City of Canyonville
Wastewater Facilities Plan

May 2010

Kennedy/Jenks Consultants

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CHAPTER 1

EXECUTIVE SUMMARY

The *Canyonville Wastewater Facilities Plan* will serve as the City's long-term strategy for cost-effective wastewater management. The recommended strategy accommodates anticipated growth and regulatory requirements. However, recognizing that conditions change over time, the *Facilities Plan* also provides flexibility by identifying key factors that could trigger changes to the planned approach.

STUDY AREA CHARACTERISTICS

The Douglas County Planning Department estimates that the City's population will grow at an average annual rate of 1.75 percent. Applying this growth rate to the current service area population of 1,730 results in a projected population of 2,764 at design year 2035.

EXISTING WASTEWATER FACILITIES

The City's Wastewater Treatment Plant (WWTP) was constructed in the 1970s. Major liquid stream processes include influent pumping, comminution, grit removal, activated sludge secondary treatment, secondary clarification, secondary effluent pumping, filtration, disinfection, and discharge to the South Umpqua River. The biosolids management program consists of lime stabilization and land application of liquid biosolids onto agricultural land. While the WWTP has generally served the City well over the years, many components have reached the end of their useful life. In addition, the existing plant does not have adequate capacity to accommodate planned growth, nor can it comply with anticipated effluent quality limits.

WASTEWATER FLOWS AND LOADS

The key wastewater characteristics affecting the WWTP are flows, solids loads, organic loads, and nutrients. Increases in flows and loads over time are expected to be driven by population growth and significant commercial and industrial development. Current and design year flows and loads are summarized in Table 1-1.

Table 1-1: Wastewater Characteristics Summary

Parameter	Year 2008	Design Year 2035
Service Area Population	1,730	2,764
Flows		
Average dry weather flow, MGD	0.17	0.27
Average annual flow, MGD	0.23	0.37
Average wet weather flow, MGD	0.28	0.45
Maximum month dry weather flow, MGD	0.30	0.48
Maximum month wet weather flow, MGD	0.45	0.7
Maximum day dry weather flow, MGD	0.68	1.0
Maximum day wet weather flow, MGD	1.3	1.7
Peak hour flow, MGD	1.6	2.2

Parameter	Year 2008	Design Year 2035
Loads		
Annual average BOD, ppd	400	640
Maximum month BOD, ppd	750	1,200
Annual average TSS, ppd	400	640
Maximum month TSS, ppd	700	1,100

BASIS OF PLANNING

Several key regulatory issues impact wastewater planning and National Pollutant Discharge Elimination System (NPDES) permitting for the City, including:

- **South Umpqua River Total Maximum Daily Load (TMDL).** The TMDL will result in effluent phosphorus limits being included in the City's NPDES permit.
- **Toxicity and Mixing Zone Standards.** Toxicity and mixing zone guidance documents recently developed by DEQ will result in effluent ammonia limits. In addition, elimination of effluent residual chlorine prior to river discharge will be required.
- **Antidegradation Policy.** DEQ's antidegradation policy requires that increased flows and loads from population growth be accommodated by improvements in treatment effectiveness rather than increases in pollutant discharge.
- **EPA and DEQ Reliability and Redundancy Requirements.** These standards guide the number and capacity of treatment units that must be constructed.

Historically speaking, regulatory requirements generally become increasingly stringent over time. Consequently, the City should monitor regulatory issues to assess their potential impact on the wastewater program. Possible future regulatory issues include:

- **Future TMDLs.** Ongoing monitoring of South Umpqua River water quality will likely trigger the development of future TMDLs.
- **Elimination of mixing zones.** To date, periodic legislative attempts by environmental groups to eliminate mixing zones have been unsuccessful. If these efforts are ultimately successful, treatment plant effluent will have to comply with water quality standards without the benefit of dilution.
- **Contaminants of emerging concern.** Trace contaminants, such as hormones and personal care products, are receiving increased scrutiny by regulatory agencies and the media.
- **Bioaccumulative toxins.** Certain toxic compounds bioaccumulate in fish. The current regulatory direction would eventually decrease the allowable concentrations of these compounds by ten fold.
- **Additional toxic substances.** Well over 100 toxic compounds of concern have been identified by DEQ. Future monitoring for these compounds could ultimately result in effluent limits.

- **Elimination of compliance schedules.** If adopted, this regulatory change would require treatment facilities to be in compliance with effluent limits upon receipt of their new discharge permit.

It is anticipated that the City's next NPDES permit will be similar to the existing permit, with the addition of effluent phosphorus limits and updated ammonia limits.

DEVELOPMENT AND EVALUATION OF ALTERNATIVES

The *Facilities Plan* evaluated alternatives for both liquid stream treatment and biosolids management.

Liquid Stream Treatment Alternatives

The liquid stream treatment alternatives developed for consideration both increased treatment capacity and provided compliance with anticipated treatment requirements. The approach used for developing and evaluating liquid stream alternatives was as follows:

1. Develop "big picture" alternatives (referred to as "wastewater management strategies")
2. Conduct an initial evaluation, or "screening" of these wastewater management strategies to identify significant shortcomings
3. Develop a short list of management strategies
4. Develop alternatives for upgrading each treatment process (such as screening and disinfection)
5. Refine the management strategies using a combination of appropriate treatment process alternatives
6. Compare the updated management strategies

The following strategies were evaluated in detail:

- MS1. Year-Round Discharge
- MS3. Indirect Discharge
- MS4. Dry Weather Reuse, Wet Weather Discharge
- MS7. Dry Weather Reuse with Tribe, Wet Weather Discharge

Strategies MS3 and MS4 had significantly higher costs than the other two strategies. While MS7 provided a number of important advantages, it currently has several key uncertainties that could adversely affect its cost and implementation. MS1 was found to have the lowest cost. Its primary disadvantage is that it is subject to future changes in water quality regulations.

Biosolids Management Alternatives

Improvements to the WWTP's solids treatment and handling facilities are needed to increase capacity and provide long-term regulatory compliance. Therefore, alternatives to improve the biosolids management program were developed and evaluated. The biosolids management alternatives shared two important characteristics:

- **Production of Class B biosolids.** It is unclear if there would be a significant local market for high quality Class A biosolids, the production of which has relatively high costs. Therefore, the alternatives were based on a continuation of the City's agricultural land application program.
- **Lime stabilization.** Elevated pH levels help to retain phosphorus in particulate form. Therefore, lime stabilization was recognized as a means to help prevent solubilization of the phosphorus captured in the biosolids and its return to the liquid stream.

Three biosolids management alternatives were considered:

- B1. Lime pretreatment
- B2. Lime posttreatment
- B3. Lime stabilization only

Alternative B2 Lime Posttreatment was found to have the lowest costs. However, due to limited experience with this process in the state, DEQ has expressed concerns. Therefore, Alternative B1 Lime Pretreatment is recommended at this time. Wet weather biosolids handling would be through dewatering and landfill disposal.

RECOMMENDED PLAN

The recommended plan consists of facilities sized to accommodate the City's wastewater needs through year 2035. These facilities include:

- **Preliminary Treatment and Influent Pumping.** The new screening system will be constructed upstream of the influent pump station to improve pump reliability and reduce maintenance.
- **Secondary Treatment.** For the purposes of the *Facilities Plan*, costs will be based on construction of an oxidation ditch and two secondary clarifiers. The City may want to consider further evaluating sequencing batch reactors (SBRs) during preliminary design, particularly if effluent ammonia limits or other treatment requirements differ appreciably from those presented herein.
- **Tertiary Treatment.** A second filter and chemical feed system will provide compliance with effluent phosphorus limits. The secondary effluent pump station will be expanded to increase capacity.
- **Disinfection.** A new UV system will provide compliance with effluent bacteria limits for river discharge.
- **Effluent Discharge and Reuse.** A new outfall diffuser is necessary to meet water quality standards.

- **Biosolids Management.** The sludge dewatering facilities and lime stabilization system will provide compliance with Federal biosolids regulations.
- **Support Facilities and Repairs.** Structural repairs, an upgraded electrical service, a distributed control system, an operations building expansion, plant water pumps, a new standby generator, and additional land would be needed to support the above.

Estimated costs for these facilities are presented in Table 1-2.

Table 1-2: Estimated Capital Costs for Recommended Plan

Item	Cost[(a)], $1000
Preliminary Treatment and Influent Pumping	2,700
Temporary aeration basin improvements	350
Secondary Treatment	4,600
Secondary Effluent Pumping	80
Tertiary Filtration	1,900
Temporary Dechlorination	150
UV Disinfection	900
Effluent Reuse and Discharge	500
Biosolids Management	2,400
Structural Repairs	335
Electrical Service	223
Standby Generator	335
Distributed Control System	223
Site Improvements	800
Operations Building	669
Land Acquisition	200
Total (rounded)	**$16,400**

Note:

(a) Capital costs include the following multipliers: general conditions, 15 percent; contractor overhead and profit, 15 percent; engineering, value engineering, legal, and administration, 25 percent, contingency, 30 percent; escalation to mid-point of construction, 3.8 percent

The Capital Improvement Plan (CIP) presented in Chapter 9 was developed by observing the following principles:

- **Compliance.** The WWTP will continuously be in compliance with its NPDES and/or MAO limits, even as the limits become increasingly stringent over time.
- **Capacity.** The WWTP will have adequate capacity to accommodate the current population as well as anticipated population growth.
- **Reliability**. The WWTP will comply with EPA and DEQ reliability and redundancy requirements. Equipment will be replaced at the end of its useful life.
- **Just-in-Time Construction.** Recognizing the substantial costs involved, the CIP will distribute the financial burden over time to the extent possible by constructing projects in phases.

These principles resulted in the development of a four-phase CIP, which will provide ongoing compliance while deferring costs to the extent possible. It is anticipated that deferral of secondary treatment upgrades will be facilitated through an amendment of the City's MAO. Recommended Phase 1 projects will focus on permit compliance and include:

- Screening, grit removal, and influent pumping
- Temporary aeration basin improvements
- Chemical feed system
- Temporary dechlorination facilities
- Outfall

FINANCIAL ANALYSIS

The costs for facilities necessary for compliance with anticipated effluent requirements and to accommodate growth are considerable. Given the City's relatively modest user base, the resulting rates would be among the highest in the state. Because the projected rates are inconsistent with current economic conditions within the City, refinement of the implementation plan during preliminary design is recommended. Elements of this approach include:

- Investigate and identify potential funding sources.
- Identify potential construction cost saving and deferral measures.
- Optimize rate structure and identify ability to pay.

CHAPTER 2

INTRODUCTION, PURPOSE AND NEED

INTRODUCTION

The City of Canyonville provides wastewater collection and treatment services to the residents and businesses within the City's urban growth boundary (UGB). By consistently and effectively providing these services, the City protects the water quality and supports the beneficial uses of the South Umpqua River.

The major elements of the City's wastewater infrastructure include the sanitary collection system and the wastewater treatment plant (WWTP). The age and condition of the collection system varies as it was installed over time to serve population growth. The WWTP was constructed in the late 1970s.

PURPOSE AND NEED

The *Wastewater Facilities Plan* will serve as the City's long-term guide to wastewater management. Wastewater facilities plans are typically prepared or updated approximately every 10 years, and address a planning period of 20 years or more. The October 2006 *Umpqua Basin TMDL*, which identified South Umpqua River water quality constraints, triggered the start of the current facilities planning process. The significant wastewater issues that the City is currently facing include:

- Conformance with its Mutual Agreement and Order (MAO) compliance schedule.
- Compliance with waste load allocations identified in the *Umpqua Basin TMDL*.
- Supporting the NPDES permit renewal process.
- Correcting existing system deficiencies.
- Accommodating anticipated growth within the planning period through WWTP capacity expansions.

The *Facilities Plan* develops and presents approaches for addressing these issues. These include:

- Develop a cost-effective approach to accommodate increased flows and loads associated with population growth.
- Establish a flexible, cost-effective approach to long-term compliance with current and anticipated future regulatory requirements.
- Identify and prioritize deficiencies in the existing infrastructure and recommend corrective measures.
- Develop a coordinated implementation plan that considers the multiple needs of correcting system deficiencies; accommodating capacity demands; complying with current and anticipated future regulatory requirements; and conforming to financial limitations.

The City will successfully accommodate the needs of local residents and businesses and continue to protect South Umpqua River water quality by adopting the recommendations of the *Facilities Plan*, periodically reviewing the plan, and refining wastewater management approaches as dictated by changing conditions.

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CHAPTER 3

STUDY AREA CHARACTERISTICS

The review of a community's natural and socioeconomic background is an important initial step in the process of developing a comprehensive wastewater management plan. Information of interest regarding the natural environment includes characteristics of the local topography, geology, soils, climate, and waterways. Relevant aspects of the socioeconomic environment include local land uses, population, and growth projections. These unique characteristics provide the context for evaluating various alternative strategies for the long-term wastewater management in Canyonville.

STUDY AREA

Canyonville is located near the southern boundary of Douglas County in southwestern Oregon. This portion of the county is dominated by rugged, forested hills which are bounded by the Cascade Mountain Range to the east, the Coastal Mountain Range to the west, and the Klamath Mountain Range to the south. The town is situated along US Interstate Highway 5 (I-5) in the narrow Canyon Creek Valley to the south of the creek's confluence with the South Umpqua River. Canyonville lies within the Umpqua River Basin which is a Pacific slope stream. The area surrounding Canyonville is shown on the vicinity map in Figure 3-1.

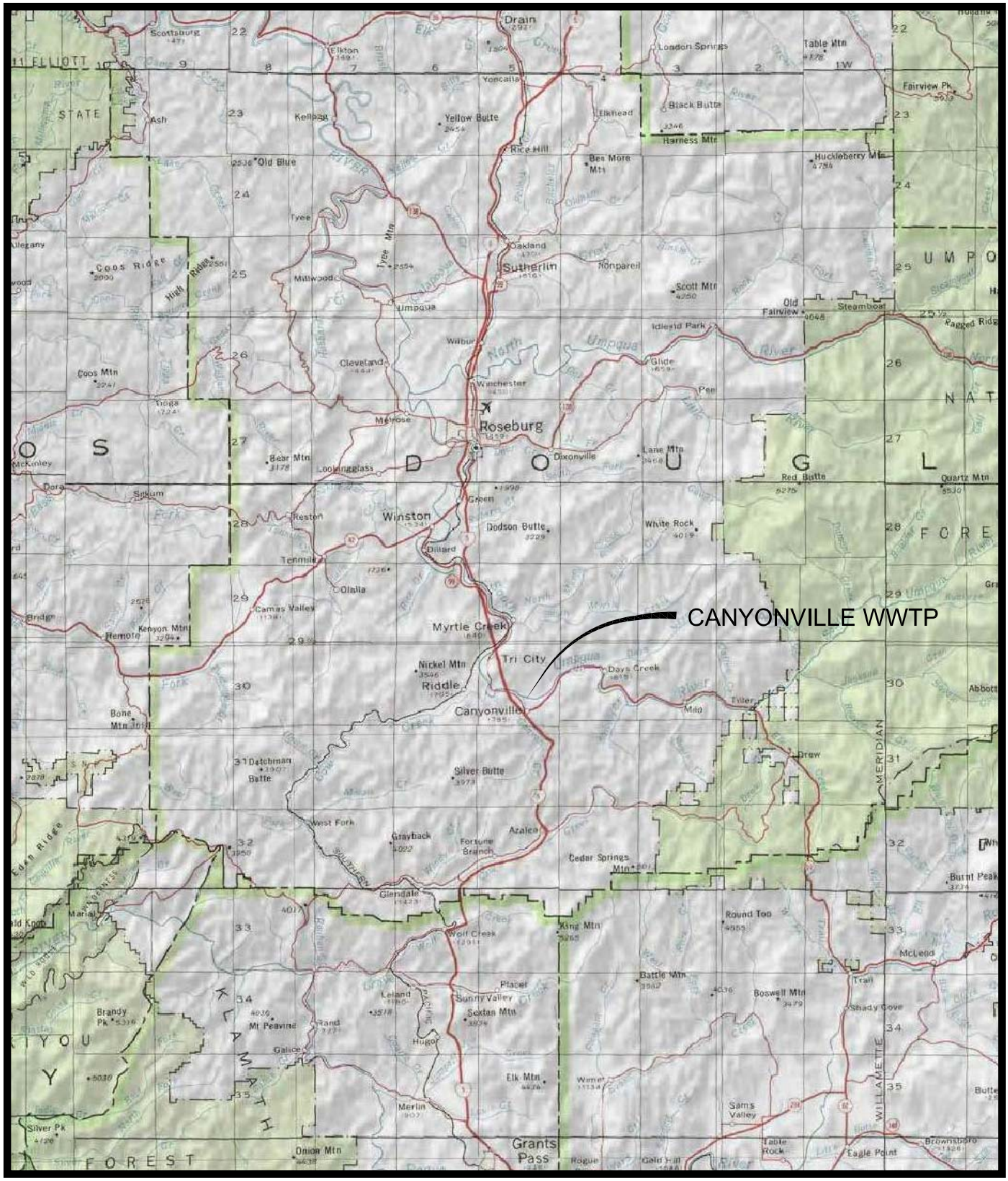
The study area for this wastewater facilities plan includes land within the Canyonville Urban Growth Boundary (UGB). The UGB currently encompasses 970 acres of land of which approximately 570 are within the city limits. Expansion of the UGB is limited by natural geologic features of the area.

PHYSICAL ENVIRONMENT

The physical environment includes the climate, soils, geology, and water resources of the region. This section presents a brief overview of these characteristics as they relate to the wastewater collection system and treatment plant. Precipitation can increase the flow to the treatment plant while air and water temperature can affect biological treatment. Soil conditions and geology can impact the suitability and cost of constructing sewers and treatment units.

Climate

Canyonville is in the rain shadow of the coastal mountains and generally experiences dry mild summer and wet cool winters. This leads to high river flows in the winter and low river flows in the summer. Canyonville does not have a local weather station, so precipitation and temperature data gathered from the Oregon Climate Service Riddle station # 357169 (approximately 3 miles west-northwest of Canyonville) from 1971 through 2008 are summarized in Table 3-1.



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CITY OF CANYONVILLE
WASTEWATER FACILITIES PLAN

VICINITY MAP

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FIGURE 3-1

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TABLE 3-1: Monthly Temperature and Precipitation Data for Canyonville (1971-2008)

PARAMETER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Temperature (^{o}F)													
Maximum	49.1	54.4	58.3	62.8	69.2	76.1	83.3	83.8	79.1	68.4	54.5	47.9	65.6
Minimum	33.7	35.5	37.3	39.5	44.3	49.2	53.2	52.3	46.6	41.4	38.4	34.2	42.1
Mean	41.4	45	47.8	51.2	56.8	62.7	68.3	68.1	62.9	54.9	46.5	41.1	53.9
Extreme Temperature (^{o}F)													
Maximum	70	80	85	94	99	103	105	110	108	102	77	74	110
Minimum	-3	8	20	26	26	35	37	39	30	22	13	3	-3
Precipitation (inches)													
Monthly Mean	4.70	3.86	3.51	2.42	1.56	0.86	0.38	0.62	1.01	2.15	5.20	5.28	31.55
Extreme 24-hour	2.85	3.26	2.30	1.37	1.94	1.48	1.17	1.36	1.85	3.86	2.87	3.41	3.86

Source: National Climatic Data Center – Riddle, OR Station

The mean annual rainfall is 31.55 inches with the maximum monthly mean of 5.28 inches occurring in December and the minimum monthly mean of 0.38 inches occurring in July. About 50 percent of rainfall occurs between November and January and only about 6 percent of rainfall occurs in between June and August. The extreme rainfall for any 24-hour period was 3.86 inches, which occurred on October 29, 1950.

The mean annual snowfall is 2.9 inches with virtually all snowfall occurring between November and March. About two-thirds of the snowfall occurs in December and January. The extreme recorded snow depth was 10 inches. Although snowfall and snow depth in mountains is considerably higher and snowmelt adds to the flow in Canyon Creek and Umpqua River in the spring, there is no significant late-season snow pack even at the headwaters of the South Umpqua River.

According to 1971-2008 data from the National Climatic Data Center, the normal range of monthly average temperatures is from 33°F to 83°F and the mean annual temperature is 54°F. Maximum and minimum daily temperatures over this time period have been recorded at 110°F and -3°F, respectively.

Soils

The geology of the South Umpqua River sub-basin is characterized by that of the Klamath Mountain Province and the Western Cascades. Lower Cretaceous and upper Jurassic sedimentary and volcanic rocks are prevalent in the Klamath Mountain Province which is older than the Cascade and Coast Ranges. Granite, metamorphosed sediment, and volcanic materials are common. Ultramafic and related Jurassic rocks, locally altered to serpentine, form the site of a nickel mine near Riddle.

Soil in the Western Cascades is derived from igneous rocks and pyroclastic materials, volcanic sediment, and lava flows. Swelling volcanic clays are common in the western end of the Western Cascades.

Geologic Hazards and Conditions

Canyonville, at an elevation 747 feet above sea level, is surrounded by mountains. Nearby Canyon Mountain rises to over 3,300 feet above sea level. Canyonville is situated in a canyon which narrows and rises to the south while a wider valley runs to the north.

Canyonville lies within the South Umpqua River sub-basin which is part of the Umpqua River Basin. Most of the South Umpqua sub-basin is below an elevation of 5,000 feet. The South Umpqua River passes almost entirely through two greatly contrasting physiographic provinces: the Klamath Mountain Province and the Western Cascades.

The Western Cascades are deeply dissected with narrow stream valleys separated by sharp ridges and with slopes typically ranging from 10 to 20 degrees. Many valleys show evidence of previously higher stream levels appearing as discontinuous steps, and of ancient and current landslides. The valleys are wider and the slopes are more gradual in the western end of the Western Cascades.

The Klamath Mountains are characterized by rugged topography with advanced dissection, overly steep slopes, narrow ridges, and deep canyons. Weathering is highly variable depending on the geology and the intensity of fracturing. Only the lowermost few miles on the South Umpqua is configured similarly to the West Cascades; the land is characterized by more gently sloping terrain running to the north.

The nearest seismic fault is the Beaver Creek Fault, located approximately 50 miles west of Canyonville, near the Pacific Coast. According to the U.S. Geological Survey, the Beaver Creek Fault has the potential to produce an earthquake with a maximum magnitude of 6.52 on the Richter scale; an event which has a 2 percent probability of occurring in the next 50 years. The fault has not produced a measurable earthquake in the past 100 years.

Public Health Hazards

Douglas County Public Health is responsible for planning and leadership in assessing the public health needs of Canyonville and other Douglas County residents and developing, implementing, and monitoring preventive health programs designed to meet those needs. No public health hazards unique to the City of Canyonville are known to exist at this time.

Energy Production and Consumption

Natural gas for the Canyonville area is provided by Avista Gas Company, at a rate of approximately $1.37 per therm for residential customers. Electricity for both residential and commercial use is provided by Pacific Power and Light, at a current rate of approximately $0.06 per kWh. 56 percent of households use natural gas for home heating, while 39 percent use electricity, and the remaining 5 percent use some form of wood, oil, or propane.

Water Resources

The Umpqua River Basin has a drainage area of approximately 4,560 square miles and drains into the Pacific Ocean near Reedsport. Canyonville lies on the South Umpqua River which drains approximately 1,800 square miles in its sub-basin. In 1990, 75 percent of the water rights of the South Umpqua River were for irrigation, 15 percent for industry, and 9 percent for municipalities according to the *Assessment of Water Quality, Nutrients, Algal Productivity, and Management Alternatives for Low-Flow Conditions, South Umpqua River Basin, Oregon, 1990-92*; (Oregon U.S. Geological Survey-Water Resources Investigations Report 96-4082, 1996).

Surface water from Canyon and O'Shea Creeks is the primary source of irrigation, industrial, and municipal water supplies. Both creeks flow into the South Umpqua River. The South Umpqua River is approximately 104 miles in length from its mouth to its headwaters. From its headwaters, the South Umpqua drops steeply with an average gradient of 42.5 feet per mile from Castle Rock Creek to Elk Creek near Tiller. From Days Creek to Canyonville, the South Umpqua River flows west then southwest for about 7 miles through a three-fourths mile wide valley. Canyon Creek joins the South Umpqua River at Canyonville. The South Umpqua River then flows about 4 miles to Riddle where it is joined by Cow Creek, the South Umpqua's largest tributary. From Elk Creek to Cow Creek, the South Umpqua has an average gradient of 13.5 feet per mile. From its confluence with Cow Creek to its mouth, the South Umpqua is relatively flat with an average gradient of approximately 6 feet per mile.

The South Umpqua River watershed has a low water-holding capacity, with precipitation quickly flowing into the Umpqua River. There is no significant late-season snowpack at the headwaters to provide snowmelt for river flow. Its flow pattern is characterized by high winter flows and low summer flows leading to periodic flooding in the winter and water shortages in the summer. The river temperature becomes very warm in the summer and excessive algae growth is a significant water quality problem.

South Umpqua River flow data at Tiller for the period from 1990 through 2008 was obtained from the U.S. Geological Survey. The lowest seven day average flows over a ten year period (7Q10 flow) for winter (November 1 through April 30) and summer (May 1 through October 31) were 45.1 cfs and 31.1 cfs, respectively.

The largest allocation of water rights is for a combination of in-stream water rights and irrigation. Domestic, industrial and manufacturing, municipal, livestock, and commercial water rights allocations combined make up the remaining water rights allocations. Total water rights allocation typically exceeds the summer flow. Because of this over-allocation, the Oregon Water Resources Department typically does not issue additional water rights above Cow Creek and can limit existing rights.

Flora and Fauna

Natural resources within the Canyonville area include water, timber, minerals, fish, and wildlife. The forest types of the area range from predominantly Douglas-fir and western hemlock to white and silver fir in the higher elevations. Small stands of white oak, and occasionally ponderosa pine, can be found along steep slopes. Undergrowth includes sedges, alder, and willow, and bladderwort, burweed, and mossy hummocks within the riparian habitat.

Over 250 wildlife species exist in the South Umpqua Basin. Large mammals such as elk, deer, black bear, and cougar, as well as the smaller residents, squirrels, fox, raccoons, and bats are supported by the diverse forest habitats. Raptors such as owls, eagles, osprey, and peregrine falcons, exist in the forest ecosystem, while waterfowl are highly visible swimming and feeding in the riparian zones of rivers and lakes. Anadromous fish - Coho and Chinook salmon and steelhead (sea-run trout) - and rainbow, brown and cutthroat trout exist in the rivers and streams in the Canyonville area. Non-native smallmouth bass also populate the local creeks and rivers.

Several federally listed and sensitive plant and animal species exist within the local watershed, including the Umpqua kalmiopsis, Thompson's mistmaiden, northern spotted owls, southern torrent salamanders and the Coho Salmon.

Air Quality and Noise

According to DEQ's 2008 Air Quality Annual Report, Douglas County (specifically Roseburg) had 331 days in 2008 characterized as having an air quality index of "Good" with the remaining 33 days characterized as "Moderate". A "Moderate" rating means that unusually sensitive people should consider reducing prolonged or heavy outdoor exertion on those days. Canyonville has consistently met the National Ambient Air Quality Standards (NAAQS), and is not listed as a maintenance or nonattainment area by the U.S. Environmental Protection Agency (EPA).

Due to Canyonville's proximity to Highway I-5, a significant amount of noise for the area can be attributed to vehicular traffic. No other chronic noise sources have been identified.

Environmentally Sensitive Areas

Environmentally sensitive areas typically include wetlands, riparian areas, and habitats for environmentally sensitive species. For example, stands of old growth Douglas Fir in the western part of Douglas County are considered by the Bureau of Land Management to be environmentally sensitive areas. In the immediate vicinity of Canyonville, only riparian areas, such as those in and around Canyon Creek and the South Umpqua River, would be considered sensitive areas, for which any improvements in these areas may require additional permitting and/or oversight by multiple stakeholder agencies.

Land Use

The South Umpqua River sub-basin is 89 percent forest. The second largest land use activity after forest management is livestock range. There is irrigated and non-irrigated agriculture but little industry. Urban, suburban, and other developed areas account for about 2 percent of the South Umpqua River sub-basin area. Most of the urban areas, including Canyonville, are on the lower reaches of the South Umpqua River.

SOCIO-ECONOMIC ENVIRONMENT

Population growth, land use patterns, and economic growth within the UGB will determine flows and loads to the wastewater treatment plant. The current population and projected population growth within the wastewater service area are the key parameters in projecting sewage flows. An important factor affecting population growth is land use. For a relatively small community such as Canyonville, growth rates are difficult to project because small changes in population can represent a large change in terms of growth rate.

Economic Conditions and Trends

Traditionally, the lumber and wood product industry has dominated employment in Douglas County, especially in the Canyonville area of southern Douglas County. In the last decade, however, Douglas County witnessed a diversification of its job market to include many new positions in financial institutions, education and health services, and most significantly, construction. Between 2001 and 2005, construction services alone increased by 42 percent.

During the 1990s, Douglas County witnessed an 18 percent cut in all private sector forestry and logging. Many jobs were cut and never restored. Because the timber industry has been the dominant employer in Douglas County up until recently, the reduction in timber production has greatly contributed to the rate of poverty over the last two decades. Technology innovations continually replace jobs formally operated by employees.

Southern Douglas County experienced a degree of industry growth from 2005 to 2007. WINCO, a food distribution company, opened a company branch in Tri-City, and has since been considered a major employer in the area. Seven Feather Casino and Hotel Resort in Canyonville, now one of the top employers in the County, has drastically increased the labor force. Additionally, trailer manufacturers and construction have steadily supplied labor.

In spite of this growth, there is still a significant degree of economic atrophy. According to the Oregon Employment Department regional analysts, economic development has slowed in recent years. The unemployment rate for Douglas County was consistently in the range of 8 to 10 percent from 1990 to 2007, but with the national economic downturn in recent years, the unemployment rate for the County has increased to near 16 percent as of July 2009 (compared with 12 percent state-wide).

Population

The City currently has a population of approximately 1,730 residents, based on information from the Population Research Center at Portland State University (PSU), effective July 1, 2008.

Population Growth Projections

The Douglas County Planning Department (Planning Department) and the City of Canyonville (City) have agreed to use a population forecast annual growth rate of 1.75 percent, revised from a previous growth rate of 3.5 percent used in the 2008 Effluent Reuse Study. The 1.75 percent annual growth rate is applied to a population of 1,730 for the year 2008 to determine the year 2035 population. A letter from the Planning Department, included as Appendix A, documents the City's projected population growth rate.

Figure 3-2 illustrates the population growth rate and the projected year 2035 population, estimated to be 2,764 residents.

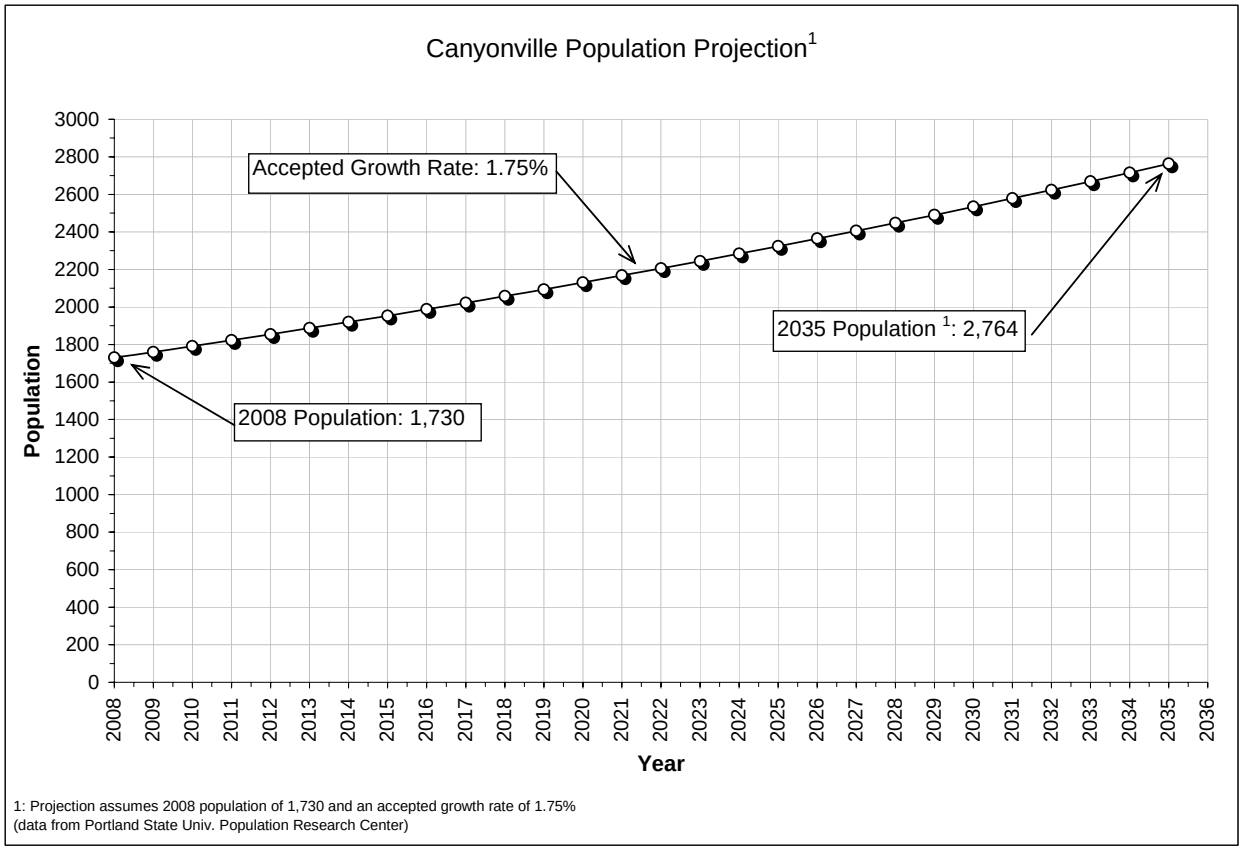


Figure 3-2: Canyonville Population Projection

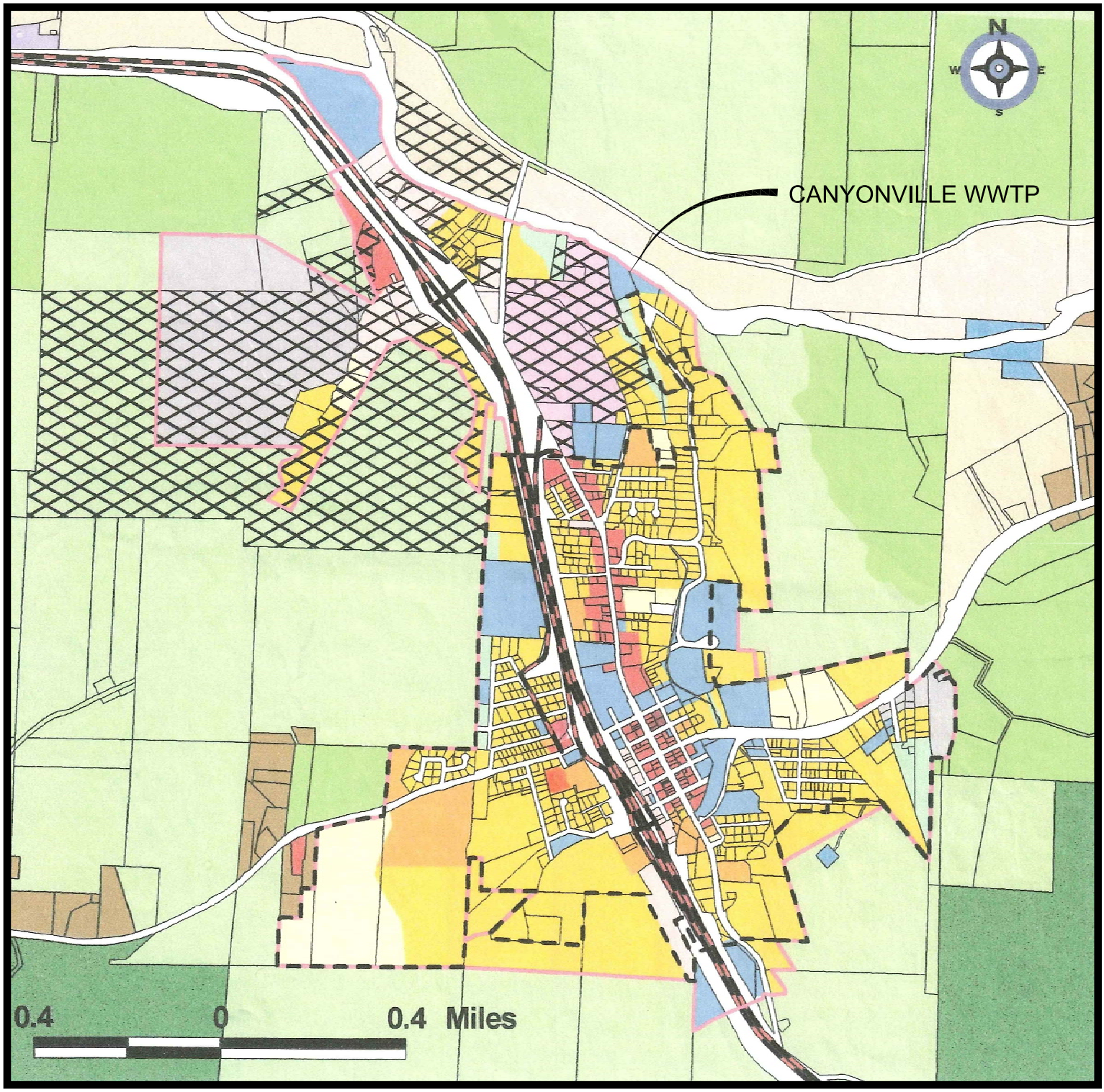
LAND USE REGULATIONS

Figure 3-3 is a current zoning map of Canyonville that shows the city boundary, UGB, and zoning designations. Although more than half of the UGB land is outside of the existing city limits, a significant amount of this acreage is poorly suited for development due to the present of steep slopes, floodplains, and riparian corridors. Further, the Canyonville UGB contains substantial public and semi-public lands such as property owned by the Cow Creek Tribes.

City or County Comprehensive Plan

The Umpqua Regional Council of Governments developed a Comprehensive Plan in 1973. The Comprehensive Plan addresses land use and development issues within the City. The Comprehensive Plan and subdivision ordinance regulates the divisions of land and the creation of public facilities. The “design standards” section of the subdivision ordinance, discusses generalized public facility design requirements. The Comprehensive Plan has not been revised or amended since 1973.

The Oregon Department of Transportation, in conjunction with Douglas County and the Cow Creek Band of Umpqua Tribe of Indians, developed an Interchange Area Management Plan (IAMP) in 2006. The IAMP outlined access management strategies to consider for implementation in conjunction with the I-5: Exit 99 Interchange Improvement project and recommended long-term access improvements for the County to consider for future



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KEY FEATURES

- City Limits
- U.G.B.
- Highways
- Tribal Properties (7/14/1999)

City Zoning

- C-1 Commercial Retail
- C-2 Commercial Highway Related
- C-3 Office-Professional
- CS Community Service
- IG Industrial General
- IL Light Industrial
- R-1 Single Family Residential, 2-5 Units/Acre
- Manufactured Home/ Duplex Residential, 5-8 Units/Acre
- Multi-Family Residential, 8-18 Units/Acre
- Reservation
- WOA Woodland/Open Space/Agriculture

County Zoning

- 5R
- C3
- CT
- F2
- F3
- FF
- FG
- M2
- PR
- RR
- TR

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Kennedy/Jenks Consultants

CITY OF CANYONVILLE
WASTEWATER FACILITIES PLAN

ZONING MAP

0976004.00
MAY 2010

FIGURE 3-3

improvements to roadways under their jurisdiction in the influence area. The IAMP provided an analysis of potential land use changes around the interchange. The City and County have used the results of this analysis as a basis for which to refine local land use designations in the immediate vicinity of the interchange improvements.

Intergovernmental Agreements

The WWTP site is outside of the City Limits, but within the Urban Growth Boundary. Consequently, the City has an agreement with Douglas County which authorizes the use of the site (Appendix B).