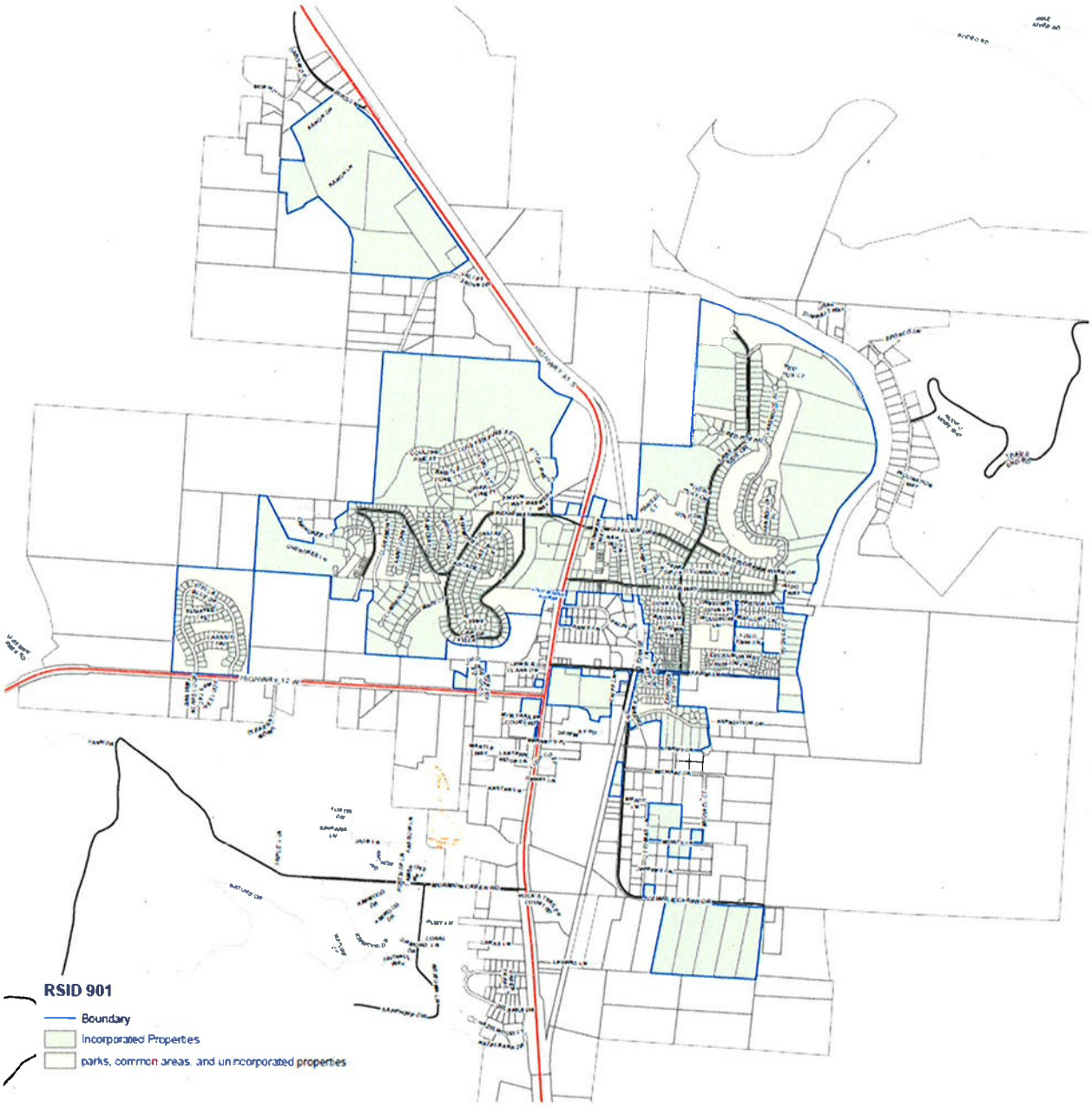

FIGURE 1. 2019 LOLO RSID 901 BOUNDARY MAP

Population Forecast

Introduction

Population projections for the Lolo area have been completed in the past by the Lolo Regional Plan in 2002 and the Lolo Wastewater Facility Plan in 2000. Past reports have projected growth for the area to be approximately 1-2% per year. The 2002 Lolo Regional Plan recommended a total build-out population of 10,841 for the Community of Lolo Development Area, this area is larger than the current Lolo RSID 901 service area. The Regional Plan also stated that there is land available beyond the need of the projected population. The projected population growth for

Lolo RSID 901 will be based on census data and the highest reasonable sustained growth rate, while considering growth rates of the surrounding area, counties and state.

Existing and Projected Population

Current service area population for Lolo RSID 901 was calculated using connection data provided by Missoula County from 1990 to 2016 and Montana Department of Environmental Quality's standard of 2.5 people per living unit from Circular DEQ-4. During this time period, the average annual growth rate of service connections was 2.47%. The 2016 service population, including residential and commercial (employment and visiting population) was estimated to be 3,143 people based on 1,301 service connections and 2.5 people per connection. The 2019 service population was then estimated to be 3,386, escalating the 2016 population at 2.5% annual growth rate. This assumes that residential and commercial demand will grow at the same ratio.

Census data from 1990, 2000 and 2010 for Lolo Census Designated Place (CDP), Frenchtown-Evaro Census County Division (CCD), City of Missoula, City of Hamilton, Missoula County, and Ravalli County was used to establish a future population growth rate for Lolo RSID 901. Table 1 summarizes historical average annual growth rates for these census areas.

TABLE 1. HISTORIC POPULATION GROWTH

	Average Annual Growth Rate		
	1990-2000	2000-2010	1990-2010
Lolo CDP	2.34%	1.49%	2.09%
Frenchtown-Evaro CCD	3.97%	2.19%	3.51%
City of Missoula	3.29%	1.71%	2.78%
City of Hamilton	3.54%	1.74%	2.94%
Missoula County	2.18%	1.41%	1.95%
Ravalli County	4.42%	1.15%	3.04%
Average	3.29%	1.62%	2.72%

Lolo is located 11 miles south of Missoula and 36 miles north of Hamilton, the largest cities in Missoula and Ravalli Counties. The population of Lolo is impacted most by the growth in these two cities which averaged 2.78% and 2.94% annual growth from 1990 to 2010. During this same time frame, the two counties combined averaged 2.5% annual growth. Though according to census data Lolo has not seen growth rates this high, 2.5% growth is consistent with its growth in service connections and large amounts of developable land adjacent to Lolo would allow for this level of growth. An annual growth rate of 2.5%, the average growth rate experienced by Missoula and Ravalli Counties combined will be used to project service population to the year 2070. The 2010 population of the Lolo CDP was 3,892. Not all of this population is currently served by the Lolo RSID 901 water system, but there is reasonable potential that within the planning period, existing population not currently served would be served in the future as land redevelops and individual wells fail or become contaminated. The 2010 Lolo CDP population and a 2.5% growth rate will be used to estimate service population for the Lolo RSID 901 water system. Table 2 summarizes existing and projected service population for the Lolo RSID 901 water system.

TABLE 2. LOLO RSID 901 SERVICE POPULATION PROJECTION

Year	2010	2020	2030	2040	2050	2060	2070
Projected Population	3,892	4,982	6,378	8,164	10,450	13,377	17,124

Per Capita Water Demand

Water Production

Missoula County provided a water production summary from 1990 to 2018 with average day, maximum day, and maximum month flow for each year along with a detailed summary of 2015. A portion of this data is presented in Table 3, below.

TABLE 3. HISTORIC MAXIMUM WATER PRODUCTION

Year	Estimated Service Population	Average Day	Maximum Day	Maximum Month	Peak Hour
		Gallons			
2012	2,983	**852,301**	2,491,000	59,379,000	--
2013	2,993	772,651	**2,963,000**	66,900,800	--
2015	3,108	834,943	2,869,000	59,720,100	**158,488**
2017	3,222	824,609	2,656,000	**79,608,800**	--

From the water production data the largest value for each category along with the corresponding service population estimate was used to calculate a per capita water demand factor in gallons per capita per day (GPCD). These values are compared to the Department of Natural Resources and Conservation's (DNRC) average day standard of 250 GPCD, calculated water demand factors are outlined below in Table 4.

TABLE 4. HISTORIC MAXIMUM WATER DEMAND FACTORS

	Average Day	Maximum Day	Maximum Month	Peak Hour	DNRC
Year	2012	2013	2017	2015	--
Gallons	852,301	2,963,000	79,608,800	158,488	--
Estimated Service Population	2,983	2,993	3,222	3,108	--
GPCD	286	989	812	1,224	250

Missoula County also provided a summary of total annual production by well for 2017 and 2018. This data is presented in Table 5, below.

TABLE 5. WELL PRODUCTION DATA

	Average Annual Production (GAL)		
Well	1	2	3
2017	115,149,300	47,410,000	138,423,000
2018	53,579,200	159,450,000	62,792,000

Future Water Right Needs

Lolo RSID 901 service connection data and United States Census data from 1990 to 2010 for Lolo CDP and the surrounding areas was used to establish an estimated growth rate, per capita water demand, and a service population for Lolo RSID 901. The projected service population for Lolo RSID 901 in 2070 is 17,124 people. The largest reasonable average day flow occurred in 2012 equivalent to a water demand factor of 286 GPCD. Combining the estimated 2070 service area population with the per capita demand factor results in a 2070 water right need of 4,897,464 GPD which equates to 5,485.9 acre-feet per year (AFY).